2023 Southeastern Residency Conference

A Administration (ADM) **B** Ambulatory Care (AMB) **C** Cardiology (CAR) **Y** Community Pharmacy (CP)

R Critical Care/Emergency Medicine (CCM) **G** Geriatrics (GER) **I** Infectious Disease (ID)

L Internal Medicine (IM) **M** Medication Safety (MES) **N** Neurology (NEU) **O** Oncology (ONC)

P Pain Management (PM) **D** Pediatric (PED) **S** Psychiatric Pharmacy (PSY) **T** Transitional Care (TC)

1 Transplant (TRP)

APRIL 26 • WEDNESDAY

7:00pm – 10:00pm	**Early Check-In** Join us at Creature Comforts for a casual reception if you're in town early!

A Administration (ADM) B Ambulatory Care (AMB) C Cardiology (CAR) Y Community Pharmacy (CP)

R Critical Care/Emergency Medicine (CCM) G Geriatrics (GER) I Infectious Disease (ID)

L Internal Medicine (IM) M Medication Safety (MES) N Neurology (NEU) O Oncology (ONC)

P Pain Management (PM) D Pediatric (PED) S Psychiatric Pharmacy (PSY) T Transitional Care (TC)

1 Transplant (TRP)

APRIL 27 • THURSDAY

PINNED
8:00am – 8:10am

Welcome — Ballroom EF

Presenters: Jenna Foster Cox

Welcome to the 2023 Southeastern Residency Conference!

PINNED
8:10am – 9:00am

Keynote Address — Ballroom EF

Presenters: Edoabasi McGee

Integrating Health Equity into Postgraduate Pharmacy Training

9:10am – 9:30am B **Assessing the Needs of Community Pharmacists to Successfully Implement Collaborative Drug Therapy Management (CDTM) into Community Pharmacies Across the State of Georgia** Olympia 2

Moderators: Derek Gaul

Presenters: Kyler Hazelett

Evaluators: Heather McLeod

TITLE: Assessing the Needs of Community Pharmacists to Successfully Implement Collaborative Drug Therapy Management (CDTM) into Community Pharmacies Across the State of Georgia

AUTHORS: Chelsea Keedy, PharmD, BCACP; Amber D. Fraley, PharmD Candidate; Kelly Bazel, PharmD Candidate; Joseph Crosby, RPh, PhD, FAFPE; Rebecca H. Stone, PharmD, BCPS, BCACP, FCCP; Blake R. Johnson, PharmD, MPH, BCACP

OBJECTIVE: To understand the perceived challenges and barriers of Georgia community pharmacists to engage in advanced community pharmacy services (ACPS)

SELF ASSESSMENT QUESTION: not required

BACKGROUND: Not required

METHODOLOGY: A survey was administered to members of the Academy of Independent Pharmacy within the Georgia Pharmacy Association (GPhA). 601 surveys were electronically sent via RedCap® and ninety pharmacists (15%) completed the survey. The survey instrument included interest in, current perspectives of, and needs for workflow, staffing, and program management to implement ACPS. Pharmacists willing to discuss survey responses were invited for interview, which were recorded, transcribed, and analyzed for themes.

RESULTS: On a scale of 1 (Strongly Disagree) to 7 (Strongly Agree), survey respondents mostly agreed or strongly agreed: community pharmacists play an important role in improving quality (median = 7, IQR=0) and access (median = 7, IQR=0) to care by engaging in ACPS. Pharmacists reduce health care costs associated with poor quality (median = 7, IQR=1) and access (median = 7, IQR=1) of care; pharmacist can enhance their public image (median = 7, IQR=1); ACPS engagement enhances pharmacist job satisfaction (median = 7, IQR=1); and lastly, leads to better patient outcomes (median = 7, IQR=0). Survey respondents agree these tools would be mostly helpful or somewhat helpful: access to ACPS educational activities (median = 5, IQR = 1); collaboration with providers (median = 4.25, IQR = 0.75); access to patient's clinical and laboratory data (median = 5, IQR = 1); ACPS public awareness (median = 5, IQR = 1); monetary compensation for ACPS services (median = 5, IQR = 1); ACPS computerized prompts (median = 5, IQR = 1); guideline access (median = 5, IQR = 1); drug resources access (median = 5, IQR = 1); ACPS targeted professional development programs (median = 5, IQR = 1).

CONCLUSIONS: Our results demonstrate community pharmacists have an interest in engaging in ACPS. These pharmacists identified specific needs to successfully implement ACPS. To overcome these barriers, additional preparatory programming may be required to meet the needs of these pharmacist to ensure that we have considerable community pharmacy engagement and successful implementation of these services to optimize patient outcomes.

9:10am – 9:30am B **Sodium-Glucose Cotransporter-2 (SGLT-2) Inhibitor Therapy in Veterans with Heart Failure with Reduced Ejection Fraction (HFrEF) Regardless of Diabetes Status** Olympia 1

Moderators: Grant Teague

Presenters: Amber Jefferson

Evaluators: Alexandre Ivanov

TITLE: Sodium-Glucose Cotransporter-2 (SGLT-2) Inhibitor Therapy in Veterans with Heart Failure with Reduced Ejection Fraction (HFrEF) Regardless of Diabetes Status

AUTHORS: Amber Jefferson, Brittney Howard, Erin Amadon, Kaylee Herring

OBJECTIVE: Categorize common reasons Veterans with HFrEF were not initiated on SGLT-2 inhibitor therapy Illustrate the impact pharmacists have on management of HFrEF

SELF ASSESSMENT QUESTION: Which is not an appropriate reason to recommend against SGLT-2 inhibitor therapy?

BACKGROUND: During the 2021 Veterans Affairs (VA) fiscal year, heart failure accounted for the highest number of prorated admissions and readmission by condition. This included approximately 28,000 admissions among 22,000 Veterans and a prorated readmission rate of around 25%. The Fayetteville NC VA Coastal Health Care System trends below the national and Veterans Integrated Services Network (VISN) averages for HFrEF patients prescribed a SGLT-2 inhibitor. This quality improvement initiative aims to initiate the VA formulary preferred SGLT-2 inhibitor, empagliflozin, in Veterans with HFrEF without contraindications.

METHODOLOGY: This initiative was designed as a quality-improvement, prospective, cohort analysis, conducted within the Fayetteville NC VA Coastal Health Care System and was exempt from Institutional Review Board (IRB) approval. A self-updating dashboard created by the VA Innovation and Research Review System (VAIRRS) was used to identify Veterans with a diagnosis of HFrEF, but without an active order for a SGLT-2 inhibitor. The listed Veterans were then stratified according to their assigned primary care provider (PCP). Lastly, Clinical Pharmacist Practitioners (CPPs) throughout the enterprise were tasked with reviewing the appropriateness of SGLT-2 inhibitor initiation in Veterans based on their associated PCP. Patient Aligned Care Team (PACT) CPPs assessed Veterans for any contraindications to empagliflozin and initiated therapy in qualified Veterans. Data was collected May 1, 2022 through November 30, 2022. The investigator compared the number of Veterans with a diagnosis of HFrEF that were not prescribed an SGLT-2 inhibitor prior to May 1, 2022 with the number of Veterans with a diagnosis of HFrEF not prescribed a SGLT-2 inhibitor as of December 1, 2022. The primary endpoint was the number of Veterans with HFrEF prescribed an SGLT-2 inhibitor before and after the quality improvement initiative.

RESULTS: There was a total of 935 Veterans assessed by PACT CPPs. 708 Veterans were identified as appropriate candidates for initiation of empagliflozin. SGLT-2 inhibitor therapy was not initiate for 227 Veterans. Of those 227 Veterans, 39 (17%) had eGFR less than 20 mg/dL/min/1.73m2 or were on dialysis, 32 (14%) had an LVEF that improved, 27 (12%) refused empagliflozin therapy, 28 (12%) had recurrent UTIs or urinary complications, 24 (11%) had a history of hypotension, 16 (7%) had a previous ADR to an SGLT-2 inhibitor, 37 (16%) were followed by a non-VA Cardiologist and their input was requested prior to initiation, 24 (11%) of Veterans were not initiated on empagliflozin for miscellaneous reasons defined as Veteran-specific situations that were not identified as common occurrences preventing empagliflozin initiation.

CONCLUSIONS: This initiative demonstrated the pharmacist’s essential role in optimizing therapy for chronic disease states. It also highlighted the need for CPPs to utilize their unique position in the multidisciplinary team to communicate gaps in treatment and utilize their scope of practice to fill those gaps and prevent adverse outcomes. VA CPPs have the scope of practice, the knowledge, and the accessibility to review patients’ medication lists and find ways to optimize GDMT to decrease HF exacerbations, reduce hospital readmission rates, and improve the Veteran’s overall health. Veterans with HFrEF are at an increased risk of major cardiovascular events, including death from HF. GDMT has consistently demonstrated reduced rates of cardiovascular death and hospitalizations due to heart failure. At the end of this initiatives data collection period, 66% of the Veterans assigned to the Fayetteville NC VA Coastal Health Care System were started on SGLT-2 inhibitor therapy as recommended by ACC HF guidelines.

9:10am – 9:30am R **Clinical outcomes of protocolized antibiotic dosing in critically-ill patients with bacteremia and augmented renal clearance compared to critically-ill patients without augmented renal clearance**

Athena I

Moderators: Kristen Turner

Presenters: Martin Gordon

Evaluators: Taylor Wells

TITLE: Clinical outcomes of protocolized antibiotic dosing in critically-ill patients with bacteremia and augmented renal clearance compared to critically-ill patients without augmented renal clearance

AUTHORS: Martin Gordon, Evan Lantz

OBJECTIVE: At the conclusion of the presentation, the participant should be able to identify patients at risk of augmented renal clearance and summarize the mortality difference between patients with bacteremia and augmented renal clearance compared to those patients without augmented renal clearance.

SELF ASSESSMENT QUESTION: True or False: There was a difference in in-hospital mortality between patients with bacteremia and augmented renal clearance compared to those patients without augmented renal clearance.

BACKGROUND: Augmented renal clearance (ARC) is a phenomenon witnessed in critically-ill patients where these patients exhibit supraphysiologic drug clearance through renal and non-renal mechanisms such as an elevated cardiac index, low systemic vascular resistance, and increased organ blood flow. There is no universally accepted definition of ARC, although most studies characterize ARC as a creatinine clearance (CrCl) of ≥ 130 mL/min out of simplicity. It is important to note that this value does not truly reflect ARC in all cases. A clinical concern for patients with ARC is the possibility of suboptimal concentrations of medications that are renally cleared, specifically antibiotics. Our institution does not accommodate for ARC dosing, with doses on our protocol only reflecting current package insert recommendations. Therefore, the purpose of this study is to compare the clinical outcomes of our institutional protocolized antibiotic dosing regimen in critically-ill patients with bacteremia and ARC compared to critically-ill patients without ARC.

METHODOLOGY: We performed a retrospective cohort study comparing the efficacy of an institutional protocolized antibiotic dosing regimen in critically-ill patients with bacteremia and ARC compared to critically-ill patients without ARC. To be eligible, patients required admittance to the Surgical Critical Care service with a discharge diagnosis of bacteremia. We only included the first episode of bacteremia that was treated with antibiotics that are renally dose adjusted and where serum concentrations are not measured, such as various cephalosporins and carbapenems. Therefore, anyone treated with vancomycin, or an aminoglycoside was excluded. Patients were also excluded if they were on hemodialysis or continuous renal replacement therapy, had a culture that was considered a contaminant, or were treated with antibiotics that are not on the institution's renal dosing protocol. The ARC group included patients who had an instance of CrCl of ≥ 130 mL/min during antibiotic administration; our control group consisted of included patients who did not have an instance of CrCl of ≥ 130 mL/min during antibiotic administration. The primary endpoint was in-hospital mortality. Secondary outcomes were ICU mortality, days requiring mechanical ventilation, ICU length of stay, hospital length of stay, development of drug resistance to index antibiotic, and documented clearance of blood cultures within 72 hours.

RESULTS: For our study, 285 patients were reviewed, with a total of 210 patients excluded for various reasons. Of the 75 patients included in the analysis, 40 patients were assigned to the ARC group, and 35 patients were assigned to the non-ARC group. Baseline characteristics were evenly distributed between the two arms. At the end of the study, 20% of patients in the ARC group died in the hospital vs 31% in the non-ARC group (p 0.26). The results for the ARC group versus the non-ARC group for the secondary outcomes of ICU mortality (20% vs 26%, p 0.56), ICU length of stay (14.7 days vs 7 days, p 0.07), hospital length of stay (28.3 days vs 21.6 days, p 0.03), days requiring mechanical ventilation (14 days vs 12 days, p 0.49), duration of antibiotic therapy (7.5 days vs 9.0 days, p 0.39), documented clearance of blood cultures within 72 hours (41% vs 33%, p 0.56) and the development of drug resistance to the index antibiotic (0% vs 0%, p > 0.99) were also calculated.

CONCLUSIONS: Among critically-ill patients with bacteremia and ARC, there was no significant difference in in-hospital mortality compared to critically-ill patients without ARC. No statistical differences were seen when analyzing most of the secondary endpoints. There was a significant difference in hospital length of stay, with a shorter duration of stay for the non-ARC group. Although not significant, there was a numerical difference in ICU length of stay favoring the non-ARC group. The trial was underpowered due to low patient enrollment which was driven by the lack of available patients in the ARC group.

9:10am – 9:30am R **Comparison of time to shock reversal in patients with septic shock initiated on differing hydrocortisone dosing regimens** Athena H

Moderators: Dustin Bryan
Presenters: DeVon Suber
Evaluators: Stephanie Smith

TITLE: Comparison of time to shock reversal in patients with septic shock initiated on differing hydrocortisone dosing regimens

AUTHORS: L. DeVon Suber, Cortney Dodson, William Owens, David Schrift, Deborah Hurley, Jenna F. Cox

OBJECTIVE: To examine difference in time to shock reversal between hydrocortisone 100 mg q8h and 50 mg q6h dosing regimens for septic shock.

BACKGROUND: Septic shock is a life-threatening condition that terminates the lives of one in three and one in six of the millions that are impacted annually. Prior studies showed decreased time to shock reversal with the administration of a minimum of 200 mg a day of hydrocortisone as adjunct therapy to vasopressor administration in hospitalized patients with septic shock. The most frequently observed hydrocortisone dosing strategies in clinical practice for septic shock are 100 mg every 8 hours and 50 mg every 6 hours, but the optimal dose for improving hemodynamic instability is unknown. A recently published single-system study demonstrated similar rates of shock reversal between these regimens, while the 100 mg every 8-hour regimen reduced the recurrence of shock. Differences existed between groups in regard to fludrocortisone use. The purpose of this study is to further examine which of these two hydrocortisone dosing strategies (100 mg every 8 hours or 50 mg every 6 hours) in the treatment of septic shock provides decreased times to shock reversal.

METHODOLOGY: This retrospective, observational study includes adult patients admitted to an intensive care unit (ICU) at Prisma Health Richland, Greenville, or Baptist Hospitals between May 1, 2017, and April 30, 2022 with proven or clinical suspicion of infection, who received at least two doses of a hydrocortisone (100 mg every eight hours or 50 mg every six hours regimen) and received vasopressor support to maintain mean arterial pressure above 65 mmHg. Excluded are patients with COVID-19 diagnosis, admission to the surgical cardiovascular ICU, oral glucocorticoid use within 30 days of ICU stay, or receipt of other systemic corticosteroids during hydrocortisone use. The primary outcome is time to shock reversal, and the secondary outcomes to be evaluated are recurrence of shock, rates of new shock, hospital and ICU lengths of stay, and in-hospital mortality. Safety outcomes include rates of insulin infusion initiation, hyperglycemia, initiation of midodrine, and new-onset infection.

RESULTS: In Progress

CONCLUSIONS:In Progress

9:10am – 9:30am R **Efficacy and safety of increased dosing of activated prothrombin complex concentrate for the reversal of vitamin K antagonist intracranial hemorrhage** Athena G

Moderators: Erica Merritt

Presenters: Holly Clark

Evaluators: Courtney Mallon

TITLE: Efficacy and safety of increased dosing of activated prothrombin complex concentrate for the reversal of vitamin K antagonist intracranial hemorrhage

AUTHORS: Holly Clark, Sarah Elizabeth Davis, Jeremy Ray, Jerry Robinson

OBJECTIVE: To discuss the efficacy and safety of increasing the current institutional dose of activated prothrombin complex concentrate for warfarin reversal in patients with confirmed intracranial hemorrhage.

SELF ASSESSMENT QUESTION: What variables should a pharmacist consider when using an activated prothrombin complex concentrate for warfarin-associated life-threatening bleeding events?

BACKGROUND: At Huntsville Hospital, fixed-dose activated prothrombin complex concentrate (aPCC) is used in combination with intravenous (IV) phytonadione for warfarin reversal associated with major bleeding events. Physicians have expressed concern that the current institutional dosing for warfarin reversal in intracranial hemorrhage (ICH) patients may be insufficient to achieve hemostasis. While primary literature comparing aPCC dosing strategies for warfarin-associated major bleeding is sparse, some institutions utilize higher dosing of aPCC in combination with IV phytonadione for ICH patients. The objective of this project is to evaluate the safety and efficacy of increasing the current institutional fixed-dose of aPCC for warfarin reversal in patients with confirmed ICH.

METHODOLOGY: This is a single-center, retrospective analysis between January 2020 and March 2023. Patients included in this study are greater than or equal to 18 years of age, presented with ICH confirmed on head computerized tomography (CT), receiving warfarin prior to bleeding event, and received aPCC (Factor Eight Inhibitor Bypassing Activity [FEIBA]) for warfarin reversal. Patients were excluded if they had an International Normalized Ratio (INR) elevation secondary to other causes (hepatic dysfunction, cirrhosis, etc.). Data was collected from the electronic medical record and analyzed using descriptive statistics. The following pre-implementation data was collected: patient demographics, pertinent labs, Glascow Coma Scores (GCS), coagulation studies, home medication history, head CT scan results, aPCC dose administered, blood products administered, pertinent inpatient events (i.e. thromboembolic events, etc.), length of stay, and discharge disposition. Hospital-specific data and current literature were reviewed to identify areas of improvement, and the warfarin reversal protocol was updated accordingly to include increased aPCC dosing for warfarin-associated ICH. Post-implementation data collection is in progress.

RESULTS: In progress

CONCLUSIONS: In progress

9:10am – 9:30am | **Community-Associated Extended Spectrum β-Lactamase Bacteremia Prediction Scoring** Athena A

Moderators: Cori Edmonds
Presenters: Robert Bevins
Evaluators: Katheryn Pruitt

TITLE: Community-Associated Extended Spectrum β-Lactamase Bacteremia Prediction Scoring
AUTHORS: Robert Bevins, Samantha Walker, Brandon Hawkins
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Recent surveillance reports demonstrate an increasing amount of Extended-Spectrum Beta-Lactamase (ESBL) bacteremia are community-onset. As a result, carbapenems are being increasingly used for initial, empiric therapy. Increasing carbapenem usage presents additional problems with regards to increasing rates of C. difficile and carbapenem resistant Enterobacterales (CRE) infections. The purpose of this study is to develop a risk factor scoring tool for the prediction of Community-associated ESBL (CA-ESBL) Enterobacterales bacteremia as it relates to previously identified risk factors, and validation of a local risk factor scoring tool for the prediction of CA-ESBL Enterobacterales bacteremia to allow for more targeted carbapenem prescribing.
METHODOLOGY: This is a single center, observational, retrospective, case-control study of patients admitted to a 710-bed academic medical center with a blood culture positive for Enterobacterales bacteria within 48 hours of admission. Cases were defined as isolates demonstrating confirmed ceftriaxone resistance via molecular or conventional susceptibility testing methods, whereas controls were defined as isolates without ceftriaxone resistance via molecular or conventional susceptibility testing methods. Notably, in cases where CTX-M was identified through molecular testing, there was no discordance with phenotypic susceptibility results. Risk factors related to time, age, prior antimicrobial use, and healthcare exposure were collected. Statistical analysis and multivariable logistic regression were performed using SAS to identify time, age, or other previously mentioned risk factors most associated with CA-ESBL bacteremia. Risk factors independently associated with CA-ESBL bacteremia ($P < 0.05$) were included in the final model. A point scoring system was developed, and each risk factor weighted by its corresponding regression coefficient.
RESULTS: 300 patients were included in this IRB-approved study. 106 ESBL cases were compared against 194 non-ESBL controls with 79 variables collected across all patients. 10 non-colinear variables were included in the multivariate logistical regression analysis based on statistical significance. The variables independently associated with increased risk of ESBL bacteremia included: previous ESBL isolate (OR: 5.02), nursing home resident prior to admission (OR: 3.32), ≥ 3 ED visits in the past 12 months (OR: 3.13), antibiotics in the past 90 days (OR: 2.73), an invasive procedure in the past 4 weeks (OR: 2.39), qPITT Bacteremia Score (OR: 1.86), and Charlson Comorbidity Index (OR: 1.19).
CONCLUSIONS: Specific factors that could be used to identify patients at increased risk for ESBL bacteremia were identified at a regional academic medical center. These findings echo previously identified risk factors in addition to several new risk factors, including previous ESBL isolate and qPITT Bacteremia Score. Use of this locally validated model will help clinicians better consider empiric carbapenem prescribing for select patients based on these statistically significant risk factors.

9:10am – 9:30am | **Impact of Optimizing Urine Culture Susceptibility Reports on Prescribing of Antimicrobials in Outpatients at the Atlanta VA Health Care System (AVAHCS)** Athena D

Moderators: Serina Tart

Presenters: Christopher Gale

Evaluators: Sarah Berardi

TITLE: Impact of Optimizing Urine Culture Susceptibility Reports on Prescribing of Antimicrobials in Outpatients at the Atlanta VA Health Care System (AVAHCS)

AUTHORS: Christopher Gale, Tiffany Goolsby, Andrew S. Webster

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: To encourage less fluoroquinolone prescribing in uncomplicated urinary tract infections (UTIs), the AVAHCS optimized urine susceptibility reports by adding educational comments regarding selection of narrow-spectrum beta-lactams for Enterococcus spp and certain Enterobacterales (E. coli, K. pneumoniae, Proteus spp) and hiding the susceptibility of levofloxacin for Enterococcus spp in the results. The purpose of this study is to determine the impact of these changes on antibiotic selection in the outpatient setting. Our primary goal is to evaluate fluoroquinolone prescribing rates before and after the intervention. Additionally, we seek to evaluate if the intervention made a difference in prescribing of narrow spectrum beta-lactams.

METHODOLOGY: This study consisted of retrospective chart reviews of patients with urine cultures that are positive for the target organisms from March - December 2019 and March - December 2022 (before and after implementation of the interventions). Patients were included if they received treatment for a UTI, had positive urinalyses, and had urine cultures that resulted with Enterococcus spp, E. coli, K. pneumoniae, or Proteus spp. Patients were excluded if they had positive blood cultures at the time of sample collection, were hospitalized at the time of sample collection, had a previous urine culture or received treatment for a UTI within 30 days, had a urological procedure in the preceding 12 months, or if polymicrobial infections were reported. We sought to include 100 patients from each group. The primary outcome was the percent change in the use of fluoroquinolones before and after implementation. Secondary outcomes included the percent change in the use of aminopenicillins and cephalosporins in the treatment of UTIs due to Enterococcus spp. and Enterobacterales respectively.

RESULTS: For Enterococcus spp, there was a 29.21% decrease (2019: 9/26, 2022: 2/37) in the selection of fluoroquinolones as definitive therapy in 2022 compared to 2019. Additionally, there was a 37.11% increase (2019: 3/26, 2022: 18/37) in the use of aminopenicillins as definitive therapy in 2022 compared to 2019. For Enterobacterales, there was a 14.97% (2019: 33/99, 2022: 18/98) decrease in the selection of fluoroquinolones as definitive therapy in 2022 compared to 2019. Additionally, there was a 13.27% increase (2019: 2/99, 2022: 15/98) in the use of first-generation cephalosporins as definitive therapy in 2022 compared to 2019. Further analyses of differences between subpopulations are pending.

CONCLUSIONS: Suppression of levofloxacin from the susceptibility report led to a substantial decline in the use of fluoroquinolones in those with Enterococcus spp UTIs. Additionally, the dramatic increase in the use of aminopenicillins in Enterococcus spp UTIs between the groups supports the effectiveness of C&S report comments in guiding definitive therapy. In Enterobacterales UTIs, there was a more modest decline in definitive fluoroquinolone use when compared to Enterococcus spp UTIs. Similarly, the increase in use of first-generation cephalosporins as definitive therapy was less pronounced when compared to the increase seen with aminopenicillins and Enterococcus spp. It is unclear whether this is due to provider familiarity with the appropriate treatment options for the causative organism or other factors. Of note, there has been a decline in both empiric and definitive use of fluoroquinolones at our institution since 2019 due to multiple co-occurring stewardship initiatives. As such, we suspect that prescribing trends are likely to have been influenced by more factors than those described in our study.

9:10am – 9:30am | **Impact of Pharmacy-Led Beta-Lactam Allergy Clarification and Delabeling at a Community Hospital** Athena B

Moderators: Beth Phillips
Presenters: Christopher D'Amico
Evaluators: Sarah Talley

TITLE: Impact of Pharmacy-led Beta-Lactam Allergy Clarification and De-labeling at a Community Hospital
AUTHORS: Christopher M. D'Amico & Linda Johnson
OBJECTIVE: To evaluate the pharmacy-led antimicrobial stewardship program on de-labeling and clarifying patient's penicillin and beta-lactam allergies
SELF ASSESSMENT QUESTION: Will be included in presentation

BACKGROUND: Evaluation of appropriate antibiotic usage is a vital part of antibiotic stewardship. Multiple aspects go into the decision making including disease state(s), first-line therapies per Infectious Diseases Society of America (IDSA) guidelines, local antibiograms, severity risk factors, and patient allergies. Penicillin (PCN) allergies are not uncommon, and often lead to unnecessary usage of broader-spectrum antibiotics. The Centers for Disease Control and Prevention (CDC) provides the following statistics regarding penicillin allergies: approximately 10% of all US patients report having an allergic reaction to a penicillin class antibiotic in the past, less than 1% of those patients are not truly allergic to penicillin (reaction not IgE-mediated), and lastly, appropriately 80% of those who had an IgE-mediated reaction lose their sensitivity after 10 years.

Penicillin allergy labels are associated with more frequent outpatient visits, longer hospital length of stay, and higher rate of hospital readmission. Using alternative antibiotics when a penicillin class antibiotic leads to increased resistance, chance for a Clostridioides difficile infection (CDI), clinical failure, and direct and indirect antibiotic hospital costs. However, over 97% of patients reporting a penicillin allergy are not truly allergic when assessed by skin testing and direct amoxicillin challenge. In addition, over 95% of patients with low severity penicillin allergy can tolerate penicillin.

There are different methods utilized and studied for de-labeling and challenging PCN allergies. The antibiotic stewardship committee implemented a protocol to help reduce the number of patients admitted with penicillin allergies in an effort to help reduce the number of patients with penicillin allergies on profile. A guideline was created as an outline of resources to ultilize including: patient allergy assessment tool, patient risk categories for allergies, a cross-reactivity matrix, and a detailed delabeling protocol for low risk patients. Clarification of patients' allergies are primarily conducted by the emergency department medication history pharmacy technicians by utilizing the patient allergy assessment tool questionaire in addition to reviewing outpatient records for beta-lactam prescriptions in the past year.

METHODOLOGY: This is a retrospective chart review to evaluate the impact of the beta-lactam allergy delabeling protocol. Pre-protocol implementation data was collected from 01/01/2022 through 01/31/2022. Post-protocol implementation data was collected from 01/01/2023 through 01/31/2023. The primary endpoints include: the total number of patients with beta-lactam allergies clarified and total number of pharmacy interventions made. Secondary enpoints include: intervention type breakdown, details of patients' allergies (reaction risk category, allergy > 10 years ago, immediate vs. delayed allergic reaction, and previous outpatient beta-lactam prescription).

RESULTS: 332 patients in the pre-protocol group were reviewed and found no documented interventions made. The post-protocol group included 394 patients; 143 patients (36.1%) had their allergies clarified with a total of 167 pharmacy interventions made. 85.6% of interventions made were allergy clarifcations. Of the patients with allergies clarified: 41.6% of patients reported a minimal or low risk reactions, 72% of patients reported reaction > 10 years ago, 34% reported an immediate reaction, and 43.4% of patients had a previous beta-lactam antibiotic reproted on outpatient records.

CONCLUSIONS: The implementation of thai pharmacy led beta lactam allergy clarification protocol led to 167 interventions in the post-period with the most common intervention being allergy clarification by med history technicians. This number also includes 24 pharmacist interventions that resulted in in delabeling, de-escalation, or allergy challenges. This study shows there are substantial opportunities for de-labeling with approximately 40% of patients allergies being categorized as either minimal or low-risk allergic reactions; 72% of patients had their allergy over 10 years ago, which again, if the allergy occurred over 10 years ago, the majority of ige-mediated reactions are desensitized, and lastly 43% of patients had previous beta-lactam outpatient

prescriptions in the past year.

9:10am – 9:30am P **Impact of parenteral hydromorphone versus morphine on length of stay in patients with sickle cell disease** Parthenon 1

Moderators: Bradley Smith
Presenters: Emily Lee
Evaluators: Anna Parker

TITLE: Impact of parenteral hydromorphone versus morphine on length of stay in patients with sickle cell disease
AUTHORS: Emily Lee, Annalise Labatut, Julianna Cebollero, Jennifer LaFollette, Morgan McLemore, Marjorie Curry
OBJECTIVE: To assess the length of stay for patients with sickle cell disease hospitalized for vaso-occlusive pain crisis who received parenteral hydromorphone and/or morphine for pain management
SELF ASSESSMENT QUESTION: Which statement is true regarding LOS and parenteral hydromorphone and morphine?
BACKGROUND: Vaso-occlusive pain crisis (VOC) is a complication of sickle cell disease (SCD). It can lead to emergency department visits and hospital admissions resulting in an estimated $2.4 billion in United States healthcare costs annually. As there is no curative treatment for VOC, pain and symptom management are the mainstay of inpatient treatment. Opioid analgesics are commonly used to manage VOC associated pain episodes, although limited evidence exists to support dosing and treatment duration in SCD.

At Grady Health System, acute pain episodes are initially managed in the Georgia Comprehensive Sickle Cell Center, a 24/7 acute care center, until a determination for admission is made. Parenteral opioids, preferentially morphine, and/or hydromorphone are administered for VOC pain management per institutional guidance. Parenteral morphine is the preferred agent; however, hydromorphone is commonly prescribed and doses higher than the 2 mg IV maximum recommended dose are frequently ordered and administered. A documented increase in the use of parenteral hydromorphone over five years prompted a retrospective review of VOC admissions in 2020 (N=32). The analysis showed an increased length of stay (LOS) for patients that predominately received parenteral hydromorphone as compared to morphine (5.7 vs 2.9 days). As a result of the analysis, a larger study was proposed to assess the association between parenteral opioids and LOS for VOC pain management.

METHODOLOGY: In order to evaluate the impact of parenteral opioids on LOS, a single-center, randomized, retrospective chart review from January 2020 to December 2021 was performed. All encounters for hospitalized patients with VOC during the time period were randomized using a random number generator and assessed for inclusion. Patients who were intubated, admitted with a diagnosis unrelated to VOC, were not administered IV opioids, and/or were not admitted were excluded. A total of 187 admission encounters were included; parenteral morphine (n=72) and hydromorphone (n=115). Placement into either the hydromorphone or morphine group was determined by the calculated total oral morphine equivalent (OME) administered during the encounter. The primary outcome was to compare LOS for patients in the parenteral hydromorphone versus morphine group. Secondary outcomes included total OME per day and LOS based on hydromorphone dose administered during the encounter.
RESULTS: LOS for VOC was similar between the parenteral hydromorphone and morphine groups (5.4 vs 4.9 days respectively, $p = 0.551$). The median total OME per day in the morphine and hydromorphone groups were 186 mg and 369 mg, respectively ($p < 0.001$). The impact of OME on LOS demonstrated a trend toward increased LOS for total daily doses < 750 OME. The LOS based on dose of hydromorphone administered was as follows: no hydromorphone (4.4 days), hydromorphone ≤ 2 mg (4.1 days), 2.1-3.9 mg (5.5 days), and > 4 mg (6.3 days).
CONCLUSIONS: Although there was not a statistically significant difference in LOS between the hydromorphone and morphine groups, increasing doses of opioids and higher daily OME resulted in longer LOS. Overall, patients in the hydromorphone arm received approximately two times the total OME per day compared to the morphine group. Ongoing education for sickle cell pain management and opioid OME conversion is required.

9:10am – 9:30am D **Discontinuation of Inhaled Cycled Suppressive Antibiotic Therapy in Cystic Fibrosis** Athena J

Moderators: Lucy Crosby
Presenters: Bailey Horne
Evaluators: Nancy Bailey

TITLE: Discontinuation of Inhaled Cycled Suppressive Antibiotic Therapy in Cystic Fibrosis
AUTHORS: Bailey Brogdon Horne, Aubrey Slaughter, Margaret Oates Poisson
OBJECTIVE: N/A
SELF ASSESSMENT QUESTION: N/A
BACKGROUND: Cystic fibrosis (CF) is a genetic disorder that disrupts the cells' ability to transport chloride ions due to mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) protein. This dysregulation results in thick, acidic mucus secretions throughout the body, with a predominant focus on lung disruption. These secretions can lead to pulmonary exacerbations (PEx), which decrease lung function, impact quality of life, and increase mortality. Current literature fails to provide consensus on defining PEx in CF. Clinically, PEx present as increased cough and sputum production, requiring antibiotic therapy and increased pulmonary toilet targeting organisms such as Staphylococcus aureus, Pseudomonas aeruginosa (PSA), Stenotrophomonas maltophilia, and Burkholderia cepacia complex. PSA is associated with decreased lung function which in turn leads to increased morbidity and mortality. Aerosolized anti-pseudomonal antibiotics, like tobramycin, significantly improve lung function, reduce hospitalizations, and improve quality of life while minimizing systemic effects. Current literature focuses on the safety and efficacy of aerosolized tobramycin formulations, treatment cycle duration, and initiation of suppressive inhaled anti-pseudomonal antibiotic therapy. The optimal duration of inhaled cycled therapy remains unclear and is often deferred to provider preference. The purpose of this study is to determine if cycled suppressive therapy can be discontinued successfully in patients who have not cultured PSA in at least two years.
METHODOLOGY: This is a single center, prospective intervention with retrospective chart review study to examine the relationship between discontinuation of inhaled cycled suppressive antibiotic therapy in patients with CF and future respiratory microbiome and lung function. Patients were included if they met one of three criteria for the institution's inhaled anti-pseudomonal antibiotic de-escalation guideline: (1) Culture negative for PSA in the past two years; (2) On continuous alternating therapy (CAT) and stable on a CFTR modulator for at least three months and culture positive for PSA without PEx, defined as increased airway clearance and/or initiation of antibiotics, in the last six months; or (3) On CAT and stable on CFTR modulator for at least three months and culture negative for PSA within the last six months. Patients were excluded if they were being evaluated or received a lung transplant. The following endpoints were collected through chart review: age, gender, race, genotype, CFTR modulator therapy, PSA phenotype, baseline and quarterly forced expiratory volume in one second (FEV1), baseline and quarterly relevant bacterial organisms, date of antibiotic discontinuation, and incidence and severity of PEx, defined as need for outpatient versus inpatient management.
RESULTS: In progress
CONCLUSIONS: In progress

9:10am – 9:30am S **Evaluation of prescribing trends for newly approved naloxone HCl nasal spray 8 mg (Kloxxado™) to naloxone HCl nasal spray 4 mg (Narcan®) to prevent opioid overdose** Parthenon 2

Moderators: Camille Robinette

Presenters: Sean Blaeser

Evaluators: Abigayle Campbell

TITLE: Evaluation of prescribing trends for newly approved naloxone HCl nasal spray 8 mg (Kloxxado™) to naloxone HCl nasal spray 4 mg (Narcan®) to prevent opioid overdose

AUTHORS: Sean Blaeser

OBJECTIVE: The intent of this research is to assess appropriate and optimal prescribing practices of naloxone 4 mg and naloxone 8 mg within VA Tennessee Valley Healthcare System.

SELF ASSESSMENT QUESTION: Who is the most frequent prescriber of naloxone 8 mg nasal spray?

BACKGROUND: Naloxone is a life-saving medication used in the case of opioid overdose. The higher dose, 8 mg strength of naloxone, was FDA approved in 2021 due to the increase in opioid overdose deaths. However, current criteria for which patients are prescribed the historically used 4 mg dose versus the new 8 mg high dose remains unclear. This project is seeking to identify prescribing trends including patient-specific factors and prescriber information associated with 4 mg versus 8 mg naloxone prescriptions. Data was collected in patients that received a naloxone prescription from February 7th, 2022, to October 1st, 2022, at a dual-campus medical institution.

METHODOLOGY: Data was collected through retrospective chart review of patients who have received a naloxone prescription on or after the February 7th, 2022. Each patient's risk factors for receiving naloxone or high-dose naloxone were collected and assessed as the primary outcome of this study. Patient risk factors evaluated include history of opioid use disorder, history of substance use disorder, receiving concomitant central nervous system depressant medications, prescription opioid use, and history of opioid overdose. The type and setting of prescriber and survival post-naloxone administration will also be collected and assessed as secondary endpoints. Descriptive statistics were used to identify the number of patients in each subgroup that have identified risk factors that would make the patient a potential candidate for high-dose naloxone. The information collected will be used to educate prescribers on which patients may be optimal candidates to receive high-dose naloxone within the healthcare system.

RESULTS: Among the 4408 Veterans whose charts were reviewed, a total of 5581 naloxone scripts were prescribed, 91% (n=5085) for naloxone 4 mg and 9% (n=496) for naloxone 8 mg. Veterans with a documented opioid use disorder were prescribed naloxone 4 mg 69% of the time (n=344), and naloxone 8 mg 28% of the time (n=140). Prescription strength also varied by provider type, while physicians, physician assistants, and nurse practitioners prescribed the 8 mg strength between 3-5% of the time, pharmacists prescribed the 8 mg strength 35% of the time (n=288). In total pharmacists prescribed 58% of all naloxone 8 mg prescriptions. Excluding pharmacists in those practice areas, primary care wrote for 17% (n=86) and psychiatry wrote for 16% (n=77) of all naloxone 8 mg prescriptions.

CONCLUSIONS: Although the Department of Veterans Affairs Pharmacy Benefits Management Services provides recommendations for naloxone and highlights patients that may be candidates for the 8mg naloxone nasal spray, many of those patients are still being prescribed naloxone 4 mg. Among those patients receiving high dose naloxone 8 mg, pharmacists are prescribing at a frequency of 11 times that of both physician assistants and nurse practitioners, and almost 7 times more frequently than physicians. Next steps include reinforcing education for providers of all practice types and backgrounds to be better equipped and more confident in prescribing naloxone 8 mg in patients that might benefit from this higher dose. This could be in the form of an additional academic detailing campaigns, continued education, talent management system modules, and/or increased advocation from pharmacists. With these measures we may see an increase in naloxone 8 mg prescribing, additional prescribing from more diverse practice types, overall increased patient safety, and more optimized access to naloxone.

9:10am – 9:30am T **IMPACT OF A BEDSIDE MEDICATION DELIVERY AND COUNSELING SERVICE ON THIRTY-DAY READMISSION RATE** Athena C

Moderators: KIMM FREEMAN

Presenters: Dylan Waer

Evaluators: Tanea Womack

TITLE: IMPACT OF A BEDSIDE MEDICATION DELIVERY AND COUNSELING SERVICE ON THIRTY-DAY READMISSION RATE

AUTHORS: Dylan Waer, Jennifer Hayes, Emily Brinkman, Matthew Holt

OBJECTIVE: The purpose of this study was to evaluate if the utilization of a bedside medication delivery and counseling service lowers thirty-day readmission rate.

SELF ASSESSMENT QUESTION: Question: Which of the following are perceived benefits of Meds to Beds services?

A. Better patient adherence

B. Increased cost to hospital

C. Decreased patient satisfaction.

D. Better patient understanding

E. A & D

BACKGROUND: Readmission to the hospital within 30 days of discharge is a widespread and costly occurrence for patients and institutions. Studies show 14% of all patients are readmitted within this time frame nationwide, with an average cost of $15,200 per admission. Higher-risk disease states accounted for the highest percentage of readmissions, including septicemia (8.2%), heart failure (6.1%), diabetes mellitus (3.2%), and COPD (2.8%). Unfortunately, patients often do not pick up their newly prescribed medications after being discharged from the hospital. Bedside medication delivery service (Meds to Beds) programs aim to alleviate these issues by providing counseling and medications directly to patients before they are discharged. A Meds to Beds program is established at Piedmont Columbus Regional Midtown to address these concerns.

METHODOLOGY: A retrospective chart review was conducted to evaluate the 30-day readmission rate for patients who received the Meds to Beds service at Piedmont Columbus Regional Midtown compared to those that did not between March 1st, 2022, and June 1st, 2022. Inclusion criteria consisted of patients ≥18 years of age discharged from the 8th and 9th floors of our institution with at least a 2-day admission and 2 or more maintenance medications. Patients discharged to a setting other than home were excluded as well as those with planned readmissions. Data collection allowed for the evaluation of 30-day readmission rate, readmission costs, and impact of discharge diagnosis on readmission rate of patients who received Meds to Beds compared to those who did not. For the statistical analysis, the primary outcome was evaluated using a two-sided chi-squared test, while baseline characteristics and secondary outcomes were summarized using descriptive statistics

RESULTS: Baseline characteristics were similar, including mean age, gender, and ethnicity. One difference to note is that there were many more patients with no insurance in the meds to beds group versus the control group (21 in meds to beds vs 4 in the control group). Of note, there were a number more patients in the meds to beds group with diabetes mellitus (5 versus 1 in the control group), and more in the control group with septicemia (13 versus 5 in the meds to beds group). For the primary outcome of 30-day readmission rate, Meds to Beds had 6 patients readmitted for a readmission rate of 8.2%. The control group had 11 readmissions within 30 days for a readmission rate of 15.1%. The p-value of 0.197 was not statistically significant. Of note, there were only readmissions for patient discharged with septicemia in the control group. Even though we didn’t have a statistically significant difference in readmission rate, there were still 5 fewer readmissions, leading to $76,000 saved based on the findings of the 2018 Healthcare cost and utilization project.

CONCLUSIONS: In this study, there was no statistically significant difference in thirty-day readmission rate between patients who received bedside medication delivery and those who did not. While not statistically significant, there was a relative reduction in thirty-day readmissions. Cost savings to hospital should aslo be considered. No significant conclusions can be drawn about the impact of primary discharge diagnosis on thirty-day readmission rate due to limited data. Limitations of this study include a lack of ability to control the environment due to the observational design, which leaves vulnerability of confounding variables that can alter the data. We also did not assess the adherence of patients in the outpatient settings to their discharge mediations. Study size was another limiting factor: a larger, ideally prospective study is warranted.

9:30am – 9:50am B **Assessment of Clinical Outcomes After Implementation of Population Health Pharmacist Recommendations** Olympia 2

Moderators: Derek Gaul
Presenters: Emily Hainer
Evaluators: Heather McLeod

TITLE: Assessment of Clinical Outcomes After Implementation of Population Health Pharmacist Recommendations

AUTHORS: Emily Hainer, Angie Lynch, Logan Evans, Danielle Baker, Michael DeWitt

OBJECTIVE: To measure clinical outcomes in beneficiaries impacted by One-on-One Rx recommendations in the previous study.

SELF ASSESSMENT QUESTION: From the evaluation, what was the most significant take-away in terms of the significant difference or lack thereof regarding pharmacist impact on clinical outcomes?

BACKGROUND: The Atrium Health Wake Forest Baptist (AHWFB) Pharmacy Population Health Center (PPHC) was created to meet patient care needs for value-based care contracts. The Population Health Department used the existing value-based care model to create a program for employees and their insured dependents (beneficiaries) with an AHWFB health insurance plan. The pharmacy team provides comprehensive medication therapy management in collaboration with primary and specialty providers to beneficiaries. A previous resident research project at AHWFB categorized pharmacist recommendations that were and were not implemented for patients with uncontrolled Type 2 Diabetes (T2DM). Results indicate that 55.7% of pharmacist recommendations were implemented. The most common recommendation was a drug therapy addition, followed by gap in care identification. The current objective is to identify the value that resulted from those pharmacist recommendations on patient clinical goals.

METHODOLOGY: This study is an observational, retrospective, pre-post electronic chart review cohort study. The study population includes 92 beneficiaries identified as having an encounter with a One-on-One Rx pharmacist from January 1st, 2021 to September 5th, 2021. Clinical markers including hemoglobin A1c, lipid levels, blood pressure, weight/BMI, and atherosclerotic disease risk score within a year prior and a year following the recommendation(s) were assigned as pre-intervention and post-intervention, respectively. The primary endpoint is change in these markers before and after recommendation. Descriptive statistics were utilized and assessed with Bayesian linear regression with outcomes controlled for scaled baseline value. Bayesian hypothesis testing was conducted to quantify the posterior probability of an effect in the desired direction.

RESULTS: 164 patients met study criteria from the previous research. 72 patients were excluded in this phase of the study due to either being followed by the Pharmacy Care Clinic or having a pharmacist recommendation that was not clinically relevant to the measured outcomes. Values were collected up to 1 year prior for a baseline and 1 year post recommendation for a comparison from the pharmacist recommendation. P-values are associated with statistical significance < 0.05. No values were statistically significant between those with an intervention accepted compared to an intervention not accepted for all baseline values. The highest impact of recommendation was determined to be HDL with an increase of 19%. Wide density intervals indicate large variability in patient outcomes. Posterior probability suggests that there is 66% probability that interventions increased HDL. ASCVD was unable to be calculated for 48% of patients in this study, and the time between pre and post values collected was not significant between those with a recommendation implemented compared to those not implemented. The most significant limitation identified is that the type of recommendation made was not quantified in order to link the intervention with the clinical outcome.

CONCLUSIONS: In conclusion, clinical outcomes were not assessed according to the specific One-on-One Rx pharmacist recommendations. Further therapeutic intervention-specific sub-group analysis is needed to compare the type of intervention made to the change in clinical marker to associate recommendations to outcomes. The results of the sub-group analysis will be used to optimize clinical services.

9:30am – 9:50am B **Pharmacist-Led Harm Reduction Initiative to Improve Naloxone Access for Patients with Perinatal Substance Use Disorder** Olympia 1

Moderators: Grant Teague
Presenters: Abby Block
Evaluators: Alexandre Ivanov

TITLE: Pharmacist-Led Harm Reduction Initiative to Improve Naloxone Access for Patients with Perinatal Substance Use Disorder

AUTHORS: Abby Block, Kylie Futrell, Melinda Ramage, Olivia Caron

OBJECTIVE: Identify barriers to accessing naloxone for perinatal patients with substance use disorder (SUD).

SELF ASSESSMENT QUESTION: What role can pharmacists have to expand access to naloxone in a clinic setting?

BACKGROUND: By 2017 estimates, maternal opioid-related diagnoses (MOD) occurred at a rate of 8.2 per 1000 hospital deliveries nationally, and this was an increase of 234% from 2010. In North Carolina (NC), this trend was more pronounced with 12.5 MOD per 1000 deliveries, and an increase of 366% over the same period. ACOG and SAMHSA recommend prescribing naloxone, the opioid overdose reversal drug, in pregnancies complicated by opioid and stimulant use disorder (OUD and STIMUD) to minimize overdose deaths.

States have implemented a variety of naloxone access laws (NALs) which aim to make naloxone available without a prescription. Policies which allow direct authority for pharmacists to prescribe naloxone have shown the most reduction in opioid-related mortality. A pharmacist-driven naloxone co-prescribing initiative in the primary care setting demonstrated a 12-fold increase in naloxone prescribing with a 76% pharmacy pick-up rate following pharmacist counseling.

Project CARA (Care that Advocates Respect/Resilience/Recovery for All), an outpatient perinatal substance use disorder (SUD) program at Mountain Area Health Education Center (MAHEC) in Western NC has sought quality improvement initiatives which leverage the skills of the clinic pharmacist to increase rates of naloxone co-prescribing in these patients.

METHODOLOGY: The IRB at the University of North Carolina has approved this study (#22-2382) under expedited review. Five weeks of Project CARA data was filtered for new patient consult visits. Patients with SUD other than OUD or STIMUD were excluded. Charts were reviewed by the pharmacy team to determine access to naloxone during the initial consult. Patients without a naloxone prescription were contacted by the pharmacy team and offered a prescription or given information on naloxone standing orders. For patients who consented to receiving naloxone, the pharmacist sent a naloxone prescription to the patient’s pharmacy. Declines were documented in the chart. To follow up, the pharmacy team called the patient’s pharmacy to confirm pick up of naloxone. If naloxone was not picked up, the patient was called to assess and determine if the pharmacy team could remove any barriers to access

RESULTS: During the study period, there were 16 documented perinatal substance use disorder consults. Of these patients, all but one had documented OUD (81%), STIMUD (44%), or both (31%). Fifty-six percent of consult patients were receiving medication for OUD, one using methadone and eight using buprenorphine. Current co-prescribing practices at Project CARA ensured that 55% of patients had documented naloxone access prior to pharmacy intervention, either from a prescription ordered at initial consult or from patient reports that they already owned naloxone. Following pharmacy chart reviews and follow-up interventions, documented naloxone access increased to 68%. For the remaining five patients without documented access, three were found to reside in group settings with access to naloxone in the event of an overdose, and two were unreachable. Of the four patients prescribed naloxone at initial consult visit, half experienced barriers to pick-up at the pharmacy. The pharmacy team supported these patients by addressing cost and communication errors.

CONCLUSIONS: Naloxone access in patients with perinatal OUD and STIMUD is a vital component in efforts to reduce overdose in pregnancy and postpartum. This initiative aims to display the importance of the pharmacist in optimizing access to naloxone to ultimately reduce overdose deaths in pregnancy. Preliminary results suggest that pharmacist intervention in the early stages of perinatal OUD and STIMUD care improves access to naloxone and supports the need for incorporating pharmacists within interdisciplinary teams. However, providers caring for high-risk populations should aim for 100% naloxone ownership, despite barriers like housing and communication. Processes for integrating and prioritizing naloxone access in consult visit documentation must be developed.

9:30am – 9:50am C **Efficacy And Safety Of Sodium Glucose Co-transporter 2 Inhibitors In Patients With A Left Ventricular Assist Device** Athena D

Moderators: Serina Tart

Presenters: Kyle Furlow

Evaluators: Sarah Berardi

TITLE: Efficacy And Safety Of Sodium Glucose Co-transporter 2 Inhibitors In Patients With A Left Ventricular Assist Device

AUTHORS: Kyle Furlow, Adele Robbins, Morgan Corkish

OBJECTIVE: Evaluate the efficacy and safety of SGLT2 inhibitors in LVAD patients as another GDMT option for a unique patient population.

SELF ASSESSMENT QUESTION: What impact did the use of SGLT2 inhibitors have on infectious incidence within a 6-month period?

BACKGROUND: An LVAD is a durable implantable mechanical circulatory pump that patients may receive for their end stage heart failure as a bridge to transplant or destination therapy. However, they do come with the risk of complications. Therefore, it is imperative to investigate pharmacologic therapy that may reduce the risk of complications. Updated Heart Failure guidelines gave a class I recommendation for SGLT2 inhibitors showing reduction in cardiovascular hospitalizations and death in HF patients. One study of SGLT2 inhibitor use in LVADs showed no change in efficacy markers of weight, renal function, or diuretic dose but did find potential SGLT2 inhibitor-related adverse effects, including genitourinary infections, acute kidney injury, and limb amputations as well as four LVAD driveline infections. Other studies of SGLT2 inhibitor use in LVAD patients have demonstrated reduction in diuretic dosing requirements without increase in adverse events. This retrospective review aims to add to the available literature and evaluate the incidence of infection and all cause hospitalization in patients with LVADs receiving SGLT2 inhibitor therapy. Results of this study will provide support for the ongoing use of heart failure guideline-directed medical therapy in the LVAD population to help minimize post implantation complications.

METHODOLOGY: This is a single center, IRB approved, retrospective observational cohort chart review study including LVAD patients at Emory University Hospital that received SGLT2 inhibitor therapy for at least one month after a LVAD implantation. Included patients will be patients managed by Emory University Hospital LVAD program who are greater than 18 years of age and who received SGLT2 inhibitor therapy for at least 1 month after LVAD implantation from 1/1/2020 through 1/31/2022. Patients will be excluded if they had active IV antibiotic therapy use at time of SGLT2 inhibitor initiation, SGLT2 inhibitor therapy for less than 30 days, or heart transplant occurred within the 6-month follow up period. Data collection will be obtained through the Emory electronic Medical Record (EeMR). The primary objective will evaluate the safety of SGLT2 inhibitors measured by the incidence of infection at 6 months following SGLT2 inhibitor initiation. Infection will be defined as documented positive culture result(s) of any type/source or suspected infection prompting new initiation of antimicrobial therapy for at least 48h duration. The secondary efficacy outcome will be rate of all cause hospitalization at 6 months following SGLT2 inhibitor initiation. Documented inpatient admission records will be utilized to determine if a patient was admitted.

RESULTS: Of the 531 patients who received an LVAD at Emory University Hospital, 51 (9.6%) patients were included in the study. Patient demographics on average were 50 years of age, more than half were male (n=32, 62.7%), and primarily African Americans represented (n=42, 82.4%). Dapagliflozin was primarily the SGLT2 initiated (n=36, 70.6%) among patients usually at 5 mg daily. Among the study population 14 (27.5%) patients had an infectious event within 6 months post SGLT2 inhibitor initiation, meeting our primary endpoint. The median duration from initiation of an SGLT2i to infectious event was 60.1 days [30-116]. Within the 6-month time frame, 21 patients (41.2%) were hospitalized meeting our secondary outcome. The median duration from initiation of an SGLT2i to being admitted to the hospital for any reason was 62 days [24-97], and on average patients had more than one admission during 6 months.

CONCLUSIONS: While these results are descriptive in nature and only represent a specific population at Emory efforts should be made to continue further research on the safety and efficacy of SGLT2 inhibitors in LVAD patients in a larger randomized study to evaluate if results are statistically significant and if that correlates to clinical significance.

9:30am – 9:50am R **Efficacy of clonidine to transition from dexmedetomidine in trauma-surgical ICU patients** Athena H

Moderators: Dustin Bryan

Presenters: Christopher Johns

Evaluators: Stephanie Smith

TITLE: Efficacy of clonidine to transition from dexmedetomidine in trauma-surgical ICU patients

AUTHORS: Christopher Johns, Amanda McKinney, Jacob Creighton, Devin Clegg, Reagan Bollig, Brian Daley, A. Shaun Rowe

OBJECTIVE: To compare the duration of dexmedetomidine infusion in trauma-surgical ICU patients transitioning to a protocolized clonidine taper versus weaning off dexmedetomidine alone.

SELF ASSESSMENT QUESTION: Patients may benefit from the use of clonidine to transition off a dexmedetomidine if the following condition is met:

a.dexmedetomidine infusion > 72 hours

b.hemodynamically stable (MAP > 65 mmHg, SBP > 90 mmHg, HR < 50bpm)

c.not actively receiving vasopressor/inotropic support

d.all of the above

BACKGROUND: Dexmedetomidine is common option for ICU sedation given its light sedative properties and lack of respiratory depression; however, it is more costly than other sedatives and can only be administered in critical care units, potentially increasing ICU length of stay.

Dexmedetomidine withdrawal syndrome (DWS) is characterized by symptoms of sympathetic overactivity that can occur after cessation of the α2 agonism such as agitation, hypertension, and tachycardia. Factors that could influence DWS include age, infusion rate, discontinuation strategy, and a duration of therapy over 72 hours. Clonidine is a much less expensive oral option that shares the same mechanism of action as dexmedetomidine which may facilitate a more timely dexmedetomidine discontinuation. Recent studies have evaluated the use of oral clonidine to wean intravenous dexmedetomidine. In a mixed surgical, medical, and neurologic ICU, Gagnon et al. found that 50% of patients were transitioned off dexmedetomidine at 24 hours, 75% were transitioned within 48 hours, and cost analysis revealed cost savings up to $52,000.

METHODOLOGY: This is a quasi-experimental study of patients admitted to the Trauma Critical Care Surgery Service at the University of Tennessee Medical Center. The study will include patients receiving dexmedetomidine for at least 72 hours. In March 2022, the “Dexmedetomidine to Clonidine Transition Procedure for the Trauma-Surgical ICU” protocol was approved, and implementation of this protocol will begin on August 1, 2022. This study aims to compare the duration of dexmedetomidine infusion before and after the implementation of this protocol.

RESULTS: In Progress

CONCLUSIONS: In Progress

9:30am – 9:50am R **IMPACT OF EMERGENCY DEPARTMENT CLINICAL PHARMACIST PRACTITIONER-DRIVEN SEPSIS ANTIBIOTIC INTERVENTIONS** Athena I

Moderators: Kristen Turner

Presenters: Aubrie Hammond

Evaluators: Taylor Wells

TITLE: IMPACT OF EMERGENCY DEPARTMENT CLINICAL PHARMACIST PRACTITIONER-DRIVEN SEPSIS ANTIBIOTIC INTERVENTIONS

AUTHORS: Aubrie Hammond, Regan Porter, Kevin Lynch, Taylor Cason, Patrick Passaretti

OBJECTIVE: To evaluate the impact of a clinical pharmacist practitioner-driven protocol on antimicrobial interventions in sepsis patients in the emergency department.

SELF ASSESSMENT QUESTION: In what areas can Emergency Medicine Clinical Pharmacists impact outcomes of patients presenting to the Emergency Department with Sepsis?

BACKGROUND: The 2021 Surviving Sepsis Guidelines recommend administration of antimicrobials within the first hour of recognition of sepsis. Over the last decade, several trials have demonstrated improved time to antibiotic administration and antibiotic appropriateness when a pharmacist was involved in the care of patients with sepsis. To our knowledge, no studies evaluating the appropriate use of antibiotics in sepsis driven entirely by an Emergency Medicine (EM) Clinical Pharmacist Practitioner (CPP) have been published. EM Clinical Pharmacists at this facility are formally consulted to assist in antibiotic selection in ~46% of sepsis admissions within the Electronic Medical Record (EMR). Historically, the CPP Protocol was only applied to the Culture Callback Program but did entitle CPPs to manage antimicrobial selection across a variety of disease states when formally consulted by a provider. The purpose of this study is to evaluate the impact of a CPP-driven protocol on antimicrobial interventions in septic patients in the emergency department (ED).

METHODOLOGY: A pre-protocol group of septic patients for whom antimicrobials were ordered in the ED without pharmacist intervention will be compared to a post-protocol group of septic patients whose antimicrobial agents were chosen by a CPP via a Sepsis Consult to Pharmacy. For the purposes of the study, the Sepsis Consult to Pharmacy order was updated in the EMR to require the consulting provider to select a suspected source of infection. EM CPP’s reviewed patient's historical admissions, culture data, and allergy profiles to guide antimicrobial selection and entered orders under their scope of practice with formal documentation in a chart note. The primary objective is to compare the rate of appropriate empiric antibiotic utilization in septic patients presenting to the ED pre- and post-protocol intervention. Broadening of ED-initiated empiric antibiotics on hospital admission, time to antibiotic administration, Rapid Emergency Medicine Score (REMS) association with in-hospital mortality, hospital length of stay, and pharmacist time spent completing consult (post-intervention) will be analyzed as secondary endpoints.

RESULTS: In Progress

CONCLUSIONS: In Progress

9:30am – 9:50am R **Impact of Emergency Department Sepsis Antibiotic Order Set Changes on Patient Outcomes and Antibiotic Utilization** Athena G

Moderators: Erica Merritt

Presenters: Hana Davis

Evaluators: Courtney Mallon

TITLE: Impact of Emergency Department Sepsis Antibiotic Order Set Changes on Patient Outcomes and Antibiotic Utilization

AUTHORS: Hana Davis, Benjamin Casey, Austin Roberts

OBJECTIVE: Describe clinical outcomes associated with the utilization of a non-antipseudomonal antibiotic order set in the ED.

SELF ASSESSMENT QUESTION: What is an implication of the overuse of broad-spectrum antibiotics for sepsis in the ED?

BACKGROUND: Emergency departments (ED) serve as the first medical contact for approximately 80% of patients presenting with sepsis. It has been well described that empiric antibiotic selection in the ED impacts antibiotic utilization during hospital admissions. Early initiation of appropriate antimicrobials is imperative to reduce mortality with sepsis. However, the overuse of broad-spectrum antibiotics contributes to antimicrobial resistance, adverse drug reactions, and increased healthcare costs. This study aimed to assess the clinical impact of utilizing a non-antipseudomonal ED sepsis of unknown origin order set in patients presenting to the ED.

METHODOLOGY: A single-center, retrospective, pre and post order set implementation study was conducted for all adult patients with an active order for the ED sepsis order set with sepsis of unknown origin documented as the indication for therapy. The primary endpoint was the number of days alive and without antipseudomonal antibiotics between days 0 and 7. Utilization and compliance with order set recommended therapy, antibiotic use during the first seven days of therapy, ICU admission within 72 hours, hospital length of stay, and all-cause hospital mortality were also described.

RESULTS: 180 patients were identified, and 14 were included in the final data analysis. Five patients were included in the pre-revision group, and nine patients were included in the post-revision group. The median number of days alive and without antipseudomonal antibiotics between days 0 and 7 was five days in the pre-revision group and six days in the post-revision group (p=0.617). The initial selection of antibiotics was consistent with the order set recommended therapy in 4 of 5 patients in the pre-revision group and 6 of 9 patients in the post-revision group (p=1). There was no difference in ICU admission within 72 hours, hospital length of stay, or all-cause hospital mortality between the pre-revision and post-revision groups.

CONCLUSIONS: There was no difference in the number of days alive and without antipseudomonal antibiotics between days 0 and 7 after revising the ED sepsis order set. Clinical outcomes did not differ between groups. However, implementing a non-antipseudomonal antibiotic ED sepsis order set was associated with a trend toward decreased utilization of antipseudomonal antibiotics.

9:30am – 9:50am | **Impact of Implementation of a Rapid Molecular Diagnostic Platform on Time to Effective Antibiotics in a Community Teaching Hospital** Athena A

Moderators: Cori Edmonds

Presenters: Andrew Revels

Evaluators: Katheryn Pruitt

TITLE: Impact of Implementation of a Rapid Molecular Diagnostic Platform on Time to Effective Antibiotics in a Community Teaching Hospital

AUTHORS: Andrew Revels, Kenda Germain, Kelsey Knorr

OBJECTIVE: Describe the impact of rapid molecular blood culture testing results on time to effective antibiotic therapy.

SELF ASSESSMENT QUESTION: You have recently implemented a rapid molecular blood culture testing program at your institution. Based on the findings of this study, which of the following outcomes could you expect with this new technology?

BACKGROUND: An estimated 250,000 bloodstream infections occur annually and are associated with significant morbidity and mortality. Rapid nucleic acid microarray testing can be performed on blood cultures growing gram-negative rods or gram-positive cocci. This technology allows for rapid identification of bacteria along with some of their most common resistance genes, within 2 hours of a positive Gram stain result, which may lead to quicker optimization of antibiotic therapy. This project was designed to assess the clinical benefits associated with implementation of rapid molecular blood culture testing at a community teaching hospital.

METHODOLOGY: This is a single-center, retrospective, Institutional Review Board approved, pretest-posttest chart review study performed at a community teaching hospital. In the pre-implementation group, patients with a positive blood culture Gram stain result from June to October 2021 were reviewed. These patients were matched with and compared to patients who met inclusion criteria from June to October 2022 as the post-implementation group. Patients were included if they were greater than or equal to 19 years of age with a positive blood culture Gram stain result. Patients were excluded if they had a polymicrobial bloodstream infection, were under hospice or palliative care, transferred, discharged, or expired prior to Gram stain results finalizing, received an initial diagnosis of bacteremia at another institution, had a corrected rapid molecular testing result, or had multiple sources of infection with overlapping antimicrobial therapy. The primary outcome is the time to effective antibiotic therapy from Gram stain result. Secondary outcomes include hospital length of stay, time to optimal antibiotic therapy, and clinical pharmacist recommendation acceptance rates. Unpaired student t-test was used for continuous data and Fisher’s exact test was used for categorical data. A two-tailed alpha of 0.05 was used to determine statistical significance between groups.

RESULTS: 149 patients were included in the IRB-approved study. Clinical pharmacist recommendations were accepted 89% of the time, leading to an escalation of therapy in 17% and de-escalation in 43% of cases. In the overall study population, the mean time to effective antibiotics from positive Gram stain result was similar between groups, with an average of 6.9 hours in the pre-implementation group and 2.2 hours in the post-implementation group (difference, 4.7; 95% CI, -0.38 to 9.78; P, 0.07). In patients with ineffective empiric therapy, the mean time to effective antibiotics was an average of 27.2 hours in the pre-implementation group and 6.5 hours in the post-implementation group (difference, 20.7; 95% CI, 15.62 to 25.78; P, 0.0001). The mean time to optimal antibiotics was an average of 29.7 hours in the pre-implementation group and 17.3 hours in the post-implementation group (difference, 12.4; 95% CI, 0.94 to 23.86; P, 0.03). In patients with suboptimal empiric therapy, the mean time to optimal antibiotics was an average of 54.4 hours in the pre-implementation group and 28.5 hours in the post-implementation group (difference, 25.9; 95% CI, 14.44 to 37.36; P, 0.0001). Hospital length of stay was similar between groups, with an average of 10.7 days in the pre-implementation group and 10.2 days in the post-implementation group (difference, 0.5; 95% CI, -2.09 to 2.99; P, 0.73).

CONCLUSIONS: While the primary endpoint did not statistically differ between groups in the overall patient population, there was a numerical trend towards shorter time to effective antibiotics in the post-implementation group. Numerical and statistical differences were observed for time to optimal antibiotics in the overall patient population as well as for time to effective and optimal antibiotics in patients who required a change in therapy, with a shorter time achieved in the post-implementation group. Overall, clinical pharmacist interventions were well accepted. Despite these findings, there was not a significant reduction in hospital length of stay.

9:30am – 9:50am | **Outcomes Associated with Vancomycin-Resistant Enterococci and Vancomycin-Susceptible Enterococcal Urinary Tract Infections Across a Community-based Health System** Athena B

Moderators: Beth Phillips

Presenters: Chad Hartley

Evaluators: Sarah Talley

TITLE: Outcomes Associated with Vancomycin-Resistant Enterococci and Vancomycin-Susceptible Enterococcal Urinary Tract Infections Across a Community-based Health System

AUTHORS: Charles G. Hartley, Christopher W. Whitman, Cherie Abernathy, Hong Duong

OBJECTIVE: Participants should be able to recommend an appropriate treatment option for UTIs caused by vancomycin-resistant enterococci (VRE).

SELF ASSESSMENT QUESTION: A 38 YO female with no past medical history reports increased urinary frequency and dysuria. Urine studies are collected and hCG is negative. She has no known drug allergies. What would the most appropraite treatment for acute cystitis be for this patient?

BACKGROUND: Enterococcal spp are frequently isolated from urine cultures and are associated with asymptomatic bacteriuria (ASB) and urinary tract infections (UTIs). Vancomycin-resistant Enterococci (VRE) is a multi-drug resistant organism that often prompts providers to utilize broad spectrum antibiotics including daptomycin & linezolid. However, evidence has shown that cystitis caused by VREs can be treated with an aminopenicillin. Overtreatment of VRE with broad spectrum antibiotics such as daptomycin and linezolid can lead to increased incidence of Clostridioides difficile infection, antibiotic resistance, and cost. The purpose of this retrospective review is to assess differences in the treatment of patients with VRE and vancomycin-susceptible enterococci (VSE) bacteriuria.

METHODOLOGY: This is an institutional review board approved, retrospective, observational chart review. The study was conducted at a community healthcare system comprised of approximately 1000 hospital beds from January 1st, 2021 to October 31st, 2022. Patients admitted for at least 48 hours with Enterococcus spp isolated from a urine culture were screened for inclusion. Patients in each group (VRE and VSE) were randomized. Patients were excluded if they had concurrent Enterococcal bacteremia or were pregnant. A manual chart review and subsequent data collection were performed with a target of 200 patients in each group. The primary outcome was length of antibiotic length of therapy in days. Secondary outcomes were hospital length of stay and broad-spectrum antibiotic length of therapy.

RESULTS: During the 22-month study period, 1105 patients met initial inclusion criteria, 222 with VRE and 883 with VSE bacteriuria. After chart review, 23 patients in the VRE group were excluded and 72 were excluded in the VSE group. A total of 199 patients and 201 patients in the VRE group and VSE group, respectively, were included in the analysis. The median age in the VSE group and VRE group was 71 years (Interquartile range [IQR]; 61-82) and 67 (IQR; 59-78). The median length of stay was 8 (IQR; 5-16) days in the VSE group and 16 (8-18) days in the VRE group (p-value = 0.002). The median duration of antibiotic treatment was 9 (IQR; 6-12) and 7 (IQR; 5-14) days in the VSE and VRE groups, respectively (p-value = 0.296). Eighty patients (40.2%) in the VRE group received linezolid and 38 (19.1%) received daptomycin compared to 18 (9.0%) and 5 (2.5%) respectively in the VSE group.

CONCLUSIONS: No difference was found in antibiotic treatment duration between the VRE and VSE groups. However, VRE patients were more likely to be treated with IV or broad-spectrum antimicrobials. The data will be utilized by the antimicrobial stewardship team to optimize and standardize the microbiology reporting of urine cultures positive for VRE. Further, this study provides an opportunity to improve patient care through the use of narrow-spectrum agents, including aminopenicillins, and decreasing antibiotic length of therapy.

9:30am – 9:50am P **Assessing the Impact and Utilization of Pharmacist Involvement in Optimizing the Interpretation of Urine Drug Testing (UDT) at the Charlie Norwood VA** Parthenon 1

Moderators: Bradley Smith
Presenters: Emily Stauffer
Evaluators: Anna Parker

TITLE: Assessing the Impact and Utilization of Pharmacist Involvement in Optimizing the Interpretation of Urine Drug Testing (UDT) at the Charlie Norwood VA

AUTHORS: Emily Stauffer PharmD, Kemberley Higdon PharmD BCPS, Christopher Gore PharmD BCPS, Eva Wong PharmD BCPS

OBJECTIVE: The objective of this study is to compare the interpretation and follow-up of urine drug testing in clinics with and without a Pain Clinical Pharmacy Practitioner (CPP) as a core member of the clinical team to determine CPP impact.

SELF ASSESSMENT QUESTION: 1.Which of the following are strategies to monitor Veterans on pain medications?
a.Urine drug screens
b.Fentanyl test strips
c.Educating and providing naloxone
d.All of the above

BACKGROUND: With an opioid epidemic currently plaguing the United States, strategies such as urine drug testing are paramount to mitigate certain risks associated with pain medications. At the Charlie Norwood VA Medical Center (CNVAMC) urine drug testing is utilized in our Primary Care and Pain Medicine clinics. Further assessment can be done to see if proper action is being taken when these results appear unexpected such as tapering of pain medication, medication discontinuation, or placing pain management consults. Other actions may be appropriate as clinically indicated. The purpose of this study is to compare the interpretation and follow-up of urine drug testing in clinics with and without a Pain Clinical Pharmacy Practitioner (CPP) as a core member of the clinical team to determine CPP impact.
METHODOLOGY: A dashboard was created to populate a list of Veterans during a prespecified time period that have completed urine drug tests in selected clinics. This dashboard displays additional information including Veteran identifier, age, gender, and UDT date. A retrospective chart-review was then completed for Veterans who underwent urine-drug testing (UDT) in March 2022 - May 2022 from the Primary Care and Pain Medicine clinics. Max number of charts reviewed was determined to be 110. Patients being followed by a non-VA pain provider and/or prescribed non-VA opioids as their only pain medication were not included in our population. These charts were then reviewed 6 months after enrollment to identify UDT results, provider's interpretation and what actions were taken thereafter during this time frame. Further assessment can be done to see if action taken was appropriate given results of UDT, medications prescribed, and fill history. Further assessment was also done to see if proper action is being taken when these results appear unexpected such as tapering of pain medication, medication discontinuation, or placing pain management consults. Other actions may be appropriate as clinically indicated. The primary outcome of this study is to compare the interpretation and follow-up of urine drug testing in clinics with and without a pharmacist as a team member to determine CPP impact. Descriptive statistics will be used to analyze the data collected.

RESULTS:A total of 110 retrospective chart reviews were completed after assessing a database for prespecified time period. There were 55 patients in each group, Primary Care and Pain Medicine. The average age in the Primary Care group was 57 years old with 93% males. The average age in the Pain Medicine group was 65 years old with 85% males. In the Primary Care group UDTs were ordered as follows: 23 basic, 11 confirmatory, and 21 basic + confirmatory. In the Pain Management group UDTs were ordered as follows: 34 basic, 1 confirmatory, and 20 basic + confirmatory. Regarding the Primary Care group, there were 33 expected negative, 18 expected positive, 2 unexpected positive, and 2 unexpected negative results. Regarding the Pain Management group, there were 30 expected negative, 20 expected positive, 0 unexpected negative, and 5 unexpected positive results. The unexpected negatives from Primary Care were handled with Pain Management consults being scheduled with no follow up while there were none in Pain Management. The unexpected positive results from Primary Care were not addressed while in the Pain Clinic opioid use disorder medications were initiated or continued.

CONCLUSIONS: Clinical Pharmacist Practitioner involvement leads to more reliable and appropriate

interpretation and follow-up on urine drug screens. Further education must be supplied to primary care to inform on the appropriateness of when to order what type of screen and how to properly assess unexpected results.

9:30am – 9:50am D **Implmentation of Standardized Pediatric Sterile Compounding Competencies** Athena J

Moderators: Lucy Crosby
Presenters: Amanda Bass
Evaluators: Nancy Bailey

TITLE: Implmentation of Standardized Pediatric Sterile Compounding Competencies
AUTHORS: Amanda Bass, Kelley R. Norris, Margaret Oates Poisson, Courtney Campbell, Chris Duphren
OBJECTIVE: The purpose of this project is to establish standard processes and procedures for pediatric sterile compounding, technician training, and competency assessment, as well as to formulate pediatric specific medication compounding records.
SELF ASSESSMENT QUESTION: To be updated prior to final presentation submission.
BACKGROUND: The U.S. Food and Drug Administration (FDA) defines drug compounding as “the process of combining, mixing, or altering ingredients to create a medication tailored to the needs of individual patients.” All compounding personnel, specifically pharmacists and pharmacy technicians, are responsible for compounding and dispensing sterile products and preparations of the correct ingredient, purity, strength, and sterility. Medication compounding is a fundamental part of pharmacy practice and plays an important role in the treatment of pediatric patients. Approximately 20% of currently available medications are approved by the FDA for use in pediatrics; therefore, medications are often used off-label for treatment purposes in pediatrics. Due to this, commercially available intravenous medications are not always suitable for pediatric patients and thus must be manipulated further to produce patient specific doses.

Standard guidelines for preparing compounded sterile medications were developed by the United States Pharmacopeia (USP) to help decrease risks of incorrect dosing, infection, or contamination of products. A main area of focus within the USP 797 guidelines is the training of personnel for preparing compounded sterile preparation and ensuring personnel competency. Currently there are not any national competencies related to pediatric sterile compounding.

METHODOLOGY: A gap analysis was conducted to assess the pharmacy process of pediatric sterile product preparation. Technician perception of knowledge and comfort with compounding pediatric products was established by creating and conducting a survey among pharmacy technicians. Following survey completion, a pediatric specific training program and competency was developed. Compounding records were created to develop a pediatric master formulation record for each sterile compound. Finally, a second survey will be conducted to re-evaluate technician comfort and degree of competency after implementing a formalized competency assessment and standardized workflow process for pediatric sterile preparation.
RESULTS: In progress.
CONCLUSIONS: In progress.

9:30am – 9:50am S **Evaluation of Oral Buprenorphine Overlap During Buprenorphine Extended-Release Injection Initiation** Parthenon 2

Moderators: Camille Robinette
Presenters: Kyrsten Chaplin
Evaluators: Abigayle Campbell

TITLE: Evaluation of Oral Buprenorphine Overlap During Buprenorphine Extended-Release Injection Initiation
AUTHORS: Kyrsten Chaplin, Megan Jackson
OBJECTIVE: Identify the difference in outcomes between initiating buprenorphine extended-release with oral buprenorphine overlap vs buprenorphine extended-release monotherapy.
SELF ASSESSMENT QUESTION: Does prescribing oral buprenorphine overlap when initiating buprenorphine extended-release injection improve outcomes?
BACKGROUND: For many years, opioid use disorder (OUD) has posed a major challenge to public health. Medication-assisted treatment (MAT), the use of medications in combination with counseling and behavioral therapies1, has become a fundamental component of OUD treatment and a staple in many patients' sustained recovery. Although the Food and Drug Administration (FDA) has approved three medications– methadone, naltrexone, and buprenorphine– for the treatment of OUD, buprenorphine has become the most versatile and widely available. Of the seven different formulations of buprenorphine, Sublocade (buprenorphine extended-release), offers the greatest benefit for nonadherence and misuse. Following an injection, the peak serum concentration (Tmax) of buprenorphine occurs after approximately 24 hours. After reaching the initial peak, the serum level falls to a plateau and eventually reaches steady state after 4-6 months.

After observing the practices of multiple OUD buprenorphine providers within the Veterans Affairs Healthcare System (VAHS), a pattern of prescribing oral buprenorphine overlap when initiating the extended-release formulation was identified. Although it is recommended to establish tolerability with oral buprenorphine before initiating treatment with the injectable formulation, there are no available studies that support the use of oral overlap following the first injection. This study aims to evaluate the differences in efficacy between the two buprenorphine extended-release initiation strategies, further identify prescribing patterns, and provide evidence based recommendations for the treatment of OUD with buprenorphine extended-release formulation.
METHODOLOGY: This is a single center, retrospective, electronic chart review of patients at the Tennessee Valley Healthcare System (TVHS) who were initiated on buprenorphine extended-release injection between November 30th, 2017 and August 31st, 2022. Patients were included if they were > 18 years old, received four or more consecutive buprenorphine extended-release injections, and had at least one urine drug screen between the first injection and 28 days after the fourth injection.
RESULTS: In progress
CONCLUSIONS: In progress

9:30am – 9:50am T **Implementation and Impact of a Pharmacist-led Post-discharge Clinic** Athena C

Moderators: KIMM FREEMAN
Presenters: Hanie Barakat
Evaluators: Tanea Womack

TITLE: Implementation and Impact of a Pharmacist-led Post-discharge Clinic
AUTHORS: Hanie B. Barakat; Cristina E. Plemmons; Marisa L. Strychalski
OBJECTIVE: The purpose of this project is to evaluate the impact and describe the implementation process of a pharmacist-led post-discharge telephone clinic and its effects on healthcare utilization in high-risk patients.
SELF ASSESSMENT QUESTION: In Progress
BACKGROUND: Hospital readmissions are often accompanied with unfavorable patient outcomes and high institutional financial costs. Approximately 20% of Medicare discharges had a readmission within 30 days due to multifactorial reasoning. Transitions of care prioritizes adequate patient education, complete medication reconciliations and care coordination as patients transfer from the inpatient to outpatient settings. Many initiatives to promote transitions of care are focused on either inpatient or outpatient settings and collaborative efforts to bridge the gap between the two settings are warranted. The pharmacy post-discharge clinic (PDC) was established to promote transitions of care by identifying and managing ambulatory care sensitive conditions (ACSC) in referred and identified Veterans.
METHODOLOGY: This prospective quality improvement project was conducted at the Ralph H. Johnson VA Medical Center (RHJ VAMC) from July 11, 2022 to December 31, 2022. Patients included/enrolled into PDC are high-utilizers, or patients who have been identified as having at least 3 admissions at RHJ VAMC in the past year. Other patients included were referred to the clinic if close follow-up within 1-2 weeks post-discharge was warranted for addressing ACSCs. Patients were excluded from PDC if they were discharged to a skilled nursing facility (SNF), assisted living facility (ALF), or hospice. Patients were also excluded if their hospitalizations were scheduled or planned readmissions. The primary aim of this project was evaluating the impact of PDC on healthcare utilization and secondary objectives include assessing the pharmacist's overall role in comprehensive medication management in high-risk patients. The primary outcomes were analyzed using Wilcoxon signed-rank test analyses and McNemar change test analyses. Secondary outcomes were analyzed using descriptive statistics.
RESULTS: In Progress
CONCLUSIONS: In Progress

9:50am – 10:10am **Empty** Parthenon 2

Moderators: Camille Robinette
Evaluators: Abigayle Campbell

9:50am – 10:10am B **Evaluating the Efficacy of Text Messaging on Patient Outreach Rates in a Telephonic Ambulatory Care Clinic** Olympia 1

Moderators: Grant Teague

Presenters: Jamie Oh

Evaluators: Alexandre Ivanov

TITLE: Evaluating the Efficacy of Text Messaging on Patient Outreach Rates in a Telephonic Ambulatory Care Clinic

AUTHORS: Jamie Oh, Erin Pace, Jasmine Rogers

OBJECTIVE: Describe the impact of text messaging on outcomes relevant to a telephonic ambulatory care clinic.

SELF ASSESSMENT QUESTION: What are some benefits of text messaging in the current healthcare system?

BACKGROUND: Mobile technology has influenced the way healthcare services are being delivered via expanded access to cell phones and text messaging services. Currently, there are limited studies evaluating the impact of text messaging on specific health outcomes. The purpose of this study is to assess the efficacy of text messages on patient outreach rates and other health outcomes relevant to ambulatory care services within an integrated healthcare system.

METHODOLOGY: This is a retrospective descriptive study including adult patients who had scheduled telephone encounters with an ambulatory care clinical pharmacy specialist (CPS) between 11/1/2018 – 10/31/2019 and between 11/1/2021 – 10/31/2022 in the Medication Therapy Management (MTM) and Diabetes service at Kaiser Permanente Georgia. The primary outcome is to compare the percent of completed telephone encounters before and after the implementation of text messaging. A1c control rates will also be compared in newly referred patients with type 2 diabetes who received a text message reminder and completed the initial encounter with a CPS versus those who did not complete the initial encounter. Lastly, the percent of completed comprehensive medication reviews (CMR's) before and after the implementation of text messaging will be compared in the Medicare Part D population. Collected data will be analyzed using descriptive statistics for qualitative and quantitative data.

RESULTS: Between 11/1/2018 – 10/31/2019, there were 1,704 patients who missed the initial attempt of their scheduled call in the MTM and Diabetes service and received a voicemail from the pharmacist. There were 538 patients (32%) who completed the telephone encounter on the same day. Between 11/1/2021 – 10/31/2022, 1,045 patients missed the initial attempt of their scheduled call in the MTM and Diabetes service and received a text message reminder. There were 369 patients (35%) who completed the telephone encounter on the same day. The absolute increase of 3% (p= 0.04) in patient outreach rates after the implementation of text messaging was statistically significant.

There were 52 patients who were newly referred to the Diabetes service between 11/1/2021 – 10/31/2022 and who received a text message reminder for their initial consultation session with a CPS. In a comparison of patients who completed this session versus those who did not, 35% and 14% achieved A1c less than 8% at least 3 months later, respectively (p= 0.08). Before and after the implementation of text messaging, 50% and 54% of CMR's were completed in the MTM service, respectively (p= 0.6).

CONCLUSIONS: Overall, the utilization of text message reminders after missed call attempts improved patient outreach rates in a telephonic ambulatory care clinic for the MTM and Diabetes service. While it also improved the percent of CMR completions, the absolute increase was not statistically significant. Finally, the impact on A1c improvement may be inconclusive due to the small pool of data.

9:50am – 10:10am B **Suicide-Related Events Among the Use of Glucagon-Like Peptide-1 Receptor Agonists in a Veteran Population** Olympia 2

Moderators: Derek Gaul

Presenters: Max Lamb

Evaluators: Heather McLeod

TITLE: Suicide-Related Events Among the Use of Glucagon-Like Peptide-1 Receptor Agonists in a Veteran Population

AUTHORS: Gina Heilman, Max Lamb, Haley Henry, Ashley Thomas

OBJECTIVE: The objective of this study is to assess for a difference in incidence of suicide-related events in Veterans treated with a GLP-1 RA who have a history of a mental health condition compared to those without.

SELF ASSESSMENT QUESTION: Based on data presented, which mental health comorbidity was most prevalent in Veterans with a suicide related event while on a GLP-1RA?

A. Schizophrenia B. Major depressive disorder C. Schizoaffective disorder D. Panic disorder

BACKGROUND: Results from the Effect of Liraglutide on Body Weight in Non-diabetic Obese Subjects or Overweight Subjects with Co-morbidities: SCALE™ trial revealed 4 events of suicidal ideation in patients without prior mental health history. This phenomenon was not seen in the diabetes trial prior, nor was it replicated in Once-Weekly Semaglutide in Adults with Overweight or Obesity; however, Tirzepatide Once Weekly for the Treatment of Obesity revealed 5 mental health events including suicidal ideation in the active study group, thus perpetuating the uncertainty.

METHODOLOGY: This was a single-centered, retrospective cohort review conducted at a Veterans Affairs Healthcare System. Veterans were included in the study if they received at least one glucagon-like peptide-1 receptor agonists (GLP-1 RA) prescription from 05/01/2019 to 10/01/2022. Two cohorts were compared: Veterans with a current or historic mental health condition(s) compared to Veterans without history of a mental health condition(s) as documented in the electronic medical record (EMR). The primary outcome assessed the incidence of suicide-related events, defined as an admission, consult, or emergency-department visit for suicidal ideation, attempt, or death by suicide. The occurrence of the primary outcome was further delineated for those diagnosed with T2DM compared to those without as well as birth sex and type of GLP-1 RA. Secondary outcomes evaluated for age at time of event, time to primary outcome from start of GLP-1 RA, dose at time of primary outcome, and incidence of primary outcome stratified by existing mental health condition(s). Data was collected via a combination of warehouse extraction and manual chart review.

RESULTS: There were a total of 612 patients in each cohort; 528 (86.2%) patients in the prior mental health history cohort were male compared to 580 (94.7%) patients in the no prior mental health history cohort. Racial background was similar between both cohorts with White being the predominant race (459 [75.0%] vs 465 [75.9%]), followed by Black or African American (110 [17.9%] vs 88 [14.3%]). Within the prior history of mental health cohort, 28 (4.5%) of the patients had a high-risk suicidal ideation chart flag. 6 patients were identified as having the primary outcome event, all found within the prior mental health history cohort ($p < 0.05$). All were male and had an average age of 56.3 years (SD=5.7) at time of event. 4 out of the 6 patients had a primary mental health diagnosis of major depressive disorder (MDD) at time of event; 2 out of the 6 patients had a primary diagnosis of dementia. Two events occurred within 30 days of GLP-1 RA start, 2 at less than 1 year, and 2 greater than 1 year.

CONCLUSION: An increased number of emergency suicidal events were identified in patients with a prior mental health history including MDD or dementia when a GLP-1 RA was prescribed; however, no identifiable pattern was discerned based on time to primary outcome from start of agent. Nonetheless, this retrospective review prompts further exploration of the use of GLP-1 RAs in a population at risk for suicidal events.

Points of Contact: Gina.Heilman@va.gov ; Maxwell.Lamb@va.gov

9:50am – 10:10am C **Pharmacist Optimizing Guideline-Directed Medical Therapy in a Heart Failure Clinic** Athena D

Moderators: Serina Tart

Presenters: Brooke Prevette

Evaluators: Sarah Berardi

TITLE: Pharmacist Optimizing Guideline-Directed Medical Therapy in a Heart Failure Clinic

AUTHORS: Brooke Prevette, William Mang, Jenny Gooch

OBJECTIVE: To assess the impact pharmacist have on titrating guideline-directed medical therapy to goal

SELF ASSESSMENT QUESTION: What impact can pharmacists have on patient care in a heart failure clinic?

BACKGROUND: The prevention of hospitalizations and improvements in quality of life are two important components of a pharmacist's role in the heart failure patient population. A pharmacist's role in a heart failure clinic includes utilizing guideline-directed therapies to provide patient education, assessing adherence, and monitoring for adverse effects. The purpose of this study is to assess pharmacists' impact on patient care before and after interventions are made during patient visits. Assessing the impact that pharmacists can have on patient care will continue to increase the involvement of pharmacists in heart failure clinics.

METHODOLOGY: A retrospective, observational study was conducted between August 1, 2022 and January 31, 2023 at FirstHealth Heart Failure clinic. Inclusion criteria consists of new clinic patients, 18 years or older with a diagnosis of heart failure. Patients are referred to the heart failure clinic if they have had a 30-day heart failure readmission, 2 or more heart failure hospitalizations in the past 12 months, or a heart failure diagnosis and had cardiothoracic surgery. Exclusion criteria consists of ESRD on dialysis, adult congenital heart disease, or currently on hospice. Patients will be evaluated over 3 visits. Patients are evaluated on the first visit by a pharmacist and physician and then followed up by the physician alone. The primary outcome was intervention made to titrate to goal by a pharmacist. Secondary outcomes included rehospitalization within 30 days, medication adherence, and educational teaching provided.

RESULTS: Of the 70 patients screened, 60 patients were identified. A pharmacist recommended the addition of guideline-directed medical therapy or titration to goal dose in 82% of patients. 15% of patients had rehospitalization after 30 days. 18% of patients reported issues with medication adherence. Education was provided to 100% of patients seen by a pharmacist.

CONCLUSIONS: This study has demonstrated that a pharmacist should be utilized in the heart failure clinic to more effectively titrate guideline-directed medical therapy to goal. More recommendations to meet guideline-directed medical therapy were made at the first visit compared to the follow-up visits. The recommendation most often made by pharmacists was to add an SGLT-2 inhibitor. The second most common recommendation was to titrate beta-blocker therapy to goal doses. In the future there is hope that pharmacists will be included in all clinic visits in order to most effectively include all appropriate guideline-directed medical therapy, reach goal doses for each medication, and serve as a continuum for patient education at each visit.

9:50am – 10:10am R **Impact of Pharmacist Involvement on the Appropriate Dosing of Ketamine and Propofol During Procedural Sedations in the Emergency Department** Athena G

Moderators: Erica Merritt

Presenters: Sydney Bowman

Evaluators: Courtney Mallon

TITLE: Impact of Pharmacist Involvement on the Appropriate Dosing of Ketamine and Propofol During Procedural Sedations in the Emergency Department

AUTHORS: Sydney Bowman, Forrest Stewart, Samantha Sullivan, Jason Dover

OBJECTIVE: To evaluate the impact of pharmacists on the frequency of appropriate dosing of ketamine and propofol for procedural sedations in the emergency department.

SELF ASSESSMENT QUESTION: In what ways can pharmacists play an active role during procedural sedations in the emergency department?

BACKGROUND: Procedural sedations involving ketamine and propofol are routinely performed in the emergency department. Although moderate sedation guidelines address the use of these agents, appropriate doses may not always be administered, increasing the risk of undesirable outcomes. As pharmacists become more involved in the emergency department, they are uniquely positioned to steward the use of these high-risk medications.

METHODOLOGY: Patients that underwent procedural sedation with ketamine and/or propofol in the emergency department between January 1, 2021, and December 31, 2021, were eligible to be included in the analysis. Study groups were evaluated based on the presence or absence of a pharmacist. The primary outcome was the frequency of appropriate weight-based intravenous ketamine and/or propofol dose used during procedural sedation. Secondary outcomes included the sedative(s) utilized and the frequency of hypotension, hypoxia, and patients unresponsive to painful or verbal stimuli during procedural sedation. Study inclusion criteria were a minimum age of nineteen years and having undergone a procedural sedation with propofol and/or ketamine in the emergency department. Exclusion criteria included use of any other sedative for procedural sedation, non-intravenous administration of ketamine, sedations without appropriate documentation, and vulnerable populations.

RESULTS: Eighty-nine patients met study inclusion criteria. Thirty-seven patients were included in the “pharmacist absent” group, and 52 patients were included in the “pharmacist present” group. Appropriate dosing of ketamine and/or propofol occurred in 75.7% of cases when a pharmacist was absent and 80.8% of cases when a pharmacist was present, but this finding was not statistically significant (p=0.732). Either propofol or ketamine alone was used more commonly when a pharmacist was absent, and the combination of ketamine and propofol was used more commonly when a pharmacist was present (29.7% vs. 63.5%, p=0.003). No significant differences in frequency of hypotension, hypoxia, or level of sedation were observed between groups.

CONCLUSIONS: Although more patients received appropriate doses of ketamine and/or propofol when a pharmacist was present, this finding was not statistically significant. Interestingly, the combination of ketamine and propofol for sedation was significantly more common when a pharmacist was present, which highlights the potential benefits of this strategy including less propofol use and a lower risk of hypotension and nausea and vomiting. Ultimately, future studies with larger sample sizes are needed to truly evaluate the impact of a pharmacist on sedatives chosen for procedural sedations and on the appropriate dosing of high-risk medications.

9:50am – 10:10am R **Impact of Pharmacists on Empiric Antibiotic Utilization in Patients with Open Fractures** Athena H

Moderators: Dustin Bryan
Presenters: Adrianna T. Reagan
Evaluators: Stephanie Smith

TITLE: Impact of Pharmacists on Empiric Antibiotic Utilization in Patients with Open Fractures

AUTHORS: Adrianna Reagan, Brooke Gallman, Ezekiel Terrell, Susan Smith

OBJECTIVE: Describe the impact of pharmacist intervention on the antibiotic selection, dosing, and time to administration for open fractures.

SELF ASSESSMENT QUESTION: Does pharmacist intervention increase adherence to empiric antibiotic guideline-directed therapy for patients with open fractures?

BACKGROUND: Open fractures are a significant health concern as they increase the risk of infection and orthopedic complications. Pharmacists can assist with the multifarious management of empiric antibiotics to reduce these risks. However, there is a lack of literature directly observing pharmacist impact on prophylactic antibiotic selection in this population. The purpose of this study is to evaluate the impact of pharmacists' interventions on empiric antibiotic selection, dosing, and time to administration in patients presenting with open fractures. We hypothesize that pharmacist intervention will improve adherence to guideline-directed therapy.

METHODOLOGY: This was an institutional review board exempt observational study of patients presenting to the Piedmont Athens Regional (PAR) emergency department who received empiric, prophylactic antibiotics for open fractures between January and December 2022. Patients were stratified into two groups based on the presence of a documented pharmacist intervention. The primary outcome was adherence to PAR's open fracture empiric antibiotic guideline, which was created by clinical pharmacists in accordance with the Eastern Association for the Surgery of Trauma practice management guidelines and approved by the hospital's antimicrobial stewardship committee. Secondary outcomes included appropriate antibiotic selection, optimal dosing, time to antibiotic administration, and rate of antibiotics given within 60 minutes. Details regarding the antibiotic selection and dosing, fracture grade, time to antibiotic administration, and patient demographics were accessed via electronic health records and open fracture records recorded by the trauma program performance improvement coordinator. Categorical variables were compared between patients that did and did not receive pharmacist intervention using the Chi-squared or Fisher's exact test, as appropriate. Interval data was compared using the Mann-Whitney U test. Binary logistic regression was completed to identify independent variables associated with the primary outcome. Variables were determined a priori by consensus of investigators, and included age, gender, weight, fracture grade, fracture location, contamination, pharmacist intervention, and emergency medicine pharmacist availability. Due to the retrospective nature of this study, the sample size was determined by the number of patients meeting inclusion criteria during the designated time period. IBM SPSS Statistics software was utilized for all analyses with an alpha less than 0.05 indicating significance.

RESULTS: A total of 159 patients were identified for screening, and 138 were included in the study. The median age was 46 (32 – 65) years, 71% of patients were male, and 71% of patients were Caucasian. Fracture grade I or II were more common than grade III (54% vs 46%, p=0.131). Pharmacist intervention was documented on 25 (18.1%) of the open fracture cases. Rate of adherence to PAR's empiric antibiotic guidelines was significantly higher with pharmacist interventions than without (84% vs 46%, p <0.001). Moreover, the rate of correct antibiotic selection and dosing with pharmacist intervention was significantly higher than without (antibiotic agent: 88% vs. 59%, p = 0.007; dose: 96% vs. 79%, p = 0.043). The median time to antibiotic administration from presentation was 14 minutes with pharmacist intervention compared to 33 minutes without (p<0.001), and the rate of antibiotics given within 60 minutes was also higher (96% and 66%, p=0.003). In the binomial logistic regression, pharmacist intervention was associated with adherence to empiric antibiotic guidelines (OR 40.8, 95% CI 5.2-323.4) while grade III fractures were associated with a decrease in adherence (OR 0.01, 95% 0.003 – 0.054).

CONCLUSION**:** Pharmacist intervention was associated with increased adherence to empiric antibiotic guidelines in patients presenting to the emergency department with open fracture. Pharmacist intervention was also associated with reduced time to antibiotic administration. The results of this study support pharmacy services in the emergency department, including the use of pharmacist drug expertise for antibiotic selection and dosing.

9:50am – 10:10am R **INCIDENCE AND PREDICTORS OF ACUTE KIDNEY INJURY IN PATIENTS RECEIVING HYPERTONIC SALINE IN THE NEUROSCIENCE INTENSIVE CARE UNIT** Athena I

Moderators: Kristen Turner

Presenters: Allyson Barnett

Evaluators: Taylor Wells

TITLE: INCIDENCE AND PREDICTORS OF ACUTE KIDNEY INJURY IN PATIENTS RECEIVING HYPERTONIC SALINE IN THE NEUROSCIENCE INTENSIVE CARE UNIT

AUTHORS: Allyson Barnett, Erin Creech

OBJECTIVE: Recognize potential contributors to acute kidney injury in patients receiving hypertonic saline.

SELF ASSESSMENT QUESTION: True/False: Hyperchloremia may be a driving factor in the incidence of AKI in patients receiving HTS, therefore further studies are needed in this area.

BACKGROUND: Neuronal injuries are commonly complicated by cerebral edema whether from vasogenic, cellular, osmotic, or interstitial changes. The mechanism is best described by the Monroe-Kellie doctrine describing the cranial cavity composed of brain matter, blood, and cerebrospinal fluid in fixed volumes and proportions. Therefore, an imbalance in one component results in an imbalance of another. Cerebral edema results in damage and swelling of the cellular membrane resulting in decreased perfusion of blood to the brain. Hypertonic saline (HTS) is a mainstay of therapy for cerebral edema. It is beneficial at reducing intracranial hypertension via rapid vasoconstriction and reduction of cerebrovascular volume by creating an osmotic gradient to draw fluid intravascularly. Data on acute kidney injury (AKI) in patients receiving HTS, albeit limited, has recently emerged and suggests several independent factors may contribute to the risk of AKI in patients receiving HTS, including the incidence of hyperchloremia. The results of this study will aid in extrapolation of HTS selection or avoidance of other factors to reduce the incidence of AKI.

METHODS: This retrospective, observational, cohort study compared patients who developed an AKI as defined by RIFLE (Risk, Injury, Failure, Loss, End-stage) criteria to those who did not after receiving HTS. Patients in the Neuroscience Intensive Care Unit (NSICU) with medication orders for 1.8% or 3% sodium chloride (NaCl), 3% sodium acetate, and 1.5% NaCl- 1.5% sodium acetate (buffered HTS) between March 1, 2021 and September 20, 2022 will be included if they received at least 24 hours of HTS. Exclusion criteria consisted of patients receiving renal replacement therapy prior to administration of HTS whether in-hospital or out of hospital, past diagnosis of diabetes insipidus (DI) or syndrome of inappropriate antidiuretic hormone secretion (SIADH), baseline serum sodium greater than 155 mEq/L, or pregnant/lactating patients. Potential confounders for AKI were assessed as secondary endpoints.

RESULTS: A total of 192 patients were identified for screening with 81 patients excluded, primarily due to less than 24 hours of HTS infusion (n=60). There were 111 patients included in the primary analysis, with 3 (2.7%) patients developing AKI. A HTS bolus was administered to 45 (40.5%) patients, with 24 patients receiving 3% NaCl, 15 receiving 1.8% NaCl, and 6 receiving buffered HTS as the initial bolus. The average volume of HTS boluses 250 mL in the AKI group and 498.5 mL in absence of AKI. The initial infusion was 3% NaCl for 45 (40.5%) patients, buffered HTS for 33 (29.7%), 1.8% NaCl for 31 (27.9%), and 3% sodium acetate for 2 (1.8%) started on average around 54.8mL/hr. A statistical difference in baseline serum sodium between AKI and no AKI (145.33 v. 137.48, p=0.011) was seen. The peak serum sodium was 166.33 v. 155.15 (p=0.082). Though not statistically significant, the baseline serum chloride between AKI and no AKI (110.00 v. 104.17, p=0.057) and peak serum chloride (126.33 v. 118.90, p=0.095) was clinically significant. The time to AKI was on average 134.42 hours, with the time to peak serum sodium and serum chloride in these patients being 81.43 hours, and 178.21 hours.

CONCLUSIONS: The incidence of AKI in patients receiving HTS was increased in patients with higher baseline serum sodium. Although not statistically significant, a trend was observed between the incidence of AKI and the baseline serum chloride, peak serum chloride and peak serum sodium. Larger studies are needed to assess hyperchloremia as a driving factor of AKI.

9:50am – 10:10am | **Living in the (PEN)-FAST LANE: Implementation of a quantitative allergy assessment on antibiotic usage in a community hospital setting** Athena A

Moderators: Cori Edmonds

Presenters: Dawn Jensen

Evaluators: Katheryn Pruitt

TITLE: Living in the (PEN)-FAST LANE: Implementation of a quantitative allergy assessment on antibiotic usage in a community hospital setting

AUTHORS: Dawn Jensen, Amanda Guffey, Benjamin Britt, Vince Buttrick, Erik Turgeon

OBJECTIVE: Evaluate the impact of the PEN-FAST allergy assessment in the Emergency Department on antibiotic usage in a community hospital setting.

SELF ASSESSMENT QUESTION: Approximately what proportion of patients can be expected to not be able to be assessed with PEN-FAST?

BACKGROUND: Only approximately 1% of people in the United States have a true IgE-mediated penicillin allergy, and about 80% of those lose their hypersensitivity to penicillin after 10 or more years. Therefore, clarifying these allergies to identify those who can tolerate penicillin antibiotics can decrease carbapenem usage, as carbapenems are historically known to not be immunogenic in those with a true penicillin allergy. PEN-FAST is a clinical decision tool validated against penicillin skin tests and oral challenges. It quantifies the allergy assessment interview process and approximates the percent chance a patient has a true IgE-mediated hypersensitivity to penicillin antibiotics. This is the first formal intervention Lexington Medical Center (LMC) has implemented to evaluate penicillin allergies.

METHODOLOGY: This is a single-center, retrospective, observational cohort study. Adult inpatients with a documented penicillin allergy from 11/16/21-2/16/22 or 11/16/22-2/16/23 were included. Antibiotics ordered or authorized by surgery providers were excluded. The intervention was the PEN-FAST clinical decision tool, primarily in the Emergency Department (ED). Primary endpoint was counts of carbapenems ordered pre- and post-implementation. Educational sessions to pharmacists, physicians, and nurses on PEN-FAST were conducted in ED, MICU, CCU and general medicine floors. A best practice alert prompting ED pharmacists to conduct PEN-FAST assessments on eligible patients was implemented on 11/16/22. Descriptive statistics and Chi-square were used for statistical analysis.

RESULTS: There were 2982 and 2344 antibiotic orders included in the pre- and post-implementation cohorts, respectively. There was a statistically significant reduction in carbapenem order counts (230 vs 93, $p < 0.001$) after implementation. Of 563 included PEN-FAST assessments, 283 received a score of 0, 43 score of 1, 35 score of 2, 97 score of 3, 0 score of 4, and 13 score of 5. Ninety-two PEN-FAST assessments were unable to be assessed, 9 due to patients denying penicillin allergy. There were 219 documented PEN-FAST assessments associated with administration of a non-carbapenem beta-lactam that same admission.

CONCLUSIONS: There was a statistically significant decrease in carbapenem ordering after implementation of PEN-FAST. A majority of patients interviewed with PEN-FAST are at low or very low risk of positive penicillin allergy test.

9:50am – 10:10am | **Outcomes Associated with Integrating Clinical Decision Support Software Alerts for Microbial Cultures in a Non-Teaching Community Hospital** Athena B

Moderators: Beth Phillips
Presenters: Summer Snowden
Evaluators: Sarah Talley

TITLE: Outcomes Associated with Integrating Clinical Decision Support Software Alerts for Microbial Cultures in a Non-Teaching Community Hospital
AUTHORS: Summer Snowden, Tanner Shields, Brad Crane, Danielle Yates, Susan Roberts
OBJECTIVE: Will be included in presentation.
SELF ASSESSMENT QUESTION: Will be included in presentation.
BACKGROUND: In January 2021 a Clinical Decision Support Software (CDSS) was implemented at Blount Memorial Hospital. CDSS provides real time notifications for positive cultures (defined as updates to the gram stain, organism identification, and susceptibilities), making them readily available for clinical pharmacists to identify and optimize antimicrobial therapy. Prior to utilizing CDSS, pharmacists were notified of updated positive cultures through a manual process that consisted of the microbiology lab printing off a list of newly updated positive cultures and then sending it to the pharmacy up to two times a day on weekdays. There were no culture notifications on the weekends.
METHODOLOGY: This is an IRB-approved, retrospective, cohort analysis evaluating the timeliness of antimicrobial-associated interventions. A report of antimicrobial-categorized interventions was generated for specified time frames pre and post CDSS implementation. The report was manually reviewed to find interventions associated with antimicrobials that were optimized in response to the updated culture result and categorized as accepted. Interventions were excluded if they were associated with Verigene results, MRSA PCR, urinary antigens, or contaminated urine cultures.
The primary objective is to compare the time difference from updated positive culture results to changes in the antimicrobial order prescribing, pre and post CDSS implementation. Secondary objectives include time difference to escalation (potential bug-drug mismatch), time difference to de-escalation (narrowing antimicrobial therapy), comparing time differences to optimization Monday through Friday versus Saturday and Sunday, and comparing cost-savings associated with time difference to antimicrobial optimization.

RESULTS: In Progress.
CONCLUSIONS: In Progress.

9:50am – 10:10am L **Evaluation of adherence to an electronic health record alert versus nursing driven electrolyte replacement protocol in a community hospital setting** Athena J

Moderators: Lucy Crosby

Presenters: Mckenzie Abu Taha

Evaluators: Nancy Bailey

TITLE: Evaluation of adherence to an electronic health record alert versus nursing driven electrolyte replacement protocol in a community hospital setting

AUTHORS: McKenzie Abu Taha, Casey Baker

OBJECTIVE: Compare the adherence to electrolyte replacement protocols in a community hospital setting using a Best Practice Advisory (BPA) versus nursing-driven potassium replacement.

SELF ASSESSMENT QUESTION:What is a potential advantage of implementing an electronic MAR alert to help facilitate electrolyte replacement?A. Improved patient comfort during electrolyte replacement B. Enhanced reimbursement for healthcare providers C. Timely alerts to prompt appropriate intervention D. Increased patient engagement in their own care

BACKGROUND: Previously, Baptist Health Lexington utilized a nursing driven electrolyte protocol, where nurses would assess the patient’s labs daily and give the indicated doses based on serum electrolyte levels. Baptist Health Lexington has now implemented an electronic health record alert to facilitate electrolyte replacement. The following Best Practice Advisory (BPA) serves to notify the nurse of any deviations from normal serum electrolyte levels and suggests appropriate replacement options, along with a recommendation for follow-up laboratory tests, that are specific to the patient's kidney function. The aim of this study is to compare the incidence of potassium administration utilizing a best practice advisory (BPA) versus nurse-driven potassium replacement protocol in hypokalemic patients.

METHODOLOGY: In this retrospective cohort study, the incidence of successful protocol initiation between the previous nursing facilitated protocol (March 2022 – December 2022) and BPA-driven protocol (January 2023 - March 2023) will be evaluated. Successful initiation is defined as administration of the first indicated potassium replacement dose within 12 hours of the first abnormal serum potassium result. To be included in this study patients must have had the standard electrolyte replacement protocol ordered and have had at least one serum potassium level ≤3.6 mmol/L. Patients were excluded from this study if they were <18 years old, admitted to the intensive care unit, had a history of end stage renal disease, experienced acute kidney failure or diabetic ketoacidosis during their admission, or were pregnant or incarcerated. Data collected for each patient include age, sex, potassium level, time of level result, time of replacement, difference in time from level result to replacement, route of replacement, whether follow up labs were ordered, and length of stay.

RESULTS: A total of 200 patients were included in this study. Of the 100 patients included in the pre-implementation group, 56 patients were successfully initiated on the potassium replacement per protocol, versus 81 pf the 100 patients in the post-implementation group. Median time to replacement was 3.8 hours in the nursing driven group and 2.5 hours in the BPA driven group. The median initial serum potassium was 3.4 mEq/L in the nursing driven group and 3.3mEq/l in the BPA driven group. Of the patients where the potassium replacement protocol was initiated, 13 patients (21%) int he nursing driven group and 26 (32%) in the BA driven group had follow-up serum potassium concentration labs ordered per protocol.

CONCLUSIONS: The current BPA-driven potassium replacement protocol was more likely to result in potassium replacement than the nursing-driven protocol.Further education for pharmacists, physicians, and nurses is warranted in order to increase compliance with the BPA-driven potassium replacement protocol.

9:50am – 10:10am N **EVALUATION OF THE UTILIZATION OF TOTAL PHENYTOIN LEVELS IN PATIENTS WITH HYPOALBUMINEMIA AND RENAL DUSFUNCTION AT A SINGLE-CENTER ACADEMIA MEDICAL CENTER** Parthenon 1

Moderators: Bradley Smith
Presenters: Liz Ferengul
Evaluators: Anna Parker

TITLE: EVALUATION OF THE UTILIZATION OF TOTAL PHENYTOIN LEVELS IN PATIENTS WITH HYPOALBUMINEMIA AND RENAL DUSFUNCTION AT A SINGLE-CENTER ACADEMIA MEDICAL CENTER
AUTHORS: Elizabeth Ferengul, Haley Smith, Danielle Ricks, Rose Dastoori, Clare Olin, Jennifer Hartenstein
OBJECTIVE: n/a
SELF ASSESSMENT QUESTION: n/a
BACKGROUND: Phenytoin is a 90% protein bound, narrow therapeutic window medication. These pharmacokinetic properties require the use of a correction equation when a patient's albumin is 2 hours prior to the next phenytoin dose or an albumin was not drawn within 72 hours of the level. Phenytoin levels were collected from the EMR and corrected using the equation below. Corrected levels 20 mcg/mL should have been acted on by the physician. This information was then compared to chart to see if a dose change was documented.

If CrCl 20 ml/min □Corrected Total Phenytoin = (total phenytoin) / [(0.275*albumin) + 0.1)]

RESULTS: In progress
CONCLUSIONS: In progress

9:50am – 10:10am O **Optimizing Steroid Use through Paclitaxel Order-Sets in the Outpatient Infusion Center** Athena C

Moderators: KIMM FREEMAN
Presenters: Kinsey McClure
Evaluators: Tanea Womack

TITLE: Optimizing Steroid Use through Paclitaxel Order-Sets in the Outpatient Infusion Center
AUTHORS: Kinsey McClure, Sarah Mills, Teresa Turner, Andre Harvin

OBJECTIVE: To determine if we can safely lower dexamethasone dosing to 10 mg for premedication in patients receiving paclitaxel.
SELF ASSESSMENT QUESTION: Can we safely lower dexamethasone dosing to 10 mg for premedication in patients receiving paclitaxel?
BACKGROUND: Paclitaxel is a cytotoxic chemotherapy agent that has the potential to cause life-threatening infusion-related reactions. In patients receiving paclitaxel, it is strongly recommended that patients are premedicated with diphenhydramine, famotidine, and dexamethasone to combat this reaction. Current literature shows that a 10 mg dose of dexamethasone is sufficient in this setting and patients who receive higher doses may have an increased risk of adverse effects. Within our health-system, premedication regimens of dexamethasone for paclitaxel protocols are not standardized. The goal of this research is to reduce overall steroid exposure and limit steroid-related side effects by standardizing paclitaxel order sets.
METHODOLOGY: This was an IRB-reviewed, determined exempt, single-health system, multi-center, pre-post intervention study. Patients were included if they were over 18 years old and received paclitaxel through an established order set. The intervention consisted of updating all paclitaxel treatment plans in the health-system to default to a standardized dose of 10 mg of dexamethasone for premedication. Pre-intervention and post-intervention data was gathered on patient demographics, cancer type and stage, chemotherapy regimen, premedication regimen, and adverse reactions experienced. Pre-intervention, retrospective data was collected via chart review from a report of all patients given paclitaxel at health-system infusion centers. Post-intervention data was collected from a separate report using the same criteria. The primary outcome measured in this study was the incidence of paclitaxel infusion-related reactions compared to pre-intervention. Secondary outcomes included steroid exposure per patient and infusion-related reaction grade.
RESULTS: Of 51 patients in the pre-intervention group, 6 (11.8%) experienced paclitaxel infusion-related reactions. Of 97 patients in the post-intervention group, 6 (6.2%) patients experienced paclitaxel infusion reactions. The absolute risk reduction between groups was -0.06 (95% CI -0.16 to 0.04, p=0.24). Of the patients who experienced a reaction, 100% (n=6) were classified as grade 2 in the pre-intervention group and 83.3% (n=5) of the post-intervention group. One reaction in the post-intervention group (16.7%) was classified as grade 3. In the pre-intervention group, 25% of patients received a dexamethasone dose over 10 mg, whereas 0% of patients in the post-intervention group received a dexamethasone dose over 10 mg.
CONCLUSIONS: The incidence rate for infusion-related reactions post-intervention compared to pre-intervention was numerically lower and statistically similar, indicating noninferiority. Most infusion reactions occurred with the first paclitaxel dose and were classified as grade 2 reactions, only warranting use of oral medications. All patients who experienced an infusion reaction were able to continue the infusion. Average steroid exposure per patient was lower in the post-intervention group compared to pre-intervention. Based on this data, future research should explore dexamethasone omission in later paclitaxel treatment cycles.

10:10am – 10:30am **Empty** Parthenon 2

Moderators: Camille Robinette
Evaluators: Abigayle Campbell

10:10am – 10:30am A **Assessment of Factors Affecting Candidate Rankings of PGY-1 Programs** Athena I

Moderators: Kristen Turner
Presenters: Brittany Walley
Evaluators: Taylor Wells

TITLE: Assessment of Factors Affecting Candidate Rankings of PGY-1 Programs

AUTHORS: Brittany Walley; Geren Thomas; Maura Hall

OBJECTIVE: Identify the factors that PGY-1 pharmacy residents considered most important in the selection of their rank list for the pharmacy residency matching process

SELF ASSESSMENT QUESTION: Which factors were found to have a considerable impact on candidate rankings of PGY-1 pharmacy residency programs?

A. Interactions with preceptors during interview
B. Interactions with residents during interviews
C. Variety of elective rotations
D. All of the above

BACKGROUND: Throughout the postgraduate year-1 (PGY-1) experience, pharmacy residents are continually evaluated on their skills across an array of competency areas including patient care, leadership and management, and teaching and education. Because residency often involves a considerable workload and can have a significant impact on future employment opportunities, the decision of where to pursue postgraduate training is not taken lightly. For these reasons, candidates consider a host of factors in the selection of programs and their respective rank for the Match. Previous literature reported accreditation status and program reputation as candidates' most critical factors to ranking a residency program. Given the growth of interest in residency since 1990, alternate features may need to be also considered when marketing programs to prospective residents. The purpose of this study is to identify the factors that PGY-1 pharmacy residents considered most important in the selection of their rank list for the pharmacy residency matching process.

METHODOLOGY: An anonymous, web-based survey was distributed via email to residency program directors of acute care PGY-1 residency programs for further distribution to their respective residents who matched in 2022. Demographic information collected included age, gender, estimated grade point average, marital status, number of applications submitted, and number of interviews offered. Factors impacting the applicant's ranking of pharmacy residency programs were assessed using a five-point Likert scale. Respondents then selected their top three most critical factors that raised a program's rank as well as any applicable factors that dissuaded their decision to rank a program. Statistical analysis was performed using descriptive statistics, including measures of central tendency (mean and median) and variation (standard deviation and interquartile range).

RESULTS: Of 1561 surveyed residents, 219 PGY-1 pharmacy residents responded, which yielded a response rate of 14%. When ranked individually on a Likert scale, factors considered critically important by the majority of respondents included the personalities of residency program faculty (70.9%), morale among residents (64.3%), the number and type of elective rotations (61.5%), integration of pharmacy in provision of clinical services (56.8%), and staffing schedule (53.5%). These factors were similarly deemed to the most important when assessed collectively. Least important program features included showcases at national and regional conferences and availability of in-person interviews. Factors most highly influencing respondents to not rank a program included interactions with residency program faculty and residents, interview experience, and staffing requirements.

CONCLUSIONS: Based on the responses, interactions with preceptors and residents during interviews had the considerable impact on candidate rankings, either for or against ranking a program. Other critical factors included the variety of rotation of electives and the level of integration of pharmacy in the provision of clinical services. As interest in residency has grown, programs have similarly increased their visibility at residency showcases and implemented a variety of marketing strategies, but this does not substantially influence interest in programs. Respondents were mostly influenced to rank programs on the basis of interactions with program faculty and residents while training opportunities followed closely behind. This information leads us to believe that while great learning opportunities may be available, the social aspects of programs have a compelling influence on candidate rankings.

10:10am – 10:30am B **Evaluation of Primary Care Providers' Utilization of Glucagon-Like Peptide 1 Receptor Agonists with Demonstrated ASCVD Benefit in Patients with Type 2 Diabetes Mellitus** Olympia 1

Moderators: Grant Teague

Presenters: Savannah Owen

Evaluators: Alexandre Ivanov

TITLE: Evaluation of Primary Care Providers' Utilization of Glucagon-Like Peptide 1 Receptor Agonists with Demonstrated ASCVD Benefit in Patients with Type 2 Diabetes Mellitus

AUTHORS: Savannah Owen, Laura Schalliol, Bayley George, Kimberly Zitko

OBJECTIVE: The primary objective is to evaluate the overall appropriateness of the utilization of three GLP-1 receptor agonists (liraglutide, dulaglutide, and subcutaneous semaglutide) that provide additional ASCVD benefit. This objective will be assessed by analyzing the percentage of patients on an optimal titrated dose to achieve HgA1c goals, as well as the average percentage of change in HgA1c and weight from baseline to the end of the study period.

SELF ASSESSMENT QUESTION: What roles could pharmacists play in monitoring patients started on a GLP-1 receptor agonist by their primary care provider?

BACKGROUND: Liraglutide, semaglutide, and dulaglutide are heavily prescribed glucagon-like peptide 1 (GLP-1) receptor agonists that provide significant glycemic benefit and offer cardiovascular protection for patients with type 2 diabetes mellitus (T2DM). However, despite their advantages, these medications are often discontinued at relatively high rates. Improper titration and monitoring can lead to several problems, including increased adverse reactions and a lack of perceived benefit leading to early discontinuation. This research sought to analyze the real-world monitoring and titration of GLP-1 receptor agonists in a primary care clinic, along with the rate and common reasons for discontinuation.

METHODOLOGY: This retrospective, single-center study utilized ICD-10 codes to generate a list of potential subjects with T2DM seen in clinic from July 1, 2021 to July 30,2022. Medical record reviews were then conducted to determine if the subject was prescribed liraglutide, semaglutide, or dulaglutide. If so, subjects were included in the research if they didn't meet any of the exclusion criteria, which included being younger than 18 years old, not having a documented follow-up appointment, or having an unknown date of initiation of the study medication. The primary objective was to evaluate the overall appropriateness of the usage of GLP-1 receptor agonists by looking at three main areas: titration schedules, monitoring of efficacy parameters, and discontinuation information. Outcome measures used to evaluate this objective include the percentage of patients on appropriately titrated doses, average change in HgA1c and weight parameters as compared to baseline values, and the percentage of patients who discontinued GLP-1 receptor agonists and common reasons why. Researchers also collected data pertaining to the subjects' pertinent co-morbid conditions, additional antihyperglycemic medications, and if a referral was initiated for diabetes management by the clinical pharmacy team.

RESULTS: 188 patients met the inclusion criteria. Mean baseline characteristics included the following: age (57.2 years), weight (106.6 kg), BMI (38.3 kg/m2), HgA1c (8.1%), history of ASCVD (16.5%), hypertension (75%), and dyslipidemia (74.5%). The majority of patients were also taking metformin (63.8%) and a small percentage of patients were taking DDP-4 inhibitors (6.4%). At the end of the study period, it was discovered that 66% were on optimally titrated doses of GLP-1 receptor agonists. Mean decrease in HgA1c, weight, and BMI were 0.5%, 2.6 kg, and 3.3 kg/m2 respectively. Only 12.2% of patients were referred to the clinical pharmacy team for management, and 25.5% discontinued the study medication mostly due to unknown causes, switching to a different agent, intolerable adverse reactions or financial issues.

CONCLUSIONS: Clinical pharmacy services were underutilized and there are many opportunities for pharmacists to improve patient outcomes, as around 1/3 of patients were not titrated up from their starting dose and over an average duration of 17 months, only modest weight loss and BMI reductions were noted. A high percentage of patients also discontinued their medication for a variety of reasons. Pharmacists can be involved in providing closer follow-up with patients to help with these issues.

10:10am – 10:30am C **Identifying Discrepancies and Standardizing Antiarrhythmic Monitoring** Athena D

Moderators: Serina Tart

Presenters: Megan Lathrop

Evaluators: Sarah Berardi

TITLE: Identifying Discrepancies and Standardizing Antiarrhythmic Monitoring

AUTHORS: Megan Lathrop, PharmD and Rebecca Holt, PharmD, BCPS

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Although not always considered a first line treatment option, certain clinical situations warrant the use of antiarrhythmic medications to control arrhythmias, ameliorate symptoms, and improve quality of life. Careful monitoring is essential to ensure safe use of antiarrhythmic medications due to their pro-arrhythmic risk and non-cardiac side effects. Establishing monitoring parameters, identifying discrepancies within current practice, and developing a monitoring protocol are necessary steps to improve patient safety with antiarrhythmic medication use at the James H. Quillen VA Medical Center.

METHODOLOGY: This quality improvement project will focus on identifying current discrepancies in antiarrhythmic monitoring and developing an implementable, standardized monitoring process of outpatients on Class I and III antiarrhythmics at James H. Quillen VA Medical Center. A review of the High-Risk Drug Monitoring Dashboard was conducted to evaluate the monitoring of antiarrhythmic at our facility. Appropriate monitoring parameters to implement at The James H. Quillen VA Medical Center were developed after reviewing internal standards of practice, clinical practice guideline recommendations, manufacturer package inserts, and consulting with local cardiologists. These monitoring parameters will be utilized in creating a standardized protocol in antiarrhythmic monitoring to be implemented at the James H. Quillen VA Medical Center.

RESULTS: In progress

CONCLUSIONS: In progress

10:10am – 10:30am R **Impact of Clinical Pharmacist Practitioners on the Interdisciplinary Team in the Inpatient Critical Care Setting** Athena G

Moderators: Erica Merritt
Presenters: Karen Clark
Evaluators: Courtney Mallon

TITLE: Impact of Clinical Pharmacist Practitioners on the Interdisciplinary Team in the Inpatient Critical Care Setting
AUTHORS: Karen Clark, Holly McLean, Sarah Puryear

OBJECTIVE: To evaluate the impact of a CPP on other members of the interdisciplinary team and to evaluate CPP protocol interventions

SELF ASSESSMENT QUESTION: True or False? The CPP's role is determined by the practice agreement with the listed supervising physician(s)

BACKGROUND: A clinical pharmacist practitioner (CPP) is a licensed pharmacist with prescriptive authority to act as a prescriber through a protocol agreement between the pharmacist and a licensed physician. The CPP agreement between parties addresses medical conditions, medication therapy, tests, and monitoring that a CPP can independently and autonomously manage without contacting the provider for approval. There is a lack of literature evaluating the interventions and outcomes of CPPs in acute care settings and their potential impact this could have on patient care. This study aimed to evaluate the impact of clinical pharmacist practitioner services on the interdisciplinary team in critical care settings.

METHODOLOGY: This was a single-center, retrospective, descriptive, observational, chart review study ranging from May 1st, 2021 to May 1st, 2022, conducted at a North Carolina 435-bed not-for-profit acute care community hospital. CaroMont Regional Medical Center is a Level III trauma center with 25 critical care beds and 32 post-intensive care unit (PICU) beds. In April of 2021, two of the decentralized critical care pharmacists obtained their CPP licenses with protocol supervision from the CaroMont Critical Care Medicine Group. Patients in this study were identified using an Epic-generated intervention report. The following data was collected: age, gender, critical care admission indication, the total number of patients with CPP intervention(s), the total number of CPP interventions, number of days with critical care attending, type of CPP protocol interventions performed, interdisciplinary team survey satisfaction scores, and CPP data surveys completed by active North Carolina (NC) CPPs.
RESULTS: Of the 67 critical care team members who received a CPP Satisfaction Survey, 33 (49%) participants completed the survey. The CPP satisfaction score averaged 4.56/5 (91.2%) indicating high CPP satisfaction among the interdisciplinary team. Of the 410 active CPP members in NC who received an NC CPP Data Survey, 156 (38%) participants completed the survey. Twenty-two (14.1%) CPPs selected "inpatient" as their practice site description. During the one-year retrospective chart review study at CRMC, the CPPs performed 631 interventions on 307 patients with 41.4% of the interventions documented as dosage form review/adjustment.
CONCLUSIONS: Clinical Pharmacist Practitioners are highly valued by the critical care interdisciplinary team and serve as an additional resource to optimize patient care. The interdisciplinary team viewed the CPP as a valuable and competent member of the team and they felt more confident in their patient care. In comparison to previous studies, most CPP interventions are focused on the individualization of patient care.

10:10am – 10:30am R **The efficacy of furosemide versus bumetanide in patients with hypoalbuminemia** Athena H

Moderators: Dustin Bryan

Presenters: Sarah Lamon

Evaluators: Stephanie Smith

TITLE: The efficacy of furosemide versus bumetanide in patients with hypoalbuminemia

AUTHORS: Sarah Lamon, Tyler Chanas

OBJECTIVE: Compare the efficacy of furosemide and bumetanide in patients with hypoalbuminemia (serum albumin ≤3 g/dL) determined by 24-hour urine output after loop diuretic initiation.

SELF ASSESSMENT QUESTION: True or False: Hypoalbuminemia theoretically impacts loop diuretic response because loop diuretics are highly protein bound and it decreases the volume of distribution but does not affect drug delivery to the site of action.

BACKGROUND: Loop diuretics are commonly used to treat volume overload in critically ill patients, especially those with comorbid conditions such as heart failure or kidney disease. Diuretic resistance, defined as a reduction or loss of response to the diuretic therapy in the presence of adequate dosing, is often a concern when fluid balance goals are unmet. Loop diuretics are highly protein bound; therefore, albumin is essential in delivering the active drug to its site of action. Many intensive care unit (ICU) and intermediate unit patients suffer comorbid conditions that precipitate low serum albumin and concomitantly require loop diuretic therapy. This study at East Carolina University Health Medical Center (ECUHMC) will compare the efficacy of furosemide and bumetanide in patients with hypoalbuminemia.

METHODOLOGY: This study is a single center, retrospective, IRB reviewed and exempt cohort study. Patients were included if they were admitted to an intensive care unit (ICU) at ECUHMC between July 2020- July 2022, ≥ 18 years of age, received IV furosemide or bumetanide continuous infusions for at least 12 hours and had documented hypoalbuminemia (albumin ≤ 3g/dL) on most recent lab result prior to and within 72 hours of loop diuretic infusion initiation, and utilized a urinary catheter. Patients were excluded if receiving intermittent hemodialysis (HD) or continuous renal replacement therapy (CRRT) prior to loop diuretic therapy during admission, End Stage Renal Disease (ESRD) on HD, who received albumin within 72-hours before or 24-hours after starting IV loop diuretic continuous infusion, had missing urine output documentation or collections not quantified, or concomitant diuretic therapy 48 hours before or 24 hours after the start of the loop diuretic infusion. The primary outcome was 24-hour urine output after starting loop diuretic therapy. Secondary outcomes included rates of hypokalemia and hypomagnesemia, use of additional diuretics after the first 24-hours of loop diuretic therapy, net fluid balance during first 24-hours, and need for renal replacement therapy during admission after the first 24-hours of continuous loop diuretic therapy.

RESULTS: A total of 64 patients met the studies inclusion criteria and were included in the final analysis, 45 in the furosemide arm and 19 in the bumetanide arm. For the primary endpoint, the average urine output (ml/kg/hr) was 1.86±1.09 and 1.84±1.23 for furosemide and bumetanide respectively (mean difference 0.01357, 95% CI -0.6067 to 0.6339; p=0.9653). A linear regression was completed detailing that age (95% CI -0.03723 to -0.00058; p=0.043) and weight (95% CI -0.02448 to -0.004682; p=0.0046) had the largest impact on urine output. Degree of hypoalbuminemia does not appear to have a large influence on urine output (95% CI -0.296 to 1.45; p=0.1906). There were no reported events of severe hypokalemia or hypomagnesemia in the first 24-hours of therapy in either arm.

CONCLUSIONS: In patients with hypoalbuminemia, there was no difference in 24-hour urine output in ml/kg/hr between continuous infusion furosemide vs bumetanide.

10:10am – 10:30am | **Evaluation of Antimicrobial Stewardship Discontinuation of Antimicrobial Therapy for Misdiagnosed Urinary Tract Infections in Hospitalized Patients** Athena A

Moderators: Cori Edmonds

Presenters: Jessica Duke

Evaluators: Katheryn Pruitt

TITLE: Evaluation of Antimicrobial Stewardship Discontinuation of Antimicrobial Therapy for Misdiagnosed Urinary Tract Infections in Hospitalized Patients

AUTHORS: Jessica Duke, Cyle White, Brittany White, Jessica Parker, Alicia Stowe

OBJECTIVE: Compare the total duration of antimicrobial therapy in hospitalized patients with misdiagnosed UTIs before and after adoption of an active antimicrobial stewardship intervention

SELF ASSESSMENT QUESTION: AE is an 80-year-old female with moderate dementia who presented to the emergency department from a long-term care facility because of “lethargy”. She is confused but denies cough, fever, abdominal or back pain, and urinary symptoms. Labs and vital signs are stable and within normal limits. Her UA is positive with large leukocyte esterase and pyuria, and a urine culture is pending. The primary team initiates ceftriaxone 1 gram for acute cystitis. What is the best course of action to be taken? A. Recommend changing antibiotics to nitrofurantoin 100 mg twice daily B. De-escalate antibiotic therapy once the urine culture results C. Stop ceftriaxone and monitor off antibiotics D. Escalate antibiotic therapy to meropenem

BACKGROUND: While urinary tract infections (UTI) are among the most common indications for antibiotic use in the hospital, UTIs are often misdiagnosed resulting in unnecessary antibiotic prescribing in patients with asymptomatic bacteriuria (ASB) and pyuria. This practice has been associated with the development of antimicrobial resistance and *Clostridioides difficile* infection. In July 2017, Erlanger Health System revised the antimicrobial stewardship policy to include automatic discontinuation of antibiotics for patients with misdiagnosed UTIs. The aim of this study is to assess the effectiveness of this policy on reducing inappropriate antibiotic days in patients with ASB.

METHODOLOGY: This is a single-center, retrospective, observational review that assessed the effect of a unique antimicrobial stewardship initiative to reduce inappropriate antibiotic use in patients with misdiagnosed UTIs. Adult patients admitted to Erlanger Health System between November 1, 2017 to November 30, 2022 who received an antibiotic order for asymptomatic bacteriuria or pyuria were included. The presence of UTI symptoms were evaluated via comprehensive, manual chart review. Patients with altered mental status without systemic signs or symptoms of infection were included. The post-intervention group consisted of patients with ASB in which antibiotics were discontinued by the antimicrobial stewardship team. The primary endpoint was days of antimicrobial therapy. Secondary outcomes included 30-day hospital readmission, in-hospital mortality, incidence of *Clostridioides difficile* infection within 90 days of antibiotic initiation, hospital length of stay, and growth of multidrug-resistant organisms in subsequent urine cultures.

RESULTS: A total of 306 patients were included (77 pre-intervention and 229 post-intervention). Patients in the post-intervention group received a median of 2 days of antibiotic therapy compared to 6 days in the pre-intervention control ($P<0.0001$). Antibiotics were most commonly initiated in the emergency department and ceftriaxone was the most common agent utilized.

CONCLUSIONS: This antimicrobial stewardship initiative was associated with a clinically significant reduction in inappropriate antibiotics days for misdiagnosed UTIs. This intervention is novel in the fact that most antimicrobial stewardship interventions are passive and based on recommendations or education to providers. The findings of this evaluation highlight that active antimicrobial stewardship interventions reduce inappropriate antimicrobial use.

10:10am – 10:30am | **Evaluation of the microbiology and clinical outcomes of spontaneous bacterial peritonitis within a US academic health system** Athena B

Moderators: Beth Phillips
Presenters: Chris Parish
Evaluators: Sarah Talley

TITLE: Evaluation of the microbiology and clinical outcomes of spontaneous bacterial peritonitis within a US academic health system

AUTHORS: P. Christopher Parish, Alex D. Taylor, Tyler J. Stone, Vera P. Luther, Christopher C. Ohl, James R. Beardsley

OBJECTIVE: Describe common epidemiologic and microbiologic characteristics of spontaneous bacterial peritonitis

SELF ASSESSMENT QUESTION: What risk factors are identified by the 2021 AASLD guidelines for spontaneous bacterial peritonitis with a multidrug resistant organism?

BACKGROUND: Spontaneous bacterial peritonitis (SBP) is an infection that results from bacterial translocation into the peritoneal cavity in patients with compromised gastrointestinal tracts due to cirrhosis. Consensus guidelines for the management of SBP published by the American Association for the Study of Liver Diseases (AASLD) have historically recommended empiric therapy with third-generation cephalosporins for all patients with SBP. However, in the 2021 AASLD guideline update for SBP management, empiric therapy with antipseudomonal beta-lactams including meropenem, in addition to methicillin-resistant Staphylococcus aureus coverage in select patients, is recommended in patients with high likelihood of infection with multi-drug resistant organisms (MDROs). These proposed contexts include patients who are admitted to intensive care units, have nosocomial infections, or were recently hospitalized. Clinical data supporting these recommendations are primarily derived from studies conducted outside the United States in centers whose rates of MDROs may not be generalizable to other practice settings. Therefore, there is a need to validate the necessity of broad-spectrum antimicrobial coverage for SBP at a local institutional level. The primary objective of this study is to elucidate the microbiology and clinical outcomes of SBP infections at Atrium Health Wake Forest Baptist Health to help optimize empiric antimicrobial therapy.

METHODOLOGY: This was a retrospective cohort study conducted at a five-hospital health system. Patients admitted to our health system from 2010 to 2022 with ICD-9/ICD-10 codes for spontaneous bacterial peritonitis and liver disease were identified through an internal data query and analysis tool. Patients were included if they were at least 18 years old, admitted to the hospital, and had SBP confirmed through chart review. Patients were excluded if they had concomitant secondary peritonitis. Our study included all patients with positive peritoneal fluid cultures and a random sample of 60 patients with negative peritoneal fluid cultures. The primary outcome of this study was the percentage of peritoneal fluid cultures with organisms that were non-susceptible to ceftriaxone in patients with positive peritoneal fluid cultures. Secondary outcomes evaluated in the entire population included the percentage of patients whose therapy was modified to expand antimicrobial spectra, in-hospital mortality, hospital re-admission, and patient factors associated with failure of antimicrobial therapy. Results were analyzed using descriptive statistics, Chi-squared test, and two-proportion Z-test as appropriate. A multivariable analysis was used to identify potential factors associated with resistance to ceftriaxone.

RESULTS: 49 isolates were identified in cases of culture-positive SBP. Of these 49 isolates, 8 isolates (16%) were non-susceptible to ceftriaxone. Among culture-positive patients, modifications to antimicrobial therapy were most common in patients who received empiric third generation cephalosporin therapy (14/31; 45%). The most common reason for therapy modification was initial gram stain or species results (1/14; 7%). Statistical analyses of secondary endpoints are forthcoming.

CONCLUSIONS: While results are preliminary, our study indicated that over 80% of the causative organisms in culture-positive SBP at our institution are ceftriaxone susceptible. Data collection is ongoing to determine if empiric therapy broader than ceftriaxone is beneficial. A multivariable analysis is planned to determine risk factors for ceftriaxone non-susceptibility and mortality in SBP patients at our instutition.

10:10am – 10:30am L **Evaluation of Readmission Rates for Patients Receiving Pharmacy Conducted Meds-to-Beds Delivery** Athena J

Moderators: Lucy Crosby

Presenters: Natalie Delozier

Evaluators: Nancy Bailey

TITLE: Evaluation of Readmission Rates for Patients Receiving Pharmacy Conducted Meds-to-Beds Delivery

AUTHORS: Natalie Delozier, Marion Javellana, Nicole Metzger, Carrie Tilton

OBJECTIVE: Describe the readmission rates and financial impact of patients receiving meds-to-beds.

SELF ASSESSMENT QUESTION: What impact does meds-to-beds have on patients and the pharmacy?

BACKGROUND: Meds-to-beds is when a hospital employee delivers prescriptions to the patient before inpatient discharge. Meds-to-beds may have an impact on clinical and financial outcomes including decreased readmission rates and increased revenue for the pharmacy. The purpose of this study is to determine the impact of meds-to-beds on readmission rates.

METHODOLOGY: A retrospective chart review included hospitalized patients who were discharged between 01/01/2022 to 07/30/2022. The two groups evaluated are patients who received meds-to-beds at discharge compared to patients whose prescriptions were sent to an outside pharmacy at discharge. For the primary outcome, we compared 30-day readmission rates between the groups. Secondary outcomes included were 7-day and 60-day readmission rates, percentage of patients with primary diagnosis of myocardial infarction, chronic obstructive pulmonary disease, heart failure, or pneumonia, percentage of patients who received high risk prescription drugs via delivery, and economic measures. High risk prescription drugs included were anticoagulants, insulin, antibiotics, antiepileptics, diuretics, inhalers, antiplatelets, and opioids. Outcomes will be assessed using frequencies and percentages. A two-sample test of proportion will be used to compare readmission rates.

RESULTS: The number of patients readmitted within 30-days of discharge for the meds-to-beds group was 61 (12.7%) patients compared to 108 (28.2%) patients for the non-meds-to-beds group. The total marginal profit from meds-to-beds was $34,850.09.

CONCLUSIONS: Overall meds-to-beds reduced 7-day and 30-day readmissions. Within a 7-month period the pharmacy generated about $35,000 with meds-to-beds prescriptions.

10:10am – 10:30am M **Assessing Compliance with the Institute of Safe Medication Practices (ISMP) Guidelines for Safe Medication Use in the Perioperative Setting** Olympia 2

Moderators: Derek Gaul

Presenters: Lauren Carter

Evaluators: Heather McLeod

TITLE: Assessing Compliance with the Institute of Safe Medication Practices (ISMP) Guidelines for Safe Medication Use in the Perioperative Setting

AUTHORS: Lauren Carter, Omeka Sanders, Megan Freeman

OBJECTIVE: The goal of this study is to examine medication practices in the perioperative and procedural settings at inpatient and outpatient surgery centers across a community hospital system.

SELF ASSESSMENT QUESTION: What practices can be implemented to enhance safe medication use throughout procedural processes?

BACKGROUND: Medication errors are a significant concern across all levels of healthcare due to potential for severe irreversible outcomes. According to the World Health Organization, errors cause death or injury among 1.3 million people annually. Considering the complex, fast-paced environment of the perioperative setting, caution should be implemented to minimize consequences occurring as a result of medication errors. The ISMP Guidelines for Safe Medication Use in the Perioperative and Procedural Settings aim to highlight important factors that should be implemented prior to, during and after a procedure in order to lessen the risk for medication errors.

METHODOLOGY: In this qualitative improvement study, each stage of the perioperative setting will be studied to address best practices for respective areas. During phase one, each surgical practice site will be assessed on compliance with ISMP's newest guidelines utilizing self-reported survey tools. The survey is comprehensive and addresses each element of the published guidelines. In addition, adverse drug events reported in these areas will be collected to assess errors reported. In phase two, all data collected will be analyzed to assess compliance and identify any areas for improvement where applicable. The third phase will utilize outcomes from the surveys and reported adverse drug events to develop ongoing staff competency and education to reach full compliance with best practice guidelines. Ongoing collection of adverse drug events will be assessed prior to and after implementation of any practice changes.

RESULTS: Surveys were collected from sites who completed self-evaluation surveys of current practices at surgical and procedural sites. In the preoperative setting, at least 75% of respondents noted full compliance in regards to the use of medication delivery devices, drug storage and distribution, communication of drug orders and patient information. Opportunities for improvement include implementing the use of technology such as barcode scanning and smart infusion pumps and proper orientation of medications in carts, trays and kits. Intraoperatively, compliance is noted in these areas as well as drug information and drug storage and distribution. In postoperative settings, 19.2% of items concerning patient information were reported as not implemented. This is a result of patient characteristics determining monitoring of ventilation, while oxygenation of all patients is monitored continuously. There were 41 medication errors reported from 12 surgery sites over a six month period. The majority were reported from the preoperative setting and mostly attributed to incomplete medication reconciliations at transitions of care.

CONCLUSIONS: The perioperative setting is unique in regards to certain tasks that are conducted in this setting. Specific measures may be taken to reduce risk of commonly identified errors involving these events. Incident reporting systems are useful in identifying flaws in practice and addressing them to prevent recurrence. The use of an electronic health record and electronic order entry throughout the perioperative system are encouraged to satisfy best practice guidelines regardless of practice site.

10:10am – 10:30am N **Multimodal Pain Control in Headaches Associated with Subarachnoid Hemorrhages** Parthenon 1

Moderators: Bradley Smith
Presenters: Lindsey Fields
Evaluators: Anna Parker

TITLE: Multimodal Pain Control in Headaches Associated with Subarachnoid Hemorrhages
AUTHORS: Lindsey Fields, Leslie Hamilton, Shaun Rowe, Thomas Christianson, Terrance Nowell
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Headaches are a common occurrence in patients post subarachnoid hemorrhage. There are currently no guidelines in place in terms of treatment of headaches associated with aneurysmal subarachnoid hemorrhage (aSAH). In March 2020, a new pathway was implemented to manage headaches associated with (aSAH) at an academic medical center. This change was implemented to utilize a multimodal pain approach to help patients gain better control of their pain post aSAH and to spare opioid use. This project was designed to ensure that the pathway that was implemented appropriately utilized a multimodal pain approach while ensuring patients pain scores were appropriately managed.
METHODOLOGY: The investigational review board approved this project as a retrospective quality improvement pre and post study that utilized patients diagnosed with aneurysmal subarachnoid hemorrhage (aSAH) from January 2017 to December 2019 and compared them with patients who were treated with the aSAH power plan from March 2020 through 2022. Inclusion criteria was patients 18 years and older who were treated for an aSAH. Exclusion criteria for this study was patients being treated for a non-aneurysmal subarachnoid hemorrhage related to trauma. The primary endpoint was to compare morphine milligram equivalent usage pre and post headache pathway implementation on days 1-5 post aSAH. Secondary endpoints were pain scores on days 1-5 and frequency of use of non-power plan analgesics. Primary outcomes will be analyzed using descriptive statistics.
RESULTS: After the implementation of a multimodal pain pathway, on average patients required an average of 14 MME per day for the first five days of their hospital admission. 34% of these patients were discharged on opioids. Their pain scores (scale of 1-10) on days 1-5 were as follows: 4.5, 4.6, 4.6, 4.8, 4.9. As compared to our pre-pathway patients who required an average of 5.3 MME per day for the first five days of their hospital admission. 20% of the pre-pathway patients were discharged on opioids. Their pain scores (scale of 1-10) on days 1-5 were as follows: 3.2, 2.1, 3.0, 3.1, 3.5.
CONCLUSIONS: Based off these results it is not possible to draw conclusions about the efficacy of this multimodal pain pathway due to the differences in the number of patients pre and post pathway along with their different baseline characteristics. In the future, matching and adding more patients to the pre pathway group will be necessary to help form accurate conclusions. Potential Limitations: home opioid use that contributed to increased opioid utilization, subarachnoid hemorrhage severity, intubation status

10:10am – 10:30am O **Optimizing Hypertension Management for Gynecologic Oncology Patients Receiving Bevacizumab** Athena C

Moderators: KIMM FREEMAN
Presenters: Devan Parker
Evaluators: Tanea Womack

TITLE: Optimizing Hypertension Management for Gynecologic Oncology Patients Receiving Bevacizumab
AUTHORS: Devan Parker, Brittney Hale, Allison Bass
OBJECTIVE: To discuss the implementation process of a protocol to combat bevacizumab-induced hypertension in gynecologic oncology patients and compare patient outcomes after implementing the protocol.
SELF ASSESSMENT QUESTION: What is the preferred first line agent to combat bevacizumab-induced hypertension in gynecologic oncology patients according to ACC/AHA guideline recommendations?
BACKGROUND: The purpose of this study is to develop and implement an evidence-based algorithm to facilitate management of hypertension in patients being treated with bevacizumab at a large community hospital's outpatient gynecologic oncology clinic. The goal of this protocol is to decrease the adverse drug reaction associated with bevacizumab therapy, hypertension, and increase patient safety.
METHODOLOGY: A retrospective chart review was conducted and evidence was reviewed to evaluate current practices used for adult patients receiving treatment with bevacizumab in the hospital's outpatient gynecologic oncology clinic. This is adult patients who have a gynecologic malignancy (ovarian, cervical, uterine, vaginal, etc.) being treated with bevacizumab by the outpatient clinic. An evidence-based algorithm was designed and implemented after discussion with a multi-disciplinary team. Post-implementation data collection is ongoing to assess areas of improvement for the bevacizumab-induced hypertension treatment algorithm in this patient population.
RESULTS: Twenty-three patients who received a total of 245 doses of bevacizumab were included in the retrospective chart review. Eleven patients (48%) had a history of hypertension before starting bevacizumab therapy. Nine patients (39%) did not have an abnormal blood pressure value according to the National Cancer Institute's Common Terminology Criteria for Adverse Events (CTCAE) grading scale prior to starting therapy. Twelve patients (52%) had grades 1 or 2 hypertension, and 2 patients (9%) had grade 3 hypertension before starting therapy.
CONCLUSIONS: In progress

10:30am – 10:50am **Empty** Parthenon 2

Moderators: Camille Robinette
Evaluators: Abigayle Campbell

10:30am – 10:50am A **Evaluate Clinical Rules Engine Based Software and Current Workflow in Order to Increase Adherence and Documentation of Clinical Activities** Athena I

Moderators: Kristen Turner

Presenters: Aaron Smith

Evaluators: Taylor Wells

TITLE: Evaluate Clinical Rules Engine Based Software and Current Workflow in Order to Increase Adherence and Documentation of Clinical Activities

AUTHORS: Aaron Smith; Mary Dang

OBJECTIVE: To discuss the findings of our data review, along with the changes implemented to address these changes.

SELF ASSESSMENT QUESTION: What are the necessary steps required to implement a change in process that improves pharmacist workflow when using a clinical tool, allowing improved patient care by increasing pharmacist ability to find and address adverse events?

BACKGROUND: Sentri-7™, a clinical engine software program, provides a unique way for HHHS' (Huntsville Hospital Health System) pharmacists to evaluate and intervene on rule based clinical alerts on identified patients, document interventions, and follow-up on patients' medications and statuses. By providing this tool, patient safety and outcomes may be improved as adverse events and medication errors could be prevented. Due to the sheer volume of patients and clinical engine rules and subsequent alert triggers, the overwhelming workload could contribute to alert fatigue and the inability for pharmacists to address all alerts triggered. The purpose is to review HHHS Main data of Sentri-7™ in order to determine how we can be more effective and proficient with the utilization of the clinical alerts and improve documentation numbers, while decreasing the time when an alert is addressed by pharmacists. In addition, the clinical rules engine based software will be streamlined, based on data evaluation and input. Overall, there is a need to decrease certain clinical alerts that may no longer be necessary, thus increasing the percentage of activities that are addressed and decreasing the time when the alert is triggered and resolved. In addition, a re-education and staff development with competencies will be implemented.

METHODOLOGY: Using Sentri-7™, an evaluation of the data and clinical alert triggers will be performed in order to determine the clinical rules that may need to be adjusted or deleted. In addition, the evaluation will help determine the rationale of why the clinical activities are being addressed and completed at a low percentage and why the time from alert trigger to being addressed is delayed. After the evaluation and analysis of the data, adjustment to the parameters selected will be implemented. This will include an evaluation of workflow and adjustments to improve compliance. After education and implementation of any changes made, a review of the data post-implementation will be conducted.

RESULTS: After two weeks, median time to completion and addherance had not chnaged after a rule chage had been implemented.

CONCLUSIONS: More time and data is required to see the full effect of changes in rule function.

10:30am – 10:50am B **Impact of Telephone-Based Pharmacist-Led Smoking Cessation Service in A Pulmonology Clinic** Olympia 1

Moderators: Grant Teague

Presenters: Rachel Shelley

Evaluators: Alexandre Ivanov

TITLE: Impact of Telephone-Based Pharmacist-Led Smoking Cessation Service in A Pulmonology Clinic

AUTHORS: Rachel Shelley, Shelby Koen, Peter Koval, Devki Gajera, Praveen Mannam

OBJECTIVE: Evaluate the quit rates of patients in a pulmonology clinic who use a pharmacist-led smoking cessation telephone service.

SELF ASSESSMENT QUESTION: What amount of adult smokers who tried to quit did not use evidence-based therapy?

BACKGROUND: Tobacco use is the leading cause of preventable death in the world and costs North Carolina residents $3.81 billion annually in health care costs. The American Thoracic Society (ATS) recommends starting pharmacotherapy for all patients currently using tobacco. More than two-thirds of adult smokers who tried to quit did not use evidence-based therapy, decreasing the chance of successfully quitting. Pharmacists can provide smoking cessation telephone-based services aiding in motivational interviewing, pharmacotherapy initiation, and follow-up to help improve rates of cessation success. This quality improvement initiative will evaluate the quit rates of patients who engage in a pharmacist-led smoking cessation telephone service.

METHODOLOGY: This is a single-center, IRB-reviewed and determined exempt, prospective, pre-post analysis. Patients included are active in a pulmonology clinic, at least 18 years old, report smoking at least 10 cigarettes per day, and are interested in quitting within the next thirty days. Patients are excluded if they are currently pregnant, have a diagnosis of schizophrenia, bipolar disorder, or major depression, a recent myocardial infarction or coronary bypass grafting in the last 2 months prior to the service, or severe/worsening angina. Referrals for the program are completed by the patient's pulmonologist during a Pulmonary Care Clinic encounter. The initial call included a screening to exclude ineligible patients, obtain an extensive history of the patient's tobacco history, and past experiences with smoking cessation agents. The pharmacist will recommend a pharmacotherapy agent most appropriate for that patient. Patients will be called at least every four weeks, until they have been tobacco free for at least three months. A progress note detailing the patient's current tobacco use, trigger assessment, evaluation for side effects, and treatment plan will be documented in the patient's electronic health record. The pulmonologist will be sent the smoking cessation visit note and is able to contact the pharmacist as needed. The primary objective is the proportion of patients who are tobacco free at 3 months after the first phone call. Secondary objectives include proportion of patients that reduced tobacco use by 50% at 3 months, number of patients with prescribed pharmacotherapy, number of patients lost to follow-up, adverse effects reported, and duration of telephone visit.

RESULTS: Of the 31 patients referred, 18 patients were enrolled in the telephone service. Of those 18 patients, 28% were tobacco free at 3 months (*P* 0.0625) and 50% reduced tobacco by at least fifty percent at 3 months (*P* 0.0039). The most common pharmacotherapy prescribed was nicotine patches followed by varenicline and the most common adverse reaction reported was skin irritation. However, no patients had to discontinue treatment due to adverse effects. Initial telephone visits lasted an average of 23 minutes and follow up visits lasted an average of 11 minutes.

CONCLUSIONS: Patients who utilized a telephone-based smoking cessation service significantly decreased tobacco by 50% at 3 months. It is important to note that this service utilized both pharmacotherapy and behavioral interventions. Implementing this service to other clinics across the health system would improve the number of patients offered evidence-based approaches to smoking cessation.

10:30am – 10:50am Y **Assessment of Asthma Control and Socioeconomic Factors in Adult Outpatients Using Albuterol Monotherapy** Athena D

Moderators: Serina Tart
Presenters: Colin Cabelka
Evaluators: Sarah Berardi

TITLE: Assessment of Asthma Control and Socioeconomic Factors in Adult Outpatients Using Albuterol Monotherapy

AUTHORS: Colin Cabelka, Jonathan Harward, Charles Herring, Katie Trotta

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Short-acting beta-agonist (SABA) therapy using inhaled albuterol as needed has been a mainstay of asthma treatment since its FDA approval in 1982. The 2019 Global Initiative for Asthma (GINA) guidelines removed SABA monotherapy from all adult asthma treatment stages due to increasing evidence of excess exacerbation risk and reduced asthma control as compared to combination therapy utilizing an inhaled corticosteroid (ICS) with formoterol or a SABA. Risks for these adverse events increase with increased albuterol use. Despite these risks, albuterol monotherapy remains a common asthma treatment choice. Albuterol's relatively inexpensive cash price, quick relief, and status as an emergency reliever may influence prescribing practices. The purpose of this study was to investigate asthma control, patient demographics, and barriers to care in this population.

METHODOLOGY: The primary objective of this prospective, single center cohort study was to describe the level of asthma control in adults using albuterol monotherapy for the treatment of asthma. Secondary objectives were to describe the number of inhalers dispensed in 2022, patient demographics, and patient preferences between participants with different asthma control groups. Prescription records from a mid-size independent community pharmacy in Raleigh, NC were screened for English-speaking subjects > 18 years of age who were dispensed an albuterol inhaler between Nov 1st to Dec 31st, 2022. Subjects reporting using any maintenance or combination inhalers during the study period or reporting any lung condition besides asthma were excluded. Eligible subjects were contacted by a pharmacist via telephone and sent a survey including the GINA Asthma Control Assessment, questions regarding healthcare cost and access, and questions about their experience with asthma inhalers. Subjects were informed of their level of asthma control (well-controlled, partially controlled, and uncontrolled). For the purposes of this study's analysis, partially controlled and uncontrolled patients were combined (labeled as not well-controlled). Those not well-controlled were asked if they wanted a prescriber or pharmacist consultation. Descriptive statistics were used to describe patient demographics, patient preferences, and number of albuterol inhalers dispensed.

RESULTS: Of the 63 subjects identified as potential subjects and contacted, 27 responded to the pharmacist call and survey. A total of 23 subjects were included (4 excluded due to a reported COPD diagnosis). Of these, 9 were well-controlled, 6 partially controlled, and 8 uncontrolled. Partially controlled and uncontrolled were combined for secondary analysis for a total of 14 patients in this group. More positive responses to barriers to care questions were reported for the not well-controlled group compared to the well-controlled group (50% and 11% respectively). Paying cash price (29% vs. 11%) and having Medicaid (29% vs. 0%) was reported in the groups not well-controlled and well-controlled (respectively). All five patients utilizing cash pricing had only used albuterol and 4/5 were not well-controlled. More patients in the not well-controlled group were dispensed 3 or more albuterol inhalers in 2022 than the well-controlled group (50% vs. 22%). Finally, of the 14 patients in the not well-controlled group, 3 declined consultation, 6 elected for pharmacist outreach to a provider, and 5 discussed their asthma with the pharmacist.

CONCLUSIONS: Consistent with previous studies on inhaler overuse and socioeconomic status in patients with asthma, this study demonstrated potential factors (insurance status, patient access, and number of inhalers dispensed over a year) which distinguish patients with asthma that is not well-controlled. This study sheds light on the unique position of the community pharmacist who could implement the brief GINA asthma control survey along with dispensing records to potentially identify these patients for whom intervention would improve treatment outcomes.

10:30am – 10:50am R **Efficacy and Safety of an Electronic Glycemic Management System in the Treatment of Diabetic Ketoacidosis (DKA)** Athena G

Moderators: Erica Merritt

Presenters: Ashley Crisler

Evaluators: Courtney Mallon

TITLE: Efficacy and Safety of an Electronic Glycemic Management System in the Treatment of Diabetic Ketoacidosis (DKA)

AUTHORS: Ashley Crisler, Joshua Chestnutt, Ryan Crossman, Ann Marie Blair, Eric Tsai, Amy Spurlock

OBJECTIVE: Compare the time to resolution of DKA with the use of GlucommanderTM, an electronic glycemic management system, versus the use of a paper-based protocol in the titration of continuous IV insulin infusion for the management of DKA.

SELF ASSESSMENT QUESTION: Does the use of GlucommanderTM to titrate IV insulin reduce the time to DKA resolution?

BACKGROUND: The pathophysiologic process in the development of DKA emerges from the deficiency of insulin and/or peripheral insulin resistance. American Diabetes Association recommendation for the management of DKA involves administration of continuous IV insulin infusion titrated to a goal blood glucose aimed to treat hyperglycemia and resolve anion gap acidosis. GlucommanderTM is an electronic glycemic management system that provides an algorithm-based titration of continuous IV insulin infusion. The objective of this study was to compare outcomes with the use of GlucommanderTM, an electronic glycemic management system, versus the use of a paper-based protocol in the titration of IV insulin for the management of DKA.

METHODOLOGY: A retrospective chart review was conducted during two independent time periods of adult patients admitted to the study facility treated with continuous IV insulin infusion for the management of DKA. Patients were excluded if they were pregnant or incarcerated, had euglycemic DKA, or were administered IV insulin for any indication other than DKA. A paper-based protocol was utilized to titrate insulin during the pre-implementation phase which included data from October 2021-March 2022. GlucommanderTM was utilized to titrate IV insulin during the post-implementation phase which included data from July-December 2022. The primary objective was to compare the time from IV insulin initiation to resolution of DKA with the use of GlucommanderTM versus a paper-based protocol. Secondary outcomes include insulin transition failure, ICU length of stay, and incidence of hypoglycemia.

RESULTS: In Progress

CONCLUSIONS: In Progress

10:30am – 10:50am R **The Impact of Melatonin Dose on Intensive Care Unit Delirium** Athena H

Moderators: Dustin Bryan
Presenters: Stephen Deatrick
Evaluators: Stephanie Smith

TITLE: The Impact of Melatonin Dose on Intensive Care Unit Delirium
AUTHORS: Stephen Deatrick, Tonya Derrick, Taylor Nickens
OBJECTIVE: To determine the effect of melatonin on intensive care unit delirium at various dosages
SELF ASSESSMENT QUESTION: Does a higher or lower dose of melatonin have a greater impact on the occurrence of delirium?

BACKGROUND: Delirium is a disturbance in consciousness and cognition that can develop within a few hours to days. Symptoms may fluctuate throughout the day, but tend to be worse during the night, and may include: behavior changes, emotional disturbances, and cognitive impairment. The prevalence of delirium in intensive care unit (ICU) patients is roughly 32%. In ventilated patients, the prevalence of delirium ranges from 45%-87%. Studies have shown that the administration of melatonin can lead to a decreased development of delirium in ICU patients. The purpose of this study is to compare the impact on ICU delirium between different doses of melatonin.

METHODOLOGY: Retrospective chart review of adult patients in the medical ICU experiencing delirium at Ascension Saint Thomas Hospital West between August 1, 2019 to August 31, 2022. Up to 200 patients total were included. Patients included were at least 18 years of age, received scheduled melatonin for a minimum of 48 hours, and were in the medical ICU. Patients were excluded if they received scheduled melatonin prior to admission, received as needed melatonin, initiated on melatonin greater than 72 hours upon admission to the medical ICU, had a history of hepatic encephalopathy or end-stage liver disease, had a diagnosis of dementia or other neurological deficits not allowing them to complete the confusion assessment methods for the intensive care unit (CAM-ICU) evaluations, or were pregnant, breastfeeding, or incarcerated. The primary outcome for this study is impact on delirium assessed through CAM-ICU scores. Secondary outcomes include ICU length of stay, hospital length of stay, and mortality.
RESULTS: Two hundred patients were included in the study. Patients were placed into two groups based on melatonin dose. There were 57 patients in the 6mg group. There was no significant difference in CAM-ICU outcomes between differing doses of melatonin. A majority of patients who initially presented CAM-ICU negative remained CAM-ICU negative regardless of melatonin dose. Secondary outcomes were all similar between the two groups, except the >6mg group had a significantly longer median ICU length of stay. However, at baseline this group also had a significantly larger amount of COVID-19 positive patients, which could have impacted ICU length of stay.

CONCLUSIONS: In this study, we observed that a specific melatonin dose does not have an alternative effect on delirium outcomes. Further studies on the effect of early initiation of melatonin may be warranted as a majority of patients who presented without delirium continued to present CAM-ICU negative.

10:30am – 10:50am | **A Pharmacist’s Impact on Improving Stewardship of Intravenous Antimicrobial Prescribing at Discharge** Athena B

Moderators: Beth Phillips
Presenters: Lauren Hayes
Evaluators: Sarah Talley

TITLE: A Pharmacist’s Impact on Improving Stewardship of Intravenous Antimicrobial Prescribing at Discharge
AUTHORS: Lauren Hayes, Josh Pruitt
OBJECTIVE: Evaluate a pharmacist’s impact on improving stewardship of intravenous antimicrobial prescribing at discharge.
SELF ASSESSMENT QUESTION: True or False: The guideline recommendation duration of antibiotic use for acute cystitis is 7-10 days?
BACKGROUND: Antimicrobial stewardship efforts are primarily focused around inpatient or outpatient primary care prescribing rather than prescribing at hospital discharge. More than 1 in 8 hospitalized patients are discharged on antimicrobials. Despite this, less than 1 in 5 hospitals monitor antibiotic use at discharge. Pharmacists can help mitigate this gap by ensuring patients are discharged on appropriate antimicrobials.
METHODOLOGY: A retrospective cohort study was conducted evaluating discharge antimicrobial prescriptions over a six-month period. A pharmacy consult was implemented to identify patients with discharge parenteral antimicrobial prescriptions. Hospital providers were educated on the consult prior to its release. Eligible patients included those prescribed parenteral antimicrobials at discharge from a rural community hospital. Data was evaluated three months prior and post implementation of consult. Discharge prescriptions were assessed for appropriate antibiotic selection and duration based on indication and culture results.
RESULTS: A total of 273 patients were identified for potential inclusion in the study. This was narrowed down to a total of 85 patients who met the inclusion criteria, with 48 patients in the pre-intervention group and 37 patients in the post-intervention group. For the pre-intervention group, 25 (52%) patients had appropriate antimicrobial prescribing at discharge. For the post-intervention group, 21 (57%) patients had appropriate antimicrobial prescribing at discharge. The pharmacy consult was used a total of 8 times over the three month post-intervention period. 7 of the 8 pharmacist recommendations were accepted by the ordering physician, resulting in an 87.5% success rate of the consult.
CONCLUSIONS: When given the opportunity to review antimicrobials at discharge, pharmacists can have a positive impact. One of the biggest challenges facing successful implementation of this initiative is finding the best way to incorporate it into current provider practices. Our study evaluated the use of a pharmacy consult, which may not be the most effective option for providers as it required additional orders and clicks. Further studies with increased provider participation are needed to appropriately assess the full impact a pharmacist can have on antimicrobial discharge prescriptions. This study identified a clear opportunity to improve antimicrobial prescribing at hospital discharge.

10:30am – 10:50am | **Impact of Antibiotic Stewardship Intervention on Antibiotic Treatment for Patients with Intestinal Perforations** Athena A

Moderators: Cori Edmonds

Presenters: Caroline Childs

Evaluators: Katheryn Pruitt

TITLE: Impact of Antibiotic Stewardship Intervention on Antibiotic Treatment for Patients with Intestinal Perforations

AUTHORS: Caroline Childs; Morgan Cunningham; Dustin Zeigler; Jayashree Ravishankar; Brandon Beers

OBJECTIVE: The purpose of this study was to determine if an antibiotic stewardship team intervention can safely shorten antibiotic length of therapy for IAI after source control was achieved.

SELF ASSESSMENT QUESTION: Will the implementation of an antibiotic stewardship team intervention safely shorten antibiotic length of therapy for IAI?

BACKGROUND: The 2010 Intraabdominal Infection (IAI) IDSA Guidelines recommend urgent intervention to obtain source control followed by 4-7 days of antibiotic therapy for complicated IAI.1 The Trial of Short-Course Antimicrobial Therapy for Intraabdominal Infection (STOP-IT) compared patients with complicated IAI and adequate source control who received antibiotics for 2 days after resolution of fever, leukocytosis, and ileus versus a fixed 4-day antibiotic course.2 No significant difference was found in surgical-site infections, recurrent IAI, or death within 30 days.2 Surat et al. conducted a single-center retrospective review of antimicrobial stewardship measures on surgeons' antibiotic prescribing behaviors for IAI and found significant reductions in total antibiotic days.3 At Alamance Regional Medical Center, post-operative antibiotic length of therapy was previously at the discretion of the surgeon and has not been a focus of stewardship intervention

METHODOLOGY: Single-center, IRB-reviewed (determined exempt), pre- and post-intervention study conducted at Alamance Regional Medical Center. Patients were included in this study if they were at least 18 years old with intestinal perforation with or without abscess. Appropriate source control was defined as either interventional radiology and/or surgical interventions along with resolution of leukocytosis, fever, and ileus. Exclusion criteria included lack of source control, other source(s) of infection requiring antibiotic therapy, total parenteral nutrition, immunocompromised, or comfort care status. Chart review was conducted retrospectively over 6 months pre-intervention and prospectively for 6 months post-intervention. The primary objective was to compare the length of antibiotic therapy before and after implementation of an antibiotic stewardship team intervention. Secondary objectives included the number of cases with stewardship intervention and the recommendation provided, the percentage of recommendations accepted, and 30-day readmission rate for infection. Descriptive statistics were utilized with means and standard deviations or medians and interquartile ranges for nonparametric data.

RESULTS: A total of 13 patients were included in the pre-intervention population and 6 patients in the post-intervention population. Median antibiotic length of therapy after source control was 10 days (IQR 5-12) for pre-intervention vs 8 days (IQR 6-12) post-intervention. The mean length of therapy pre-intervention was 9-days (SD 3.72) and post-intervention was 9-days (SD 3.58). The median total days of antibiotics was 11-days (IQR 6-14) pre-intervention and 9 days (IQR 7-14) post-intervention. Overall, 50% of antibiotics were adjusted in response to culture results in the pre-intervention and 40% in post intervention. Piperacillin/tazobactam was utilized in 12/16 (75%) cases in pre-intervention vs. 1/4 (25%) cases in post-intervention groups. Otherwise, a combination of cefepime and metronidazole was utilized.

CONCLUSIONS: Antibiotic duration of therapy trended toward improvement after implementation of antibiotic stewardship team intervention. These results are limited by the small sample size, extensive exclusion criteria, and delay in timing of patient admission to stewardship intervention. Overall, the subjective management of these infections depended on several factors which include treatment of a recurrent or initial IAI and perceived clinical response to therapy. The collaboration of infectious disease stewardship with surgeons seems to provide a benefit in the management of complicated IAI.

10:30am – 10:50am L **Safety and Efficacy of Once-daily versus Twice-daily Insulin Glargine in Acutely Ill Medical Patients at an Academic Medical Center** Athena J

Moderators: Lucy Crosby

Presenters: Amanda Sweat

Evaluators: Nancy Bailey

TITLE: Safety and Efficacy of Once-daily versus Twice-daily Insulin Glargine in Acutely Ill Medical Patients at an Academic Medical Center

AUTHORS: Amanda Sweat, Robert S. Helmer

OBJECTIVE: To be included in slide set.

SELF ASSESSMENT QUESTION: To be included in slide set.

BACKGROUND: Long-acting insulin such as insulin glargine is often used for the management of hyperglycemia in hemodynamically stable hospitalized patients. Duration of insulin glargine is generally 24 hours or longer, and it is traditionally administered once a day. Twice-daily dosing of insulin glargine has been utilized in clinical practice; however, data supporting its use in hospitalized patients is limited. The objectives of this study are to evaluate the safety and efficacy of once-daily versus twice-daily insulin glargine in acutely ill medical patients and to identify patient characteristics associated with once-daily versus twice-daily dosing.

METHODOLOGY: This was a single center, retrospective cohort study that included patients admitted between December 15, 2020 and October 31, 2021. Key efficacy outcomes between cohorts included mean blood glucose, percentage of time spent in 140-180 mg/dL range, and average daily sliding scale insulin use. Key safety outcomes included incidence of hypoglycemia and severe hypoglycemia. Patients who were 18 years or older, had a diagnosis of type 1 or 2 diabetes mellitus, and received at least 20 units/day of insulin glargine for at least 48 hours during the study period were included. Patients were excluded if they required intensive care unit care, were admitted to a surgical team, were receiving total parenteral nutrition or continuous tube feeds, were admitted for diabetic ketoacidosis, received an insulin drip, and/or had insulin glargine held for at least 48 hours during the study period. Study cohorts (once-daily or twice-daily dosing) were assessed until discharge or for up to 10 days from inclusion. Pertinent patient characteristics that were collected included serum creatinine, glomerular filtration rate, A1c within 3 months of admission, home long-acting and pre-prandial insulin use/dose, inpatient systemic steroid use, scheduled bolus insulin, sliding scale insulin use, and total daily dose of insulin glargine. Statistical analysis was done using student t-test for continuous data and chi-square test for categorical data.

RESULTS: A total of 41 patients (once-daily = 26; twice-daily = 15) were included in the analysis. Age, sex, race, serum creatinine, A1c, and home glargine use were similar between groups. The baseline glomerular filtration rate was significantly lower (59.5 mL/min/1.73m^2 vs. 68.7 mL/min/1.73m^2, p=0.049) and there were significantly more patients with CKD (10 patients vs. 1 patient, p=0.049) in the once-daily group. There were significantly more patients on inpatient systemic steroids (2 patients vs. 6 patients, p=0.035) and the total daily dose of insulin glargine was significantly higher (29.5 units vs. 63.1 units, p=0.001) in the twice-daily group. No difference was observed in the mean blood glucose and percentage of time spent in 140-180 mg/dL range. There was significantly more sliding scale insulin use (8.3 units vs. 16.6 units, p=0.035) in the twice-daily group. Additionally, the twice-daily group did not experience an increased incidence of hypoglycemia (4 episodes vs. 1 episode, p=0.636) and there were no instances of severe hypoglycemia.

CONCLUSIONS: Despite receiving more daily insulin there were no differences in safety or efficacy between once-daily and twice-daily dosing in this patient sample. Patients receiving higher insulin glargine doses or systemic steroids tended to receive twice-daily dosing more often. Patients with CKD and decreased kidney function may not require twice-daily dosing.

10:30am – 10:50am M **EXPANDING PHARMACY TECHNICIAN ROLES IN THE INPATIENT SETTING: DECENTRALIZATION OF PHARMACY TECHNICIANS INTO SUPPORTIVE ROLES FOR CLINICAL PHARMACISTS** Olympia 2

Moderators: Derek Gaul

Presenters: Shannah Heffner

Evaluators: Heather McLeod

TITLE: EXPANDING PHARMACY TECHNICIAN ROLES IN THE INPATIENT SETTING: DECENTRALIZATION OF PHARMACY TECHNICIANS INTO SUPPORTIVE ROLES FOR CLINICAL PHARMACISTS

AUTHORS: Shannah Heffner, Connie Street, Jill McHugh, Kristin H. Eginger

OBJECTIVE: Describe the outcomes of decentralizing a pharmacy technician with a clinical pharmacist on patient care units within the hospital setting.

SELF ASSESSMENT QUESTION: What activities can a decentralized pharmacy technician participate in to assist clinical pharmacists on patient care units within the hospital setting?

BACKGROUND: As the role of pharmacists continues to evolve, inpatient pharmacists are expanding their roles to take on more clinical responsibilities. Clinical pharmacists often spend a considerable amount of time attending to operational and distributive responsibilities thereby decreasing the time dedicated to clinical interventions. Pharmacy technicians are capable of performing these routine and operational responsibilities, which would further integrate pharmacy technicians into the interdisciplinary team. The purpose of this study is to determine the impact of integrating pharmacy technicians into the workflow with clinical pharmacists on patient care units on the medication distribution process within the hospital setting.

METHODOLOGY: During this IRB-approved study, a pharmacy technician was scheduled to be present on an intermediate care unit with a clinical pharmacist for a four-week period. The pharmacy technician provided services including delivering cart-fill to the unit, maintaining medication bins/medication rooms, restocking automated dispensing cabinets, delivering patient-specific narcotics to nurses, transferring medications to the new unit when patients transfer off the unit, providing unit-to-pharmacy home medication storage services, completing medication reconciliation services for any patient admitted without a complete list, completing unit inspections, completing optimization/supply chain management tasks as assigned, and participating in IV to PO program under the direct supervision of a unit-based clinical pharmacist. Data were collected from the electronic medical record, medication room audits, compliance with medication storage requirements, medication history completion rates, and nursing staff surveys to determine the number of re-dispensed medications and nursing satisfaction with pharmacy services.

RESULTS: In progress

CONCLUSIONS: In progress

10:30am – 10:50am O **Optimal Length of Bisphosphonate Therapy in the Oncologic Setting** Athena C

Moderators: KIMM FREEMAN

Presenters: Colton Troxler

Evaluators: Tanea Womack

TITLE: Optimal Length of Bisphosphonate Therapy in the Oncologic Setting

AUTHORS: Colton Troxler, Alexia Greene, Thom Morris

OBJECTIVE: Determine the optimal length of bisphosphonate therapy in preventing or minimizing the incidence of medication-related osteonecrosis of the jaw (ONJ).

SELF ASSESSMENT QUESTION: See presentation

BACKGROUND: Bisphosphonate therapy involves highly efficient antiresorptive drugs used to treat diseases with increased osteoclast activity, such as cancer-related conditions, osteoporosis, etc. The widespread use of bisphosphonates led to the increased recognition of possible association with the, although rare, incidence of osteonecrosis of the jaw. Osteonecrosis develops in the jaw area due to this bone having a higher remodeling rate than others, making it more prone to bisphosphonate effects.

METHODOLOGY: Eligible participants were identified via retrospective chart reviews using electronic medical records from July 2017 through August 2022. Patients included were ≥18 years old with a confirmed cancer diagnosis requiring treatment with an intravenous formulation of either zoledronic acid or denosumab. The defining characteristic of osteonecrosis of the jaw utilized for data inclusion was to include those who experienced exposed bone in the maxillofacial region present for a minimum of 8 weeks. Exclusion criteria included patients with prior dental extractions or previous trauma to the jaw area that exposed part of the bone, those with history of radiation to the maxillofacial region, and those who were treated with both zoledronic acid and denosumab. Secondary objectives that were assessed include evaluating average length of bisphosphonate therapies, time-to-onset of ONJ event/diagnosis, severity of osteonecrosis event, and assessment of any dental interventions made as a result of the event. Patient information was identified by using the associated International Classification of Diseases (ICD) codes for any classification of documented osteonecrosis of the jaw (i.e., osteonecrosis of mandible, osteonecrosis due to medication, etc.) All data collected was de-identified and only the primary investigators have access to the data via a password encrypted file.

RESULTS: A total of 907 patient charts were reviewed. 15 out of 384 (3.9%) patients within the zoledronic acid treatment group and 11 out of 523 (2.1%) patients within the denosumab group experienced confirmed ONJ, for a total of 26 patients included in the IRB-approved study. Patient characteristics evaluated to show the differences in treatment groups included age, gender, race, prescribing provider, cancer type with associated stage, and any additional identifiable risk factors. The mean length of therapy in months was 18.3 (SD ± 8.8) for the zoledronic acid group and 19.6 (SD ± 9.6) for the denosumab group. The time-to-onset of ONJ event and/or diagnosis was identified as 17.4 months (SD ± 7.6) for the zoledronic acid treatment arm and 18.9 months (SD ± 9.3) for the denosumab treatment arm. Severities of ONJ events were assessed and the majority of patients in the zoledronic acid group (9/15, 60%) were categorized with Stage 2 ONJ events, while the majority of patients within the denosumab group (7/11, 63.6%) were categorized with Stage 1 events. The incidence of dental interventions was similar across treatment arms with 8 out 15 (53.3%) requiring dental interventions in the zoledronic acid group and 6 out 11 (54.5%) requiring dental interventions in the denosumab group.

CONCLUSIONS: Data suggests that there are no significant differences in the overall incidence of osteonecrosis of the jaw between the two treatment groups. The length of therapies does align with prior research that suggests the incidence of ONJ increases after two to three years of bisphosphonate therapy. Larger sample sizes are needed for definitive conclusions on a true optimized length of bisphosphonate therapy, but for the purpose of instituting an intervention to decrease the incidence of medication-related osteonecrosis of the jaw, this data suggests that 2 years is an appropriate recommended length of bisphosphonate therapy.

10:30am – 10:50am 1 **Comparing toxicities with standard and reduced dose melphalan in autologous stem cell rescue patients with multiple myeloma** Parthenon 1

Moderators: Bradley Smith
Presenters: Katie Rogers
Evaluators: Anna Parker

TITLE: Comparing toxicities with standard and reduced dose melphalan in autologous stem cell rescue patients with multiple myeloma
AUTHORS: Katherine Rogers, Ryan Archer, David Eplin, Kendall Shultes
OBJECTIVE: To compare toxicity of MEL140 in patients > 65 to MEL200 in patients < 65.
SELF ASSESSMENT QUESTION: (T/F) MEL200 for patients >65 years old is associated with significantly more diarrhea than patients 65 treated with MEL140. The primary objectives were to evaluate treatment related mortality (TRM), time to neutrophil engraftment (TTE), and toxicities including febrile neutropenia, diarrhea, mucositis, infection, and intensive care unit (ICU) transfers for patients 65 years of age receiving MEL140. Data collection occurred via manual chart review and the transplant program data repository. Data collected included sex, ethnicity, age, comorbidities, disease state and transplant data including number of prior regimens, diagnosis date, transplant date, time from diagnosis to ASCR, disease status at transplant, ICU transfer dates, absolute neutrophil count (ANC), temperature, number of stools per day, mucositis, positive microbiological cultures, and time to engraftment. Chi-Squared tests were used to compare the toxicities, TTE, and TRM between the two groups.
RESULTS: A total of 222 patients were included in the study, with 114 patients age < 65 treated with MEL200 and 108 patients age >65 treated with MEL140. No patients experienced TRM in either arm. The median TTE was 11 days in each arm, with a range of 9-10 days in the MEL200 arm and 10-17 days in the MEL140 arm. Patients in the MEL200 arm had significantly increased rates of all grade mucositis than patients in the MEL140 arm (26.8% v. 9.3% p65 treated with MEL140. Patients in both arms had similar rates of mucositis, febrile neutropenia, and infection. Overall, patients in both arms tolerated melphalan dosing at similar rates with very few significant adverse reactions.

11:00am – 11:20am B **Analysis of Factors Affecting Nonadherence to Guideline-Directed Medical Therapy in Veterans with Uncontrolled Hypertension** Olympia 1

Moderators: Tasha Woodall
Presenters: Megan Carter
Evaluators: Nathaniel Swanson

TITLE: Analysis of Factors Affecting Nonadherence to Guideline-Directed Medical Therapy in Veterans with Uncontrolled Hypertension
AUTHORS: Megan Carter, Courtney Gamston, Kimberly Braxton-Lloyd, Garrett Aikens, Pamela Stamm
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Hypertension affects nearly half of adults in the United States and leads to significant health consequences if left untreated. Approximately 70% of Americans with hypertension are not achieving blood pressure goals, and 45% are not on appropriate guideline-directed therapies. As of 2011, hypertension was the leading chronic disease in the VA, affecting more than 37% of Veterans. The Auburn University Population Health Clinic works with Veteran patients of a rural VA clinic to provide telehealth services to patients with uncontrolled hypertension (BP >140/90 mmHg). This study aims to define the proportion of veterans with uncontrolled blood pressure who are not currently on guideline-directed medical therapy (GDMT), the underlying causes, and appropriateness of current therapy.
METHODOLOGY: This retrospective service evaluation is approved by the Institutional Review Board. Patients who have at least one recorded blood pressure >140/90 mmHg in the last 12 months and not currently reaching blood pressure goals were identified by VA population health dashboards. Medication histories were reviewed for presence of GDMT and enumeration of the proportion of patients who meet this standard. In this study, the presence of GDMT includes current first-line medications or evidence of trial of first-line medications with documentation of reasons for discontinuation. For those patients not currently on GDMT, factors that impact individual patient therapy were identified. Factors included cost of medications, adverse effects, complexity of dosing regimen, comorbid conditions, patient perception, and other factors impacting adherence.
RESULTS: In progress
CONCLUSIONS: In progress

11:00am – 11:20am B **Evaluating the Impact of Multi-Step Order Transmittal in an Inflammatory Bowel Disease Clinic**

Moderators: Ryan Dushak Olympia 2

Presenters: Caroline Hammond

Evaluators: Stephanie Hopkins

TITLE: Evaluating the Impact of Multi-Step Order Transmittal in an Inflammatory Bowel Disease Clinic

AUTHORS: Caroline Hammond, PharmD; Alyssa Stewart, PharmD, BCACP, CSP, CPP; Kathy Bricker, PharmD, BCPS, DPLA; Jennifer Young, PharmD, BCPS, CSP; Kyle Hansen, PharmD, MS, BCPS, CSP

OBJECTIVE: Describe the impact of multi-step order transmittal on specialty medication access

SELF ASSESSMENT QUESTION: What was the impact of MSOT implementation described in this study?

a)Number of appeal denials decreased

b)Time to PA submission decreased (correct)

c)Internal prescription capture rate decreased

BACKGROUND: Prior authorizations (PAs) are a time-consuming process for healthcare providers and can delay the initiation of medication therapy for patients. Previous studies have evaluated the impact of using specialty pharmacy staff to support alternative PA workflows. Both a centralized specialty pharmacy PA review team and a decentralized clinic embedded specialty pharmacy PA review workflow are established methods to improve access to medications. There is limited information, however, describing the use of PA workflow functionalities within the electronic health record (EHR) to impact medication access.

The Atrium Health Wake Forest Baptist (AHWFB) Inflammatory Bowel Disease (IBD) clinic implemented a new workflow to review PAs using multi-step order transmittal (MSOT) in the EHR. MSOT uses an algorithm which is programmed to target select medications by generic name as well as the prescribing department. If a medication fits the qualifications, it is routed to a separate work queue instead of being released to the pharmacy. The work queue is monitored by a clinical pharmacist and a pharmacy technician trained as a medication access specialist (MAS) who complete the benefit investigation, including any required PA. This study will evaluate the impact on medication access before and after MSOT implementation.

METHODOLOGY: A retrospective cohort study was completed at a large academic medical institution. Patients were included if prescribed a targeted specialty medication by an AHWFB gastroenterology provider that also required a PA. Prescriptions that required a renewal PA were not included. Uninsured patients were excluded. Timeframes for analysis included pre-MSOT (May 1, 2021 to November 1, 2021) and post-MSOT (May 1, 2022 and November 1, 2022) implementation.

Data were collected from the EHR-generated prescribing report from the IBD clinic. The primary objective of this study was the change in PA turnaround time pre-MSOT to post-MSOT. Secondary outcomes included change in the rate of internal specialty pharmacy prescription capture, time to dispense, and time to PA determination. A t-test was used to evaluate continuous endpoints and chi squared was used to compare categorical results.

RESULTS: The pre- and post-MSOT groups included 68 and 76 prescriptions respectively. The mean PA turnaround time decreased from 6.2 days pre-MSOT to 1.3 days post-MSOT (p

11:00am – 11:20am C **Common Drug Interactions in Patients With Atrial Fibrillation Anticoagulated With Factor-Xa Inhibitors: Risk Factors for Bleeding – A Case Control Study** Athena D

Moderators: Sarah-Anne Blackburn

Presenters: Michael Huber

Evaluators: Chelsea Moran

TITLE: Common Drug Interactions in Patients With Atrial Fibrillation Anticoagulated With Factor-Xa Inhibitors: Risk Factors for Bleeding – A Case Control Study

AUTHORS: Michael Huber, Catherine Barlow

OBJECTIVE: See slides

SELF ASSESSMENT QUESTION: See slides

BACKGROUND: In clinical practice, patients with atrial fibrillation are frequently prescribed factor Xa inhibitors concomitantly with dual CYP3A4/P-gp inhibitors – specifically amiodarone, diltiazem, and verapamil. Evidence suggests there is an increased incidence of bleeding associated with these drug interactions. The purpose of this study is to identify risk factors that may place select patients within this cohort at an increased risk of bleeding.

METHODOLOGY: The Institutional Review Board approved this retrospective, single-center, case-control study. Electronic medical records at Phoebe Putney Memorial Hospital dating from January 2019 to May 2022 were screened. Eligible patients were at least 18 years old, had a diagnosis of atrial fibrillation, and were taking apixaban or rivaroxaban concomitantly with amiodarone, diltiazem, or verapamil at the time of index hospitalization. The primary outcome was a composite of major bleeding and clinically relevant non-major bleeding as defined by the International Society on Thrombosis and Hemostasis. Case patients had a hospitalization or emergency department visit directly related to the primary outcome during the study period. Conversely, none of the hospitalizations for control patients could be related to the primary outcome. Data collected from the EMR and defined as exposures included age, race, sex, BMI, creatinine clearance (calculated via the Cockcroft-Gault equation), concomitant antiplatelet use, and the presence of select comorbidities (hypertension, history of stroke/TIA, history of MI, diabetes, chronic heart failure, and drug and/or alcohol abuse). Exposures were expressed as binary variables or as a binarized version of the variable (i.e., above or below median age, CrCl greater than or less than 50 mL/min, BMI greater than or less than 30 kg/m2, etc.). A two-by-two table was constructed for each exposure and odds ratios were subsequently calculated. Statistical significance will be evaluated with Fisher’s exact test.

RESULTS: Fifty patients have been included in this study thus far – thirty control patients and twenty case patients. The median age of participants was 70.5 years. More patients were taking apixaban (72%) than rivaroxaban (28%). Diltiazem (62%) was the most common rhythm/rate control agent, followed by amiodarone (40%). No patients were taking verapamil, and one patient was taking both diltiazem and amiodarone. Only two characteristics had a statistically significant association with bleeding – history of CVA/TIA (OR 9.33, 95% CI 1.72-50.6) and African American race (OR 4.00, 95% CI 1.14-14.0). Several other characteristics trended towards an association with bleeding – history of hypertension (OR 4.75, 95% CI 0.53-42.9), history of heart failure (OR 3.27, 95% CI 0.93-11.5), female sex (OR 2.33, 95% CI 0.72-7.55), and CrCl < 50 mL/min (OR 2.24, 95% CI 0.69-7.29) – but were not statistically significant. Characteristics with minimal to no apparent association with bleeding included concomitant antiplatelet use, history of diabetes, history of vascular disease, alcohol/tobacco use, age greater than median, and BMI ³ 30 kg/m2. No patients in this study had a history of cirrhosis.

CONCLUSION: We identified multiple characteristics that are potentially associated with an increased risk of bleeding in this study population – history of stroke, history of heart failure, hypertension, African American race, female sex, and impaired renal function . We recommend a thorough analysis of risk and benefit prior to initiating or continuing patients on these interacting drugs. Given their position as first and second line therapies in the management of atrial fibrillation, we do not advocate for complete avoidance. However, it would be reasonable to consider an alternative therapy (i.e., a beta-blocker) in patients with multiple high-risk characteristics.

11:00am – 11:20am R **Aspirin Initiation 18 Hours After Thrombolytic Therapy in Acute Ischemic Stroke** Athena G

Moderators: Cristina Plemmons
Presenters: Aubrey Murphy
Evaluators: Hania Zaki

TITLE: Aspirin Initiation 18 Hours After Thrombolytic Therapy in Acute Ischemic Stroke

AUTHORS: Aubrey Murphy, Pharm.D.; Leslie Hamilton, Pharm.D., FCCP, FCCM, FNCS, BCPS, BCCCP; Kalene Farley, PharmD Candidate; Shaun Rowe, Pharm.D., M.S., BCCCP, FNCS; Thomas Christianson, M.D. Brittny Medenwald, Pharm.D., BCCCP

OBJECTIVE: The purpose of this educational session is to compare available literature to a retrospective cohort study that investigated low-dose aspirin 18 hours following thrombolytic therapy, to better understand how antiplatelet agents can be optimally incorporated into early management of acute ischemic stroke.

SELF ASSESSMENT QUESTION: What patient specific and pharmacological factors are important to consider when developing a care plan for adults presenting with acute ischemic stroke?

BACKGROUND: Aspirin is highly effective in secondary prevention of non-cardioembolic ischemic stroke, but optimal timing and dosing have not been well established. Current AHA/ASA Stroke Guidelines recommend waiting a minimum of 24 hours following administration of an intravenous thrombolytic and follow-up imaging to rule out intracranial hemorrhage prior to initiating antiplatelet therapy. Our institution transitioned from 24-hour to an 18-hour post-thrombolytic computed tomography (CT) head scans, facilitating sooner antiplatelet initiation. This study investigated the safety of initiating low-dose aspirin (81 mg) 18 hours after thrombolytic therapy in acute ischemic stroke patients.

METHODOLOGY: This retrospective cohort study was conducted at a single, comprehensive stroke and academic medical center. Eligible individuals were identified by cross-referencing all orders for thrombolytic agents (tenecteplase or alteplase) with ICD-10 codes for acute ischemic stroke within the specified timeframe. These patients were then screened for confirmation of follow-up imaging without signs of hemorrhage and receipt of low-dose aspirin (81 mg) and were excluded if they were less than 18 years of age, pregnant, a prisoner, or had a known allergy to aspirin. Investigators utilized a standardized form to collect relevant data points from the electronic patient record, and patients were placed into two comparator arms based on whether aspirin was given at/before 24 hours, versus beyond 24 hours following thrombolytic therapy. The primary outcome assessed was rate of new or worsening intracranial hemorrhage, as determined by secondary imaging following administration of aspirin and confirmed by a neurologist. Secondary outcomes were mortality, changes in National Institutes of Health Stroke Scale (NIHSS) score and modified Rankin Scale (mRS) score at hospital discharge and/or 3 months, intensive care unit (ICU) length of stay (LOS), hospital LOS, favorable outcome (defined as mRS score of 0-2 at 3 months), and 3-month readmission rate for new vascular events.

RESULTS: After screening for exclusion criteria, 50 patients were included in the ≤ 24 hour group and 80 patients were in included in the > 24 hour group. Although not statistically significant, no patients who received aspirin less than 24 hours after thrombolytics experienced a significant bleeding event, while one patient in the > 24-hour group experienced an intracerebral hemorrhage (Chi-squared 0.630, p= 1.00). No statistically significant difference was found in any of the secondary outcomes; however, administration of aspirin sooner was associated with a shorter hospital length of stay (median 3 days vs 4 days, p= 0.034).

CONCLUSIONS: Administering low-dose aspirin 18 to 24 hours after thrombolytic therapy can reduce the risk of secondary embolization in adults with acute ischemic stroke, and earlier initiation did not increase the rate of bleeding events or confer any difference in mortality, rate of readmission, ICU or hospital length of stay, or changes in stroke scale scores.

11:00am – 11:20am R **Evaluation of weight-based versus fixed dosing of four-factor prothrombin complex concentrate in the management of direct oral anticoagulant associated bleeding** Athena I

Moderators: Sarah Todd

Presenters: Jordan Tynes

Evaluators: Azur Eckley

TITLE: Evaluation of weight-based versus fixed dosing of four-factor prothrombin complex concentrate in the management of direct oral anticoagulant associated bleeding

AUTHORS: Jordan Tynes; Rachel Kile

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The use of any anticoagulant is associated with an increased risk of bleeding, and bleeding complications can be life-threatening. As more data is published that support the use of direct oral anticoagulants (DOACs) over traditional anticoagulant agents such as warfarin, the number of patients taking an agent in this class has increased. Management of bleeding associated with the use of DOACs is not well defined, with varying guideline recommendations. Four-factor prothrombin complex concentrate (PCC4) is used off-label for treatment of life-threatening bleeding associated with DOACs. Recent data suggests that lower doses of PCC4 are safe and effective in the management of DOAC-related bleeding, including studies that used a maximum dose of 2000 units. Prior to February 2022, the PCC4 dose recommended per our institution's Antithrombotic Reversal & Surgical Management Guidelines for reversal of oral Factor Xa inhibitors or DOACs was a weight-based dose of 50 units/kg (maximum dose 5,000 units) for major (life-threatening) bleeding. The current PCC4 dose recommended is 2000 units for non-intracerebral brain hemorrhage (ICH) major bleeding and 2500 units for ICH (spontaneous or traumatic). The goal of this study is to evaluate the efficacy, safety, and cost savings associated with using fixed dosing of PCC4 for the management of DOAC-related bleeding compared to weight-based dosing.

METHODOLOGY: This will be an observational retrospective analysis to determine the efficacy, safety and cost savings of switching from weight-based to fixed dosing of PCC4 in the management of DOAC reversal. Data will be collected from the electronic health record (EHR). Patients who received PCC4 for the management of DOAC reversal within the designated pre- and post-data timeframes, March 1, 2021 to December 31, 2021 and March 1, 2022 to December 31, 2022, respectively, will be included. The number of patient records accessed and collected is anticipated to be 120. Charts will be reviewed to collect data to assess primary and secondary endpoints. The primary endpoints are effective hemostasis and cost. Secondary endpoints include adherence to the dosing protocol, death during admission, thromboembolic events post-PCC4 during admission, blood product use, and average length of stay. IRB approval was received to conduct the study.

RESULTS: Seventy-two patients were included in the study. Fifty-six (78%) of patients were taking apixaban, and the remainder were taking rivaroxaban. There was no statistically significant difference in the primary endpoint of effective hemostasis (p=0.80) between the weight-based and fixed dosing groups. A cost savings of over $60,000 was demonstrated over the 10 month period when utilizing fixed dose versus weight-based dosing. Secondary endpoints were not statistically significant, except for the incidence of inappropriate dosing, with a lower incidence in the fixed dose group (p=0.04).

CONCLUSIONS: This study demonstrated that modifying PCC4 dosing from weight-based to fixed maintains similar rates of hemostasis in the treatment of DOAC-associated bleeding while decreasing cost.

11:00am – 11:20am R **The Effect of Postoperative Dexmedetomidine on the Duration of Mechanical Ventilation Following Cardiovascular Surgery** Athena H

Moderators: Connie Street

Presenters: Heather Wilson

Evaluators: Lauren Floris

TITLE: The Effect of Postoperative Dexmedetomidine on the Duration of Mechanical Ventilation Following Cardiovascular Surgery

AUTHORS: Heather Wilson, Alex Ewing, Lyndsay Gormley

OBJECTIVE: Identify outcomes of patients receiving dexmedetomidine for sedation following cardiovascular surgery.

SELF ASSESSMENT QUESTION: What is the goal time to extubation for cardiovascular surgery patients?

BACKGROUND: The Society of Thoracic Surgeons (STS) recommends early extubation, defined as ≤ 6 hours, following cardiovascular surgery. This recommendation is supported by literature that shows increased mortality and morbidity in patients with prolonged intubation, defined as ≥ 24 hours. Presently there is no formal recommendation for a preferred sedative following cardiac surgery. Current published literature evaluating the duration of mechanical ventilation as a secondary endpoint has demonstrated potential benefits with dexmedetomidine compared to propofol. The purpose of this study was to evaluate the effects of dexmedetomidine post-cardiovascular surgery on the duration of mechanical ventilation.

METHODOLOGY: A single-center, retrospective, cohort study was conducted on adult patients admitted to Prisma Health—Upstate between February 2022 and August 2022 for cardiovascular surgery. Sedation with dexmedetomidine was compared to propofol assessing the duration of mechanical ventilation as the primary outcome. Secondary outcomes included incidence of delirium, hospital length of stay, intensive care unit length of stay, and 30-day mortality.

RESULTS: In progress

CONCLUSIONS: In progress

11:00am – 11:20am | **Assessment of Pre-Emptive Stop Date Applications on Antimicrobial Therapy Duration in Hospitalized Patients with Community-Acquired Pneumonia** Athena B

Moderators: Stephanie A. Ring

Presenters: Austin Dykes

Evaluators: Christopher Gore

TITLE: Assessment of Pre-Emptive Stop Date Applications on Antimicrobial Therapy Duration in Hospitalized Patients with Community-Acquired Pneumonia

AUTHORS: Austin Dykes, Cyle White, Jessica Duke, Lauren Caldwell

OBJECTIVE: To assess the impact of a direct antimicrobial stewardship intervention on total durations of therapy received by hospitalized patients with uncomplicated community-acquired pneumonia.

SELF ASSESSMENT QUESTION: For patients hospitalized with uncomplicated community-acquired pneumonia, the IDSA recommends at least ____ days of antimicrobial therapy?

A. 10 days

B. 7 days

C. 5 days

BACKGROUND: Antimicrobial resistance is an increasing public health crisis in the United States with resistant microbes estimated to cause greater than 35,000 deaths annually. Therefore, appropriate utilization of antimicrobials, including duration of therapy, is critical to curb resistance and associated adverse effects. Patients hospitalized with community-acquired pneumonia (CAP) are among those often prescribed prolonged durations of antimicrobial therapy despite effectiveness of shorter durations. This retrospective, pre-post study seeks to assess the impact of a bundled antimicrobial stewardship intervention prior to hospital discharge for hospitalized patients with CAP.

METHODOLOGY: The bundled intervention includes a default five-day therapy duration of azithromycin, stop date applications placed prior to day five on all other antimicrobial therapy by members of the antimicrobial stewardship team (AST), and a note written in the electronic medical record to document the intervention. Patients 18 years of age or older admitted to the general medical ward with a chief diagnosis of CAP were included. The primary objective was to assess the total duration, in days, of antimicrobial therapy received by patients before and after the implementation of pre-emptive stop date applications made by the AST. Secondary objectives were to assess differences in the all cause 30-day hospital readmission rate, incidence of Clostridioides difficile and multidrug resistant infections, duration of antimicrobials prescribed at hospital discharge, days of excess antimicrobial therapy (defined as therapy days exceeding day five), and hospital length of stay between the two cohorts.

RESULTS: A total of 150 patients hospitalized with uncomplicated CAP were included in the study in a 2:1 fashion between the two groups. Median total duration of antimicrobial therapy in the bundled intervention group was found to be signifcantly shorter than the pre-intervention group ([interquartile range], 5 [5-6] vs. 7 [6-8], days, $p < 0.0001$). Patients in the intervention group experienced a longer median hospital length of stay (4 [3-6] vs. 3 [2-5], days) with significantly fewer days of antimicrobials prescribed at discharge (0 [0-2] vs. 3 [0-4], $p = 0.0002$) and excess therapy (0 [0-1] vs. 2 [1-3], $p < 0.0001$). Both groups exhibited similar rates of all cause 30-day hospital readmissions (12% in both groups), Clostridioides difficile infections (0 cases total), and multidrug resistant infections (2% in both groups).

CONCLUSIONS: The bundled antimicrobial stewardship intervention was effective in decreasing total duration, discharge prescription, and overall excess of antimicrobial therapy for hospitalized patients with uncomplicated CAP. These findings are in addition to a robust pre-existing stewardship program across our health system.

11:00am – 11:20am | **Effect of CYP2C19 phenotypes on voriconazole dose and trough concentrations** | Athena A

Moderators: Laura Schalliol

Presenters: Dina Mikaiel

Evaluators: Dianne May

TITLE: Effect of CYP2C19 phenotypes on voriconazole dose and trough concentrations

AUTHORS: Dina Mikaiel, Michelle Liu, and Carmen Crowley

OBJECTIVE: Investigate the correlation of median voriconazole trough (C0) and dose adjusted trough levels (C0/D) among CYP2C19 phenotypes.

SELF ASSESSMENT QUESTION: CYP2C19 poor metabolizers have lower voriconazole C0 and median C0/D compared to normal metabolizers.

True

False

BACKGROUND: Voriconazole is an essential antifungal agent for the treatment and prevention of invasive fungal infections. Wide interpatient variability in concentrations is partly due to differences in cytochrome P450 2C19 (CYP2C19) metabolism and phenotype. Currently, incongruent clinical pharmacogenetic recommendations exists. The Clinical Pharmacogenetics Implementation Consortium (CPIC) guideline recommends alternative agents for CYP2C19 ultrarapid, and poor metabolizers while the Dutch Pharmacogenetics Working Group recommends 50% dose increases and decreases for these patients. Furthermore, emerging data shows CYP2C19 rapid metabolizers requiring higher doses. The goal of this study is to investigate median voriconazole trough (C0) and dose-adjusted trough levels (C0/D) among CYP2C19 phenotypes.

METHODOLOGY: Adult patients (>18 years) who have at least one voriconazole C0, CYP2C19 genotype, and received voriconazole were included. Exclusion criteria were pregnancy, history of a previous liver transplant, and abnormal liver function enzymes. Medication data were assessed through a manual chart review (e.g., route, trough time, and drug-drug interactions). CYP2C19 phenotype assignments were based on CPIC standards. The primary outcomes were median voriconazole C0 and C0/D assessed by CYP2C19 phenotypes. Secondary outcomes assessed were the percentage of patients with therapeutic troughs, percentage of patients with sub- and supratherapeutic troughs, and effect of drug-drug interactions.

RESULTS: This single retrospective cohort study included 169 patients. The median age was 60 years (IQR, 50-65), with the majority of patients EHR identified race as Caucasian. Majority of patients received voriconazole prophylaxis (66%) and were lung transplant recipients (58%). CYP2C19 phenotype frequencies were as followed for poor (PMs), intermediate (IMs), normal (NMs), rapid (RMs), and ultrarapid (UMs) metabolizers; 1.8%, 28.4%, 38.5%, 28.4%, and 3.0%, respectively. Compared with NMs, PMs and IMs had non-significantly higher median voriconazole C0, while UMs had lower voriconazole C0 (median (IQR): 1.6 (0.5 – 2.7), 4.7 (4.1 – 9.6), 2.3 (1.0 – 3.8), 0.8 (0.3 – 1) "μ" g/mL; respectively, p>0.025). Although there was no statistical difference observed, NMs compared with PMs and IMs had lower median voriconazole C0/D, while RMs and UMs had higher voriconazole C0/D (median (IQR): 1.5 (0.7 – 2.0), 2.5 (1.4 – 6.7), 3.8 (2.1 – 7.4), 9.8 (4.6 – 31.3)" μ" g/mL; respectively, p=0.0653). The secondary endpoints showed no statistical significance among the percent of patients with therapeutic, sub- and supratherapeutic troughs.

CONCLUSIONS: Although none of the outcomes were statistically significant, observations found were similar to current literature. Compared to NMs, IMs and PMs had higher median voriconazole C0, while UMs had lower voriconazole C0. Moreover, PMs had the highest percentage of supratherapeutic and lowest percentage of subtherapeutic troughs compared to other CYP2C19 phenotypes. Given the small sample of PMs and UMs, our findings may not be conclusive. Additional studies are required to progress guidelines toward more precise utilization of CYP2C19 guided dosing of voriconazole in clinical practice.

11:00am – 11:20am | **Evaluating the impact of BioFire BCID2 Panel Testing on Time to Appropriate Antimicrobial Selection** Athena C

Moderators: Jason Dover

Presenters: Kavya Balaji

Evaluators: Elizabeth Oglesby

TITLE: Evaluating the impact of BioFire BCID2 Panel Testing on Time to Appropriate Antimicrobial Selection

AUTHORS: Kavya Balaji and Tanea Womack

OBJECTIVE: To outline the impact of the BCID2 Panel testing on the Antimicrobial Stewardship Program at Wellstar Cobb Hospital.

SELF ASSESSMENT QUESTION:The absolute time to appropriate therapy was reduced in patients who received an Infectious Diseases consult after BCID2 implementation rather than before BCID2 implementation.

BACKGROUND: Sepsis and subsequently bloodstream infections are the leading cause of death in hospitals. Optimal antimicrobial therapy can be delayed due to a lag in culture and susceptibility results. Patients may also develop resistance to antimicrobials attributable to lack of de-escalation. BioFire BCID2 Panel testing has been found to reduce the time to pathogen identification compared to standard culture along with decreasing the time to optimal antimicrobial selection. Additionally, early detection of infection-causing pathogens can lower the incidence of adverse events and minimize drug costs.

METHODOLOGY: This was a single center, retrospective study at Wellstar Cobb Hospital that assessed time to optimal antimicrobial selection for positive bloodstream infections in patients ≥ 18 years before and after implementation of the BioFire BCID2 Panel testing. Population groups included in-patients whose blood cultures were first taken at Wellstar Cobb Hospital. During March 2021 to May 2021, patients with positive blood cultures (excluding contaminants) were identified by reports from the electronic medical record(EPIC Hyperspace®). This data was then compared to patient's post-implementation of BioFire BCID2 Panel testing, March 2022 to May 2022. In addition, the BCID2 panel results were cross-referenced with standard culture and susceptibility reports.

RESULTS: The mean total duration of antimicrobial therapy had decreased from 11.4 days to 10 days post BCID2 panel implementation (p = 0.52). Amongst patient who received an ID consult, the total duration of antimicrobial therapy decreased from 15.5 days to 12.4 days, pre-BCID2 versus post-BCID2, respectively (p = 0.4). Figure 4 shows a breakdown of pharmacist-led interventions on patients' antimicrobial therapy. On average, each patient received 2 pharmacist-led interventions prior to BCID2 implementation and 3 pharmacist-led interventions post implementation (p = 0.048). Of these interventions, 99% were accepted in the pre-BCID2 group and 98% were accepted in the post-BCID2 group. The mean time to preliminary culture and susceptibility report had increased from 0.68 days to 0.8 days, pre-BCID2 versus post-BCID2, respectively (p = 0.07). Amongst both groups, *Escherichia coli* was the most frequently growing organism in blood cultures. The mortality rate had decreased post BCID2 implementation (13 vs 7%, p = 0.17). The average hospital length of stay increased from 12 to 13 days post implementation (p = 0.58) while the average ICU length of stay decreased from 232 hours to 138 hours, post implementation (p = 0.23). The 90-day all-cause hospital readmittance rate did not vary between both groups (33%). Overall, ID was consulted for 56% of patients prior to BCID2 implementation versus 60% of patients post BCID2 implementation (p = 0.62). A total of 21 patients required vancomycin serum drug level monitoring prior to BCID2 initiation, while 17 patients required vancomycin serum drug level monitoring post BCID2 implementation (p = 0.49). The average cost of empiric antimicrobial therapy for patients was $669.74 and $653.76, pre- and post- BCID2 implementation, respectively (p = 0.17).The average cost of antimicrobial therapy post-de-escalation for patients was $121.12 and $118.83, pre- and post-BCID2 implementation, respectively (p = 0.92). The average cost of hospital stay was $31,132 pre-BCID2 implementation and $39,671 post-BCID2 implementation (p = 0.22). The average cost of ICU stay was $51,634 pre-BCID2 implementation and $32,712 post-BCID2 implementation (p = 0.28).

CONCLUSIONS: Although not significant, the findings of this study suggest that the implementation of the BCID2 panel provides a clinical and financial benefit to patients admitted to Wellstar Cobb Hospital. The study results advocate for increased antimicrobial stewardship efforts to decrease mortality, ICU LOS and total antimicrobial durations. Which ultimately may lead to decreased antimicrobial resistance, incidence of adverse events and drug costs for the hospital. Our findings reaffirm evidence from previous studies that the implementation of the BCID is a useful tool for improved antimicrobial stewardship and patient outcomes. However, Additional studies and standardized BCID2 education to provider disciplines are needed to expand upon these results to further define the benefit of implementing the BCID2 panel.

11:00am – 11:20am N **Impact of antithrombotic choice in COVID-19 related embolic stroke of undetermined source**

Parthenon 1

Moderators: Amy Duong

Presenters: Kerri Jones

Evaluators: Richard Burrell

TITLE: Impact of antithrombotic choice in COVID-19 related embolic stroke of undetermined source

AUTHORS: Kerri Jones, Chelsea Wamsley, Alexandria May, Olivia Morgan

OBJECTIVE: To evaluate if there is a benefit of using anticoagulation, rather than antiplatelet therapy, in patients with COVID-19 and embolic stroke of undetermined source (ESUS)

SELF ASSESSMENT QUESTION: If a patient presented to your institution with an embolic stroke of undetermined source and positive PCR for COVID-19, which antithrombotic agent would you advise the team to initiate?

BACKGROUND: Nearly 700,000 acute ischemic strokes (AIS) occur in the United States each year and of those, up to one-third do not have an identifiable cause. Embolic stroke of undetermined source (ESUS) describes a subset of patients with stroke caused by various potential sources of embolism. Two large randomized controlled studies compared antiplatelet to anticoagulant therapy in ESUS patients, and both studies failed to show superiority of anticoagulants in this patient population. Hypercoagulability associated with COVID-19 is well documented and has been linked to increased rates of venous thromboembolism. Several studies have also linked COVID-19 with an increased risk of arterial thromboembolism resulting in AIS. Current guidelines recommend against the routine use of therapeutic anticoagulation in patients with COVID-19, but data is lacking regarding antithrombotic treatment in patients with COVID-19 who experience AIS. The purpose of this study is to evaluate if there is a benefit of using anticoagulation, rather than antiplatelet therapy, in patients with COVID-19 and ESUS.

METHODOLOGY: This study was a retrospective chart review of adult patients with suspected ESUS, and a positive Sars-CoV-2 result within 10 days of index event between April 1, 2020, and July 30, 2022. Patients were divided into those that received antiplatelet therapy and those that received anticoagulant therapy. Patients were excluded if they had a definite indication (atrial fibrillation, venous thromboembolism, carotid stenting, etc.), contraindication to antiplatelet or anticoagulant therapy, patients who expired during initial encounter, or were a protected patient population. The primary outcome of this study was 90-day stroke recurrence in anticoagulation group versus antiplatelet group. Secondary outcomes included post-stroke discharge and 90-day mRS between groups, length of stay, and major bleeding risk.

RESULTS: During the study period, 162 patients were identified that were admitted for acute ischemic stroke with a documented history of COVID-19 within 10 days of index event. By utilizing the electronic medical record, 47 patients were determined to meet inclusion criteria of COVID-19 and ESUS stroke etiology. There were 42 patients who met inclusion criteria and five patients were excluded because they expired.

There were no significant differences in baseline characteristics between groups other than in patients with unknown vaccination status (p=0.0387). The mean age of the patients was 62 years, 64% of the patients were men, and 57% were black with a baseline mRS of 0 in 67% of patients. Ischemic stroke interventions with alteplase occurred in 7 patients in the antiplatelet arm and 17 in the anticoagulation arm (p=0.2097) and thrombectomy in 7 and 12 patients, respectively (p=1.000). In the anticoagulation arm, COVID-19 medications were administered in 12 patients, 5 received monotherapy and 7 received multiple agents. The average length of stay was 15.7 days in antiplatelet arm compared to 17.5 days in anticoagulation arm (p=0.6389). The primary outcome of 90-day stroke reoccurrence occurred in 3 anticoagulation patients and no antiplatelet patients (p=0.2489). There were no statistically significant secondary outcomes in any of the obtained laboratory values or with major bleeding risks between groups.

CONCLUSIONS: This study adds to limited literature regarding our management of patients with ischemic stroke due to hypercoagulable states such as COVID-19 infection. There was not a statistically significant difference in secondary stroke occurrence in patients administered antiplatelet compared to anticoagulation regimens. There are intrinsic limitations of this study which could impact the primary outcome including the retrospective, single-center nature of the study with a small sample size. Further studies are required to identify the favorable pharmacologic agent that would optimize secondary prevention of stroke in patients with ESUS and COVID-19 infection. Identifying more appropriate secondary prevention could help improve patient outcomes and reduce readmission rates.

11:00am – 11:20am D **Implementation of Pediatric Infectious Disease Clinical Decision Support at a Large Community Hospital** Athena J

Moderators: Matt Bamber

Presenters: Carolina Woloszyn

Evaluators: Joshua Settle

TITLE: Implementation of Pediatric Infectious Disease Clinical Decision Support at a Large Community Hospital

AUTHORS: Carolina Woloszyn, Blain Thayer, Christina Crawley

OBJECTIVE: To discuss the implementation process of the protocol and compare patient outcomes before and after implementation of the pediatric infectious disease clinical decision support for community-acquired pneumonia.

SELF ASSESSMENT QUESTION: What bacteria is most common in 2 to 5-year-old pediatric patients with community-acquired pneumonia? a. Staphylococcus aureus b. Streptococcus pneumoniae c. Pseudomonas aeruginosa d. Chlamydia trachomatis

BACKGROUND: The purpose of this study is to develop and implement an evidence-based protocol to facilitate and guide the management of community-acquired pneumonia in pediatric patients at a large community hospital. The goal of this protocol is to guide the initiation of appropriate empiric antibiotic therapy, reduce the length of hospital stay, and provide clinical decision support to ordering providers.

METHODOLOGY: : A retrospective chart review was conducted and data was reviewed to evaluate current practice used for pediatric patients treated for community-acquired pneumonia. Patients aged less than 18 years of age and diagnosed with pneumonia were considered eligible participants for this study. An evidence-based protocol was designed and implemented after a discussion with a multidisciplinary team. Post-implementation data collection is currently in process to assess areas of improvement for pediatric community-acquired pneumonia treatment protocol.

RESULTS: The study evaluated 110 pediatric patients diagnosed with community-acquired pneumonia; 69 (63%) were male, the median age was 2. Of the 110 patients, 76 (69%) of the patients were admitted to a general pediatric floor, and 34 (31%) were admitted to the pediatric intensive care unit.

CONCLUSIONS: On March 21st, 2023, the Huntsville Hospital P&T– Pediatric Subcommittee approved a new protocol aimed at improving the treatment of pediatric community-acquired pneumonia (CAP). The protocol's main goals are to increase the initiation of appropriate empiric antibiotic therapy and dosing, in accordance with pediatric CAP guidelines, and to reduce hospital stays for affected children. To monitor the effectiveness of this new protocol, a post-implementation follow-up will be conducted. The subcommittee hopes that this protocol will lead to better outcomes for children diagnosed with CAP and improve overall patient care.

11:00am – 11:20am S **Preparation for an Inpatient Alcohol Withdrawal Syndrome (AWS) Management Protocol**

Parthenon 2

Moderators: Nathan Wayne

Presenters: Shelby Buller

Evaluators: Christopher Duphren

TITLE: Preparation for an Inpatient Alcohol Withdrawal Syndrome (AWS) Management Protocol

AUTHORS: Shelby Buller, Eileen Sordo, Perry Thompson, Jacqueline Waller

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: oThe 2020 American Society of Addiction Medicine (ASAM) guideline on Alcohol Withdrawal Management states that the preferred benzodiazepine dosing method is symptom-triggered treatment in a short-term observational setting that allows for continuous monitoring. Currently at this site, there is no protocol guiding benzodiazepine dosing in the setting of AWS prevention or treatment. Thus, patients may have been receiving scheduled benzodiazepines, which may be unnecessarily continued upon transfer to a lower acuity facility. The purpose of this quality improvement project was to evaluate the current prescribing practices of chlordiazepoxide for AWS, as well as to educate providers on an upcoming protocol that will utilize Clinical Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar) scores to guide benzodiazepine therapy.

METHODOLOGY: oPre-protocol implementation data was collected via a retrospective data pull and subsequent chart reviews for patients admitted to an inpatient ward with chlordiazepoxide orders between January 1, 2022 and June 30, 2022. Training documents for inpatient (medical floor, ICU, and psychiatric unit) providers were developed utilizing the proposed AWS protocol. Prior to partaking in the training session, trainees were surveyed to evaluate their baseline comfort level regarding symptom-triggered AWS management. A training session composing of a guided PowerPoint and educational handout was conducted and the survey was re-administered after the training was completed. Pre- and post-training survey results were compared for each participant to determine if the training improved provider comfort levels with symptom-triggered dosing of benzodiazepines.

RESULTS: During the pre-implementation phase, 212 chlordiazepoxide orders from 90 visits (81 unique Veterans) were included. 96.3% (n=78) of Veterans were male and the average age was 55.2 years. 53.8% (n=114) of chlordiazepoxide orders were initiated on the medical floor, 34% (n=72) were initiated in a mental health unit, and the remaining orders were initiated in the medical intensive care unit (5.7%), stepdown unit (3.3%), or emergency department(3.3%). After excluding the "now" orders (resulting in 177 orders), 80.2% (n=142) of the orders were scheduled and 19.8% (n=35) were as needed. The Veterans that received chlordiazepoxide via as needed orders received an average of 0.27 mg lorazepam dose equivalents per day, while the Veterans that received chlordiazepoxide via scheduled orders received an average of 2.43 mg lorazepam equivalents per day (p=0.02). Of the 90 visits, 24 visits (27%) resulted in Veterans not receiving thiamine. Prior to education, 2 providers (25%) reported that they currently use a symptom-triggered benzodiazepine dosing strategy, 2 providers (25%) reported that they currently use a fixed dosing strategy. and 4 providers (50%) reported using another strategy (reported to be either lorazepam PRN in addition to fixed dosing or a combination of the two strategies). When surveyed, 2 providers disagreed with a statement regarding comfortability of using a CIWA-Ar dosing strategy, 2 providers agreed with the statement, and 4 providers strongly agreed with the statement. Following the protocol education session, 1 provider agreed with the statement, and 7 providers strongly agreed.

CONCLUSIONS: Symptom-triggered benzodiazepine dosing is the guideline recommended strategy for alcohol withdrawal syndrome prevention. In this retrospective review of current dosing at this site, Veterans with as needed chlordiazepoxide orders received a lower average lorazepam dose equivalent per day than Veterans that received scheduled doses. In preparation for the upcoming CIWA-Ar protocol, hospitalists and contract providers were educated and surveyed for comfort levels. After comparison, it can be noted that pharmacist-led education increased provider comfort regarding the use of symptom-triggered dosing.

11:20am – 11:40am B **Factors Impacting Providers Offering Statins for Primary Prevention in Patients with Diabetes**

Moderators: Tasha Woodall Olympia 1

Presenters: Disha Patel

Evaluators: Nathaniel Swanson

TITLE: Factors Impacting Providers Offering Statins for Primary Prevention in Patients with Diabetes

AUTHORS: Disha Patel, Kimberly Bowers, Asia Broughton, Zuri Hawkins

OBJECTIVE: Identify the potential disparities in under prescribing of statins for primary prevention among patients with diabetes

SELF ASSESSMENT QUESTION: Which subgroups of patients are less likely to be offered a statin for primary prevention?

BACKGROUND: According to the American Diabetes Association, diabetes was the seventh leading cause of death in the United States in 2017. Approximately 65% of people with diabetes die from cardiovascular disease which can be prevented by simultaneous control of multiple cardiovascular risk factors. Initiation of statins has proven effective in primary prevention of cardiovascular disease. Providers may be influenced by demographic factors such as race, ethnicity, sex, age, and socioeconomic disparities, each of which may play a role in under-prescribing of statins. The purpose of this study is to identify and evaluate if and what disparities exist in statin prescribing for primary prevention of cardiovascular risk among patients with diabetes.

METHODOLOGY: This is multi-center, retrospective, observational cohort study conducted within the Kaiser Permanente (KP) Georgia region. The electronic medical records (EMR) for patients at KP Georgia were screened to identify patients with diabetes who are eligible for a statin prescription but not offered a statin from April 1, 2019 to September 30, 2022. Approximately 380 patients with diabetes, who are 40 to 75 years of age, with ASCVD risk ≥ 7.5%, and no history of coronary artery disease, myocardial infarction or stroke were randomized to evaluate if the patients were offered a statin for primary prevention of cardiovascular risk. Secondary endpoints included percentage of patients offered a statin based on age, race, and sex. Descriptive statistics including means, standard deviation, and percentages were used to report baseline demographic characteristics, primary and secondary endpoints. Chi square test was used to determine statistical significance of categorical variables. The study proposal was approved by the KP investigational review board.

RESULTS: After initial screening of 42,805 patients, 8,406 patients were randomized based on inclusion and exclusion criteria. Out of which, 823 patients were reviewed, and 380 patients were included in the study. Of the 380 included patients, 41.6% of patients were not offered a statin by a provider. Among the patients that were not offered a statin, 75.9% were Black/African American, 13.3% were White and 10.8% of patients were other (p

11:20am – 11:40am B **Impact of Pharmacist Targeted Interventions in the Management of Hypertriglyceridemia in Patients with Type 2 Diabetes at High Risk for Cardiovascular Events** Olympia 2

Moderators: Ryan Dushak
Presenters: Pamela Vega Rios
Evaluators: Stephanie Hopkins

TITLE: Impact of Pharmacist Targeted Interventions in the Management of Hypertriglyceridemia in Patients with Type 2 Diabetes at High Risk for Cardiovascular Events
AUTHORS: Pamela Vega Rios, Ivy Nwogu, Peter Koval
OBJECTIVE: Evaluate pharmacist intervention in lowering triglycerides at a primary care clinic
SELF ASSESSMENT QUESTION: Which of the medication(s) is/are a good option for lowering triglycerides in patients with ASCVD?

BACKGROUND: Elevated triglycerides (TG) are a risk-enhancing factor identified by the 2018 American Heart Association and American College of Cardiology (AHA/ACC) Guidelines on the Management of Blood Cholesterol. The 2021 AHA/ACC Consensus Decision Pathway emphasizes lifestyle modifications before the use of statins and a risk-based approach to non-statin therapies for atherosclerotic cardiovascular disease (ASCVD) risk reduction in persistent hypertriglyceridemia. The objective of this study is to evaluate the impact of pharmacist interventions on hypertriglyceridemia management in patients with type 2 diabetes (T2DM) at high risk for cardiovascular events at a family medicine practice.

METHODOLOGY: This was a single-center, IRB reviewed and determined exempt, pre-post study evaluating the effect of pharmacist interventions in patients with elevated TG. The study took place at the Cone Health Family Medicine Center, a primary care clinic within the Cone Health system that serves as a teaching site for a physician residency program and provides care for patients regardless of financial status. The study included non-pregnant patients $\geq$ 18 years old with T2DM and TG > 150 mg/dL who had established ASCVD or two or more risk factors for cardiovascular events (age $\geq$ 55 for men, age $\geq$ 65 for women, current tobacco smoker or stopped smoking in last 3 months, hypertension diagnosis, or chronic kidney disease diagnosis). Patients seen at the clinic were screened through daily chart reviews for inclusion criteria. If patients met inclusion criteria, providers received pharmacist interventions via the electronic health record's messaging system. Interventions included cholesterol-lowering therapeutic recommendations according to current evidence-based guidelines. Chart reviews were conducted after visits to evaluate recommendation acceptance, new medication starts, and follow-up lab work. The primary outcome was the pre-post comparison of patients achieving TG <150 mg/dL. Secondary outcomes included the percentage of patients with severe TG who achieve ≥50% TG lowering from baseline, pre-post comparison of patients using triglyceride lowering medications, and physician acceptance rate of pharmacist recommendations.

RESULTS: In the pre-intervention group, 451 patients in the clinic had a diagnosis of T2DM with hyperlipidemia and a lipid panel within 12 months. Sixty-one percent of patients had TG < 150 mg/dL with an average TG of 263 mg/dL, 35.25% had established ASCVD and 64.75% had 2 or more additional risk factors without ASCVD. Eighty-eight percent were on a statin, 2% on fibrates and 1.55% on fish oil therapy. A total of 130 interventions were made during the intervention. Common interventions included new lipid panel requests (38.3%), icosapent ethyl initiation (31.4%), and maximizing statin therapy (22.6%). Twenty-seven percent of interventions were accepted, 43.8% were not addressed, and 28.4% were unable to be assessed due to patient no-shows. At the end of the intervention, 66.4% of patients achieved TG < 150 (5.2% difference, p = 0.1). Seventy-eight percent of patients were on a statin, 2.4% were on fish oil therapy, and 2.4% were on fibrate therapy. Of seven patients with severe TG, 5 patients (83.3%) were able to achieve $\geq$50% reduction in TG.

CONCLUSIONS: In patients with T2DM and with established ASCVD or with $\geq$ 2 risk factors for ASCVD, pharmacist interventions focused on lowering TG resulted in more patients meeting TG goal < 150 mg/dL but was not statistically significant.

11:20am – 11:40am C **Fixed-dose vs. weight-based four factor-prothrombin complex concentrate (4F-PCC) in patients with oral factor Xa inhibitor-related hemorrhage** Athena D

Moderators: Sarah-Anne Blackburn
Presenters: Robert Ojukwu
Evaluators: Chelsea Moran

TITLE: Fixed-dose vs. weight-based four factor-prothrombin complex concentrate (4F-PCC) in patients with oral factor Xa inhibitor-related hemorrhage

AUTHORS: Robert Ojukwu, Hannah Brown, Jenny Lee

OBJECTIVE: Determine the clinical utility of fixed-dose 4F-PCC for the reversal of factor Xa-inhibitor related bleeding compared to weight-based 4F-PCC

SELF ASSESSMENT QUESTION: Based on the results of this study, which of the following are benefits to using fixed-dose 4F-PCC over weight-based 4F-PCC?

BACKGROUND: The use of oral factor Xa-inhibitors (FXaIs) has increased significantly in recent years due to ease of use and favorable safety profile. However, emergent reversal remains a challenge to patient safety as andexanet alfa (AA) use is limited by cost considerations. Historically, 4F-PCC has been used off-label for reversal of FXaI bleeds and is currently recommended in cases where AA is unavailable. Evidence supporting use of a fixed dosing strategy is limited. This study aims to determine if fixed-dose 4F-PCC is safe and effective compared to weight-based dosing for achieving hemostasis in patients with FXaI-related bleeding.

METHODOLOGY: The institutional review board approved this single-center, retrospective, chart review of adult patients who received at least one dose of 4F-PCC for reversal of FXaI-related bleeding from February 11th, 2022 – December 12th, 2022. Patients taking a FXaI who were diagnosed with an active bleed, supported by clinical and radiological evidence, were included in the study. Patients who were pregnant, incarcerated, or received other hemostatic agents prior to 4F-PCC administration were excluded. Data were extracted manually from the electronic medical record. The primary outcome was hemostatic efficacy, defined as stabilization of bleeding as documented in procedural notes, no further drop in hemoglobin >2g/dL and no requirements of transfusion or hemostatic agents within 48 hours of initial management. Safety outcomes included the incidence of thromboembolic events, rebleeding, and death during hospitalization. Primary and safety outcomes were analyzed using the Chi-square test. P-values of <0.05 considered to be statistically significant.

RESULTS: A total of 189 patients received 4F-PCC within the study timeframe of which 108 were included in the final analysis. Main reasons for exclusion were receipt of 4F-PCC for an indication other than active bleed, receipt of 4F-PCC for warfarin reversal and, receipt of 4F-PCC dose outside Wellstar protocol. The majority of baseline characteristics were similar between both groups. The mean age of patients in the fixed-dose group was 74±11 years compared to a mean age of 78±11 years in the weight-based group. In both groups, 73% of patients were on apixaban with the indication of stroke prevention in non-valvular AFib in over 60% of patients. Intracranial hemorrhage was the most common type of bleed witnessed, accounting for over 50% of bleeds in both groups. The average initial GCS of patients in the weight-based group was lower compared to patients in the fixed-dose group *(12.4 vs 13.8; p-value= 0.049*). There was also a difference between groups in regard to administration of repeat 4F-PCC doses with four patients in the weight-based group receiving additional doses compared to none in the fixed-dose group *(p-value= 0.034)*

In regard to the primary outcome, hemostatic effectiveness was attained by 70% of patients in the fixed-dose group compared to 63% in the weight-based group. However, the difference was not statistically significant *(p-value=0.49)*. There were 2 thromboembolic events that occurred in the fixed-dose group compared to 1 event in the weight-based *(p-value=0.60)*. 1 patient (2%) in both the fixed-dose and weight-based group experienced an episode of rebleeding *(p-value=0.96)*. 10 patients (18%) in the fixed-dose group died during hospitalization compared to 9 patients (17%) in the weight-based group *(p-value= 0.94)*. Cost analysis was also done and based on the current acquisition cost at our institution, fixed-dose 4F-PCC was associated with an average cost savings of $3,015 per patient during the 5 months it was administered in this study.

CONCLUSION: In conclusion, fixed-dose 4F-PCC appears to be a safe and cost-effective option for the reversal of FXaI-associated bleeding, with similar hemostatic efficacy to weight-based 4F-PCC. Larger, prospective studies comparing different fixed-dose regimens are still needed to determine the true clinical utility

11:20am – 11:40am R **Assessment of IV Lorazepam Dosing for Treatment of Seizure and Status Epilepticus** Athena H

Moderators: Connie Street

Presenters: Briley Miller

Evaluators: Lauren Floris

Assessment of IV Lorazepam Dosing for Treatment of Seizure and Status Epilepticus

Authors: Miller, Briley; Thompson, Molly; Kramer, Joe

Background:

The 2012 Neurocritical Care Society Guidelines for the Evaluation and Management of Status Epilepticus recommend intravenous (IV) lorazepam as the preferred first-line agent in the treatment of status epilepticus (SE). The guidelines recommend a single, full dose of lorazepam 0.1 mg/kg by rapid IV bolus, with a maximum of 4 mg per dose; repeat doses may be administered in five to ten minutes if seizures continue. Because of the rapid modification in the postsynaptic gamma-aminobutyric acid (GABA-A) receptor during SE, resulting in reduced receptor binding and diminished anti-seizure efficacy, it is imperative that an optimal dose of benzodiazepines is administered promptly.

A 2021 study by Sathe et. al. evaluated data from the Established Status Epilepticus Treatment Trial (ESETT) trial to characterize initial benzodiazepine dosing in patients with SE. Results demonstrated that in 81% of patients, the first benzodiazepine dose was lower than the guideline recommendation. Potential adverse effects related to benzodiazepine administration include cardio-respiratory compromise and respiratory depression. Concern for adverse effects is often cited as the primary reason providers may not initially administer a full, guideline-based benzodiazepine dose for SE. However, a 2001 study by Alldredge et. al demonstrated that the rate of respiratory or circulatory complications was actually higher in untreated SE patients versus those treated with benzodiazepines (22.5% vs. 10.6%, p=0.08).

The purpose of this study was to characterize dosing, efficacy, and safety of IV lorazepam administered for seizure or SE prior to initiation of antiepileptic drugs (AEDs).

Methods:

A single-center, retrospective, case-series was conducted on adult patients admitted to the Trident Health System from November – December 2022. The study was designated as exempt from human research by the health system Institutional Review Board. Patients were included if they received IV lorazepam and a subsequent AED for seizure control. Patients were excluded if they were less than 18 years of age, if IV lorazepam was administered for an indication other than seizure, or seizure acutely precipitated by major trauma, cardiac arrest, or anoxic injury. The electronic medical record was used to collect patient demographics, medication order details, laboratory testing results, and provider progress notes.

The primary outcome examined the efficacy of initial and subsequent doses of IV lorazepam required for initial seizure control. Secondary outcomes included rate of respiratory depression and intubation after administration of benzodiazepines as well as documented seizure disorder etiology, pre-hospital AED therapy, hospital length of stay, ICU admission, and seizure recurrence.

Results:

A total of 39 patients were included in this case series. All patients weighed greater than 40 kilograms. The primary, secondary, and tertiary seizure etiologies were central nervous system (CNS) anomaly (17.9%), non-compliance with AEDs (15.5%), and infection (12.8%) respectively. Two patients (5%) received guideline-based dosing (GBD) of IV lorazepam while the remaining 37 patients received anywhere from 0.5-2mg of IV lorazepam. Of those 37 patients, 59% required repeat doses of IV lorazepam to achieve seizure control. Numerical differences in major safety outcomes, ICU admission, and all-cause mortality existed between groups.

Conclusion:

Within our small sample size, only 5% of patients received initial GBD of IV lorazepam. These patients did not experience adverse effects such as respiratory depression or intubation. Of the patients who did not receive GBD, over half required additional doses of IV lorazepam to achieve seizure control. Use of non-guideline-based doses of IV lorazepam may result in an increased rate of repeat dosing to control seizures or status epilepticus.

11:20am – 11:40am R **Evaluation of Ketamine for Refractory Acute Agitation in the Emergency Department** Athena I

Moderators: Sarah Todd

Presenters: Maddie Cooper

Evaluators: Azur Eckley

TITLE: Evaluation of Ketamine for Refractory Acute Agitation in the Emergency Department

AUTHORS: Madeline Cooper, Eden Brewington, Phillip Mohorn, Yuko Nakajima, Christele Francois

OBJECTIVE: Based on the data presented, assess efficacy of adjunctive ketamine plus standard of care compared to standard of care alone for refractory, acute agitation in the emergency department.

SELF ASSESSMENT QUESTION: Based on the data presented, is adjunctive ketamine plus standard of care more efficacious than standard of care alone for refractory, acute agitation in the emergency department?

BACKGROUND: Agitation is prevalent in the emergency department and can lead to dangerous situations for hospital staff. Traditional agents include antipsychotics and benzodiazepines, and many times multiple doses and agents are required to be effective, which increases time to sedation and safety risk to hospital staff. Ketamine is a noncompetitive NDMA and glutamate receptor antagonist that has favorable pharmacodynamics and pharmacokinetic properties for acute agitation in the emergency department over standard of care agents, but concerns remain for efficacy and safety in this setting.

METHODOLOGY: This study was an Institutional Review Board approved retrospective, multi-center, observational study, comparing adjunctive ketamine and standard of care compared to standard of care alone for refractory, acute agitation in the emergency department. Adult patients that utilized ketamine in addition to standard of care medications or standard of care medications alone for acute agitation in the emergency department were included. Those that died or were transferred to hospice within 24 hours of admission, had a known diagnosis of pregnancy, angina, uncontrolled hypertension, or heart failure, or had a documented intolerance or allergy to ketamine were excluded. The primary outcome was efficacy of ketamine or standard of care for refractory agitation, defined as a documented RASS score of less than or equal to 0 or via nursing or provider documentation. Secondary outcomes included ketamine dose, emergency department length of stay, additional sedative medications required, and adverse effects related to ketamine use, including hypertension, tachycardia, hypersalivation, hypoxia, emergence phenomenon, and nausea/vomiting. To control for confounders, the two groups were matched using multivariable logistic regression by age, gender, history of substance abuse, history of mental illness, route of administration, history of acute or chronic pain, history of schizophrenia, number of standard of care drugs given, and Charlson Comorbidity Index scores. For matched and unmatched cohorts, baseline characteristics were summarized using descriptive statistics. Comparisons between groups for categorical and continuous data were analyzed using Chi-square or McNemar test for the matched cohort and Mann-Whitney U tests respectively.

RESULTS: 64 patients were included, 19 in the ketamine group and 45 in the control group with the matched cohort comprising of 19 in both groups. The unmatched total patient population was 54.7% black, 62.5% male, had a median age of 37 years old, and a median SOFA score of 1. Efficacy for acute agitation was experienced by 63.2% in the ketamine group and 62.2% in the control group in the unmatched cohort (p-value: 1.00) and 63.2% in the ketamine group and 73.7% in the control group in the matched cohort (p-value: 0.727).

CONCLUSIONS: There was no difference in resolution of acute agitation for patients with refractory agitation in the emergency department between adjunctive ketamine to standard of care and standard of care alone. Prospective, randomized control trials are still needed to determine ketamine’s place in therapy for acute agitation in the emergency department.

11:20am – 11:40am R **EVALUATION OF THE TRANSITION FROM THROMBOELASTOGRAPHY (TEG) 5000 TO 6S IN PATIENTS WITH COAGULOPATHY** Athena G

Moderators: Cristina Plemmons
Presenters: Carolyn McCaffrey
Evaluators: Hania Zaki
TITLE: EVALUATION OF THE TRANSITION FROM THROMBOELASTOGRAPHY (TEG) 5000 TO 6S IN PATIENTS WITH COAGULOPATHY
AUTHORS: Carolyn McCaffrey, Erik Turgeon, Vince Buttrick
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: To evaluate the impact on blood product usage with the transition from the thromboelastography assay, TEG 5000, to the newer assay TEG 6S in patients with coagulopathy in a community hospital setting.
METHODOLOGY: Patients aged ≥ 18 years with coagulopathies or bleeding events who were ordered a thromboelastographic test to assess coagulation parameters were included in this study. Patients under the age of 18 and patients who left against medical advice were excluded. This retrospective chart review assessed patients during a matched three-month period from December 2021 - February 2022 and December 2022 - February 2023 to evaluate blood product usage pre- and post-introduction of the updated TEG 6S test.
RESULTS: The results of this study will help assess the need for integrated TEG therapy guidance in the electronic medical record as well as updated order sets to reflect the transition from TEG 5000 to TEG 6S.
CONCLUSIONS: In process

11:20am – 11:40am I **Clinical impact of blood culture rapid diagnostics at a tertiary facility in patients with gram negative bacteremia.** Athena B

Moderators: Stephanie A. Ring
Presenters: Olivia Hammond
Evaluators: Christopher Gore
TITLE: Clinical impact of blood culture rapid diagnostics at a tertiary facility in patients with gram negative bacteremia.
AUTHORS: Olivia Hammond, PharmD; Ben Casey, PharmD, BCID; Susan Publow, PharmD, BCPPS
OBJECTIVE: The purpose of this study is to describe the impact of implementing rapid diagnostic technologies with new gram-negative resistance gene targets in the management of gram-negative bacteremia.
SELF ASSESSMENT QUESTION: Which group of patients had the greatest impact from expanded identification targets within the BCID2 panel compared to the previous BCID1 panel?
BACKGROUND: Multidrug-resistant gram-negative bloodstream infections, pose unique challenges on the healthcare system, since routine identification of these infections is reliant upon phenotypic drugs susceptibilities which can take several to result. This can lead to delayed initiation of targeted therapies, and potentially worse outcomes. Rapid diagnostic technologies have been developed with new targets to identify these resistance mechanisms early. The purpose of this study is to describe the impact of implementing rapid diagnostic technologies with new gram-negative resistance gene targets in the management of gram-negative bacteremia.
METHODOLOGY: This study was a single center, pre and post-implementation, retrospective chart review of patients with gram-negative bacteremia. The primary objective was to describe changes in antibiotic regimen within 24 hours of positive rapid diagnostics between both treatment timeframes.
RESULTS: 147 patients were identified: 67 of which were inpatient during the BCID1 time period and 80 of which were in the BCID2 time period. There was no significant difference in change in antibiotics between the two time periods. There was a shift toward more patients having appropriate changes in antibiotic regimen in the BCID2 time period; however, this was not found to be statistically significant [48 patients versus 50 patients (p=0.79)]. Within our pre-defined subgroup analysis of beta-lactamase producing resistant organisms identified by final culture result, there was a difference in change in antibiotics—in that more patients in our BCID2 group were escalated to targeted therapy after result of rapid test [2 patients (33%) versus 7 patients (88%) (p=<0.001)], and patients in the BCID2 group had a faster time to target therapy [48 hours versus 1.5 hours (p=0.03)].
.CONCLUSIONS: The use of BCID2 rapid testing overall showed a trend toward increased appropriate changes to antibiotic therapy. The significant benefit was seen in patients with beta-lactamase producing resistant organisms, and we were able to initiate more appropriate antibiotics in a timelier manner in these patients. However, a larger group of patients with higher incidence of resistant organisms is necessary to see if the trends in clinical outcomes we observed can be replicated and reinforced on a larger widespread scale.

11:20am – 11:40am | **PrEP-aring for Combat: a single center exploration of opportunities to offer HIV pre-exposure prophylaxis to patients with risk factors for HIV acquisition** Athena A

Moderators: Laura Schalliol

Presenters: Kailey Mattison

Evaluators: Dianne May

TITLE: PrEP-aring for Combat: a single center exploration of opportunities to offer HIV pre-exposure prophylaxis to patients with risk factors for HIV acquisition

AUTHORS: Kailey Mattison; Bailey Francis; Evan Lantz

OBJECTIVE: At the conclusion of this presentation, participants should be able to describe the characteristics that put patients at high risk for HIV acquisition.

SELF ASSESSMENT QUESTION: True or false - There are opportunities to offer pre-exposure prophylaxis to patients with risk-factors for HIV acquistion.

BACKGROUND: In 2020, an estimated 1,070,604 people had HIV with 30,635 people being newly diagnosed with HIV. One goal of the national Ending the HIV Epidemic in the U.S. initiative is to have 50% of people who may benefit from pre-exposure prophylaxis (PrEP) on PrEP by 2030. Currently, an estimated 1.2 million people have indications for PrEP use—and as of 2020, 25% of these people were prescribed PrEP. PrEP reduces the risk of acquiring HIV through sexual intercourse by approximately 99% when taken as prescribed. Despite being a highly effective form of HIV prevention, the uptake of this strategy has been slow since its initial FDA approval in 2012. Increasing PrEP uptake begins with outlining the target population of who is at highest for HIV acquisition and therefore, at greatest need for PrEP prescribing. The purpose of this study was to identify the number and location of patients at highest risk for HIV acquisition within our healthcare system and evaluate the percentage of those patients that were prescribed PrEP within our study period.

METHODOLOGY: This retrospective cohort study examined opportunities for healthcare providers to offer PrEP in patients with risk factors for HIV acquisition. Patients who weighed at least 35 kilograms (77 pounds) and had an SRHS patient encounter with either any positive STI test or two or more tests for the same bacterial sexually transmitted infection (STI) within a 6-month period at the time of inclusion were eligible for enrollment. The primary endpoint for this study was the percentage of eligible patients that were prescribed PrEP at any time during the study period. Secondary endpoints included the percentage of PrEP-eligible patients with a sexual history documented in their electronic medical record and the percentage of PrEP-eligible patients with a new HIV diagnosis at any time during the study period.

RESULTS: A total of 1269 patients within 1666 encounters were included in the study analysis. The average patient in this study was a 27-year-old African American female of an unspecified sexual orientation that resided in the Spartanburg or Gaffney area. Of the included SRHS encounters, 67% occurred within emergency departments, 27% in OB-GYN clinics, 5% inpatient, and 0.5% within family medicine clinics. For the primary endpoint, 0.39% (n=5) of PrEP-eligible patients were prescribed PrEP at any time during the study period. For secondary endpoints, 51% (n=661) of PrEP-eligible patients had a sexual history documented in EMR at any time during the study period and there were 3 PrEP-eligible patients (0.23%) with a new HIV diagnosis during the study period.

CONCLUSIONS: Less than 1% of PrEP-eligible patients included in this study were prescribed PrEP at any time during the study period. To best serve this population at highest risk for HIV, it is vital that healthcare providers understand the characteristics that put patients at risk for HIV acquisition to then facilitate productive conversations regarding PrEP and link patients to appropriate care.

11:20am – 11:40am N **Evaluation of High vs Low Dose Levetiracetam for Early Post Traumatic Seizure Prophylaxis in Patients with Traumatic Brain Injury** Parthenon 1

Moderators: Amy Duong

Presenters: Emilie Muvundamina

Evaluators: Richard Burrell

TITLE: Evaluation of High vs Low Dose Levetiracetam for Early Post Traumatic Seizure Prophylaxis in Patients with Traumatic Brain Injury

AUTHORS: Emilie Muvundamina, Parth Parikh, Madalyn Kirkwood Brakel

OBJECTIVE: To evaluate the incidence of seizures with high dose levetiracetam 1000mg every 12 hours vs low dose 500 mg every 12 hours for early post-traumatic seizure prophylaxis with traumatic brain injury.

BACKGROUND: Traumatic brain injuries (TBI) are a top contributor of trauma intensive care unit admissions in the United States. Current guidelines recommend antiepileptic drugs for prevention of early post-traumatic seizures (PTS) in TBI patients. Previous studies have found relative efficacy between phenytoin and levetiracetam however there is a scarcity of data in comparing high vs low dose levetiracetam for seizure prophylaxis in TBI patients to determine an ideal dose. Thus, this study aims to evaluate the incidence of seizures with levetiracetam 1000 mg twice daily vs 500 mg twice daily for early PTS prophylaxis in patients with TBI.

METHODOLOGY: In this single-center, retrospective, pre-post protocol implementation cohort study, patients with diagnosed TBI admitted to the trauma service between January 1, 2018 and December 31, 2021 were assessed for incidence of early PTS. Included patients were at least 18 years of age at the time of injury, with a TBI confirmed by imaging and will have received levetiracetam. Excluded patients were those less than 18 years old, patients discharged within 48 hours of admission to unit, those with past medical history of seizures, incidence of seizure prior to the first dose of levetiracetam, use of antiepileptic drugs prior to admission, allergy or contraindications to levetiracetam, creatinine clearance of less than 50 mL/min , and pregnant patients. The primary outcome was the incidence of documented clinical seizures with levetiracetam 1000 mg twice daily vs levetiracetam 500 mg twice daily. Secondary outcomes included incidence of loading doses used, time to onset of first seizure, time to first dose of levetiracetam, requirement of increased dose(s), severity of TBI on admission, hospital length of stay, intensive care unit length of stay, levetiracetam treatment duration greater than 7 days, and incidence of death.

RESULTS: The incidence of seizures in patients receiving low dose levetiracetam was 8%, while incidence in patients receiving high dose was 6%. When comparing low vs high dose, the incidence of loading dose used was 19.6% vs 10.2%, treatment duration greater than 7 days was 13.7% vs 18.4%, and mortality during admission was 23.5% vs 18.4% respectively. Time to first dose (0.92 days vs 2.3 days), length of hospital stay (10.8 days vs 15.9 days), intensive care unit stay (7.37 days vs 10.26 days), and time to seizure onset (1.29 days vs 8.76 days) were all shorter in the group receiving the lower dose.

CONCLUSIONS: High dose levetiracetam may be associated with a lower incidence of post-traumatic seizures, however this study warrants a larger clinical assessment to establish optimal dosing.

11:20am – 11:40am D **Evaluating the Impact of Antibiotic Duration in the Treatment of Culture Negative Early Onset Sepsis in the Neonatal Intensive Care Unit** Athena J

Moderators: Matt Bamber

Presenters: Darryl Wanton

Evaluators: Joshua Settle

TITLE: Evaluating the Impact of Antibiotic Duration in the Treatment of Culture Negative Early Onset Sepsis in the Neonatal Intensive Care Unit

AUTHORS: Darryl Wanton Jr., Laura Hagan, Aayush Patel, Kelly Carter

OBJECTIVE: The purpose of this study is to determine if rates of adverse outcomes differ between different treatment durations of antibiotics in preterm infants with culture negative early onset sepsis.

SELF ASSESSMENT QUESTION: There appears to be a significant difference in the rate of treatment failure between groups. (True or False)

BACKGROUND: Antibiotics are the most common therapeutic class of medication prescribed in the neonatal intensive care unit (NICU). Microbial pathogens are not frequently isolated in cultures of neonates, leading to a diagnosis of culture negative sepsis. Due to the absence of a definitive pathogen or infection source, antibiotic treatment durations can be variable. Current literature suggests that there is not an increased risk of treatment failure with shorter treatment durations in preterm infants. Conversely, there is supporting evidence that shows an increased risk of late onset sepsis, necrotizing enterocolitis, and death with treatment courses over five days.

METHODOLOGY: A retrospective chart review of patients admitted to the NICU between 1/1/2021 and 2/28/2023 who received antibiotics for the treatment of presumed early onset sepsis with negative cultures. Patients were excluded if they received treatment for a definitive infection, had culture positive early onset sepsis, or death within 24 hours of delivery. Data collection allowed for the evaluation of treatment failure, late onset sepsis, death, and necrotizing enterocolitis. The primary endpoint of this study was treatment failure, defined as suspicion for sepsis by a provider within seven days of stopping antibiotics supported by laboratory evidence.

RESULTS: In progress

CONCLUSIONS: In progress

11:20am – 11:40am S **Evaluation of Metabolic Monitoring Frequency in Patients on Long-Acting Injectable Antipsychotics (LAIs) in a Veterans Affairs (VA) Outpatient Mental Health Clinic** Parthenon 2

Moderators: Nathan Wayne
Presenters: Kelly Brown
Evaluators: Christopher Duphren

TITLE: Evaluation of Metabolic Monitoring Frequency in Patients on Long-Acting Injectable Antipsychotics (LAIs) in a Veterans Affairs (VA) Outpatient Mental Health Clinic

AUTHORS: Kelly Brown, Ashley Glass, Hannah Rabon, Camille Robinette

OBJECTIVE: To evaluate the frequency of metabolic monitoring in patients prescribed long-acting injectable (LAI) antipsychotic medications.

SELF ASSESSMENT QUESTION: What are the five monitoring parameters associated with metabolic syndrome in patients taking LAIs?

BACKGROUND: LAI formulations of antipsychotic medications improve adherence, decrease readmission, and decrease mortality. Although there is a difference in degree of metabolic impact among the agents, all antipsychotics pose a risk of weight gain $\geq$ 7% of baseline body weight. Patients are also at risk of developing metabolic syndrome. Metabolic syndrome is defined by the presence of at least three of five risk factors including: elevated waist circumference (> 102 cm for men; > 88 cm for women), elevated triglycerides ($\geq$ 150 mg/dL) or on triglyceride lowering drug therapy, reduced HDL-C (< 40 mg/dL in men; < 50 mg/dL in women) or on drug treatment for reduced HDL-C, elevated blood pressure (systolic $\geq$ 130 mmHg and/or diastolic $\geq$ 85 mmHg) or on antihypertensive treatment, and elevated fasting glucose $\geq$ 100 mg/dL or on glucose lowering therapy. According to 2020 American Psychiatric Association (APA) schizophrenia practice guidelines, all patients should be screened for metabolic syndrome at baseline, four months after initiating a new antipsychotic, and at least annually thereafter.

Metabolic syndrome related to the use of antipsychotics is associated with increased mortality and reduced quality of life in individuals with schizophrenia. The metabolic abnormalities associated with metabolic syndrome contribute to increased obesity, sleep apnea, and development of diabetes mellitus and cardiovascular disease (CVD).

At the Salisbury Veteran's Affairs Healthcare System, it would be valuable to assess how frequently these metabolic parameters are assessed in patients prescribed long-acting injectable antipsychotics. Information gathered will help determine if additional education is needed regarding recommended monitoring to advocate for the health and safety of our Veterans.

METHODOLOGY: All Veterans with an active prescription for a LAI medication at the Salisbury VA Health Care System between 07/01/2022 and 12/31/2022 were reviewed. Chart reviews were performed to collect data on frequency of VA metabolic monitoring. The primary objective was to assess the appropriateness of metabolic monitoring frequency based on guideline recommendations. Secondary objectives included assessing patient metabolic status while on LAI therapy including; BMI, waist circumference, A1c, blood glucose, new diagnosis of hypertension, new diagnosis of type 2 diabetes mellitus, hypertriglyceridemia, and HDL. Safety outcomes include assessing for appropriate monitoring of abnormal involuntary movement scale (AIMS) exams. Descriptive statistics was used to assess outcomes.

RESULTS: Of the patients on LAIs (n = 93), blood pressure was collected in 96.8%, FBG in 81.7%, triglycerides and HDL in 68.8%, and waist circumference in 0%. Additional monitoring included BMI and HgbA1c which were addressed in 95.7% and 63.4% of patients, respectively. AIMS exam was appropriately monitored in 36.6% of patients. Lipid panels were ordered but not completed for 5% of patients, and both FBG and HgbA1c were ordered but not completed for 8% of patients. If frequency of labs ordered but not completed is added to those completed, 26% of patients would be missing lipid panels, 10% FBG, and 22% HgbA1c. Average FBG was the only monitoring parameter that met the definition of metabolic syndrome.

CONCLUSIONS: Overall, the results of this study highlight that there is a need for more consistent metabolic monitoring in patients on LAIs at the Salisbury VA Healthcare System. Results also indicate that patients not

completing laboratory orders contributed to lack of monitoring. Providing an education in-service on metabolic parameters that are monitored the least can help to improve consistency in the future.

11:20am – 11:40am T **Evaluation of Safety of Tacrolimus in the Non-Transplant Hospital Setting** Athena C

Moderators: Jason Dover
Presenters: Scott Gourley
Evaluators: Elizabeth Oglesby

TITLE: Evaluation of Safety of Tacrolimus in the Non-Transplant Hospital Setting

AUTHORS: Scott Gourley, Hannah Young, Conner Correll, Andrew Mardis, Julie Ann Justo, Teng Chengwen

OBJECTIVE: Describe recent research pertaining to tacrolimus related medication errors and its importance of continuation in a non-transplant hospital

SELF ASSESSMENT QUESTION: T/F: Researchers were able to find that 1 in 4 patients on tacrolimus, who were admitted to Prisma Health Midlands facilities were susceptible to medication error around their regimen.

BACKGROUND: Tacrolimus is a calcineurin inhibitor that exhibits its action by binding proteins necessary for T-cell gene transcription and inhibiting subsequent production of inflammatory cytokines. It has highly variable pharmacokinetics that are further subject to genetic variation, drug interactions, diet, and medication formulation. Tacrolimus is not renally eliminated, but alteration in kidney function can alter its metabolism. Altered kidney function can occur through several mechanisms such as high blood pressure, diabetes, dehydration, drug induced injury, and electrolyte abnormalities.
Due to the intrapatient variability, a therapeutic drug monitoring (TDM) assay was established to delineate safe and efficacious use of tacrolimus. Sub-therapeutic tacrolimus levels for a given transplant goal increase the risk of graft rejection and ultimately failure of the transplant. Conversely, supra-therapeutic tacrolimus levels increase the likelihood of adverse drug reactions such as hypertension, nephrotoxicity, neurotoxicity, dyslipidemia, diabetogenicity, and cardiovascular death. A proven way to combat IPV has been the introduction of extended-release formulations of tacrolimus. However due to the novelty of these extended-release formulations, immediate release tacrolimus remains a preferred medication on many hospital formularies.
With multiple products and dosing strategies available, the risk of tacrolimus medication errors during transitions of care is high. Many systemic processes such as medication reconciliation, formulary management, and pharmacist intervention and/or consultation can affect tacrolimus errors when patients are admitted to the hospital. While a plethora of studies have investigated the causes of medication errors in the outpatient setting, there is a lack of data in the hospital setting. Prisma Health Midlands does not currently have a standardized process for the evaluation of tacrolimus regimens.
Pharmacy completed prior to admission (PTA) medication history services are available by consult, but are not automatically completed. Clinical review may be completed at the discretion of the covering pharmacist, physician, or nurse. This study aims to identify potential areas of process improvement at Prisma Health Midlands for the reduction of tacrolimus medication errors.

METHODOLOGY: This study is a single healthcare system, retrospective cohort study. Patients included are those who were admitted to Prisma Health Midlands affiliates from March 1, 2021, to October 31, 2022, and received oral tacrolimus for solid organ transplant. The primary outcome will be frequency of medication errors in initiation of tacrolimus while inpatient. Additional outcomes analyzed will be frequency of PTA medication history, access to previous dosing regimen via electronic health record, and frequency of appropriate TDM.

RESULTS: Of 176 patients screened, 132 met inclusion criteria. The primary outcome showed that 26.5% of patients experienced a tacrolimus medication error. Both dose/formulary discrepancy and therapy interruption were associated with increased medication errors, as compared to justified dose adjustments ($p < 0.0001$). However, a statistically significant difference in tacrolimus related medication errors due to baseline dose/formulary discrepancy compared to therapy interruption could not be discerned. All secondary outcomes failed to achieve statistical significance.
CONCLUSIONS: This research shows a high rate of tacrolimus related medication errors during transitions of care at non-transplant facilities.

11:40am – 12:00pm B **Evaluation of the Management of Chronic Pain Conditions by a Clinical Pharmacy Specialist Integrated within the Primary Care Setting** Olympia 1

Moderators: Tasha Woodall

Presenters: Courtney Clarke, PharmD, MBA

Evaluators: Nathaniel Swanson

TITLE: Evaluation of the Management of Chronic Pain Conditions by a Clinical Pharmacy Specialist Integrated within the Primary Care Setting

AUTHORS: Courtney Clarke, PharmD, MBA

OBJECTIVE: To evaluate the impact of a pharmacist-led outpatient clinic managing chronic pain in the primary care setting

SELF ASSESSMENT QUESTION: True or false: the most common pharmacist-led interventions made thus far have been dose reductions.

BACKGROUND: Though there are numerous ways for Veterans at VA Tennessee Valley Healthcare System (TVHS) to receive treatment for chronic pain conditions, interventions typically begin in the primary care setting. To assist with the vast workload associated with outpatient pain management, clinical pharmacy specialists (CPS) have expanded services in order to help expand access. Pharmacists are also able to concentrate their efforts on the treatment of specific disease states and provide closer follow up. Traditionally, Patient Aligned Care Team (PACT) pain has been managed by CPS' specifically trained in pain, palliative care and mental health through referrals coming from the patient's primary care provider (PCP). Since these PACT CPS' and PCPs are already used to working closely with each other, it makes sense for PACT pharmacists to expand their scopes in order to treat disease states they are familiar with, by treating pain in these patients for which a provider relationship already exists. Pharmacy pain services have only continued to expand at VA TVHS since their initial establishment. Nationally, the Clinical Pharmacy Practice Office (CPPO) are encouraging that CPS' continue to broaden their role as providers, and the growth into common chronic pain disease states are something that PACT pharmacists should consider expanding into. This should not only increase patient access to pain management care but also allow for the those with less complex pain conditions to be seen in a primary care setting as opposed to seeking even more specialized pain management.

METHODOLOGY: Pending

RESULTS: Pending

CONCLUSIONS: Pending

11:40am – 12:00pm B **Impact of Pharmacogenomic (PGx) Testing Results on Proton Pump Inhibitor (PPI) Prescribing Patterns** Parthenon 2

Moderators: Nathan Wayne
Presenters: Micah Corriher
Evaluators: Christopher Duphren

TITLE: Impact of Pharmacogenomic (PGx) Testing Results on Proton Pump Inhibitor (PPI) Prescribing Patterns

AUTHORS: Micah Corriher, Mary Caputi, Camille Robinette

OBJECTIVE: To evaluate the use of pharmacogenomic testing when prescribing PPIs at the Salisbury Veterans Affairs Health Care System.

SELF ASSESSMENT QUESTION: Describe a medication therapy intervention that can be made after PGx testing is completed.

BACKGROUND: Proton pump inhibitors (PPIs) are commonly prescribed in a myriad of conditions including gastroesophageal reflux disease, eosinophilic esophagitis, erosive esophagitis, gastric/duodenal ulcers, and Helicobacter pylori infection. PPIs are metabolized by cytochrome P450-2C19 (CYP2C19) and are identified as either ultra-rapid, rapid, normal, intermediate or poor. Pharmacogenomic testing is useful because subsequent to phenotype identification, the optimal PPI/regimen can be prescribed. Benefits of pharmacogenomic testing include prescribing an appropriate regimen to ensure a therapeutic response in a timely manner, optimize patient outcome, and minimize excess plasma concentrations and adverse effects. The purpose of this project is to evaluate use of pharmacogenomic testing when prescribing PPIs at the Salisbury VA Health Care System (SVAHCS).

METHODOLOGY: This is a retrospective quality improvement project. A chart review will be completed for patients in which a Prior Authorization Drug Request [PADR] for a PPI was approved and the recommendation was made to consider pharmacogenomic testing. Data collection period is December 1, 2021 through June 30, 2022. The primary outcome is to determine the total recommendations made for pharmacogenomic testing, if testing was completed, testing results, and if the test results impacted the therapy choice. Secondary outcomes include number of PPIs failed prior to testing recommendation and number of providers that followed the recommendation based on the Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines.

RESULTS: A chart review was completed for 97 Veterans for whom a PPI PADR was submitted (83.5% males; mean age, 61 years). All the Veterans had trialed at least one of the 1st generation PPI agents (omeprazole and/or pantoprazole) prior to submission of the PADR for a non-formulary PPI. The most requested non-formulary PPI was esomeprazole (79.4%); 73.2% of these PADR's were submitted by gastroenterologists. Pharmacogenomic testing recommendations were made in 74 cases; 36 cases underwent PGx testing along with 38 recommendations not being accepted.
A total of 36 Veterans underwent PGx ***testing***: 21/36 were tested prior to PADR entry and the remaining 15 were tested after the PADR approval note included the recommendation to test. Pharmacogenomic testing results included 3 rapid metabolizers; 6 normal metabolizers; and 6 intermediate metabolizers. Of note, therapy was changed by the provider in 1 patient after review of testing results. The remaining 35 Veterans were already **receiving** the recommended therapy prior to PGx testing or based on current PGx results.

CONCLUSIONS: Although this was a small cohort of Veterans who completed PGx testing, the results highlight the importance of prescriber education to optimize PPI prescribing patterns. PGx testing may reduce the time to therapeutic efficacy. This also highlights the potential impact of pharmacist recommendations for pharmacogenomic testing for all available test components.

11:40am – 12:00pm B **Impact of Pharmacy Involvement on Care Gap Closure in Managed Medicaid Patients** Olympia 2

Moderators: Ryan Dushak
Presenters: Ellen Montgomery
Evaluators: Stephanie Hopkins

TITLE: Impact of Pharmacy Involvement on Care Gap Closure in Managed Medicaid Patients

AUTHOR: Ellen Montgomery

OBJECTIVE: The purpose of this project is to describe the impact of pharmacy involvement on Medicaid gap closure in Managed Medicaid patients receiving care at Atrium Health Wake Forest Baptist outpatient facilities.
BACKGROUND: The Center for Medicare and Medicaid Services (CMS) is moving away from the traditional fee-for-service healthcare model to value-based care (VBC) reimbursement models. Quality measures, or care gaps, are Medicaid's tangible way to reimburse health systems for the patients they care for based on objective data. With such high risk-rewards stakes, all members of the healthcare team must be involved to best care for patients and receive maximum reimbursement for patients managed. Pharmacists are well-positioned to impact VBC and increase Managed Medicaid reimbursement through medication management. The pharmacy risk score (PRS) was a tool created by the population health team at Atrium Health Wake Forest Baptist to increase efficiency of pharmacist intervention on patients with Managed Medicaid. It stratifies patients based on risk factors that may lead them to fail Medicaid metrics and identify patients for whom a pharmacist could assist in gap closure.
METHODOLOGY: In a single-center, retrospective, cohort study, Managed Medicaid-insured patients seen at outpatient facilities with a PRS ≥ 6 failing both hemoglobin A1c (HbA1c) and blood pressure (BP) Medicaid quality measures were assessed for care gap closure at the end of 2022. The intervention group included patients who were reviewed by a pharmacist, compared to the control group of patients not reviewed by a pharmacist. The primary outcome was closure of at least one care gap. Secondary outcomes were number of each gap closed, frequency of recommendations made by pharmacists, and frequency of recommendations implemented by providers. Statistical analyses included chi-squared, Fisher's exact, and Wilcoxon rank sum tests to characterize baseline characteristics. Univariate statistics and chi-squared tests were used to evaluate the primary outcome. Secondary outcomes were evaluated using descriptive statistics. The study was powered at 80% with an alpha of 0.05.
RESULTS: There were 50 patients in the intervention group and 30 patients in the control group. The primary outcome occurred in 37 (74%) of patients in the intervention group and 15 (50%) of patients in the control group, with an odds ratio of 2.85 and a p-value of 0.032. The HbA1c gap was closed in 30 (60%) of patients in the intervention group and 8 (27%) of patients in the control group. The BP gap was closed in 24 (48%) of patients in the intervention group and 11 (37%) of patients in the control group. Within the intervention group, the number of recommendations made by a pharmacist was associated with gap closure with a significant p-value of 0.012. No significant difference was found between the two groups in the number of recommendations implemented by providers.

CONCLUSIONS: Pharmacy intervention was associated with approximately a 3x increase in closure of at least one care gap in Medicaid patients. HbA1c gap closure was achieved more frequently than BP gap closure. The number of recommendations made by the pharmacy team was associated with increased gap closure regardless of the number of recommendations implemented by providers. The PRS accurately identified patients who would benefit most from pharmacy involvement, suggesting that utilizing a PRS of 6 or higher to target patients was validated as a way to increase gap closure.

CONTACT INFORMATION: Ellen Montgomery - ellmontg@wakehealth.edu

11:40am – 12:00pm C **Evaluation of inpatient initiation of sodium glucose cotransporter-2 inhibitors for heart failure** Athena D

Moderators: Sarah-Anne Blackburn

Presenters: Rachele Hollis

Evaluators: Chelsea Moran

TITLE: Evaluation of inpatient initiation of sodium glucose cotransporter-2 inhibitors for heart failure

AUTHORS: Rachele Hollis, Hiba Yacout, Kristina Evans, Michael Knauss

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Sodium glucose cotransporter 2 inhibitors (SGLT-2i) have shown benefit in patients with heart failure regardless of type 2 diabetes. Research demonstrated the use of SGLT-2i in heart failure with reduced ejection fraction (HFrEF) results in a decrease in morbidity and mortality related to heart failure. SGLT-2i are now a Class 1a recommendation for patients with HFrEF in the AHA/ACC/HFSA Heart Failure Guidelines. Due to increasing literature and guideline recommendations for SGLT-2i in patients with heart failure, prescribing has increased. Dapagliflozin is the formulary SGLT-2i at Grady Health System (GHS). GHS is a large, public, academic medical center in Atlanta, GA. This study assessed prescribing and readmission rates after inpatient initiation of SGLT2i.

METHODOLOGY: A single-center, retrospective chart review was conducted on patients diagnosed with HFrEF and initiated on a SGLT-2i during admission (intervention group) compared to patients with HFrEF not initiated on a SGLT-2i (control group). The purpose of this study is to evaluate the impact of inpatient initiation of SGLT-2i on heart failure readmission rates. Patients with ejection fraction < 40% were included if a SGLT-2i was initiated prior to discharge. Patients were excluded if SGLT-2i was initiated prior to admission. The primary outcome was to compare heart failure readmission rates at 30 days from discharge with and without the initiation of an SGLT-2i. Secondary outcomes included a composite endpoint of emergency department visits, any hospitalization, or heart failure readmission within 30 days of discharge, heart failure readmission within 60 days of discharge, percent of patients on guidelines directed medical therapy at discharge, percent of patients with co-morbidities of diabetes mellitus or chronic kidney disease. Secondary outcomes associated with the use of a SGLT-2i included percent of patients initiated on the heart failure indicated dose, percent of patients with genitourinary infections within 60 days of discharge, percent of patients with euglycemic diabetic ketoacidosis within 60 days of discharge, percent of patients who received medication at discharge, and percent of patients who refilled prescription within 30 and 60 days from discharge.

RESULTS: Seventy-two patients were included to be reviewed during both the control and intervention periods. Majority of patients were black (97%) and male (79%). HF-related readmissions occurred more often in the intervention group compared to the control group (17 vs 11, respectively) (p=0.208). In patients with four or less admissions within the 12 months prior to index admission, there were less HF-related readmissions at both 30- and 60-days post-discharge (30 days: 4, 6% vs 11, 15%; 60 days: 11, 15% vs 19, 26%). There were no incidences of genitourinary infection or euglycemic diabetic ketoacidosis within 60 days of discharge. The heart failure indicated SGLT-2i dose for HFrEF was prescribed in 51 patients (71%) and 56 (78%) patients received the medication prior to discharge. A total of 24 (33%) patients refilled the SGLT-2i ordered at approximately 30 days after discharge and 17 (24%) patients refilled at approximately 60 days after discharge.

CONCLUSIONS: The initiation of SGLT-2is resulted in increased HF-related readmissions compared to the control group. However, in patients with four or less admissions within 12 months prior to index admission, the initiation of SGLT-2i resulted in less HF-related readmissions at 30- and 60-days post-discharge.

11:40am – 12:00pm R **Assessment of Heparin Twice Daily Versus Three Times Daily For Venous Thromboembolism Prevention** Athena I

Moderators: Sarah Todd

Presenters: Christian Hardrick

Evaluators: Azur Eckley

TITLE: Assessment of Heparin Twice Daily Versus Three Times Daily For Venous Thromboembolism Prevention

AUTHORS: Christian Hardrick, Alyssa Osmonson, Jessica Starr

OBJECTIVE: Determine situations or patient populations in which BID or TID heparin would be preferred

SELF ASSESSMENT QUESTION: Is there a distinguishable difference between SQ heparin BID vs TID for VTE prophylaxis or bleeding events?

BACKGROUND: Evaluate twice daily versus three times daily dosing of prophylactic heparin to prevent venous thromboembolism (VTE) events and minimize bleeding

METHODOLOGY: This study is a single-center, retrospective cohort study of electronic medical records at Princeton Baptist Medical Center between January 1, 2021 and December 31, 2021. Included patients were 19 years of age and older, admitted with an order for VTE prophylaxis with subcutaneous unfractionated heparin. Patients with an active COVID-19 infection, hip or knee arthroplasty, received a dose of therapeutic anticoagulation, heparin-induced thrombocytopenia, pregnancy, active cancer, BMI greater than or equal to 40 kg/m2, or a documented missed dose of prophylactic heparin during admission were excluded. A VTE event was classified as a documented deep venous thromboembolism (DVT) or pulmonary embolism (PE) while on prophylactic heparin for a minimum of twenty-four hours since admission. The primary outcome was the rate of VTE events. Secondary outcomes include the individual components of the primary outcome, incidence of DVT and incidence of PE, as well as the rate of minor and major bleeding defined by parameters set by the International Society of Thrombosis and Haemostasis. A chi-squared test was utilized for nominal data.

RESULTS: 300 total patients were included, 147 patients in the BID group and 153 in the TID group. The primary outcome occurred in 2% (3) of patients in the BID group and 0.7% (1) of patients in the TID group ($p = 0.36$). For secondary outcomes, 1.4% (2) of patients in the BID group and 0.7% (1) in the TID group developed a DVT ($p = 0.54$). The only PE occurred in the BID group ($p = 0.31$). Bleeding events only occurred in the TID group. There was both a minor bleed (1) and a major bleed (1) ($p = 0.33$ for both outcomes).

CONCLUSIONS: There was not a significant difference in VTE or bleeding events between BID and TID dosing of subcutaneous heparin. Both dosing regimens can be utilized interchangeably. Based on historical trial data, BID is preferable for patient with increased bleeding risk, and TID dosing preferred for patients at increased risk of a VTE event.

11:40am – 12:00pm R **Evaluation of Argatroban Usage Pattern in Patients with Clinical Possibility of Heparin Induced Thrombocytopenia (HIT)** Athena G

Moderators: Cristina Plemmons
Presenters: Roxana Palacios
Evaluators: Hania Zaki

TITLE: Evaluation of Argatroban Usage Pattern in Patients with Clinical Possibility of Heparin Induced Thrombocytopenia (HIT)

AUTHORS: Roxana Palacios, Emily Johnston, Kaitlyn Ledet, Michael Ezebuenyi

Background/Purpose: HIT is a serious adverse reaction to unfractionated heparin (UFH) or low molecular weight heparin (LMWH) which occurs in 0.2-5% of patients receiving therapy1-3. Although, it is not required to document a 4Ts score prior to ordering argatroban, it can be hypothesized that appropriate initiation and timely discontinuation of argatroban will lead to decreased cost.

Methodology: This study is a single-center retrospective chart review of patients admitted to Our Lady of the Lake Regional Medical Center between April 2017 and June 2022 who were initiated on argatroban for suspected heparin induced thrombocytopenia (HIT). Inclusion criteria include being at least 18 years old and having a confirmatory HIT immunoassay or SRA test. The primary objective is to determine the length of argatroban continuation in patients with a confirmed negative HIT immunoassay test. Secondary objectives include documented 4Ts score in patients, additional cost of argatroban usage due to extended duration, hematology consult, and hospital length of stay. A total of 40 patients was determined to meet a 90% power and a P value <0.05 was considered statistically significant.

Results: A total of 42 patients were included in the study. For the primary outcome, the mean duration of argatroban continuation post negative results was 2 days. The mean cost of argatroban post negative results was $1119 and the total cost was $36,927. Both were statistically significant. Only 21% of patients had a documented 4Ts score and only 33% of patients had a hematology consult. A logistic regression analysis did not show any significance for documented 4Ts score, hematology consult, or hospital length of stay.

Conclusion: This was one of the first studies evaluating the number of days patients are continued on argatroban after a negative HIT or SRA result and assessing potential contributing factors associated with argatroban continuation.

Presentation Objective: Identify the need for a protocol to reduce the number of days patients are continued on argatroban after a confirmed negative HIT immunoassay. **Self-Assessment Question:** What are the components of the 4Ts score?

11:40am – 12:00pm R **Impact of Pharmacist-driven Interventions on Diabetic Ketoacidosis (DKA) in a Non-teaching Community Hospital** Athena H

Moderators: Connie Street
Presenters: Morgan White
Evaluators: Lauren Floris

TITLE: Impact of Pharmacist-driven Interventions on Diabetic Ketoacidosis (DKA) in a Non-teaching Community Hospital

AUTHORS: Morgan T. White, Kyle Allmond, Stephanie Grimes, Madison Iman, Alan Knauth

OBJECTIVE: Will be included in presentation.

SELF ASSESSMENT QUESTION: Will be included in presentation.

BACKGROUND: Diabetic ketoacidosis is a life threatening but avoidable complication of diabetes. Diagnosis is based on hyperglycemia with severity being defined by the American Diabetes Association (ADA) by other laboratory abnormalities. Traditional treatment includes intravenous (IV) insulin infusion and automatic ICU admission. Upon anion gap resolving, patients are started on basal insulin 2-4 hours prior to discontinuation of the IV insulin to prevent rebound hyperglycemia. The early initiation of basal insulin may decrease time to hyperglycemia resolution, faster anion gap closure, and faster discontinuation of insulin drip.

METHODOLOGY: This will be an IRB-approved, observational, single-center, retrospective chart/intervention review evaluating pharmacist-driven interventions. Eligible patients from October 1, 2022 to January 1, 2023, will include those aged 18 years or older, diagnosed with DKA with orders for or initiated on an IV insulin drip. The primary objective will be resolution of DKA and prevention of insulin drip and/or ICU admission. Secondary objectives include comparing ICU and hospital length of stay (LOS), occurrence of treatment failure, and occurrence of hypoglycemia. Patients will be excluded if hyperglycemia is determined to not be caused by DKA or death of the patient. Pharmacists in the ICU will make recommendations to begin basal insulin within 6-12 hours of DKA diagnosis and order for IV insulin. ED pharmacist interventions will be initiation of rapid acting subcutaneous insulin in the ED to resolve hyperglycemia prior to ICU admission. Accepted intervention outcomes will be compared to rejected intervention outcomes. Should all interventions be accepted, will compare outcomes with previous MUE data.

RESULTS: In progress.

CONCLUSIONS: In progress.

11:40am – 12:00pm | **Determining the Financial Impact of Blood Culture Contamination in a Community Hospital Setting** Athena A

Moderators: Laura Schalliol
Presenters: David Pierce
Evaluators: Dianne May

TITLE: Determining the Financial Impact of Blood Culture Contamination in a Community Hospital Setting
AUTHORS: David Pierce, Jarett Worden, Kelley Baxter
OBJECTIVE: Define the total financial impact of contaminated blood culture(s) by assessing the direct cost associated with unnecessary antimicrobial therapy, unnecessary imaging studies, and repeat blood cultures.
SELF ASSESSMENT QUESTION: How might blood culture contamination influence the total direct cost of hospitalization in a community hospital setting?
BACKGROUND: Blood cultures are critically important in determining the etiology of sepsis and must therefore be both highly accurate and precise. A 2016 study found that sepsis is the single most expensive condition to treat in the US healthcare system accounting for approximately $24 billion annually. Several clinical studies suggested that anywhere from 26% to 50% of all positive blood cultures contain a contaminant. The American Society for Microbiology and the Clinical Laboratory Standards Institute have established a goal contamination rate of less than 3%, with less than 1% being achievable with adherence to best practices. Contaminated blood cultures may lead to increased patient exposure to unnecessary treatment, unnecessary diagnostic testing, increased length of hospitalization (LOS), and increased risk of nosocomial infection.
METHODOLOGY: This was a single-center retrospective chart review at Ascension Saint Thomas Hospital West (ASTHW) of up to 100 patients with at least one contaminated blood culture between January 1, 2021 and December 31, 2021. Patients were at least 18 years of age or older with a hospital stay of at least 48 hours after preliminary blood culture result(s). Patients were excluded if they were pregnant, incarcerated, or had a confirmed bacterial coinfection at the time of study. The primary outcome of this study was the total financial impact of contaminated blood culture(s). This was determined by assessing the direct cost (the cost incurred by the institution) associated with unnecessary antimicrobial therapy, unnecessary imaging studies, and repeat blood cultures. Secondary outcomes included length of hospitalization, total days of antimicrobial therapy, incidence of acute kidney injury, and incidence of nosocomial infection. REDCap (Research Electronic Data Capture) was used to collect data and de-identify patient information.
RESULTS: One hundred patients were included in the study. The average length of stay for patients with contaminated blood cultures was 10.6 days compared to 6.2 days in the general patient population. The average cost per admission was $27,555 for patients with contaminated blood cultures compared to $16,080 for the general population. There were 37 imaging studies ordered and 146 sets of repeat blood cultures. The total direct cost of imaging studies in patients with contaminated blood cultures was $6,733 in this cohort. The total direct cost of repeat blood cultures was $26,747. Contaminated blood cultures resulted in 203 days of unnecessary antimicrobial therapy and $3,291 of additional direct costs. Three patients experienced AKI and 9 patients experienced a nosocomial infection.
CONCLUSIONS: This study found that contaminated blood cultures may result in increased direct cost of hospital admission, increased direct cost associated with unnecessary antimicrobial therapy and diagnostic testing at ASTHW.

11:40am – 12:00pm | **Evaluation of outcomes and risk factors associated with elevated vancomycin minimum inhibitory concentrations in patients with methicillin-resistant Staphylococcus aureus bacteremia** Athena B

Moderators: Stephanie A. Ring
Presenters: Zachary Holmes
Evaluators: Christopher Gore

TITLE: Evaluation of outcomes and risk factors associated with elevated vancomycin minimum inhibitory concentrations in patients with methicillin-resistant Staphylococcus aureus bacteremia

AUTHORS: Zach Holmes, Rachel Musgrove, Geneen Gibson, Joseph Crosby, Stanley Huffman, Natt Patimaviruih

OBJECTIVE: Identify outcomes and risk factors associated with elevated vancomycin MICs in patients with MRSA bacteremia

SELF ASSESSMENT QUESTION: In patients with MRSA bacteremia who were switched from vancomycin to a different anti-MRSA agent, what was the most common reason for the switch?

BACKGROUND: Current guidelines by the Infectious Diseases Society of America (IDSA) recommend vancomycin or daptomycin as first-line treatment for methicillin-resistant Staphylococcus aureus (MRSA) bacteremia. Vancomycin remains the initial treatment option for most hospitals, including St. Joseph's/Candler; however, whether or not vancomycin is less effective in patients with MRSA bacteremia and minimum inhibitory concentrations (MIC) at the higher end of the susceptibility range remains an area of clinical debate. The purpose of this retrospective chart review is to identify risk factors associated with elevated vancomycin MICs and determine if there is any association between elevated MICs and treatment outcomes in these patients.

METHODOLOGY: Patients admitted to St. Joseph's/Candler Health System from January 1, 2021 to September 30th, 2022 with a positive blood culture for MRSA were separated into groups of ≤1.0, 1.5, and 2.0 based on vancomycin MIC value by E-test. These groups were evaluated and compared based on clinical outcomes and pre-identified risk factors for elevated MICs. These risk factors included vancomycin exposure in previous 30 days, chemotherapy, chronic tunneled lines, ≥4 hospital admissions in 12 months, previously elevated vancomycin MIC in past 90 days, hemodialysis, and total parenteral nutrition. Patients were excluded if they had polymicrobial bacteremia with a gram-negative organism or had an MIC ≥4. The primary outcome was a composite endpoint of in-hospital mortality, bacteremia ≥7 days, and change in anti-MRSA therapy due to worsening signs or symptoms.

RESULTS: A total of 78 patients were included in the study. There were 3 patients with a vancomycin MIC ≤1.0, 29 with an MIC of 1.5, and 40 with an MIC of 2.0. For the other 6 patients, an E-test was not performed. Baseline characteristics were similar between groups. Due to a low number of patients with an MIC ≤1.0, we were unable to compare outcomes for this group. There was no significant difference found in the odds of the composite endpoint between MIC groups of 1.5 and 2.0 (p=0.559). Additionally, no significant differences were found when comparing secondary outcomes or risk factors. 28/40 (70%) patients with an MIC of 2.0 and 14/29 (48%) with an MIC of 1.5 received daptomycin as definitive therapy. Most of these patients were switched from vancomycin to daptomycin due to elevated MIC, a parameter that was not included in the composite endpoint.

CONCLUSIONS: The results of this study suggest there are no differences in clinical outcomes or risk factors in patients receiving vancomycin for MRSA bacteremia with MIC values of 1.5 and 2.0. It's unclear if any difference exists between these groups and MICs ≤1.0. The increased use of daptomycin within our health system raises the question should we be considering it as initial therapy for these patients. Future studies comparing vancomycin to daptomycin for MRSA bacteremia with elevated MICs could help answer this and determine the best course of therapy in this patient population.

11:40am – 12:00pm L **Incidence of SGLT2 Inhibitor Associated Diabetic Ketoacidosis** Athena J

Moderators: Matt Bamber
Presenters: Trevoria Dendy
Evaluators: Joshua Settle

TITLE: Incidence of SGLT2 Inhibitor Associated Diabetic Ketoacidosis
AUTHORS: Trevoria Dendy, Elizabeth Clegg, Nancy Goodbar
OBJECTIVE: The purpose of this research is to determine the incidence of Euglycemic Diabetic Ketoacidosis in patients at a rural emergency care center who have been prescribed SGLT-2 inhibitors.
SELF ASSESSMENT QUESTION:
What is one diagnostic value used in this study to determine if criteria was met for euDKA diagnosis?
A.A1C > 7% B.Blood glucose < 400 ug/mL C.Anion gap < 10 D.Presence of urine ketones

BACKGROUND: SGLT2 inhibitors such as canagliflozin, dapagliflozin, empagliflozin, and ertugliflozin inhibit the sodium-glucose transporter 2 in the proximal renal tubules. This class of medication reduces the reabsorption of filtered glucose from the tubular lumen and lowers the renal threshold for glucose, resulting in increased urinary excretion of glucose and a decrease in plasma glucose levels.

Diabetic Ketoacidosis (DKA) results from an insulin deficiency with or without insulin resistance. This causes increased glucagon production and the release of free fatty acids, leading to the production of ketone bodies. Underlying conditions that cause a reduction in glucose availability increases the risk of DKA. Due to SGLT2 inhibitors' mechanism of action, they are thought to increase the risk of DKA.

In 2015 the FDA issued a warning for SGLT2 inhibitor associated DKA following 20 case reports. Given the severity of DKA, providers at our institution have voiced hesitation with prescribing SGLT2 inhibitors despite their benefit in type 2 diabetes mellitus, heart failure, and chronic kidney disease.
METHODOLOGY: Eligible patients are those who are ≥18 years old, who have been encountered at the Emergency Care Center at Self Regional Healthcare and were on SGLT2 inhibitors at home at the time of the encounter.

RESULTS:
- Primary Outcome: The incidence of euglycemic DKA in patients at a rural emergency care center: 3 (4.3%) patients on SGLT2is where diagnosed with euDKA.
- Secondary Outcome: Significant differences in comorbidities -- There were no statistically significant difference in cormorbidities among patients diagnosed with euDKA.
- Secondary Outcome: Incidence of euglycemic DKA associated with SGLT2i prescribed -- 1 (33.3%) of patients were taking canagliflozin and 2 (66.7%) of patients were taking empagliflozin who were diagnosed with euDKA.

CONCLUSIONS: Most patients encountered in the ECC during the study period did not meet criteria for euDKA. All patients diagnosed with euDKA had comorbidites of HTN and T2DM, however these results were not statistically significant. There is further investigation needed to determine the significance of SGLT2i use and euDKA, as well as the need for increased utilization of C-peptide levels to determine its significance.

11:40am – 12:00pm O **Clinical Outcomes of an Oncology-Pharmacist Managed Inpatient Service for the Management of Febrile Neutropenia** Athena C

Moderators: Jason Dover

Presenters: Natalie Hurst

Evaluators: Elizabeth Oglesby

TITLE: Clinical Outcomes of an Oncology-Pharmacist Managed Inpatient Service for the Management of Febrile Neutropenia

AUTHORS: Natalie Hurst, Paul Hardy, Hima Patel, Stephen Aiken, Haley Adams, Courtney Mallon

OBJECTIVE: This retrospective study evaluated the differences in adherence rates to current national guidelines on antimicrobial therapy in febrile neutropenia between a pre-oncology and oncology pharmacy managed cohort.

SELF ASSESSMENT QUESTION: What are some of the complications of inappropriate antimicrobial administration?

BACKGROUND: Febrile neutropenia remains a prevalent oncologic emergency in patients receiving cytotoxic chemotherapy. Guidelines have been published to guide appropriate initiation, selection, and escalation of antimicrobial therapy, and empiric antimicrobial therapy is typically recommended for inpatient management. Only about 40-50% of febrile neutropenia cases have an infectious etiology identified, typically leading to an extended duration of broad-spectrum antibiotics. Prior to 2020, the University of Tennessee Medical Center (UTMC) Knoxville Campus did not have an oncology pharmacy service staffing the inpatient Oncology Medical-Surgical unit. With the re-organization of the Oncology Medical-Surgical Unit, an oncology pharmacy service now manages any patient admitted for active chemotherapy or for an oncologic emergency, such as febrile neutropenia.

METHODOLOGY: This study is a retrospective chart review of patients admitted to the oncology Medical-Surgical unit between March 14, 2019 and March 17, 2022. Adult patients (aged > 18) were included if they were admitted with an ICD-10 diagnosis code for febrile neutropenia or received orders using an inpatient Febrile Neutropenia Admit computerized provider order entry pathway. Patients were divided into the following two cohorts: pre-oncology pharmacy managed cohort (March 2019 to September 2020) and an oncology pharmacy managed cohort (September 2020 to March 2022). Data was collected on inpatient utilization of antimicrobial agents with a primary endpoint assessing adherence to current national consensus guidelines on appropriate empiric antimicrobial use for febrile neutropenia between the two cohorts. Secondary endpoints included appropriateness of granulocyte-colony stimulating factor (G-CSF) use and 30-day unplanned re-admission rates. A power analysis between the two cohorts determined that a total of 186 patients would be needed to reach adequate power to detect a 20% effect size between study cohorts for the primary outcome.

RESULTS: Two-hundred and forty-nine patients were included in the final analysis. Adherence to national guidelines on the management of febrile neutropenia regarding vancomycin use was 50% in the clinical-pharmacist managed cohort and 67% in the oncology-pharmacist managed cohort. Non-adherence was reduced to 33% in the oncology-pharmacist managed cohort as compared to 50% in the clinical-pharmacist managed cohort. A statistically significant difference in adherence was discovered (p

11:40am – 12:00pm 1 **Neurologic Complications Early After Liver Transplant** Parthenon 1

Moderators: Amy Duong

Presenters: Michelle Knizner

Evaluators: Richard Burrell

TITLE: Neurologic Complications Early After Liver Transplant

AUTHORS: Michelle Knizner, Heather Snyder, Sarah Todd

OBJECTIVE: Identify perioperative factors associated with neurologic complications early after liver transplant.

SELF ASSESSMENT QUESTION: What perioperative factors are associated with neurologic complications after liver transplant?

BACKGROUND: Liver transplant recipients are at risk for developing neurologic complications early after transplantation. Perioperative factors may increase this risk, including etiology of liver disease, high Model for End-Stage Liver Disease (MELD) score, hepatic encephalopathy, and medication use. Recognizing perioperative risk factors may lead to changes in medication regimens post-transplant to prevent neurologic complications.

METHODOLOGY: A retrospective chart review was conducted of adult liver transplant recipients from 2017 through 2022 at the Emory Transplant Center. Subjects were placed into one of two cohorts: those who experienced a neurologic complication within 30 days post-transplant or those who did not. Neurologic complications were defined as altered mental status, delirium, psychosis, visual disturbances, seizures, posterior reversible encephalopathy syndrome, central pontine myelinolysis, stroke, or intracerebral hemorrhage. The primary outcome was the association between perioperative factors and post-transplant neurologic complications. Secondary outcomes included incidence of neurologic complications, association of neurologic complication and change in immunosuppression regimen, and hospital length of stay.

RESULTS: Six-hundred fifteen liver transplants occurred during the specified time period, and 300 randomized transplant encounters were reviewed to date. Twenty-five percent of patients experienced a neurologic complication, which placed 77 patients in the study arm with a neurologic complication and 223 patients in the study arm without a neurologic complication. The median age was 57 years old, 57% of patients were male, and 73% were white race. The following perioperative factors were significantly greater in the neurologic complication study arm: continuous renal replacement therapy ($p<0.001$), hepatic encephalopathy ($p<0.001$), ammonia levels ordered ($p<0.001$), white race ($p=0.01$), chronic kidney disease ($p=0.02$), nonalcoholic steatohepatitis ($p=0.02$), hepatorenal syndrome ($p=0.01$), MELD score ($p<0.001$), INR ($p<0.001$), pre-transplant hospital length of stay ($p<0.001$), and pre-transplant ICU stay ($p<0.001$); hemoglobin ($p<0.001$) was significantly lower in the neurologic complication study arm. The significant variables were included in the binary logistic regression, and continuous renal replacement therapy (OR 2.673; 95% CI 1.044 – 6.841; P=0.04), hepatic encephalopathy (OR 2.654; 95% CI 1.160 – 6.073; P=0.021), and MELD score (OR 1.102; 95% CI 1.009 – 1.204; P=0.031) were found to be associated with neurologic outcomes. The immunosuppression regimen was changed for 50% of patients who experienced a neurologic complication ($p<0.001$). The average post-transplant hospital length of stay was significantly longer in the study arm with a neurologic complication ($p<0.001$).

CONCLUSION: The incidence of neurologic complications among post-liver transplants was consistent with the literature. Neurologic complications may be associated with use of continuous renal replacement therapy, history of hepatic encephalopathy, and MELD score.

12:00pm – 12:20pm A **Development of an Outpatient Infusion Strategy at a Community Hospital** Athena I

Moderators: Sarah Todd
Presenters: Amanda Choi
Evaluators: Azur Eckley

TITLE: Development of an Outpatient Infusion Strategy at a Community Hospital
AUTHORS: Amanda Choi, Yatin Patel
OBJECTIVE: Describe the impact of site of care restrictions on outpatient non-oncology infusion services.
SELF ASSESSMENT QUESTION: What are some considerations when implementing an infusion strategy for a hospital or health system?
BACKGROUND: With the rapid growth of specialty pharmaceuticals in recent years, it has become increasingly important for health systems to effectively navigate and optimize infusion services when hospital-based care is unavailable for patients. One of the primary challenges associated with providing infusion services revolves around site of care issues and restrictions, which address multiple factors such as location, drug access and purchase cost, patient out-of-pocket cost, managing hand-off communication, and other business considerations. According to the 2019 ASHP national survey of pharmacy practice in hospital settings, it is estimated that 87.7% of hospitals provide hospital-based outpatient infusion services, 20.2% offer non-hospital-based outpatient infusion services, and 11.9% offer home infusion services. Cone Health currently offers outpatient non-oncology infusion services at four hospital outpatient department (HOPD) sites and two physician office suites. One of the HOPD sites is located at Annie Penn (AP) Hospital, which serves as a mixed-use space for non-oncology outpatient infusions, same day surgery, and special procedures, such as blood transfusions and dressing changes. Due to a growing need for utilization of this space for same day surgery and special procedures, Cone Health is searching for innovative solutions to continue providing outpatient non-oncology infusion services to patients in this community. The purpose of this project is to develop a new outpatient infusion strategy by evaluating three different models of non-oncology infusion services at AP and determine which model will best meet the needs of our patients and the goals of our health system. These goals include increasing accessibility of services, optimizing medication therapy, improving clinical outcomes, and decreasing costs for patients and the health system.
METHODOLOGY: This is an IRB reviewed, determined exempt, non-human subjects research retrospective study. Infusion data was collected retrospectively for a one-year time span (8/1/2021 - 7/31/2022) from AP, which was used for a financial analysis to evaluate volume (by current procedural terminology codes, by payor types), cost, drug reimbursement, procedure reimbursement, procedure charge, and drug charge. Patients were included if they received an outpatient non-oncology infusion at the AP HOPD site within the selected time span. Patients were identified by medical record number /encounter ID, patient type (outpatient), facility ID/department name, charge codes (J codes), and charge description. Other considerations for the different models of infusion services include staff, margins for 340B reimbursement, billing (commercial versus government payors), payor policies, formularies. Using the data collected, a proforma was built to assess three different models of billing for non-oncology infusion services at AP: (1) hospital billing (HB) reimbursement and 340b pricing; (2) professional billing (PB) reimbursement and group purchasing organization (GPO) pricing; (3) combination of HB reimbursement and 340b pricing for Medicaid, Traditional Medicare, and Medicare Advantage, and 340b pricing and PB reimbursement for commercial payors.
RESULTS: Preliminary results from the proforma include operating expenses and operating income for years 1 through 5. Operating expenses for year 1 are estimated at $1,189,223 (Model 1), $1,820,843 (Model 2), and $1,189,223 (Model 3). Operating income for year 1 is estimated at $878,924 (Model 1), $56,898 (Model 2), $692,426 (Model 3).
CONCLUSIONS: In deciding which model to use, we plan to consider the preliminary results from the proforma along with the advantages and disadvantages of each model. Our next steps will involve consideration of estimated operating expenses and operating income, site of care issues and restrictions, anticipated growth of infusion volume, distribution of payor types, and projected growth of the patient population in the geographic area.

12:00pm – 12:20pm B **Characterizing Therapeutic Inertia in Veterans with Uncontrolled Diabetes at a Rural Veteran Affairs Clinic** Olympia 2

Moderators: Ryan Dushak
Presenters: Morgan Jackson
Evaluators: Stephanie Hopkins

TITLE: Characterizing Therapeutic Inertia in Veterans with Uncontrolled Diabetes at a Rural Veteran Affairs Clinic
AUTHORS: Morgan Jackson, Courtney E. Gamston, Kimberly B. Lloyd, Garrett Aikens, Pamela Stamm
OBJECTIVE: The purpose of this study is to assess factors contributing to therapeutic inertia in Veteran patients with uncontrolled diabetes.
SELF ASSESSMENT QUESTION: What are common factors associated with therapeutic inertia in Veteran patients with uncontrolled diabetes?
BACKGROUND: Of the two million Veterans in the VA (Veterans Affairs) health system with diabetes, 33% are uncontrolled despite medication therapy. Despite the many advances in technology and medication in diabetes therapy over the last 20 years, the average A1c in a person with diabetes has not improved. Studies show intensive glycemic control significantly reduces microvascular and macrovascular complications. Long-standing uncontrolled A1c leads to increased risk of complications in the heart, kidney, eyes, nerves and more. Therapeutic inertia (TI) is the lack of timely therapy adjustments in patients with uncontrolled disease. Drivers of TI include provider-level barriers (50%) including fear of side effects, underestimation of patient ability to manage medications, and failure to use guideline-directed goals to evaluate therapy. Patient-related causes (30%) include cost, medication access, poor disease education, and poor communication. System-level causes (20%) include failure to identify at-risk patients, failed provision of education, and not using team-based care.
METHODOLOGY: The Auburn University Population Health Clinic uses population health management tools to identify Veterans with an A1C ≥ 8% and provides comprehensive diabetes management services via telehealth to patients of a rural VA clinic. Records of identified Veterans were reviewed to identify individuals with therapeutic inertia and the contributing factors. TI was defined as anyone with an A1c greater than 8% and no change in therapy within the last three months or lack of diabetes labs within six months of therapy changes. The primary outcome of the study was the frequency of TI and its causes. Causes were categorized as provider-level, patient-related, and system level causes and enumerated using descriptive statistics. Correlation analyses were used to determine if relationships exist between causes of TI, the number of per-patient causes identified, the duration of inertia, and A1c.
RESULTS: In progress
CONCLUSIONS: In progress

12:00pm – 12:20pm B **Evaluation of the Effectiveness of Academic Detailing on Utilization of Pharmacogenomics Testing in A Veteran Population** Olympia 1

Moderators: Tasha Woodall
Presenters: Rachel Buchanan
Evaluators: Nathaniel Swanson

TITLE: Evaluation of the Effectiveness of Academic Detailing on Utilization of Pharmacogenomics Testing in A Veteran Population
AUTHORS: Rachel Buchanan, Amanda Carlisle, Bridget Roop
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: The purpose of this project is to evaluate within a VA Health Care System the association between academic detailing and utilization of pharmacogenomic testing by clinicians.
METHODOLOGY: The project consisted of a retrospective review conducted by evaluation of facility data tools on pharmacogenomics along with chart reviews. Eligible clinicians and chart reviews are those with testing orders from March 2022 to February 2023. Chart reviews were excluded if pharmacogenomic orders were pending, patients were not abnormal metabolizers of medications included on testing panel, or those orders that were entered outside of data collection time frame. Data points included number of pharmacogenomic tests ordered pre and post academic detailing effects compared to a non-detailed group from 6 months before versus 6 months following intervention as well as the acceptance rate of clinical pharmacist recommendations in response to pharmacogenomic test results.
RESULTS: Pending
CONCLUSIONS: Pending

12:00pm – 12:20pm C **Evaluation of Time in Therapeutic Range (TTR) for Warfarin Patients Before and After Enrollment in the Centralized Anticoagulation Clinic** Athena D

Moderators: Sarah-Anne Blackburn
Presenters: Alexandra Mott
Evaluators: Chelsea Moran

TITLE: Evaluation of Time in Therapeutic Range (TTR) for Warfarin Patients Before and After Enrollment in the Centralized Anticoagulation Clinic

AUTHORS: Alexandra A. Mott, Jina Almond, Rebecca Edwards, Camille Robinette

OBJECTIVE: To evaluate the TTR and adverse events' trends during the inital stages of this transition process

SELF ASSESSMENT QUESTION: What are the benefits of centralized anticoagulation services?

BACKGROUND: Despite over 60 years of use of the oral anticoagulant warfarin, management has remained challenging due to multiple factors that can impact the international normalized ratio (INR). Sub- or supratherapeutic INRs are associated with increased risk of thromboembolism, major bleed, and death. Time in therapeutic range (TTR) for the INR has been used to measure the quality of warfarin therapy management. An optimal TTR has yet to be defined in the guidelines. In general practice in the United States, TTRs have ranged from 25% to 65% with an average of 50% to 55%. An observational cohort study suggests a TTR greater than 75% is optimal for patients with newly diagnosed atrial fibrillation with renal dysfunction. Additional literature suggests a goal TTR greater than 70% with poor control considered less than 60%. Centralized anticoagulation services have been shown to improve safety and other outcomes, likely through consistency of care and a standardization of practice and staffing. Anticoagulation services at the Salisbury VA Healthcare System (SVAHCS) recently began enrolling patients on warfarin from its ancillary sites in Kernersville and Charlotte to complete the centralization process. The purpose of this study is to evaluate the TTR and adverse events’ trends during the initial stages of this transition.

METHODOLOGY: This is a retrospective quality improvement project. Eligible subjects for inclusion will be all Veterans on warfarin at all locations of the SVAHCS. Data will be collected from July 2021 through March 2023. The primary outcome is to assess the patients’ overall TTR for INR before and after enrolling the majority of patients in the centralized clinic. The TTR will be found utilizing the National Anticoagulation TTR Dashboard. Secondary outcomes will include the rate of reported bleeding and clotting events, the number of critical INRs greater than 4.5 pre- and post-centralization, and number of INRs measured over a timeframe greater than 56 days. Data will be analyzed using descriptive statistics.

RESULTS: Approximately 67% of 262 total warfarin patients were managed in the centralized service by the end of the evaluation period; 34% (N=90) were newly referred from ancillary sites. The pre-centralization TTR ranged from 72.7% to 76.8%, and the TTR during initial stages of centralization ranged from 72.5% to 74%. In comparison, Veterans Integrated Service Networks (VISN) 6 and national TTR percentages ranged from 70.0% to 72.2% and 67.7% to 69.1%, respectively. The rate of reported bleeding events had an upward trend from January 2023 to March 2023 with 7 bleeding events. For 2 of the bleeding events, patients were concomitantly taking aspirin. The rate of reported clotting events has remained 0 since January 2022. Critical INR percentage of total INRs down-trended from July 2022 to September 2022 at 0.55%, but up-trended in January 2023 to March 2023 at 1.14% (12 total patients). The number of INRs measured over a timeframe greater than 56 days has demonstrated a downward trend from 30 to 6 INRs during the evaluation period.

CONCLUSIONS: There was a slight decline observed in TTR during early centralization of ancillary. However, the TTR has remained above 70% which is ideal. Additionally, the SVAHCS continued to maintain relatively higher TTRs compared to local and national benchmarks. Some limitations include fewer patients on warfarin comparatively, seasonal variation, and continued follow-up of many patients outside of centralization services. Future considerations include reassessment of TTR trends in the future, escalation of aspirin deprescribing efforts, identification of new quality improvement initiations, and additional staff.

12:00pm – 12:20pm R **1.8% Balanced Sodium Bicarbonate/Sodium Chloride Solution Compared to 3% Sodium Chloride for the Management of Cerebral Edema** Athena G

Moderators: Cristina Plemmons

Presenters: Rebecca Ortega

Evaluators: Hania Zaki

TITLE: 1.8% Balanced Sodium Bicarbonate/Sodium Chloride Solution Compared to 3% Sodium Chloride for the Management of Cerebral Edema

AUTHORS: Rebecca Ortega, Eric Shaw, Emily Bowers, Alisha B. Terry

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Hyperosmolar therapy, including 3% (513 mEq/mL) sodium chloride, is recommended by current guidelines in the acute management of cerebral edema to help reduce rising intracranial pressure in patients with injuries such as intracerebral hemorrhage or acute ischemic stroke. However, a 3% NaCl shortage during the COVID-19 pandemic impacted patient care and called for a temporary solution. One academic medical center compounded a 1.8% (304 mEq/mL) balanced sodium bicarbonate/sodium chloride solution for management of cerebral edema. The purpose of this study was to assess achievement of target serum sodium levels (145-155 mEq/L) of patients who received 1.8% balanced NaHCO3/NaCl solution compared to those who received 3% NaCl prior to the national shortage.

METHODOLOGY: This single-center, retrospective chart review included critically ill adults at Memorial Health University Medical Center that received either received either 1.8% balanced NaHCO3/NaCl or 3% NaCl for cerebral edema from October 2021 to August 2022. Patients were excluded if they received hyperosmolar therapy for Na+ < 130 mEq/L, were brain dead within the first 24 hours after injury, pregnant, incarcerated, or required continuous renal replacement therapy prior to hospital admission. The primary outcome was to assess the effect of 1.8% balanced NaHCO3/NaCl solution administration to attain target serum sodium levels compared to 3% NaCl for cerebral edema management. Secondary outcomes included ICU mortality, hospital and ICU length of stay, incidence of acute kidney injury and hyperchloremia, time to goal serum sodium range, and net change in serum sodium from start of hypertonic therapy to 96 hours. A subgroup analysis between patients with goal Na 145-150 mEq/L and patients with goal Na 150-155 mEq/L was also conducted.

RESULTS: A total of 18 patients were included, 9 patients in the 1.8% balanced NaHCO3/NaCl solution group and 9 patients in the 3% NaCl group. Baseline characteristics were similar between groups. There were no difference in reaching target serum sodium levels between the two intervention groups (p = 1.00). Each had 7 patients who achieved goal sodium range and 2 patients who did not before discontinuation of therapy. Patients within the 3% group reached target levels quicker and had a larger net change in sodium from start of therapy to 96 hours (19.3 hours, +16.13 mEq) compared to the 1.8% group (32.25 hours, +10.01 mEq). Incidence of acute kidney injury was larger in the 3% group (78% vs. 37.5%) but was not significant (p=0.0921). The 1.8% group had a statistically significant longer ICU and hospital length of stay compared to the 3% group (p=0.04, p=0.045), but ICU mortality was similar (p=1.00). In regards to the subgroup analysis between the different goal sodium ranges, there were a total of 14 patients (78%) with the goal of 150-155 mEq/L and 4 patients (22%) with the goal of 145-150 mEq/L. There were a total of 9 patients (64%) with a goal of 150-155 mEq/L and 2 patients (50%) with a goal of 145-150 mEq/L (p=0.6052), leading to no difference in reaching target serum sodium goals between the two subgroups.

CONCLUSIONS: Target serum sodium levels were achieved with the 1.8% NaHCO3/NaCl solution similarly to that achieved with 3% NaCl for cerebral edema management. The use of 1.8% NaHCO3/NaCl could be considered as an alternative to 3% NaCl for cerebral edema management. However, further research is needed to assess the efficacy and safety of a 1.8% balanced sodium bicarbonate/sodium chloride solution to support its use as an acceptable alternative to 3% sodium chloride in the event of another national drug shortage.

12:00pm – 12:20pm R **Impact of pharmacist-led interventions on urine cultures in the emergency department** Athena H

Moderators: Connie Street

Presenters: Anna-Kathryn Priest

Evaluators: Lauren Floris

TITLE: Impact of pharmacist-led interventions on urine cultures in the emergency department

AUTHORS: Anna-Kathryn Priest, Alanna Rufe, William Johnson, Kaitlyn Claybrook, Michael T. Dailey

OBJECTIVE: Describe the role of the ED pharmacist with respect to outpatient urine culture follow-up

SELF ASSESSMENT QUESTION: (True or False): Implementation of a urine culture follow-up process on patients discharged from the ED is an opportunity for improved antimicrobial stewardship.

BACKGROUND: Urinary tract infections (UTIs) are commonly encountered diagnoses in the emergency department (ED). In 2019, more than 2 million ED discharge diagnoses were UTI related. Due to delay between culture collection and pathogen identification, treatment is empiric. ED pharmacists' involvement in culture reviews have shown a decrease in inappropriate antimicrobial use, ED visits, and hospital admissions. The purpose of this quality improvement project is to evaluate the impact of initiating a pharmacist-led service reviewing urine cultures on patients discharged from the ED.

METHODOLOGY: This quality improvement project was deemed exempt by the Institutional Review Board at Jackson Hospital. Patients discharged from the emergency department at Jackson Hospital between September 2022 and December 2022 with subsequent positive urine cultures were reviewed by the ED pharmacist daily. Patients excluded from data collection were those less than 18 years of age, required hospital admission, or expired in the emergency department. A clinical decision support database was used to identify patients with positive results. Once identified, the pharmacist notified an ED provider and determined a plan of care. An algorithm for outpatient UTI treatment was created based on local resistance patterns to guide providers on their empiric antibiotic selection. The primary outcome was the number of interventions completed by the emergency department pharmacist. Intervention was defined as notifying the provider who initially saw the patient, if available, of the positive result and determining a plan of action which included contacting the patient for changes in symptoms, documentation of asymptomatic bacteriuria, or contacting the patient's primary care physician and notifying them of the patient's results. Key secondary outcomes included antibiotic appropriateness, dose appropriateness, 30-day admission due to related infection, and 30-day overall hospital admission.

RESULTS: A total of 112 urine cultures were reviewed. Of the 112 patients reviewed, 8 were excluded due to age less than 19 years, admission status, elopement, or expiration. A total of 104 patients were analyzed. Pharmacist intervention was required in 9 patients. Of these, new antibiotic therapy was prescribed in 3 patients, after discussion with the provider 3 patients were classified as having asymptomatic bacteriuria, and 3 patients' results were faxed to outpatient providers. For patients discharged on antibiotics, 21% were dosed incorrectly.

CONCLUSIONS: The implementation of a pharmacist-led urine culture review in the ED established a formalized process for the review and documentation of urine cultures obtained post hospital discharge. Pharmacist intervention was required in 16% of patients. Development of a UTI treatment algorithm played a role in streamlining antibiotic prescribing patterns and may have attributed to the low number of interventions required.

12:00pm – 12:20pm | **Dalbavancin utilization in the emergency department and impact on hospital admission for acute bacterial skin and skin structure infections** Athena A

Moderators: Laura Schalliol
Presenters: Ruchi Shah
Evaluators: Dianne May

TITLE: Dalbavancin utilization in the emergency department and impact on hospital admission for acute bacterial skin and skin structure infections

AUTHORS: Ruchi Shah, Kristen Paciullo, Raphaelle Lombardo, Ronald Trible

OBJECTIVE: Describe the benefits of dalbavancin use in the emergency department for the treatment of ABSSSIs

SELF ASSESSMENT QUESTION: What are the potential benefits of utilizing dalbavancin in the emergency department for ABSSSIs?

A. Decreased length of hospital stay
B. Decreased hospital costs
C. Lower risk of adverse events
D. All of the above

BACKGROUND: Acute bacterial skin and skin structure infections (ABSSSIs) are common and lead to approximately 2.3 million emergency department (ED) visits annually in the United States. Vancomycin has historically been the gold standard for moderate to severe MRSA infections, however is associated with adverse effects and typically requires hospital admission due to the need for patient specific pharmacokinetic dosing. Dalbavancin is a newer antibiotic that is Food and Drug Administration (FDA) approved for the treatment of ABSSSIs. Studies comparing dalbavancin and vancomycin for ABSSSIs have found them to be non-inferior in terms of early clinical response. In addition, dalbavancin has been associated with fewer adverse events. With a long half-life of approximately 15 days, dalbavancin can treat ABSSSIs with a single infusion and avoids the need for hospital admission for the sole purpose of receiving IV antibiotics. Few studies have looked at the use of dalbavancin in the emergency department (ED), specifically. A protocol for the use of dalbavancin to treat ABSSSIs in the ED was developed and implemented at Emory Saint Joseph's Hospital (ESJH) in August 2022. The purpose of this study is to evaluate the impact of dalbavancin utilization in the ED on the length of hospital stay in patients with ABSSSIs.

METHODOLOGY: A retrospective chart review was conducted to analyze patients meeting inclusion criteria during a five-month period pre and post dalbavancin implementation (August 1, 2021 to December 31, 2021 and August 1, 2021 to December 31, 2022). The study included adult patients (> 18 years old) with moderate to severe ABSSSI who required IV antibiotics. Patients were excluded if they had any of the following: concern for sepsis or comorbidities requiring hospital admission, significantly immunocompromised, ABSSSI with concern for gram negative infection, known or suspected osteomyelitis, septic arthritis, endocarditis, or pregnant. The primary objective was to compare length of hospital stay in patients with ABSSSI prior to and post implementation of dalbavancin in the ED. Secondary objectives included readmission for the treatment of ABSSSI, acute kidney injury (AKI), and hospital and drug costs.

RESULTS: The IRB-approved study included 63 patients, 29 in the pre-dalbavancin group and 34 in the post-dalbavancin group. Of the 29 patients in the post-dalbavancin group, only 5 patients received dalbavancin. Based on preliminary analysis of the data, the average length of stay was 4.3 days in the pre-dalbavancin group and 3.9 days in the post-dalbavancin group. Readmission for the treatment of ABSSSI was similar between the two groups (4 vs 3 patients); however, none of the patients who received dalbavancin were re-admitted for the treatment of ABSSSI. Rates of acute kidney injury were also similar in both groups, with 2 patients in the pre-dalbavancin group and 1 patient in the post-dalbavancin group experiencing AKI.

CONCLUSIONS: Given the limited utilization of dalbavancin in the ED during the study period, we are unable to draw conclusions from this study. Further education regarding the use of dalbavancin and an expanded study population is needed to better identify the impact of dalbavancin on hospital length of stay for patients with ABSSSIs.

12:00pm – 12:20pm | **Implementation of an Auto-Substitution from Piperacillin-Tazobactam Plus Vancomycin to Cefepime Plus Vancomycin and the Effect on Acute Kidney Injury (AKI)** Athena B

Moderators: Stephanie A. Ring

Presenters: Justin White

Evaluators: Christopher Gore

TITLE: Implementation of an Auto-Substitution from Piperacillin-Tazobactam Plus Vancomycin to Cefepime Plus Vancomycin and the Effect on Acute Kidney Injury (AKI)

AUTHORS: Justin White, Ryan Lally, Rachel Langenderfer, Brittany NeSmith, Taylor Servais, Matt Timmons, Julie Cash

OBJECTIVE: Discuss the implementation and assess the impact of the auto-substitution on acute kidney injury

SELF ASSESSMENT QUESTION: When switching from piperacillin-tazobactam to cefepime, which two organisms are no longer covered? Select two of the following:

A. Pseudomonas aeruginosa B. Bacteroides fragilis C. Escherichia coli D. Enterococcus faecalis

BACKGROUND: Recent literature has highlighted an increased incidence of AKI in patients receiving concurrent piperacillin-tazobactam and vancomycin. Cefepime offers a similar spectrum of antibiotic coverage compared to piperacillin-tazobactam and may result in lower incidence of AKI compared to piperacillin-tazobactam when administered with vancomycin. A local automatic substitution was developed that substitutes cefepime in place of piperacillin-tazobactam when ordered with vancomycin. The purpose of this study was to assess the effectiveness of the automatic substitution policy at reducing incidence of AKI.

METHODOLOGY: A single-center retrospective cohort chart review from June 2022 to March 2023 was conducted. One arm of the study included patients who received piperacillin-tazobactam prior to the implementation of the automatic substitution and the other arm included patients who were substituted to cefepime. Inclusion criteria consisted of patients 18 years or older, initially prescribed concurrent piperacillin-tazobactam and vancomycin, and who had an antibiotic indication of pneumonia, skin and soft tissue infection, urinary tract infection, or sepsis of unknown etiology. Exclusion criteria included suspected necrotizing infection, diabetic foot infection, aspiration pneumonia, and intra-abdominal infection, less than 48 hours of concurrent antibiotic therapy, patients on renal replacement therapy, patients with a SCr greater than 2 for the first 48 hours of hospitalization, and previous cefepime resistance. AKI was defined as an increase in serum creatinine by 0.5 mg/dL or a 50% increase from start of therapy on consecutive days. The primary outcome of this study was to compare the incidence of AKI between each treatment arm. Secondary outcomes included in-hospital mortality and length of hospital stay.

RESULTS: A total of 200 patients were included in this study, 100 in each arm. A 13% incidence of AKI was found in the piperacillin-tazobactam group and a 12% incidence in the cefepime group. In-hospital mortality was 9% in the piperacillin-tazobactam group and 10% in the cefepime group. Average length of hospital stay was 9 days in the piperacillin-tazobactam group and 10 days in the cefepime group.

CONCLUSIONS: This retrospective chart review demonstrated a similar incidence of AKI in the piperacillin-tazobactam plus vancomycin group and the cefepime plus vancomycin group. This study showed no significant difference in hospital mortality or length of hospital stay between the groups. Although a reduction of AKI was not found in this study the auto-substitution did reduce patient exposure to unnecessary antibiotic coverage.

12:00pm – 12:20pm L **IMPACT OF AN AUC-BASED VANCOMYCIN DOSING PROGRAM ON INITIAL TARGET ATTAINMENT IN ADULT PATIENTS** Athena J

Moderators: Matt Bamber

Presenters: David Smith

Evaluators: Joshua Settle

TITLE: IMPACT OF AN AUC-BASED VANCOMYCIN DOSING PROGRAM ON INITIAL TARGET ATTAINMENT IN ADULT PATIENTS

AUTHORS: David Smith, Jessi Dorrough, Spencer Livengood, Dustin Wilson, Ruthanne Baird, Justin Hodges, Lori Duke, Kristen Keen, Catherine Wente

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: To ensure therapeutic efficacy, the plasma concentration of vancomycin is monitored, either with trough-based or with AUC-based monitoring. AUC-based monitoring has been shown to shorten time to therapeutic concentration while decreasing the risk of acute kidney injury. To align with the IDSA guidelines, our rural community health system switched our vancomycin monitoring from trough-based dosing to AUC-based dosing in July 2022. The purpose of this study is to examine the initial therapeutic rates of vancomycin after switching to AUC-based dosing.

METHODOLOGY: This IRB-approved, retrospective, multicenter, cohort study analyzed patients who were 18 years of age or older and received IV vancomycin therapy between March 1st, 2022 and May 30th, 2022 and October 1st, 2022 and December 31st, 2022 at a rural community health system. Patients receiving renal replacement therapy, a creatinine clearance less than 25 mL/min or diagnosed with an acute kidney injury at the time of receiving vancomycin were excluded from the analysis. Patients who received vancomycin monitoring that deviated from our institution protocols were also excluded. The primary objective of the study is to compare the rate of the initial steady-state vancomycin exposure between trough-based and AUC-based dosing. The secondary objective is to compare the total daily dose of vancomycin needed to achieve initial therapeutic concentrations for trough-based dosing and AUC-based dosing. For analysis of the objectives, a Chi-squared analysis will be performed for the primary and a 2-sample T-Test for the secondary.

RESULTS: In Progress

CONCLUSIONS: In Progress

12:00pm – 12:20pm O **Clinical and Economic Impact of Oncology-Trained Pharmacist Integration in an Ambulatory Cancer Clinic** Athena C

Moderators: Jason Dover

Presenters: Ashley Mull

Evaluators: Elizabeth Oglesby

TITLE: Clinical and Economic Impact of Oncology-Trained Pharmacist Integration in an Ambulatory Cancer Clinic

AUTHORS: Ashley Mull, Courtney Meade, Shannon Parkey, Alexandra Punke, Courtney Mallon

OBJECTIVE: Determine total cost-avoidance for pharmacist interventions and impact on Centers for Medicare and Medicaid Services' (CMS) OP-35 measures after full-time integration of a board-certified oncology pharmacist in an ambulatory oncology clinic.

SELF ASSESSMENT QUESTION: What types of interventions can pharmacists make and what is the potential impact in an ambulatory oncology setting?

BACKGROUND: Outpatient oncology practice is a growing area of opportunity for pharmacists to provide clinical services and evidence-based care. After employing a board-certified oncology pharmacist specialist in the cancer clinic setting, we assessed total cost-avoidance for pharmacist interventions and impact on Centers for Medicare and Medicaid Services' (CMS) OP-35 measures.

METHODOLOGY: This single-center, retrospective chart review analyzed pharmacist interventions after full-time integration in the ambulatory oncology clinic setting. Interventions were characterized into distinct types which were assigned a cost avoidance value based on previously described values in literature. Cost avoidance was calculated per hour and then extrapolated to a yearly estimate based on a 40-hour work week for a one-year period for one FTE pharmacist. Data collection for the primary clinical outcome was performed by compiling provider-specific emergency department (ED) and inpatient admission rates for diagnoses specified in CMS OP-35 measures within 30 days after receiving outpatient chemotherapy. The rates for the data collection period were compared to the rates six months prior to pharmacist integration to assess pharmacist impact. Team member satisfaction was assessed by anonymous surveys regarding pharmacist presence in clinic.

RESULTS: In six months, 516 total interventions were made by the oncology pharmacist. The most frequent interventions were patient counseling (42.25%) and order clarification (15.50%). Incidence of ED visits were 3.34% and 1.72% during the pre- and post-pharmacist intervention periods, respectively. Incidence of inpatient admissions were 2.43% and 0.34% pre- and post-pharmacist intervention, respectively. Total cost avoidance was estimated to be $375,795 and when accounted for the median pharmacist salary at our institution, total cost savings was $243,981. Results of the healthcare team member survey showed a positive impact with the presence of the clinical pharmacist.

CONCLUSIONS: Presence of an oncology pharmacist specialist in the ambulatory cancer clinic provided clinical and economic benefit to the cancer clinic. Our findings support the need for further pharmacist integration in ambulatory cancer clinics to improve patient outcomes and reduce healthcare spending.

12:00pm – 12:20pm P **Evaluation of the effect of pharmacy-driven education and peer comparison on the amount of opioids prescribed at discharge** Parthenon 2

Moderators: Nathan Wayne
Presenters: Stephen Tipton
Evaluators: Christopher Duphren

TITLE: Evaluation of the effect of pharmacy-driven education and peer comparison on the amount of opioids prescribed at discharge

AUTHORS: Stephen Tipton, Eric Marr, William Stewart

OBJECTIVE: Compare the average morphine milligram equivalent (MME) prescribed at discharge before and after pharmacy-driven provider education

SELF ASSESSMENT QUESTION: Which of the following is included in the 2022 CDC recommendations on opioid prescribing?

BACKGROUND: The past 30 years has provided the United States with the ever-growing problem of the opioid epidemic. Excessive opioid prescribing has led to increased incidence of opioid abuse and death. Recent studies have shown a two-fold increase in MME prescribed at discharge versus 24 hours prior to discharge. Targeting potential prescribers with periodic data and education about their current opioid prescribing practices has shown to have possible benefit towards helping reduce total MME prescribed at discharge. This may be a small solution that can help build towards improvement in tackling the opioid epidemic in this country.

METHODOLOGY: The institutional review board approved this study. The study will involve a monthly retrospective analysis of opioid prescribing patterns for the prescribers within the Baptist Health Lexington Orthopedic Surgery Group. Using data derived from outpatient prescribing reports, a baseline daily MME average per patient will be calculated for each prescriber over the past 6 months prior to the trial starting. Starting in October 2022, each prescriber in the study will receive a monthly email giving education related to opioid stewardship, their average MME for the previous month, where they rank in comparison to their fellow prescribers in the service, and how they are trending compared to the previous month. This intervention will be completed every month up through March 2023. The primary outcome measure will be the change in average MME prescribed the orthopedic service from baseline to 6 months after providing the monthly opioid information intervention. Secondary outcome measures include the average number of tablets per prescription, types of opioids prescribed before and after the intervention, and a comparison between daily average MME prescribed versus inpatient MME requirements both pre and post-intervention.

RESULTS: A total of 187 prescriptions written by 6 providers were evaluated for preliminary data in the pre-intervention cohort and 169 prescriptions were in the post-intervention cohort. Average MME prescribed at baseline for all providers in the service was 51.0 MME/day ± 10.9. (Median 47.5 MME/day) and was 47.4 MME/day ± 13.0 (P value < 0.001).

Average number of tablets per prescription was 35.3 ± 4.9 at baseline and 32.3 ± 7.2 post-intervention (P value < 0.001). There was no significant difference in types of opioids prescribed (P value = 0.319). The difference in MME from inpatient to outpatient was reduced compared to baseline from approximately a difference of 34 MME/day to 23 MME/day.

CONCLUSIONS: Statistically significant differences were observed for the primary outcome (daily average MME) and in the number of tablets given per prescription. These differences may not be clinically significant, but do suggest a promising trend and reinforce the ability of pharmacists to impact opioid prescribing practice. There exists an opportunity to expand this approach to a system wide level to best approximate the true impact a social pressure intervention has on prescribers. Further success would open a doorway towards using a similar approach in other medication classes or pharmacy identified problem areas.

12:00pm – 12:20pm 1 **Analyzing Characteristics that Attribute to Differences in Time to Therapeutic Tacrolimus Troughs in Patients Undergoing Heart Transplantation** Parthenon 1

Moderators: Amy Duong
Presenters: Brandon Smith
Evaluators: Richard Burrell

TITLE: Analyzing Characteristics that Attribute to Differences in Time to Therapeutic Tacrolimus Troughs in Patients Undergoing Heart Transplantation

AUTHORS: Brandon Smith, Zach Klick, Monty Yoder, Eric Kelly

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The International Society of Heart and Lung Transplant Society recommends for patients to be started on a regimen consisting of a calcineurin inhibitor, an antimetabolite, and corticosteroids after undergoing heart transplantation. Between the two commercially available calcineurin inhibitors, tacrolimus and cyclosporine, ISHLT recommends using tacrolimus due to trial data demonstrating higher percentages of patients remaining rejection-free at one year.

Tacrolimus has a narrow therapeutic index, wide inter-patient pharmacokinetic variability, and saturable kinetics. Additionally, tacrolimus is excreted renally and is metabolized by the CYP 3A4 isoenzymes. Therefore, it requires dose adjustments in the setting of concomitant inducers or inhibitors of CYP 3A4. For these reasons, the medication requires daily therapeutic drug monitoring at the beginning of therapy, and it may be challenging to reach therapeutic levels prior to discharge.

Current dosing practice at Atrium Health Wake Forest Baptist (AHWFB) is to initiate therapy at 1 mg by mouth twice a day and titrate up based on levels. This dosing regimen is lower than the recommended dosing listed in the manufacturer package insert of 0.075 mg/kg/day in divided doses. In circumstances where trough levels remain subtherapeutic, despite several dose escalations, patient's antifungal prophylaxis is switched from nystatin to a CYP3A4 inhibitor, such as clotrimazole or fluconazole. Due to the variability in therapeutic tacrolimus dosing, our study aims to analyze the characteristics and tacrolimus levels of previous patients to individualize our practice moving forward.

METHODOLOGY: In this single-center, retrospective chart review, ninety-four patients who underwent heart transplantation at AHWFB from January 1, 2014, will be evaluated for inclusion. The primary endpoint is the creation of an individualized dosing model based on the characteristics that demonstrate the largest effect on a patient's therapeutic tacrolimus dose. Secondary endpoints include the time to therapeutic tacrolimus trough, rate of supratherapeutic tacrolimus levels, and time in therapeutic range.

RESULTS: Of the ninety-four patients screened, none were excluded from the review. The median age of our patient population was 58, 71% of the patients were male, and 65% were white. The majority of patients were admitted on a RASS inhibitor, used valganciclovir for CMV prophylaxis, and had concomitant use of a boosting agent. The median time to therapeutic tacrolimus trough was 7 days, and the median number of supratherapeutic tacrolimus troughs during the index admission was 3 per patient. The median time in therapeutic range during the index admission was 36%.

CONCLUSIONS: These results suggest that there is room to optimize current dosing practice of tacrolimus at Atrium Health Wake Forest Baptist Medical Center. Further data analysis is required to identify specific patient characteristics that lead to differences in therapeutic tacrolimus trough.

12:20pm – 12:40pm A **A Prospective Analysis of Interventions to Improve Pharmacy Technician Job Satisfaction** Athena I

Moderators: Sarah Todd

Presenters: Jillian Calderon

Evaluators: Azur Eckley

TITLE: A Prospective Analysis of Interventions to Improve Pharmacy Technician Job Satisfaction

AUTHORS: Jillian Calderon, T.J. Henderson, Sterling Serfoss

OBJECTIVE: Identify strategies to improve overall job satisfaction among the pharmacy technicians and increase retention rate.

SELF ASSESSMENT QUESTION: Which of the following metrics can be used to assess employee job satisfaction?

BACKGROUND: Employee retention and job satisfaction remains an issue in healthcare. According to the U.S. Bureau of Labor Statistics, 4 million people have quit their jobs in May 2021, and 13% of those were healthcare and social assistance workers. The 2021 ASHP survey discovered a 21% turnover rate among pharmacy technicians and about 10% of the health systems surveyed lost almost half of their pharmacy technicians. Harvard Business Review reports that employees ideally stay with the company due to long-term job satisfaction. There are factors that can be used to assess employee job satisfaction, such as training, recognition, support, rewards, etc. Improvement in these areas can boost overall job satisfaction.

METHODOLOGY: This study was a single-center, pre-post survey evaluating all inpatient pharmacy technicians at Piedmont Columbus Regional Midtown. The study began on December 2022, and technicians were surveyed on the following: sense of belonging, workload, potential for advancement, feeling valued by administration, orientation and training, having caring and trusting teammates, seeking a better job, doing meaningful work, compensation, flexible schedule and work-life balance, feeling engaged by work, and overall job satisfaction. After reviewing the results of the initial survey, focused interventions to address specific areas were implemented. The first intervention phase included the following: scheduled huddles on Tuesdays and Thursdays, birthday recognition, holiday celebration, and work anniversary announcements. After 3 months of incorporating the first intervention phase, the same survey was given, which directed a second intervention phase over an additional 3 months. The second intervention phase added to the first intervention phase and included an improved orientation and training program, new lead pharmacy technician, and new employees to improve staffing. The same and final survey will be given at 6 months for a final evaluation. The primary outcome is to assess the change in overall job satisfaction at baseline and at 3 months. The secondary outcome is to compare the changes in scores of each individual category at baseline, 3 months, and 6 months as well as assess the change in overall job satisfaction at 6 months.

RESULTS: In progress

CONCLUSIONS: In progress

12:20pm – 12:40pm B **Evaluating the impact of Clinical Pharmacists' care on A1c Outcomes in Safety-Net Primary Care Clinics** Olympia 1

Moderators: Tasha Woodall
Presenters: Reed Henderson
Evaluators: Nathaniel Swanson

TITLE: Evaluating the impact of Clinical Pharmacists' care on A1c Outcomes in Safety-Net Primary Care Clinics
AUTHORS: Reed Henderson, Emily Lee, Mary Katherine Cheeley
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: At the Grady Health System, clinical pharmacists are an integral part of the interdisciplinary care team and serve as a valuable resource in a variety of clinical settings, including primary care. In different health settings, interventions can be tracked when recommendations or adjustments are made to patient's medication regimens. Observational and retrospective studies have shown pharmacists can greatly reduce healthcare utilization and improve patient and provider satisfaction.1 A survey done by Truong and colleagues showed high satisfaction with clinical pharmacists especially in academic and FQHC settings.2 A systematic review that analyzed 27 controlled trials and 4 observational trials evaluated the impact of pharmacist-led interventions in ambulatory care settings.3 Complete medication reviews and adherence review were the majority of the interventions, which led to identifying drug related problems and adverse events in patients.
In numerous studies, interventions have been collected and have shown value in overall categories but have yet to be quantified. By evaluating the change in A1c from the time of PharmD referral, we will be able to quantify these clinical metrics in relation to PharmD interventions. In addition, this aligns with the Medicare Merit-based Incentive Payment System (MIPS).
METHODOLOGY: This was a retrospective chart review of adults being treated for uncontrolled diabetes in primary care clinics both inside the hospital and in clinics associated with the hospital in surrounding neighborhoods. At our institution, patients with poorly-controlled diabetes are often referred by the primary care provider to an appointment with a clinical pharmacist who not only helps determine appropriate regimens based off individual patient characteristics but also counsels the patient on proper administration technique, important dietary considerations, and ways to improve medication adherence. Then, additional appointments are scheduled as needed thereafter.

Data was collected on patients who were referred to a clinical pharmacist for management of their diabetes mellitus who had at least one subsequent follow-up appointment during the collection window from February 2021 through January 2022. The purpose and primary outcome of this study was to evaluate the median change in hemoglobin A1c measurements after PharmD intervention. Secondary outcomes included the median number of PharmD visits during the study period, the percent of patients who achieved clinical (A1c less than 7) and MIPS (A1c less than 9) goal following PharmD intervention, and the difference in clinical metrics by clinic type (ex. teaching vs community-based clinic) or other patient demographics.
RESULTS: Of the 657 patients observed, Black patients made up the vast majority of the population. Median baseline A1c in the entire population was 10, and the median final A1c was 8.2. More patients achieved the MIPS goal than the clinical goal, a result which may be explained in part by the short time period chosen. Clinics with sample sizes greater than 100 achieved similar overall A1c changes, with the greatest median A1c change reported in Community Clinic 1 – a neighborhood clinic – and the least change in the main hospital clinic.
CONCLUSIONS: Clinical pharmacists at Grady Health System positively impact patients' diabetes care when actively participating in the care plan. Median end-study A1c's were lower than baseline across all clinics though the exact median change varied. More patients achieved the MIPS goal of less than 9 than the clinical goal of less than 7, a result that could be affected by the study length. Additional studies are warranted to control for possible confounding variables and to help identify reasons for the inter-clinic disparities reported.

12:20pm – 12:40pm C **Assessing a conservative anticoagulation protocol following gastrointestinal bleeding in patients with a HeartMate 3 left ventricular assist device** Athena D

Moderators: Sarah-Anne Blackburn
Presenters: Benjamin Tabor
Evaluators: Chelsea Moran

TITLE: Assessing a conservative anticoagulation protocol following gastrointestinal bleeding in patients with a HeartMate 3 left ventricular assist device

AUTHORS: Benjamin Tabor, Andrew Mardis, James Ampadu and Laura Straw

PRESENTATION OBJECTIVE: Describe the impact of a conservative anticoagulation protocol following GIB on clinical outcomes in patients with a HM3 LVAD

SELF ASSESSMENT QUESTION:
Which of the following are true regarding the implementation of a conservative post-GIB protocol? (select all the apply)
A. Thromboembolic events occurred in approximately 50% of patients
B. Recurrent bleeding events occurred in approximately 50% of patients
C. A numerically significant increase in GIB occurred in patients with AVMs during initial GIB
D. A statistically significant increase in GIB occurred in patients with AVMs during initial GIB

BACKGROUND: Left ventricular assist devices (LVAD) provide a life-extending therapeutic option for patients with advanced-stage heart failure refractory to medical management alone. A major concern for LVAD patients is the risk of thromboembolic complications due to a need for chronic anticoagulation. Chronic anticoagulation introduces the risk of hemorrhagic complications - the most clinically relevant of which is gastrointestinal bleeding (GIB). The management of GIB typically includes interruption of anticoagulant and antiplatelet therapies; however, time without antithrombotic agents in older generation devices has been associated with increased thromboembolic risk. In September of 2020, a single non-transplant center developed a conservative post-GIB anticoagulation protocol that included stepwise reintroduction and/or reduction of antithrombotic therapies for patients supported by the HeartMate 3 (HM3) LVAD. The purpose of this study is to evaluate the time free from hemocompatibility related adverse events (HRAE) in patients managed per this conservative protocol following GIB.

METHODOLOGY: This is a single center, retrospective cohort study that included all patients with a HM3 LVAD managed by a single, non-transplant LVAD center between September 1st, 2020, to August 31st, 2022, who experienced a presumed or confirmed GIB and were managed per protocol. Patients who only experienced GIB during their implant admission were excluded. The primary outcome of this study is to evaluate hemocompatibility related adverse events (HRAE), which includes nonsurgical bleeding, thromboembolic events, pump thrombosis, and neurological events, following index GIB. The secondary outcomes include hospitalization, heart transplantation, mortality related to thromboembolic event, mortality related to bleeding event, and all-cause mortality. Baseline demographics, international normalized ratio (INR) goal, INR, and hemoglobin at time of index GIB were also collected. Descriptive statistics were utilized to evaluate both primary and secondary outcomes.

RESULTS: A total of 99 patients were screened for inclusion with 17 patients meeting inclusion criteria. The average patient included was an African American (70.6%) male (76.5%) at an average age of 63.5 years. The primary outcome occured in 9 out of 17 patients (52.9%). All recurrent HRAEs seen were gastrointestinal bleeding events with seven patients experiencing one recurrent GIB and two patients experiencing two GIBs. No thromboembolic events occured following the index GIB. Hospitalization for index event occured in 8 patients (47.1%). No patients experienced death or recieved transplantation during the 6 month followup period.

CONCLUSIONS: Reccurent gastrointestinal bleeding events occured in 9 out of 17 patients treated with a conservative anticaogulation protocol. However, no patients experienced a thromboembolic event during a 6 month follow-up from their index event. This freedom from thromboembolic events suggests that a conservative antithrombotic regimen including time off of warfarin appears to be safe in patients with HM3 LVAD experiencing a GIB.

12:20pm – 12:40pm C **Evaluation of Concomitant Antiplatelet and Direct Oral Anticoagulant Use at the Salisbury Veterans Affairs Health Care System** Athena B

Moderators: Stephanie A. Ring
Presenters: Kelly Jankowski
Evaluators: Christopher Gore

Title: Evaluation of Concomitant Antiplatelet and Direct Oral Anticoagulant Use at the Salisbury Veterans Affairs Health Care System

Authors: Kelly Jankowski, Rebecca F. Edwards, Jina Almond, Camille Robinette

Objective: Develop and implement a clinical protocol for oral antiplatelet deprescribing in eligible patients on direct oral anticoagulant therapy within the Salisbury Veterans Affairs Health Care System.

Self Assessment Question: What characteristics make a patient a good candidate for potential aspirin deprescribing?

Background: Co-prescribing of oral anticoagulant (OAC) and oral antiplatelet (OAP) agents increases the relative risk for bleeding by 53 to 106%; this in turn can increase risk of ischemic events (due to held doses) and mortality.1 In a registry-based cohort study, approximately one-third of patients taking direct oral anticoagulant (DOAC) therapy for atrial fibrillation or a history of venous thromboembolism were prescribed aspirin with no clear indication.2 In addition, current clinical guidelines advise against concomitant therapy unless the benefit is likely greater than the risk of bleeding.3 At the Salisbury VA Health Care System (SVAHCS), approximately 26% of patients prescribed a DOAC also appear to be taking an OAP. Additionally, 95% of patients at the SVAHCS on OAC therapy are on DOACs rather than warfarin. It is therefore beneficial to assess prescribing trends of concomitant DOAC and OAP therapy within the SVAHCS to identify opportunities for clinical pharmacy and provider intervention.

Methods: This is a retrospective quality improvement project. Eligible subjects are Veterans at the SVAHCS with active orders for both an oral OAP and DOAC during the months of March and April 2023. The DOAC population management tool (DOAC PMT) and other databases will be used to identify patients co-prescribed an OAP. The primary objective is to develop and implement a clinical protocol for OAP deprescribing in eligible patients on DOAC therapy within the SVAHCS . Secondary objectives include identifying indications documented for OAP and DOAC use, assessing the number of eligible discontinuations and supported continuations, and identifying appropriate candidates for proton pump inhibitor (PPI) use. Descriptive statistics will be used to assess outcomes.

Results: Data collection is ongoing. Of the preliminary results, twenty-one Veterans have met inclusion criteria. The average age was 76 years old, and all were male. The majority were on apixaban and aspirin, and five were prescribed dual antiplatelet therapy. Five patients and one patient were eligible for aspirin and clopidogrel deprescribing, respectively. Of these patients, four had pending aspirin recommendations with one each accepted recommendation for aspirin and clopidogrel discontinuation. Five patients were no longer taking an OAP and required medication reconciliation. Eight patients (38.1%) were candidates for a PPI recommendation. Five are pending PPI addition, one is pending discontinuation, one was successfully added, and one recommended addition was declined by the provider. A total of thirteen patients had an active PPI order on their medication list. Of note, 57.1% of patients had an active OAP at the time of DOAC initiation. In addition, approximately half of reviewed patients had previous pharmacy recommendations to deprescribe OAP and/or add a PPI.

Conclusions: Overall, there are significant opportunities for deprescribing OAP, particularly aspirin, in patients at the SVAHCS. In addition, nearly one in four patients thus far had OAP inaccurately listed as an active medication, emphasizing the importance of medication reconciliation. Encouragingly, over 60% of patients were already on a PPI, mitigating bleed risk, although there is room for improvement. Continued deprescribing interventions by pharmacy staff will be ongoing utilizing tools developed, and these will be addressed via the DOAC PMT OAP flag. There will also be provider education on these quality improvement findings, appropriate deprescribing candidates, and benefits of PPI use.

12:20pm – 12:40pm R **Comparison of Andexanet alfa versus Four Factor Prothrombin Complex Concentrate for Factor Xa Inhibitor–Associated Bleeding** Athena G

Moderators: Cristina Plemmons

Presenters: Anna Phillips

Evaluators: Hania Zaki

TITLE: Comparison of Andexanet alfa versus Four Factor Prothrombin Complex Concentrate for Factor Xa Inhibitor–Associated Bleeding

AUTHORS: Anna Phillips, Devon Burhoe, John Carr

OBJECTIVE: To compare and contrast Andexanet alfa to Four Factor Prothrombin Complex, for the urgent reversal of Xa-inhibitors.

SELF ASSESSMENT QUESTION: Which of the following Xa inhibitors does Andexanet alfa have FDA approval to reverse?

BACKGROUND: Approved in 2018, Andexanet alfa is the only FDA approved agent for the reversal of apixaban and rivaroxaban. Despite the FDA approval, many institutions still favor second line options such as Four Factor Prothrombin Complex Concentrate. As of January 2023, there are no known randomized control trials, and few observational studies published comparing Andexanet alfa to Four Factor Prothrombin Complex Concentrate for the reversal of Xa inhibitors. The primary objective of this study is to determine if the administration of Andexanet alfa in the setting of urgent Xa-inhibitor reversal is associated with different rates of thromboembolic events compared to Four Factor Prothrombin Complex Concentrate.

METHODOLOGY: The institutional review board approved this retrospective, observational chart review which evaluated adult patients who received either Andexanet alfa or Four Factor Prothrombin Complex Concentrate for the reversal of Xa inhibitors within a two-hospital health system. A computer-generated list identified patients who received either reversal agent from October 1, 2018 to August 31, 2022. The following was gathered from the subject's electronic health records: their prescribed Xa inhibitor and its indication, type of surgical procedure, type and severity of bleed, the reversal agent used, achievement of hemostasis, incidence of venous thromboembolism, mortality, length of stay, and cost. Categorical data was analyzed through the chi square test. Continuous data was analyzed through the independent samples t-test.

RESULTS: A total of 92 patients met criteria for inclusion, with 58 patients receiving Andexanet alfa and 34 patients receiving Four Factor Prothrombin Complex Concentrate. The mean age was 76 years of age (range, 42-99) and 78% of patients were male. For the primary outcome, 9 patients experienced thromboembolic events in the Andexanet alfa group and 1 patient in the Four Factor Prothrombin Complex Concentrate group (p-value = 0.06).

CONCLUSIONS: In this retrospective comparison of Andexanet alfa and Four Factor Prothrombin Complex, no statistically significant differences were found in the rates of venous thromboembolism. Study limitations include the retrospective design, and small sample size. Larger, prospective trials are needed to compare the safety of Four Factor Prothrombin Complex for the urgent reversal of Xa-inhibitors to Andexanet alfa.

12:20pm – 12:40pm R **Evaluating the Use of N-acetylcysteine in Non-acetaminophen-Induced Acute Liver Failure**
Moderators: Connie Street Athena H
Presenters: Katarina Bielinski
Evaluators: Lauren Floris
TITLE: Evaluating the Use of N-acetylcysteine in Non-acetaminophen-Induced Acute Liver Failure

AUTHORS: Katarina Bielinski, My Dien Tran, Jana Mills

BACKGROUND: Non-acetaminophen induced acute liver failure (NAI-ALF) is a rare and life-threatening disease associated with a high mortality rate in patients without liver transplantation. NAI-ALF is characterized by acute liver dysfunction evident by coagulopathy and encephalopathy. In many patients the cause of NAI-ALF is unknown, but can include viral hepatitis, hypoperfusion, and drug toxicities. Treatment options for NAI-ALF are generally not well-proven, however there is emerging evidence for the use of N-acetylcysteine (NAC) in NAI-ALF. N-acetylcysteine is used first line in acetaminophen overdose to facilitate conjugation of toxic metabolite N-acetyl-p-benzoquinone imine (NAPQI) by increasing hepatic glutathione stores. NAC has been shown to improve both 3-week survival rates, transplant-free survival rates and reduce hepatic encephalopathy in NAI-ALF. There is conflicting evidence on its benefit in reducing mortality. The purpose of this study is to further assess the potential benefit of N-acetylcysteine in patients with NAI-ALF.

METHODOLOGY: This study is a single center, retrospective chart review conducted from January 2021 to September 2022 that included hospitalized patients age18 years or older with NAI-ALF that received N-acetylcysteine. NAI-ALF is defined as acute hepatic dysfunction evident by abnormal liver enzymes (greater than or equal to 3 times the upper limit of normal) and coagulopathy (internationalized normal ratio [INR] greater than or equal to 1.5) with or without encephalopathy. Patients will be excluded if they had a suspected or known acetaminophen overdose, an acetaminophen level greater than 200 mcg/mL at initiation of N-acetylcysteine, any underlying chronic liver disease, or pregnancy. The primary outcome of the study is 30-day mortality. Secondary outcomes include median changes in INR, AST, and ALT after administration of N-acetylcysteine, median hospital length of stay, and receipt of liver transplant.

RESULTS: Death at 30 days occurred in 50% of patients (n=18). The median change in INR was 1.6 (n=16). Reduction to INR < 1.3 was observed in 6 patients, occurring within a median of 4 days. The median hospital length of stay was 13.5 days. No patients received a liver transplant at 3 months. Transplant-free survival at 3 weeks was 50%.

CONCLUSIONS: N-acetylcysteine can potentially improve transplant free survival and reduce mortality in NAI-ALF. NAC is well-tolerated with minimal adverse effects and can potentially be used as adjunctive treatment in NAI-ALF. There is a need for additional studies to determine appropriate dosing and duration of NAC.

12:20pm – 12:40pm | **Clinical Outcome Comparison Among Obese Patients Receiving Fluoroquinolones** | Athena A

Moderators: Laura Schalliol

Presenters: Harley Moore

Evaluators: Dianne May

TITLE: Clinical Outcome Comparison Among Obese Patients Receiving Fluoroquinolones

AUTHORS: Harley Moore, Samantha Walker, Nicholas Martin, A. Shaun Rowe, Brandon Hawkins

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Fixed dosing of antimicrobials in obesity has come under increased scrutiny. Fluoroquinolones are commonly prescribed antimicrobials, typically in fixed-dose regimens. While pharmacokinetic/dynamic analyses of these antimicrobials exist, little data is available regarding patient specific outcomes. Prior studies examining beta-lactams demonstrated higher rates of treatment failure and longer duration of therapy among patients with a BMI (body mass index) less than or equal to 30 kg/m2. Suboptimal fluoroquinolone dosing and exposure may contribute to treatment failure and resistance. The purpose of this study is to determine the impact of obesity on treatment outcomes in patients treated with fluoroquinolones.

METHODOLOGY: A retrospective cohort study comparing treatment failure among non-obese, Body Mass Index less than 30 kg/m2, and obese, BMI less than or equal to 30 kg/m2, patients receiving standard doses of fluoroquinolones was conducted at a large academic medical center. Adult patients were eligible for inclusion if they were hospitalized between August 1, 2017, and July 1, 2022, received ciprofloxacin or levofloxacin for greater than 72 hours during admission and had a positive culture for an Enterobacterales or Pseudomonas species isolate. Patients with infections requiring more than one agent for definitive gram-negative coverage, isolates demonstrating fluoroquinolone non-susceptibility, those unable to achieve source control within 72 hours of initiating therapy, pregnant individuals, or those with a diagnosis of cystic fibrosis were excluded from enrollment in the study. The primary composite endpoint of treatment failure consisted of a change in therapy due to clinical worsening, the presence of fever, temperature greater than100.9 F; an elevated white blood cell count greater than 14 cell/cmm after 72 hours of definitive therapy with fluoroquinolone, and readmission within 30 days with the same organism following discharge. Secondary endpoints included all-cause inpatient mortality, hospital length of stay, and adverse effects. Data concerning demographics, comorbidities, infectious syndromes, antimicrobials before fluoroquinolone treatment, as well as microbiology and susceptibility data, were also collected.

RESULTS: This study included 250 total patients: 161 with a BMI less than 30 kg/m2; 89 with a BMI less than or equal to 30 kg/m2. There were no statistical differences in baseline characteristics between groups. The most common infection site was the urinary tract; 64 and 40 percent, respectively. Ciprofloxacin was used as definitive therapy 63 percent of the time in the BMI less than 30 kg/m2 cohort and 57 percent of the time in the BMI greater than or equal to 30 kg/m2 cohort (p value 0.3998). The oral route of administration was slightly more common than intravenous for definitive therapy (p value 0.8521). Treatment failure occurred in 29 subjects with BMI less than 30 kg/m2 and 29 subjects with a BMI greater than 30 kg/m2. The composite outcome was primarily driven by persistent leukocytosis (p value 0.002). There was no statistical difference in all-cause mortality (p value 0.2507) or median hospital length of stay (p value 0.2106). There were no documented cardiac, musculoskeletal, neurologic, or endocrine adverse events.

CONCLUSIONS: Obesity may increase the occurrence of treatment failure with fixed-dose fluoroquinolone regimens regardless of the source of infection or regimen. These findings warrant larger study populations and further pharmacokinetic analyses to determine specific dosing recommendations for targeted infection types for the safety and efficacy of fluoroquinolone therapy in obesity.

12:20pm – 12:40pm L **Utilization of famotidine for stress ulcer prophylaxis and associated outcomes in a community hospital** Athena J

Moderators: Matt Bamber
Presenters: William Carleton
Evaluators: Joshua Settle

TITLE: Utilization of famotidine for stress ulcer prophylaxis and associated outcomes in a community hospital
AUTHORS: William C. Carleton, William R. Johnson, Leborah Cole Lee, Catelin A. Fulghum
OBJECTIVE: To discuss the appropriate utilization of famotidine for stress ulcer prophylaxis

SELF ASSESSMENT QUESTION: True or False: A GCS of 12 is an indication for SUP?
BACKGROUND: Famotidine is indicated for stress ulcer prophylaxis (SUP) in select patients who are hospitalized. Literature suggests that patients who are critically ill comprise the majority cohort that would benefit the most from SUP. This research aims to assess famotidine for SUP in an acute care community hospital in congruence with evidence-based recommendations.
METHODOLOGY: This study was exempted by the Institutional Review Board at Jackson Hospital and Clinic. Patients eligible for inclusion were those who received famotidine for SUP, 19 years and older, and not receiving acid suppressing medications prior to admission between March 1 and July 1, 2022, which resulted in a total of 300 patients included. The primary outcome was to assess appropriate use of famotidine for SUP with “appropriateness of therapy” determined based upon the American Society of Health Systems Pharmacists’ (ASHP) published guidelines for SUP. Key secondary outcomes included famotidine discontinuation prior to discharge and if anticoagulation or a P2Y12 inhibitor was the only indication for SUP.
RESULTS: Of the 300 patients, 208 (69%) patients were determined to be appropriate. The most common reason for inclusion was for anticoagulation. Of the 208 patients that had appropriate SUP, 111 patients (53%) were considered appropriate due to the patient being on anticoagulation or a P2Y12 inhibitor. Excluding the sole indication of anticoagulation or P2Y12 inhibitor, 97 of the 300 patients (32.3%) appropriately received SUP. Upon discharge, 225 (75%) of the patients who were administered famotidine continued it post discharge.
CONCLUSIONS: The usage of SUP in this study was predominantly appropriate when considering use of anticoagulant or P2Y12 inhibitors. Conversely, SUP was inappropriate in the majority of the participants evaluated if anticoagulation or P2Y12 inhibitor is not considered to be the only indication. It was discovered that 89% were initiated in the ED and 5.3% in the ICU. The medication was found not to be discontinued when the patient was discharged home in 75% of the patients reviewed in this study. Results suggest removal of famotidine from general admission order set may be an avenue to reduce inappropriate SUP.

12:20pm – 12:40pm M **The incidence of hypoglycemia after implementation of an electronic glucose monitoring system in a community hospital** Olympia 2

Moderators: Ryan Dushak
Presenters: Cody Sullivan
Evaluators: Stephanie Hopkins

THE INCIDENCE OF HYPOGLYCEMIA AFTER IMPLEMENTATION OF AN ELECTRONIC GLUCOSE MONITORING SYSTEM IN A COMMUNITY HOSPITAL

Cody Sullivan, Stephen Melton
Baptist Health Lexington-Lexington, Kentucky

Background/purpose: Diabetes is a common contributor to complications of care when working in the hospital setting. Patients that are receiving an intravenous insulin drip are at risk for adverse events, such as hypoglycemia, and are often not adequately controlled. Previous studies have demonstrated the direct correlation between hypoglycemic events and mortality. This correlation highlights the need for hospitals to develop systems and standards to prevent hypoglycemic events while on IV insulin therapy. With the introduction of Electronic Glycemic Management (EGM) systems in managing patients at Baptist Health, devices such as these may decrease the frequency of hypoglycemic events and improve outcomes.

Methodology: All patients 18 years of age or older on an insulin infusion were initially included. Exclusion criteria consisted of pregnancy, incarceration, and those being treated for hyperglycemic hyperosmolar state or diabetic ketoacidosis. A retrospective chart review was conducted to evaluate the incidence of hypoglycemia (less than 70mg/dL) and severe hypoglycemia (less than 40mg/dL), along with other predetermined population parameters. Patients were assigned to one of two groups: those who received therapy six months prior to the initiation of the EGM system and those who received therapy six post-initiation. The previous protocols and the new electronic management system are hospital-wide protocols. This study will not alter any current protocols or require any additional training other than what was required once these were originally approved.

Results: A total of 189 patients were included in the study. In the non-EGM group, the number of patients with hypoglycemia was 24.1% and the number with severe hypoglycemia was 0.00%. In the EGM group, the number of patients with hypoglycemia was 6.9% and the number with severe hypoglycemia was 0.00% ($p = 0.002$). The median time on infusion was 30 hours and 28 hours ($p = 0.441$) and the average glucose at discontinuation was 141mg/dL and 1143mg/dL ($p = 0.779$), respectively. The median number of blood glucose readings per patient was 32 and 24 ($p=0.013$)

Conclusions: The finalized data demonstrates a significant reduction in the number of patients who experience a hypoglycemic event while receiving intravenous insulin. This reduction in events reduces the risk of mortality in our patient population. A significant reduction in blood glucose readings was also demonstrated, which reduces burden of frequent checks on staff and serves as a secondary marker for efficacy since less frequent checks occurs in more stable patients. Future research will need to be conducted to adequately assess the efficacy of EGM systems.

Presentation objective: Convey the potential benefit of utilizing electronic glucose management systems in hospital systems across the United States. Self-Assessment: Based on current literature, what are the proposed benefits of EGM systems?

12:20pm – 12:40pm O **Impact of Clinical Pharmacist Practitioner Service Implementation on Hormone Therapy Adherence in Hormone Positive Breast Cancer Patients** Athena C

Moderators: Jason Dover
Presenters: Lainey Vargo
Evaluators: Elizabeth Oglesby

TITLE: Impact of Clinical Pharmacist Practitioner Service Implementation on Hormone Therapy Adherence in Hormone Positive Breast Cancer Patients
AUTHORS: Lainey Vargo, Dustin Bryan, Paige Perez
OBJECTIVE: To compare adherence rates in patients receiving an oral hormone therapy agent using proportion of days covered (PDC), before and after education with a Clinical Pharmacist Practitioner. Oral agents assessed included: aromatase inhibitor (anastrozole, letrozole, exemestane), or a CDK4/6 inhibitor (palbociclib, ribociclib, abemaciclib), or tamoxifen.
SELF ASSESSMENT QUESTION: n/a
BACKGROUND: Female breast cancer is one of the most prevalent types of cancer in the United States population. As of 2019, it was estimated that 4 million women are currently living with breast cancer, and over 250,000 women will be newly diagnosed in 2022. Eighty-four percent of breast cancer diagnoses have the subtype of hormone receptor positive (HR+) breast cancer. Treatment for HR+ breast cancer includes the use of hormone therapies, such as aromatase inhibitors(AIs), cyclin-dependent kinase (CDK) 4/6 inhibitors, and selective estrogen receptor modulators(SERMs). Available literature suggests patients receiving hormone therapy have variable adherence rates as not all of these therapies are followed by specialty pharmacies who track adherence metrics. Currently, there are no consistent measures in place to determine these patients' level of adherence.
The purpose of this research is to evaluate the impact of a Clinical Pharmacist Practitioner (CPP) on the adherence rates in hormone positive non-metastatic breast cancer patients referred for suboptimal adherence at Cape Fear Valley Cancer Treatment and Cyberknife Center. This research will also identify and describe adherence barriers commonly seen among this patient population.

METHODOLOGY: Patients who received their care at the Cape Fear Valley Cancer Treatment and Cyberknife Center and who fill their hormone therapy prescriptions within the Cape Fear Valley Health System were identified in EPIC. The patients identified on the generated report were narrowed down using the inclusion and exclusion criteria. Each physician was given a list of their patients with suspected suboptimal adherence. Physicians then referred the patients they believed would benefit from an appointment with a CPP. Eligible patients were then called by primary investigator or CPP and offered a 15-minute phone or in-person appointment with the CPP to complete a survey regarding their barriers to medication adherence and discuss mitigating these barriers. Researchers attempted to contact patients 3 times. A voicemail prompt will be used if patient is not reached.
RESULTS: In Progress.
CONCLUSIONS: In Progress.

12:20pm – 12:40pm	S	**Evaluation of prescribing trends for newly approved naloxone HCl nasal spray 8mg (Kloxxado™) to naloxone HCl nasal spray 4mg (Narcan®) to prevent opioid overdose** *Moderators: Nathan Wayne* *Presenters: Madeline Salsman* *Evaluators: Christopher Duphren* TITLE: Evaluation of prescribing trends for newly approved naloxone HCl nasal spray 8mg (Kloxxado™) to naloxone HCl nasal spray 4mg (Narcan®) to prevent opioid overdose AUTHORS: Madeline Salsman, PharmD., Sean Blaeser, PharmD., Monica Barrett, PharmD,BCPP., Olivia Howard, PharmD, BCPS, BCACP OBJECTIVE: Identify what patients may be a good candidate to receive high-dose 8mg naloxone. SELF ASSESSMENT QUESTION: What disease states may put patients at higher risk of opioid overdose? BACKGROUND: Naloxone is a life-saving medication in the case of opioid overdose. The higher dose, 8mg strength of naloxone (Kloxxado), was FDA approved in 2021 due to the increase in opioid overdose deaths. However, current criteria for which patients are prescribed the historically used 4mg dose versus the new 8mg high dose remains unclear. This project is seeking to identify prescribing trends including patient-specific factors and prescriber information associated with 4mg versus 8mg naloxone prescriptions. Data was collected in patients that received a naloxone prescription from February 7th,2022 to October 1st, 2022, at a dual-campus medical institution. METHODOLOGY: Data was collected through retrospective chart review of patients who have received a naloxone prescription on or after the February 7th, 2022. Each patient's risk factors for receiving naloxone or high-dose naloxone were collected and assessed as the primary outcome of this study. Patient risk factors evaluated included history of opioid use disorder, history of substance use disorder, receiving concomitant central nervous system depressant medications, prescription opioid use, and history of opioid overdose. Descriptive statistics were used to identify the number of patients in each subgroup that have identified risk factors that would make the patient a potential candidate for high-dose naloxone. The information collected will be used to educate prescribers on which patients may be optimal candidates to receive high-dose naloxone within the healthcare system. RESULTS: A total of 4,408 patients were included in this retrospective analysis. There were 5,085 prescriptions (91.1%) written for the 4mg strength of naloxone and 496 prescriptions (8.9%) written for the 8mg strength of naloxone for a total of 5,581 prescriptions written for naloxone nasal spray during the study period. Of the patients with a noted history of substance use disorder (n=1931), 62% received naloxone 4mg (n=1190) while 33% received a prescription for naloxone 8mg (n=642). An additional 5% of patients with a history of substance use disorder received a prescription for both strengths of naloxone (n=99). Of the 26 patients included in the study with a known history of opioid overdose, 65% received a prescription for naloxone 8mg (n=17). Past medical history, including hepatitis, sleep apnea, cirrhosis, or a positive drug urine test did not seem to impact a prescriber's choice to prescribe the 8mg strength of naloxone. CONCLUSIONS: High-dose 8mg naloxone is not being utilized nearly as frequently at 4mg naloxone within this health care system. A large majority of patients received the 4mg strength naloxone despite factors that make them a candidate for the 8mg nasal spray. Education to providers regarding what patient risk factors and comorbid conditions make patients a candidate for high-dose 8mg naloxone and why this dose may be a better option for patients with history of opioid abuse is needed within this healthcare institution.	Parthenon 2
12:20pm – 12:40pm	1	**Empty** *Moderators: Amy Duong* *Evaluators: Richard Burrell*	Parthenon 1
12:45pm – 2:00pm		**Lunch**	Ballroom EF
2:00pm – 2:20pm		**Empty**	Parthenon 2

2:00pm – 2:20pm B **Comparison of prescribing patterns of non-insulin pharmacologic agents for type 2 diabetes between pharmacist and usual care in a federally qualified health center** Olympia 2

Moderators: Edoabasi McGee

Presenters: Fabiola Lozano

Evaluators: Skyler Brown

TITLE: Comparison of prescribing patterns of non-insulin pharmacologic agents for type 2 diabetes between pharmacist and usual care in a federally qualified health center

AUTHORS: Fabiola Lozano, Brittany White, Brandy Hollums, Cricket Buol

OBJECTIVE: Compare prescribing rates of first-line non-insulin therapies among patients with type 2 diabetes (T2DM) being managed by a clinical pharmacist versus usual provider care.

SELF ASSESSMENT QUESTION: Does a pharmacist-led diabetes management program at an FQHC primary care clinic increase prescribing rates of first-line therapies? Yes or No

BACKGROUND: Glucagon-like-peptide 1 receptor agonists (GLP1-RAs) and sodium-glucose cotransporter-2 (SGLT-2) inhibitors reduce mortality and cardiovascular risk among patients with type 2 diabetes mellitus (T2DM) with atherosclerotic cardiovascular disease (ASCVD), heart failure, or chronic kidney disease (CKD). Several studies have demonstrated that pharmacist-led medication therapy management programs have been successful at getting more patients to target hemoglobin A1c (HbA1c) compared to usual care under a primary care physician or Advanced Practice Provider. However, there is limited evidence comparing the rates of prescribing of newer non-insulin agents between pharmacists and usual care, and if prescribing impacts rates of achieving glycemic targets. This study aims to compare the rates of patients receiving guideline-recommended first-line non-insulin pharmacotherapy to determine whether low prescribing rates of guideline-recommended first-line non-insulin therapies is an existing potential barrier to achieving glycemic goals at a federally qualified health center (FQHC) primary care clinic.

METHODOLOGY: This study was a single-center, retrospective, cohort study of adult patients > 18 years of age with T2DM and a documented hemoglobin A1c (HbA1c) > 9% between January 2021 to August 2022. Patients with type 1 or gestational diabetes, pregnant or deceased during study period, had diabetes managed by an endocrinologist, or did not have a documented primary care provider encounter in the previous 18 months were excluded. Primary outcomes included rates of patients prescribed guideline-recommended first-line non-insulin diabetes pharmacologic therapies and the mean change in HbA1c from index date to end of study period. The index date was defined as the date of first HbA1c > 9% at time of enrollment. Descriptive statistics to report baseline demographics and differences will be assessed using univariate analysis. The primary outcomes comparing the proportion of patients prescribed guideline-recommended first-line non-insulin therapies and the change in mean HbA1c will be compared between groups using bivariate analysis. An additional multivariate analysis will be conducted to identify predictors associated with the proportion of patients receiving a first-line therapies.

RESULTS: Among 100 patients enrolled at the time of interim analysis, fifty patients were included in the usual care group and fifty patients in the pharmacist-led group. Most patients were Black (61%), English speaking (86%), and male (51%) with a median age of 54 years. Hypertension was the most common comorbidity among all patients (78%). Heart failure (38%), CKD (14%), or a history of previous ASCVD event (28%) were more prevalent among the usual care cohort. In the pharmacist-led group, more patients were uninsured (48%) and had more documented allergies to metformin (22%), SGLT-2 inhibitor (8%), or GLP1-RA (10%). Rates of patients prescribed a guideline-recommended first-line therapy for patients in the usual care group and pharmacist-led group were 62% and 58% at time of enrollment, and 76% and 94% by the time of interim analysis, respectively. Fewer patients in the usual care group were prescribed a GLP1-RA (18%) and/or an SGLT-2 inhibitor (34%) compared to 48% and 58% in the pharmacist-led group, respectively. At enrollment, average index HbA1c's were 10.9% (+1.79) in the usual care group and 11.67% (+1.85) in the pharmacist-led group with a mean HbA1c reduction of -0.34 and -3.53 by the time of interim analysis, respectively. Additionally, of forty-seven patients that achieved an HbA1c less than 9%, thirty-five (74%) were managed by a pharmacist.

CONCLUSIONS: At interim analysis, achievement of HbA1c rates less than 9% and mean HbA1c reduction from index date to most recent HbA1c were greater in the pharmacist-led cohort. We observed that pharmacist-led diabetes care in an FQHC practice inclusive of high rates of uninsured patients was associated with improved glycemic outcomes with higher rates of prescribing of first-line therapies.

2:00pm – 2:20pm B **Evaluation of Hypoglycemia Incidence in Patients Achieving Target Hemoglobin A1c Receiving Traditional Antidiabetic Agents versus Novel Therapies** Olympia 1

Moderators: Nicole Bookstaver

Presenters: Johnathon Proctor

Evaluators: Haley Smith

TITLE: Evaluation of Hypoglycemia Incidence in Patients Achieving Target Hemoglobin A1c Receiving Traditional Antidiabetic Agents versus Novel Therapies

AUTHORS: Johnathon Proctor, Tori Taylor, Anna Love, Sarah Darby, Daniel Truelove, Jeff Lewis

OBJECTIVE: The objective of this presentation is to compare and contrast the risk of hypoglycemia from traditional antidiabetic agents with newer, novel antidiabetic agents.

SELF ASSESSMENT QUESTION: What antidiabetic agents are more likely to cause hypoglycemia and how might that influence determining a patient's A1c goals?

BACKGROUND: Most patients with type two diabetes have a hemoglobin A1c goal of less than 7% to prevent complications of the disease. A driver of this goal was the ACCORD trial, published in 2008, which found more intensive A1c control led to increased risk of hypoglycemia and no benefit on cardiovascular outcomes. Since this trial’s findings, new diabetic agents have received approval which have established cardiovascular benefit and may be less likely to cause hypoglycemia compared to older agents. The goal of this study is to evaluate the rate of hypoglycemia in patients reaching their A1c goal stratified by medication class.

METHODOLOGY: This study is a single-site, retrospective chart review study. Patients that had a prescription claim for insulin, sulfonylureas, SGLT-2 inhibitors, or GLP-1 receptor agonists and had a processed claim for hypoglycemia during the period of January 1, 2020 to December 31, 2021 are included. Incidence of hypoglycemia will be stratified by medication class. Patients are included if they are aged 18 years or older, had a hemoglobin A1c obtained in a healthcare setting during the specified time period, and were taking at least one medication from the classes mentioned. Exclusion criteria will be patients with a diagnosis of type 1 diabetes, pregnancy, and patients taking any of the agents for reasons other than type 2 diabetes, such as weight loss.

RESULTS: Preliminary results evaluated 1326 patients receiving traditional antidiabetic agents and 470 patients receiving novel agents. Approximately 9.28% of patients receiving traditional antidiabetic agents had a claim for hypoglycemia during the study period as compared to 1.28% of patients with a claim in the novel antidiabetic agents group.

CONCLUSIONS: Preliminary conclusions show that patients receiving novel antidiabetic agents showed fewer claims for hypoglycemia than patients receiving traditional antidiabetic agents.

2:00pm – 2:20pm C **Evaluation of Guideline-Directed Medical Therapy for Heart Failure with Reduced Ejection Fraction in Patients on Hemodialysis** Athena D

Moderators: Elizabeth Hudson
Presenters: Meleah K. Collins
Evaluators: Lauren Rass

TITLE: Evaluation of Guideline-Directed Medical Therapy for Heart Failure with Reduced Ejection Fraction in Patients on Hemodialysis

AUTHORS: Meleah K. Collins, Jaleesa Myers

OBJECTIVE: Identify the most commonly prescribed guideline-directed medical therapies in patients with heart failure with reduced ejection fraction and end-stage renal disease.

SELF ASSESSMENT QUESTION: Which of the following medications had the lowest prescribing rate during patient admission?**BACKGROUND:** Heart failure (HF) has become increasingly prevalent in the United States. Despite multiple evidence-based therapies demonstrating morbidity and mortality benefit in patients with heart failure with reduced ejection fraction (HFrEF), utilization of guideline-directed medical therapy (GDMT) is sub-optimal in clinical practice. Previous landmark trials excluded patients with end-stage renal disease (ESRD) on dialysis. In the inpatient setting, providers are challenged with weighing the risks and benefits of GDMT in this patient population. The objective of this study is to describe GDMT compliance rates in hemodialysis patients with HFrEF and to identify barriers to GDMT initiation in this population.

METHODOLOGY: This single-center, retrospective chart review evaluated trends in GDMT prescribing in patients with HFrEF and on hemodialysis. Patients admitted with a primary diagnosis of acute exacerbation of heart failure with reduced ejection fraction (EF less than or equal to 40%), age 18 years or older, and on hemodialysis were eligible for inclusion in the study. Patients with an ejection fraction greater than 40%, volume overload due to missed hemodialysis, and/or hemodynamic instability were excluded. Data was collected from the electronic medical record between July 1, 2018 and June 30, 2022. The primary endpoint was prescribing rates of each GDMT agent of interest (evidence-based beta blocker, renin-angiotensin-aldosterone-system antagonist, angiotensin receptor neprilysin inhibitor, mineralocorticoid receptor antagonist, and hydralazine/isosorbide dinitrate). Secondary endpoints included 30-day readmission rate, hospital length of stay, and discontinuation of GDMT due to adverse effects. Utilization of GDMT was assessed pre-admission, during admission, and at discharge. Barriers to GDMT initiation and reasons for non-compliance were also investigated.

RESULTS: A total of 33 admissions were included in this study. 90.9% of patients were Black/African American. The most common comorbid conditions were hypertension, coronary artery disease, and hyperlipidemia. Beta blockers were the most frequently prescribed agent prior to admission, during admission, and at discharge, while prescribing rates of angiotensin receptor neprilysin inhibitors and mineralocorticoid receptor antagonists were low. 39.4% of patients were readmitted within 30 days of discharge. The average hospital length of stay was 7.9 days (SD $\pm$ 5.78). GDMT was discontinued in 5 patients due to hypotension, hyperkalemia, or bradycardia. GDMT was altered in 3 patients due to intolerance/adverse effects.

CONCLUSION: Prescribing rates of each medication class were consistent with each phase of care, with beta blockers being most readily initiated in HFrEF patients with ESRD. This suggests that the largest barriers, such as hypotension and hyperkalemia, are impacted by the other guideline directed-medication classes. Overall, prescribing rates of GDMT appear to be less impacted by the occurrence of adverse events and more so by association with those events based on drug class effects. The findings of this study emphasize the need for deeper evaluation of whether GDMT is optimized for patients with HFrEF and ESRD.

2:00pm – 2:20pm R **Evaluation of pharmacy resident on-call activites in critically ill patients** Athena G

Moderators: ShaRhonda Watkins

Presenters: Niaima Geresu

Evaluators: Andrew Kessell

TITLE: Evaluation of pharmacy resident on-call activites in critically ill patients

AUTHORS: Niaima Geresu, Sam Pournezhad, Van Bui, Michael Knauss

OBJECTIVE: This project aims to evaluate the pharmacy resident on-call activities in critically ill patients.

SELF ASSESSMENT QUESTION: How would expanding this institutions current clinical service hours in critically ill patients impact

BACKGROUND: Critical care pharmacists continue to be integral members of multidisciplinary teams in the management of critically ill patients. Evidence demonstrates the positive impact critical care pharmacists have on improving clinical, economic, and humanistic outcomes. Critical care clinical pharmacy services are provided during traditional business hours at our institution, verified as Level I Trauma Center by American College of Surgeons, certified as Advanced Comprehensive Stroke Center, and verified burn center by American Burn Association. As a result, clinical coverage extends to an established, in-house, 24-hour on-call pharmacy resident on evenings, nights, and weekends. This project aims to evaluate the pharmacy resident on-call activities in critically ill patients.

METHODOLOGY: This was a single center, retrospective chart review evaluating the pharmacy resident on-call log entries between July 1st, 2020 and June 30th, 2022. The entries included were critically ill patients, defined as patients admitted to intensive care units (medical, burn, neuroscience, and surgical including cardiovascular) or step-down units. Entries were excluded if they were incomplete, defined as entries that did not include the location or unit of the call, intervention made, the duration of the call, and the call outcome. The data collected from the on-call log included the location or unit, date and time of the call, intervention made, duration of the call, and call outcomes. The primary outcome was the volume of calls during the weekday, week-evening, weeknight and weekend. The weekday was defined as the time from 08:00 -15:59. Week-evening was defined as 16:00 – 23:59, and the weeknight was defined as 00:00 - 07:59. The weekend was defined as Saturday, Sunday, and national holidays. Secondary outcomes included types of call activity, number of calls per specific critical care and step-down units during the weekday, week-evening, week-night, and weekend, and number of orders verified for critically ill patients during the weekday compared to week-evening and weeknight, and weekday compared to weekend.

RESULTS: A total of 3,987 entries were included with 47.6% received during the weekdays, 19.2% occurred during the weekday, 23.0% occurred during the week-evening, and 57.8% occurred during the weeknight. The volume of calls received during the weekday compared to the weekend were similar, with 52.0% of calls occurring during the weekend and 48.0% occurring during the weekdays. The majority of calls were pharmacokinetic consults (51.1%), followed by drug information questions (15.0%), and code blue response (15.0%). Lastly, the surgical ICU received the highest volume of calls (55.5%), followed by the medical ICU (29.8%).

CONCLUSIONS: The 24 hour pharmacy resident on-call program demonstrated a higher demand of calls when clinical coverage was unavailable suggesting the expansion of clinical staffing beyond current day coverage when caring for critically ill patients.

2:00pm – 2:20pm R **Impact of Pharmacist-Driven Post-Intubation Sedation and Hypotension Management in the Emergency Department** Athena H

Moderators: Brittany Wheeler
Presenters: Katie McLaurin
Evaluators: Eva Wong

TITLE: Impact of Pharmacist-Driven Post-Intubation Sedation and Hypotension Management in the Emergency Department

AUTHORS: Katie McLaurin, Melissa Catalano, Regan Porter, Charleen Melton, and Audreanna Sahmanovic

OBJECTIVE: To evaluate the impact of a pharmacist-driven protocol on time-to-analgosedation in mechanically ventilated patients within the emergency department.

SELF ASSESSMENT QUESTION: How might Emergency Medicine Clinical Pharmacists be able to positively impact the appropriateness and likelihood of timely post-intubation analgosedation administration for patients who have been mechanically ventilated within the emergency department?

BACKGROUND: Emergency medicine providers are often responsible for the intensive management of intubated and mechanically ventilated patients within the emergency department (ED). Previous studies have revealed that rates of mechanically ventilated patients with no analgesia in the ED may range from 14.3% to 28.4%, and rates of inadequate sedation from 15.2% to 21.3%, putting patients at risk for increased risk of self-extubation, agitation, posttraumatic stress, and delirium. More recent evidence has highlighted significant improvement in the likelihood of timely and appropriate analgosedative administration with the involvement of a clinical ED pharmacist. However, there are no studies to our knowledge that evaluate outcomes following utilization of a pharmacist-driven post-intubation analgosedation protocol. Therefore, the purpose of this study is to evaluate time-to-analgosedation in mechanically ventilated patients after implementation of a pharmacist-driven protocol for post-intubation management.

METHODOLOGY: This study aimed to prospectively analyze the impact of a revised version of pharmacist-driven post-intubation analgosedation and hypotension management protocol implemented in November 2022, following completion of an interim analysis. Prospective data collected from November 2021 – March 2022 was compared to retrospective data collected from November 2022 – March 2023, for patients receiving post-intubation sedation prior to the implementation of the original protocol. Patients eligible for inclusion were at least 18 years of age, intubated within the ED, and managed under the ED clinical pharmacist-driven post-intubation analgosedation algorithm upon consultation by an ED physician. Those who received massive transfusion per facility protocol, had alternative mean arterial pressure (MAP) goals, received IV antihypertensives, or were post-cardiac arrest, pregnant, or incarcerated were excluded from the study. ED pharmacists managed patients via one of two protocolized algorithms: (1) SBP ≥ 90 mmHg and/or MAP ≥ 65 mmHg (2) SBP < 90 mmHg and/or MAP < 65 mmHg containing evidence-based analgosedatives and MAP-modulating agents most suitable for the respective post-intubation blood pressures. Descriptive statistics for categorical variables were utilized to analyze baseline characteristics, while groups were compared via Pearson’s Chi-square for categorical data.

RESULTS: In progress

CONCLUSIONS: In progress

2:00pm – 2:20pm R **Intravenous calcium chloride for the treatment of hypotension in cardiac surgery patients** Athena I

Moderators: Emily Johnston

Presenters: Kenny Ngo

Evaluators: Lyndsay Gormley

TITLE: Intravenous calcium chloride for the treatment of hypotension in cardiac surgery patients

AUTHORS: Kenny Ngo, Nicholas Barker, Alexandre Ivanov, William Bender

OBJECTIVE: Compare duration of vasopressor support after intravenous (IV) calcium chloride administration for patients with ionized calcium (iCa) less than or equal to 1.12 mmol/L and ionized calcium greater than 1.12 mmol/L after cardiac surgery.

SELF ASSESSMENT QUESTION: Is there a difference between the effects of IV calcium chloride on vasopressor duration in refractory hypotensive patients with low ionized calcium and normal ionized calcium levels after cardiac surgery?

BACKGROUND: One of the most common complications from cardiac surgery is refractory hypotension requiring hemodynamic support, occurring in approximately 34% of patients. Vasopressors and inotropes are frequently used after cardiac surgery to provide hemodynamic support, but with well documented risks. The addition of agents such as intravenous (IV) calcium chloride may reduce time on vasopressors and ICU length of stay (LOS) in refractory hypotensive patients after cardiac surgery. There is limited data supporting the use of IV calcium chloride post-operatively in cardiac surgery patients. A small randomized trial concluded that injection of IV calcium chloride causes both immediate and sustained enhancement of myocardial performance and blood pressure. There is currently limited data comparing the effects of IV calcium chloride use in patients with low iCa levels and normal iCa levels.

METHODOLOGY: A single-center, IRB approved retrospective chart review was conducted to analyze cardiac surgery patients who received IV calcium chloride for presumed hypotension from January 1-December 31, 2021. Patients with at least one iCa level after cardiac surgery and requiring vasopressor support were included. Patients were divided into two groups: low iCa (less than or equal to 1.12 mmol/L) and normal iCa (greater than 1.12 mmol/L). The primary objective was duration of vasopressor support (in hours) after IV calcium chloride administration. Secondary objectives include change in vasopressor infusion rates at one, six, and 24 hour post IV calcium chloride administration, ICU LOS, hospital LOS, transfusion requirements, and incidence of post-operative atrial fibrillation.

RESULTS: The IRB-approved study included 100 patients (43 low iCa and 57 normal iCa). The median duration of vasopressor support after IV calcium chloride administration was 27 hours for the low iCa group and 26 hours for the normal iCa group ($p = 0.50$). The median ICU LOS was 4 days for the low iCa group and 4 days for the normal iCa group ($p = 0.61$). The median hospital LOS was 9 days for the low iCa group and 8 days for the normal iCa group ($p = 0.94$). The number of patients receiving transfusion was 37.2% in the low iCa group and 25.9% in the normal iCa group ($p = 0.24$). Patients with post-operative atrial fibrillation was 27.9% in the low iCa group and 26.3% for the normal iCa group ($p = 0.83$).

CONCLUSIONS: No difference in vasopressor support duration after IV calcium chloride administration between patients with low iCa and normal iCa after cardiac surgery was observed.

2:00pm – 2:20pm | **TEMPORAL TRENDS IN USAGE FOR ORAL VS. INTRAVENOUS ANTIBIOTICS FOR SERIOUS INFECTIONS IN THE OUTPATIENT SETTING.** Athena B

Moderators: Nicole Metzger
Presenters: Brandon Duplantis
Evaluators: Donley Galloway

TITLE: TEMPORAL TRENDS IN USAGE FOR ORAL VS. INTRAVENOUS ANTIBIOTICS FOR SERIOUS INFECTIONS IN THE OUTPATIENT SETTING.

AUTHORS: Brandon Duplantis, Megan Adams, J. Andrew Carr, Ryan Ruhr, Todd McCarty

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Many serious bacterial infections require treatment with antibiotics for extended periods of time. For many infections such as osteomyelitis, endocarditis, and bacteremia, it has been commonplace to use extended courses of intravenous (IV) antibiotics as an outpatient to avoid unnecessarily long hospital stays. This presents many obstacles such as long-term IV access and acquisition/cost of IV medications. Recent studies have shown oral antibiotics to be equally effective, and the BVAHCS has increased the usage of PO antibiotics for these syndromes. This project will assess the extent to which practice has changed and where there are further opportunities to improve.

METHODOLOGY: Retrospective chart review will be utilized to look at the utilization of IV vs. oral antibiotics for veterans who required ongoing treatment after discharge for certain types of infections. These infections will include Osteomyelitis, Bacteremia, SSTI, UTI, Endocarditis, Vascular graft infection, septic arthritis, and pneumonia. Factors such as patient demographics and comorbid conditions will be assessed and factored in accordingly. Microbiology data will also be recorded such as: isolated pathogen, resistance, and whether the infection was polymicrobial. Procedures such as surgical intervention for either biopsy or source control will be reviewed. Main treatment parameters will involve duration of therapy, route of administration, adverse reactions related to therapy, and line related complications. The main outcomes will be trends in treatment modality over time, complication rates, treatment success, and relapse rates.

RESULTS: In this retrospective study a total of 97 veterans who received IV outpatient antibiotics were randomly sampled from FY17-FY21. The most common comorbidity was diabetes mellitus. Of these patients 18.5% were readmitted for any reason. 6.2% of patients experienced a line related complication. 12% of patients experienced an adverse event related to their IV antibiotic regimen that required some type of intervention. For all patients sampled, based on culture data, there were oral options available for 44% of patients receiving IV therapy. This trend did not change significantly over time.

CONCLUSIONS: As data continues to be presented on the equivalency of IV and PO treatments for certain infections it is important to understand our current practices and their ramifications. Overall, outpatient IV antibiotic treatment did not have unusually high amounts of line related complications however over a tenth of patients did experience an adverse event that required a change in treatment. IV antibiotics are important to use when indicated but likely do have increased risk when compared to oral options therefore orals should be used whenever possible. Studies should continue to look to create more evidence for the use of oral antibiotics for serious bacterial infections.

2:00pm – 2:20pm | **Trough-based vs. AUC-based Vancomycin Dosing in Time to Achieve Therapeutic Levels** Athena A

Moderators: Josheph Kohn
Presenters: Steven Stadler
Evaluators: Jim Beardsley

TITLE: Trough-based vs. AUC-based Vancomycin Dosing in Time to Achieve Therapeutic Levels
AUTHORS: Steven Stadler, Deanne Tabb, Jorda Baxley, Rachel Friend
OBJECTIVE: The purpose of this study is to evaluate the potential impact of an AUC-based vancomycin monitoring protocol in the inpatient setting at Piedmont Columbus Regional Midtown.
SELF ASSESSMENT QUESTION: What is the current recommended way to monitor vancomycin dosing for serious MRSA infections?
Trough-based dosing
Peak and trough-based dosing
AUC
None of the above

BACKGROUND: Vancomycin has a complex pharmacokinetic profile making dosing and monitoring difficult. The current method for dosing vancomycin at our institution is trough based. Recent studies evaluating dosing based on the area under the curve (AUC) over 24 hours have led to many institutions implementing an AUC-based dosing protocol as their standard of care. Bayesian models using existing population parameters and patient parameters can be used to calculate a vancomycin dose to target a specific AUC value. The purpose of this study is to evaluate the potential impact of an AUC-based vancomycin monitoring protocol in the inpatient setting at Piedmont Columbus Regional Midtown.
METHODOLOGY: This study will include a retrospective chart review of patients initiated on vancomycin utilizing a trough-based dosing method. Patients will be assessed for incidence of therapeutic trough levels within the first 48-hours of starting a vancomycin regimen during the period between 1/1/2022 to 12/31/2022. These same patients will be evaluated to see if the original empiric trough-based dose would have resulted in a therapeutic AUC level. Hospitalized adult patients that received vancomycin for at least 72 hours, with a scheduled dose, and with an appropriate indication for a high vancomycin trough goal were included. This study will compare vancomycin Bayesian AUC dosing versus traditional trough-based vancomycin dosing in incidence of therapeutic level. Other outcomes include development of acute kidney injury (AKI) throughout the duration of treatment, and the average total daily dose of vancomycin when using AUC-based dosing versus that of tradition trough-based vancomycin dosing.
RESULTS: In progress
CONCLUSIONS: In progres

2:00pm – 2:20pm P **Evaluating the incidence of gastrointestinal bleeding when direct oral anticoagulants (DOACs) are combined with the use of non-steroidal anti-inflammatory drugs (NSAIDs)** Parthenon 1

Moderators: Dave Brackett
Presenters: Grace Jenkins
Evaluators: Lisa Kluttz

TITLE: Evaluating the incidence of gastrointestinal bleeding when direct oral anticoagulants (DOACs) are combined with the use of non-steroidal anti-inflammatory drugs (NSAIDs)
AUTHORS: Grace Jenkins, Timothy Atkinson
OBJECTIVE: The primary objective of this retrospective study is to evaluate the incidence of gastrointestinal (GI) bleeding events in patients taking a combination of direct oral anticoagulants (DOACs) and non-steroidal anti-inflammatory drugs (NSAIDs).
SELF ASSESSMENT QUESTION: What is the relationship between an NSAID's COX-1 inhibition and a patient’s bleed risk?
BACKGROUND: Anticoagulants are among the most frequently prescribed drugs in the United States. One must be cognizant of drug-drug interactions, especially when the consequence of the interaction may lead to significant bleeding. Direct oral anticoagulants (DOACs) have quickly gained popularity as they require less monitoring, minimal drug-drug and drug-food interactions, and more predictable dosing when compared to warfarin. As pain management treatment efforts are focusing more on the optimization of non-opioid therapies, non-steroidal anti-inflammatory drugs (NSAIDs) have become a mainstay of medication therapy. While the interaction between warfarin and NSAIDs is well defined, the incidence of GI bleeding when NSAIDs and DOACs are combined has not been clearly identified in clinical studies. We plan to evaluate the incidence of GI bleeding events in patients taking a combination of DOACs and NSAIDs using a Veterans Affairs healthcare system patient population. We also plan to examine rates of bleeding according to NSAID therapy choice and the presence or absence of GI protective medication therapy in an attempt to aid providers in weighing the risk vs. benefit of using NSAIDs for pain management in those taking anticoagulants.
METHODOLOGY: Identify all patients with VA-issued prescriptions for a DOAC and an NSAID, each filled for at least 90 days over the course of a 5-year period (from 10/01/2016 through 9/30/2021). Dates of the prescriptions will be evaluated to determine evidence of concurrent prescribing of DOAC plus NSAID at the time of GI bleed. Those who did not experience a GI bleed and those who did experience a GI bleed without the presence of the DOAC/NSAID combination will be used as comparison groups. Descriptive statistics will be used to describe characteristics of the data and identify incidence of GI bleed according to the primary and secondary outcomes.
RESULTS: In Progress
CONCLUSIONS: In Progress

2:00pm – 2:20pm D **Implementation of an Iatrogenic Drug Withdrawal Service for the Neonatal Intensive Care Unit (NICU)** Athena J

Moderators: Marci Swanson
Presenters: Kelly Betts
Evaluators: Carrington Royals

TITLE: Implementation of an Iatrogenic Drug Withdrawal Service for Neonatal Intensive Care Unit
AUTHORS: Kelly Betts, Patrick Newman
OBJECTIVE: To guide dosing conversion from alpha-2 agonists and opioids to an alternative oral/IV regimen
SELF ASSESSMENT QUESTION: What medication options are preferred for weaning opioids and alpha-2 agonists in the neonatal ICU?
BACKGROUND: Currently there is not a protocolized way that we address patients at Huntsville Hospital's neonatal intensive care unit (NICU) that have been on opiates/sedatives for extended amounts of time. Having a set criteria to identify patients at higher risk for withdrawal, and implementing a regimen/plan to help slowly wean these agents could help prevent withdrawal.
METHODOLOGY: A search was conducted to identify current literature on iatrogenic drug withdrawal, and identify other institutions policies. Collaboration with the NICU physicians was also implemented to ensure the most appropriate weaning strategy along with education to nurses on the new withdrawal algorithm. Pre/post-implementation data will be collected and assessed for efficacy.
RESULTS: Six patients total received either methadone or clonidine per our withdrawal protocols. Of those, the duration of infusion for both fentanyl and dexmedetomidine were both reduced. Hospital length of stay is still being assessed as many of the patients are still currently admitted.
CONCLUSIONS: Standardized weaning strategies have a potential to reduce duration of therapy and hospital length of stay which can improve overall patient outcomes.

2:00pm – 2:20pm T **Impact of a pharmacist-driven discharge transitions of care process in patients hospitalized with heart failure or acute coronary syndrome** Athena C

Moderators: Jason Graham
Presenters: Nason Wise
Evaluators: Adam Sawyer

TITLE: Impact of a pharmacist-driven discharge transitions of care process in patients hospitalized with heart failure or acute coronary syndrome

AUTHORS: Nason Wise, Kimberly Hurth, Lisa Curran, Megan Boothby, Thomas Jacky

OBJECTIVE: Evaluate the impact that pharmacist-driven transitions of care processes have on continuity of care

SELF ASSESSMENT QUESTION: Implementation of a pharmacist-driven transitions of care process leads to which of the following?

BACKGROUND: Pharmacist involvement in transition of care (TOC) processes of cardiovascular (CV) patients has been shown to reduce medication errors, increase medication adherence, and improve 30-day readmission rates. Moses H. Cone Hospital pharmacists currently provide inpatient services to improve TOC through pharmacist discharge order review, patient education, initiation of manufacturer patient assistance, and copay assistance. Although pharmacists provide these services, there remains a gap between recommendations made at discharge and outpatient implementation. A standardized communication process for pharmacist recommendations may increase their implementation, resulting in optimization of guideline directed medical therapy and improved patient outcomes. The purpose of this study was to evaluate the impact of a pharmacist-driven transitions of care process for patients recently discharged from the hospital following a heart failure (HF) or acute coronary syndrome (ACS) event.

METHODOLOGY: This is a single-center, pre-post, IRB-reviewed, determined exempt cohort study. Patients $\geq$18 years of age, hospitalized at Moses H. Cone Hospital for HF or ACS, followed by inpatient cardiology pharmacists, have pharmacist discharge recommendations, and able to attend at least one follow-up appointment with Cone Health Cardiology clinics were included. Patients were excluded if followed by the inpatient advanced heart failure team. Patients with discharge needs to be included in the pre-intervention group were identified via a documentation tool in the electronic health record exclusive to pharmacists. Over a 4-month period, pharmacists identified eligible patients and submitted a permanent TOC note at discharge with outpatient treatment recommendations routed to the outpatient provider. The primary outcome is the number of pharmacist interventions successfully implemented at post-discharge follow-up appointments, evidenced by recommendations accepted or medication assistance submitted. Secondary objectives are medication recommendations implemented, appropriate 30-day medication refills, medication assistance interventions, 30-day CV-related hospital readmission, number of recommendations accepted per person, and type of recommendation.

RESULTS: This pre-post study included a total of 103 patients, 50 in the pre-intervention group and 53 in the post-intervention group. The number of recommendations accepted was significantly higher in the post-intervention group (16 vs 66, $p<0.001$). The number of medication recommendations (15 vs 49, $p<0.01$), medication access interventions (1 vs 17, $p<0.001$), and recommendations accepted per person (0.32 vs 1.25, $p<0.001$) were significantly higher in the post-intervention group. There was no difference in 30-day hospital readmission.

CONCLUSION: Implementation of a pharmacist-driven transitions of care process led to a greater number of medication recommendations and a reduction in cost-related barriers to acquiring medications after discharge.

2:20pm – 2:40pm **Empty** Parthenon 2

2:20pm – 2:40pm B **Evaluation of an Outpatient Penicillin Allergy De-Labeling Clinical Service Using Oral Penicillin Challenging** Olympia 1

Moderators: Nicole Bookstaver
Presenters: Dawnna Metcalfe
Evaluators: Haley Smith

TITLE: Evaluation of an Outpatient Penicillin Allergy De-Labeling Clinical Service Using Oral Penicillin Challenging

AUTHORS: Dawnna Metcalfe, Whitney Aultman, Andrea Long, David Moulton

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Each year across the United States (US) many patients receive potentially inappropriate antibiotic therapy driven by a documented penicillin allergy. Assessing penicillin allergies and de-labeling inappropriate allergic responses can improve patient outcomes, lower healthcare cost, and reduce risk of antimicrobial resistance. Much of the prior research on this topic has focused on inpatient or hospital-based outpatient clinic penicillin skin tests and oral penicillin challenges. Few, if any, studies have been completed on the utility of penicillin allergy de-labeling in an outpatient, nonhospital-based primary care clinic. The purpose of this research is to evaluate a newly formed outpatient, non-hospital based, penicillin allergy de-labeling clinic using graded oral penicillin challenging without prior penicillin skin testing. This unique practice setting, State of Franklin Healthcare Associates (SoFHA), is a provider owned and operated organizations serving Northeast Tennessee and Southwest Virginia comprised of eighteen outpatient adult medicine clinics. This clinic also houses a unique acute care service offering administration of intravenous (IV) antibiotics and fluids for treatment of mild to moderate exacerbations of chronic conditions with staff trained to respond to medical emergencies (i.e., anaphylaxis). Established in this unique primary care setting, this new penicillin allergy de-labeling service aimed to assess penicillin allergies of low-risk patients (i.e. exclusion of any patients with a history of anaphylaxis). Recent penicillin allergy challenging data suggests that allergies in these patients may be tested via oral challenging without prior penicillin skin testing.

METHODOLOGY: This retrospective study aims to determine the percentage of patients who have their penicillin allergy removed after completion of this new clinical service. Removal of inappropriate penicillin allergy labels improves patient outcomes by allowing those patients to receive penicillin antibiotics for future infections, lowering additional health costs and concerns. Primary investigators perform retrospective chart review to obtain demographic information, prior penicillin allergy history, and outcome of graded oral penicillin challenging.

RESULTS: Preliminary results include a total of five patients having completed the oral penicillin challenge. Of the five patients, three had a history of rash from penicillin use in childhood and two experienced hives with penicillin use >10 years ago. All five patients successfully completed the graded oral penicillin challenge and were de-labeled from their pre-existing penicillin allergy. One of the patients experienced dizziness following administration of the first dose which resolved within a few seconds. No other adverse reactions were noted. Further statistical analysis pending completion of project.

CONCLUSIONS: Results of this study will serve as guidance for further development of the outpatient penicillin allergy testing clinical services. Offering this service to patients within their primary care providers office increases patient access to needed clinical testing. Primary investigators aim to utilize the results of this study to educate outpatient providers and healthcare staff on the impacts of inappropriate allergy labeling and the importance of penicillin allergy challenging. Further conclusion and discussion pending completion of data analysis.

2:20pm – 2:40pm B **Evaluation of awareness, training, and implementation of pharmacist-initiated hormonal contraception in North Carolina** Olympia 2

Moderators: Edoabasi McGee
Presenters: Roshni Pattabiraman
Evaluators: Skyler Brown

TITLE: Evaluation of awareness, training, and implementation of pharmacist-initiated hormonal contraception in North Carolina

AUTHORS: Roshni Pattabiraman, Amanda Savage, Mollie Scott

OBJECTIVE: The goal of this study is to evaluate North Carolina pharmacist awareness of the standing order (House Bill 96/State Law 2021-110) allowing community pharmacists to provide hormonal contraception, to identify how many pharmacists completed the hormonal contraception certification offered by the North Carolina Association of Pharmacists (NCAP), and to recognize facilitating factors and barriers during the implementation (or lack thereof) of pharmacist-initiated contraception within this group of birth control-certified pharmacists.

SELF ASSESSMENT QUESTION: What are the major motivations and barriers to implementing hormonal contraception services at community pharmacies?

BACKGROUND: Approximately 45% of US pregnancies are unintended, and women between 18-24 who are low-income, minorities, and/or did not complete high school are disproportionately affected. This further impacts women who live in “contraceptive deserts”, where access to hormonal contraception is restricted due to transportation, availability of these patient-care services, and overall limited access to healthcare. In North Carolina, 637,430 women live in contraceptive deserts, while 90% of Americans live within 5 miles of a community pharmacy on average. As pharmacists are therefore a geographically accessible healthcare provider, pharmacist-led implementation of hormonal contraception services has the potential to mitigate these barriers, particularly in rural and underserved communities.

METHODOLOGY: An online, anonymous survey deployed by NCAP to all registered pharmacists in North Carolina collected information on pharmacy practice site demographics, as well as information related to awareness, completion of the hormonal contraception training, and implementation of pharmacist-initiated contraception for patients. This survey included other provisions, but the focus of this project is solely on hormonal contraception services. Barriers to completing the NCAP (and other) training, reasons for choosing to implement (or decline to implement) contraception services, perceived demand, and anticipated public health benefits of service implementation were assessed. This information was analyzed using descriptive statistics by the researchers to meet the objective of the study.

RESULTS: In progress

CONCLUSIONS: In progress

2:20pm – 2:40pm C **Comparison of cangrelor and tirofiban for bridging to coronary revascularization** Athena D

Moderators: Elizabeth Hudson
Presenters: Samantha Benvie
Evaluators: Lauren Rass

TITLE: Comparison of cangrelor and tirofiban for bridging to coronary revascularization

AUTHORS: Samantha Benvie, J. Ethan Gerrald, Rachel Hemberger

OBJECTIVE: Evaluate the incidence of bleeding and ischemic events with the use of cangrelor or tirofiban as a bridge to coronary revascularization

SELF ASSESSMENT QUESTION: Is cangrelor more efficacious than tirofiban for bridging to coronary revascularization? (T/F)

BACKGROUND: Antiplatelet therapy is essential therapy to mitigate the risk of ischemic events in patients undergoing coronary revascularization. P2Y12 inhibitors are the mainstay of antiplatelet therapy in combination with aspirin, but require a “wash out” period for surgical interventions as it takes days for platelet function to return to normal. Parenteral antiplatelet agents, including tirofiban and cangrelor, have been shown to provide rapid and sustained inhibition of platelet aggregation (IPA). Tirofiban is the drug of choice for GPIIb/IIIa inhibitors as a bridge to cardiac surgery, but cangrelor offers favorable pharmacokinetic and pharmacodynamic characteristics as it requires a shorter wash out period that is required prior to surgery.

METHODOLOGY: Single-center, retrospective chart review of patients who received cangrelor or tirofiban as their primary antiplatelet agent prior to percutaneous or surgical coronary revascularization from January 1, 2018 to October 31, 2022. Coronary revascularization is defined as undergoing percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG). Patients who received cangrelor will be compared to those who received tirofiban. Exclusion criteria are patients who received the study medication for indications other than bridge to revascularization. Primary outcomes include ischemic events (eg, stent thrombosis or ischemia-driven revascularization), bleeding, and the Global Use of Streptokinase and tPA for occluded Coronary Arteries (GUSTO) criteria. Ordinal data will be evaluated with descriptive statistics and represented with medians and inter-quartile ranges (IQR). Ischemic events will be evaluated with chi-square tests. GUSTO scores will be evaluated using a Fisher Exact Test.

RESULTS: 152 patients were identified and 56 were included in the final data analysis. Any bleeding, defined as GUSTO 1 or 2 criteria, occurred in 10 of 21 cangrelor patients and 8 of the 35 tirofiban patients (p = 0.055). Ischemic events occurred in two cangrelor patients and one tirofiban patient (p=0.549). There was no difference in hospital length of stay between cangrelor and tirofiban: 9.06 versus 9.33 days, respectively (p=0.677). The average number of blood products within 24 hours of the procedure was higher in the cangrelor group compared to tirofiban [2.0 ± 2.60 versus 0.6 ± 1.32 (p=0.05)]. More patients in the cangrelor group required post-procedure the use of protamine and 4-factor prothrombin complex concentrate (4F-PCC) [4 (19%) versus 2 (5.7%), p =0.183)].

CONCLUSIONS: More patients in the cangrelor group were classified as GUSTO 1 and 2 criteria, which indicates any bleeding with or without hemodynamic compromise. There was no difference in incidence of ischemic events between the two groups. The use of reversal and hemostatic agents was higher with cangrelor use compared to tirofiban. The overall hospital length of stay did not differ between the two groups. The overall lack of significant difference in outcomes between the two groups may pose an opportunity for cost savings

2:20pm – 2:40pm R **Are Single Doses of IV/IM Ketorolac and Dexamethasone Given in the ED Safe For Patients 65 Years of Age or Older?** Athena H

Moderators: Brittany Wheeler
Presenters: Anna Kroninger
Evaluators: Eva Wong

TITLE: Are Single Doses of IV/IM Ketorolac and Dexamethasone Given in the ED Safe For Patients 65 Years of Age or Older?

AUTHORS: Anna Kroninger, PharmD; Hannah Lineberry, PharmD, BCPS; Lisa Dykes, PharmD, BCPS, MHA

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The combination of intramuscular or intravenous (IM/IV) dexamethasone and ketorolac for acute pain is a widely used regimen in emergency departments and urgent cares across the nation. Dexamethasone is a long-acting corticosteroid that has immediate onset when administered IV, reaching peak levels within 5 minutes. It has a long side effect profile that notably includes hyperglycemia, hypertension and psychosis. Ketorolac is a strong, non-steroidal anti-inflammatory drug that has 100% bioavailability when administered IM. It has many boxed warnings including gastrointestinal (GI) bleeding, renal impairment, risk of myocardial infarction and stroke. These two drugs are attractive to providers for their route of administration, length of nociception and low cost as well as are opioid-sparing. However, the side effect profiles are not benign in their nature, potentially even with one time administrations. Because of the wide variety of side effects and interactions that can occur with the co-administration of these medications, the safety of this regimen is of clinical question, especially in a geriatric population already at an increased risk of harm compared with the younger population if an adverse drug reaction occurs.

METHODOLOGY: This project is an observational retrospective cohort study assessing ADRs related to the use of IV/IM dexamethasone and ketorolac in the emergency department at the Ralph H. Johnson VA Health Care System. Veterans 65 years of age or older will be identified by receipt of IM or IV dexamethasone and ketorolac in the emergency department. Data sources will be electronic medical record. Data will be collected on patients from September 1st 2021-August 31st 2022

INCLUSION CRITERIA

-65 years of age or older

-Received one-time doses of both IV or IM dexamethasone and ketorolac in the RHJVAMC emergency department

EXCLUSION CRITERIA

-Death > 48 hours

-Patients with incomplete or missing data as determined by project investigators (examples include patient had both medications ordered but one or the other was not charted as given, both medications ordered but patient refused one or the other, etc)

RESULTS: in progress

CONCLUSIONS: in progress

2:20pm – 2:40pm R **Efficacy and Safety of Thiazide Diuretics in Critically Ill Patients with Severe Renal Dysfunction**

Moderators: Emily Johnston Athena I

Presenters: Michael Laskowitz

Evaluators: Lyndsay Gormley

Title: EFFICACY AND SAFETY OF THIAZIDE DIURETICS IN CRITICALLY ILL PATIENTS WITH SEVERE RENAL DYSFUNCTION

Authors: Michael Laskowitz, Tyler Chanas, Jacob Edmund

Background: Fluid overload is common in critically ill patients and is associated with increased mortality. In patients with an inadequate response to loop diuretics alone, the synergistic addition of a thiazide diuretic may augment urine output through sequential nephron blockade. However, severe renal dysfunction is also common in critically ill patients and may reduce the efficacy of synergistic diuretic combination strategies. The role of adjunctive thiazide diuretics to restore homeostatic fluid balance in critically ill patients with severe renal dysfunction has not been well characterized.

Methods: A retrospective chart review of the electronic health record was conducted for adults with a baseline eGFR <30ml/min/1.73m2 who received at least one dose of chlorothiazide ≥500 mg or metolazone ≥5 mg during admission to an intensive care unit between August 1, 2021 and July 31, 2022. All patients received ≥80 mg oral furosemide (or equivalent) during specific time windows before and after thiazide initiation. Patients were excluded if they received renal replacement therapy within 72 hours before thiazide initiation or if their urine output was not documented. The primary endpoint was median change in 24-h urine output after thiazide initiation. Secondary endpoints included changes in serum sodium, changes in serum potassium, new or worsening acute kidney injury, and new requirement for renal replacement therapy.

Results: Thirteen patients were included in this IRB-approved study. After thiazide initiation, 24-h median urine output increased by 654 ml [150 - 2470 ml]. Eight patients (61%) experienced new or worsening acute kidney injury after thiazide initiation, and two patients (15%) required new renal replacement therapy. The median changes in serum sodium and serum potassium after thiazide initiation were not statistically significant.

Conclusions: The initiation of adjunctive thiazide diuretics in critically ill patients with severe renal dysfunction was associated with an increase in median 24-hour urine output. Due to small sample size and several confounding variables, randomized controlled trials are needed to validate these results.

2:20pm – 2:40pm R **Implementation and Assessment of an Emergency Department Blood Culture Follow-up Protocol Post-hospital Discharge** Athena G

Moderators: ShaRhonda Watkins
Presenters: James Miracle
Evaluators: Andrew Kessell

TITLE: Implementation and Assessment of an Emergency Department Blood Culture Follow-up Protocol Post-hospital Discharge

AUTHORS: James Miracle, Alanna Rufe, Kaitlyn Claybrook, Michael T. Dailey, William Johnson

OBJECTIVE: Describe the role of the emergency department pharmacist with respect to outpatient blood culture follow-up

SELF ASSESSMENT QUESTION: Pharmacists should always recommend that patients with positive blood culture results be contacted to return to the emergency department for treatment

BACKGROUND: Blood cultures are a vital tool for identification of bloodstream infections and are commonly collected upon presentation to the emergency department in patients with suspected infection. The average time to positivity for blood cultures is 14 to 20 hours, at which time most emergency department visits have concluded and the patient is discharged. The purpose of this quality improvement project is to implement a pharmacist-led blood culture follow-up protocol and assess its impact.

METHODOLOGY: This quality improvement project was deemed exempt by the Institutional Review Board at Jackson Hospital. Patients who presented to the emergency department at Jackson Hospital between September 1st, 2022 and January 31st, 2023 with a positive blood culture that resulted after discharge were reviewed by the emergency department pharmacist daily from 0700 to 2200. Patients who were admitted to the hospital, expired in the emergency department, or when nursing intervention was sufficient were excluded from data collection. The emergency department pharmacist utilized BD Integrated Analytics database to identify positive blood cultures for review. After the emergency department pharmacist reviewed the culture reports, notified the physician, and completed any follow-up actions requested, the pharmacist then documented the interaction in the patient's medical record. The primary outcome was the number of interventions completed by the emergency department pharmacist. Intervention was defined as notifying the physician on duty of the positive blood cultures and determining a plan of action which included waiting for final identification of the microorganism, documentation of contaminant, contacting the patient to return to the hospital, self-monitor at home, or contacting the transferring facility/patient's PCP and notifying them of the patient's blood culture results. Key secondary outcomes included time to pharmacist intervention, time to documented nursing intervention, missed interventions, and number of patients returning to the emergency department due to pharmacist intervention.

RESULTS: A total of 44 patients were reviewed who had positive blood cultures in the emergency department. Of the 44 patients reviewed, 1 patient was excluded from the study due to expiration in the emergency department leaving a total of 43 patients for analysis. Pharmacists intervention was required in 32 patients (73%) and was not required in 11 patients (27%). Pharmacists intervention composed of documentation of contaminants in 19 patients, faxing culture results to transferring facility/primary care physician in 9 patients, 2 patients had to return to the emergency department, and 2 patients were notified to self-monitor at home and return to the emergency department if their symptoms got any worse. With regards to pathogen prevalence, 34 of the positive blood cultures were deemed contaminants, 7 were pathogenic, and the bacteria failed to thrive for identification in 2 patients. The average time to pharmacist review from preliminary results was approximately 10 hours compared to 44 minutes for nursing review.

CONCLUSIONS: The implementation of a pharmacist-led blood culture follow-up protocol established a formalized process for the review and documentation of blood cultures obtained post-hospital discharge. Pharmacist's intervention was required in 73% of the patients assessed. Future process improvements will incorporate considerations to improve time to initial culture review, documentation, and structured final culture review.

2:20pm – 2:40pm | **Efficacy of vancomycin dosed by area under the curve for methicillin-resistant Staphylococcus aureus bacteremia with elevated minimum inhibitory concentrations** Athena B

Moderators: Nicole Metzger

Presenters: Sarah Arnold

Evaluators: Donley Galloway

TITLE: Efficacy of vancomycin dosed by area under the curve for methicillin-resistant Staphylococcus aureus bacteremia with elevated minimum inhibitory concentrations

AUTHORS: Sarah Arnold; Malay Patel; Katie Schoen; Dustin Orvin; Jamie L. Wagner; Bruce M. Jones

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Treatment of methicillin-resistant Staphylococcus aureus (MRSA) bacteremia is recommended with vancomycin, dosed by area under the curve (AUC) with an assumed minimum inhibitory concentration (MIC) of 1 mcg/mL via broth microdilution. Vitek 2 is currently used for automated susceptibility testing at our facility, with Etest reflexed for bacteremia isolates due to historical data at our facility regarding under call of vancomycin MIC by Vitek 2. Literature suggests that Etest may over call MIC with respect to broth microdilution. There is no clear guidance in the guidelines for facilities that do not perform broth microdilution. This study aims to determine whether Vitek 2 or Etest better predicts outcomes for patients by comparing the effectiveness of AUC-based dosing to traditional trough-based dosing of vancomycin with an Etest MIC >1 mcg/mL.

METHODOLOGY: This retrospective, observational, cohort study evaluated adult patients at St. Joseph's or Candler Hospital with a positive blood culture for MRSA between January 2017 - August 2022. Patients were included if they received definitive treatment with vancomycin and had an isolate susceptible to vancomycin with Etest MIC >1 mcg/mL. Patients were excluded for Vitek 2-reported MIC >1 mcg/mL, renal replacement therapy, or end-stage renal disease or death within 24 hours of vancomycin initiation. Patients were split into two groups, those receiving AUC-based dosing or trough-based dosing. Pitt Bacteremia and Charlson Comorbidity Index scores were used to compare severity of disease between groups. The primary outcome was vancomycin treatment failure, measured as a composite of: inpatient mortality within 90 days of blood culture, persistent bacteremia, readmission or microbiological relapse within 30 days. Secondary outcomes included acute kidney injury attributable to vancomycin, hospital and intensive care unit (ICU) length of stay (LOS), and differences in MIC between isolates. Data collected included age, sex, renal function, concomitant nephrotoxins, vancomycin regimen lab monitoring, recurrence of infection, LOS. Data regarding AUC/MIC ratio per Etest vs. Vitek 2 were analyzed via DoseMeRx monitoring software. Outcomes were analyzed using Chi-Square or Fisher's Exact for categorical data and Mann-Whitney U test for continuous values.

RESULTS: Twenty-four patients per group met inclusion/exclusion criteria. Median Pitt bacteremia score for the trough-based group was statistically lower [0.00 (0-1) trough vs. 1.00 (0-2.75) AUC, p=0.018], while the Charlson Comorbidity Index scores were similar between groups [3.00 (1.25-4.75) trough vs. 3.50 (2-5) AUC, p=0.942]. The primary composite outcome of treatment failure showed no statistical difference between trough and AUC groups, respectively [10 (41.7%) vs. 10 (41.7%), p = 1.000]. For the secondary outcomes, hospital LOS [8 days (5-14) trough vs. 8 days (5.25-15) AUC, p=0.788] and ICU LOS was similar [9 days (6.5-14) trough vs. 12 days (5-24) AUC, p=0.690]. There was similar incidence of nephrotoxicity [3 (12.5%) trough vs. 2 (8.33%) AUC, p = 1.000]. The difference in MIC between isolates, with Etest being higher than Vitek 2, was similar between groups [0.5 (0.5-1.5) trough vs. 0.5 (0.5-1.5) AUC, p = 0.217]. The median AUC/MIC ratio per Etest result was higher among trough than AUC, respectively [318.9 mcg.h/mL (290.5-372.4) vs. 287.2 mcg.h/mL (229.7-342.1), p=0.061]. Median AUC/MIC ratio per Vitek2 results was lower in trough than AUC, respectively [502.9 mcg.h/mL (454.1-624.2) vs. 517.5 mcg (448.7-598.4), p=0.869]. Median AUC representing vancomycin exposure over an entire treatment course was higher in trough than AUC, respectively [502.9 mcg.h/mL (454.1-599.9) vs 474 mcg.h/mL (435.3-533), p=0.312].

CONCLUSIONS: No statistically significant difference was found for vancomycin treatment failure in patients with elevated Etest MIC or secondary outcomes between groups. AUC/MIC per Etest and overall exposure to vancomycin were numerically higher in the trough population per Etest. This suggests that AUC dosing may limit exposure of vancomycin to patients without impact on treatment failure.

2:20pm – 2:40pm | **Evaluating the safety and effectiveness of long-term antibiotic suppression in patients with left ventricular assist devices** Athena A

Moderators: Josheph Kohn
Presenters: Kelsey Hamlin
Evaluators: Jim Beardsley

TITLE: Evaluating the safety and effectiveness of long-term antibiotic suppression in patients with left ventricular assist devices

AUTHORS: Kelsey Hamlin, Caroline Derrick, Andrew Mardis, Laura B. Straw, Hanna Winders, Julie Justo, Kamla Sanasi, James Ampadu, Majdi N. Al-Hasan, Andrew Skweres, Jacob Brown, P. Brandon Bookstaver

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The utilization of left ventricular assist device (LVAD) as a bridge to transplantation or as destination therapy for those who are not a transplant candidate continues to rise as the prevalence of heart failure increases. Unfortunately, infection remains one of the most common LVAD complications with infections occurring with an incidence as high as 25-30% within the first 2 years. The purpose of this study is to evaluate the safety and effectiveness of antibiotic suppression therapy for patients with LVAD following an LVAD-related or LVAD-specific infection.

METHODOLOGY: : A retrospective cohort study of persons 18 years or older who have undergone LVAD placement between August 2018 and September 2022 at Prisma Health Midlands, will be conducted. The primary safety outcome is a composite endpoint of treatment emergent adverse event, as documented in the EHR, or discontinuation/decrease in dose due to tolerability concerns. The primary effectiveness outcome is to evaluate the proportion of patients with an LVAD-related or LVAD-specific infection within 6 months of antibiotic suppression initiation. Secondary outcomes will include proportion of patients experiencing early LVAD-related or LVAD-specific infection defined as <90 days since initiation of antibiotic suppression and evaluation of factors associated with success of antibiotic suppression at six months.

Results:

Conclusion:

2:20pm – 2:40pm P **Correlation of Opioid Utilization and Rate of Opioid Related Adverse Drug Events** Parthenon 1

Moderators: Dave Brackett
Presenters: Hannah Henson
Evaluators: Lisa Kluttz

TITLE: Correlation of Opioid Utilization and Rate of Opioid Related Adverse Drug Events
AUTHORS: Hannah Henson, Megan Hintz, Jason Buehler, Che Solla, Satya Yaramati
OBJECTIVE: Determine if higher opioid consumption, defined by peak morphine milligram equivalent (MME) utilization, correlates to increased rates of ORADEs.
SELF ASSESSMENT QUESTION: Identify appropriate interventions we can make as pharmacists to improve patient outcomes in the post-operative period.
BACKGROUND: Opioid analgesics are commonly used for pain control in the acute setting, especially in the post-operative period. Opioid-related adverse drug events (ORADEs) are common and have a significant impact on patients and the healthcare system, including a longer hospital length of stay (LOS), increased cost of hospitalization, higher rate of 30-day readmission, and higher mortality rate than those who do not experience these adverse events. The objective of this study is to determine if higher opioid consumption, defined by peak morphine milligram equivalent (MME) utilization, correlates to increased rates of ORADEs.
METHODOLOGY: This was a retrospective cohort study of patients that underwent one of the following surgeries at an academic medical center from July 2021-June 2022: abdominal vascular surgery, colon resection, total knee replacement, total abdominal hysterectomy, radical prostatectomy, or laminectomy. Patients aged 18 and older that underwent the designated surgeries during the study timeframe were included and patients who did not receive opioids during hospitalization were excluded. The primary endpoint was correlation between peak MME and incidence of ORADE. Secondary endpoints included hospital length of stay (LOS), readmission within 30 days, and mortality. Categorical data was evaluated using Chi Square or Fisher's Exact tests. Continuous data was evaluated with Student's T Test or Mann Whitney U Test. Patients with an ORADE were matched in a 1:1 fashion to patients who did not experience an ORADE using propensity score matching with replacement and nearest neighbor matching.
RESULTS: Within a population of 216 patients that underwent one of the six surgery types, it was found that patients who experienced ORADEs were more likely to have a higher post-surgical peak MMEs ($p<0.001$). Patients with ORADEs had longer hospital lengths of stay ($p <0.001$), but did not have higher rates of readmission within 30 days ($p=0.58$) or greater mortality rates ($p=0.47$). There was not a significant difference in incidence in ORADE based on gender, opioid tolerance, history of renal, or hepatic dysfunction. The results of this study further emphasize the negative impact that increased opioid use has on patients and the healthcare system.
CONCLUSIONS: Patients with a higher opioid consumption per day had an increased rate of opioid-related adverse events and hospital length of stay.

2:20pm – 2:40pm D **A Retrospective Review of Voriconazole Trough Concentrations in Immunocompromised Pediatric Patients at High Risk of Invasive Fungal Disease** Athena J

Moderators: Marci Swanson

Presenters: Courtney Middleton

Evaluators: Carrington Royals

TITLE: A Retrospective Review of Voriconazole Trough Concentrations in Immunocompromised Pediatric Patients at High Risk of Invasive Fungal Disease

AUTHORS: Middleton C, Obordo J, Pickett LR, Hughes KT, Qayed M, Watkins N, Williams K, Schoettler ML

OBJECTIVE: In Progress

SELF ASSESSMENT QUESTION: In Progress

BACKGROUND: Patients at high risk of invasive fungal infection (IFI) include those with acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), relapsed acute leukemias, and children undergoing allogeneic hematopoietic stem cell transplantation (HSCT) due to prolonged intervals of neutropenia experienced during treatment. Since mortality rates of IFI exceed 50% in this population, these patients commonly receive prophylaxis with azole antifungal agents. Though widely used, voriconazole (VCZ), goal trough concentrations can be difficult and time-consuming to achieve. As IFI is a major concern in high-risk patients, reaching goal levels as quickly as possible is of high importance. Assessing previously-documented doses and serum trough concentrations can assist in identifying an optimal VCZ dosing strategy to achieve this aim.

METHODOLOGY: This was a retrospective chart review of pediatric patients at high risk for IFI who were admitted to Children's Healthcare of Atlanta bone marrow transplant (BMT) or hematology/oncology (HEME/ONC) services from July 2021 to July 2022. Patients who were initiated on VCZ or posaconazole (PCZ) were evaluated. The primary outcome was the time to goal VCZ trough concentration for prevention or treatment of IFI. A sub-set of patients who were initiated on PCZ were included for comparison of time to therapeutic trough concentrations. Other secondary outcomes included time to VCZ therapeutic trough concentration according to dosage form and age, number of VCZ regimens initiated for treatment of IFI (possible, probable, or confirmed), comparison of outcomes for BMT versus non-BMT patient populations, and hepatotoxicity (>5 times the upper limit of normal) associated with VCZ. Descriptive statistics were used to compare cohorts.

RESULTS: Ninety-one patients initiated on VCZ, median age 5 years (IQR 2-10), were included in this study. 32 (35%) of these patients were on the BMT service. Median time to first goal VCZ level was 8 days (IQR 5-18). When splitting patients into subgroups of reaching goal level in 5 days or less (N = 41) and 6 or more days (N=50), there was no difference found in age or service. Formulation approached significance with more patients reaching goal in 5 days or less on the IV formulation versus oral formulations (p-value 0.09). The patients initiated on VCZ for treatment of IFI (N = 20) reached goal sooner than the patients recieving prophylaxis (N = 71) (p-value 0.008). Hepatotoxicity was recorded in 18% of patients receiving VCZ.

CONCLUSIONS: We found that time to reach goal VCZ level took a longer amount of time when compared to our anticipated timeframe of 3-5 days. This presents an opportunity to review hospital-based protocol and make adjustments to initial VCZ dosing in patients receiving prophylaxis. A follow up study after protocol changes are made would allow for comparison to results found here. Given the time-sensitive nature surrounding IFI in immunocompromised patients, adjustments in protocols and further research would aid in reaching therapy goals in a timelier manner.

2:20pm – 2:40pm T **Determining the Impact of Transitions of Care Pharmacists on Renal Dose Adjustments During Discharge Medication Reconciliation** Athena C

Moderators: Jason Graham
Presenters: Kosha Patel
Evaluators: Adam Sawyer

TITLE: Determining the Impact of Transitions of Care Pharmacists on Renal Dose Adjustments During Discharge Medication Reconciliation

AUTHORS: Kosha Patel, Lakisha Hamilton

OBJECTIVE: Identify common medications that are inappropriately dosed at discharge in patients with compromised renal function.

SELF ASSESSMENT QUESTION: Which of the following was NOT a common medication dosed inappropriately based on renal function?

BACKGROUND: Renal impairment contributes to the accumulation of toxic metabolites, leading to enhanced pharmacologic effects or increased risk of adverse drug reactions (ADR). Most ADR are preventable and often dose related. Although studies demonstrate that discharge prescriptions contain inappropriate medication dosing regimens for patients with compromised renal function, there is little to no evidence regarding the impact of transitions of care (TOC) pharmacists on medication dose adjustments at hospital discharge in this patient population. The objective of this study is to evaluate the impact of TOC pharmacists on the appropriateness of renally dosed medications at discharge.

METHODOLOGY: Adult patients discharged between January 2022 and June 2022 from medical-surgical units and had an estimated glomerular filtration rate (eGFR) or creatinine clearance (CrCl) of less than or equal to 60 milliliters/minute (ml/min) at discharge were included in the study. Participants were separated into two study arms based on TOC pharmacist interventions. Each patient's discharge medication list was reviewed for adherence to the current Wellstar Renal Adjustment Guidelines for the selected medications and medication classes. Lexicomp renal adjustment recommendations were used for medications not listed in the current hospital guidelines. The primary outcome was the percentage of discharge medications inappropriately dosed based on renal function with and without TOC pharmacist review prior to discharge. The secondary outcomes were the average number of medications that require renal dose adjustments per patient, the occurrence of inappropriately dosed discharge medications by discharge provider discipline, common medications and classes of medications that were inappropriately dosed based on renal function at discharge, and the number of medications on the discharge medication list that are contraindicated for the patient's renal function.

RESULTS: A total of 200 patients were included. Baseline characteristics were similar between both groups except hemodialysis. Twenty-four (13.87%) medications were inappropriately dosed based on renal function at discharge in the TOC group, while 47 (28.31%) medications were incorrectly dosed in the non-TOC group (p=0.0011). The average number of medications requiring renal dose adjustment per patient was about 1.7. Majority of medications in both groups were inappropriately dosed by hospital medicine. Overall, the two most commonly misdosed medication classes were anticoagulants and antimicrobials, while Tramadol, Apixaban, and Gabapentin were the top three medications that were inappropriately dosed at discharge in patients with renal impairment. Patients were not discharged on any contraindicated medications in the TOC group, but there were two medications that should not have been prescribed in the non-TOC group due to the patients' renal function.

CONCLUSIONS: A higher percentage of medications were appropriately dosed according to the patient's renal function at discharge in the TOC group. Although TOC pharmacists can play a significant role in preventing medication errors at discharge, the findings of this study suggest that all pharmacists should be involved in reviewing discharge medication lists to ensure appropriate medication dose adjustment in patients with renal compromise.

2:40pm – 3:00pm **Empty** Parthenon 2

2:40pm – 3:00pm A **Effect of $0 Copayment on Medicare Beneficiary Adherence to CMS Star Ratings Generic Medications** Athena I

Moderators: Emily Johnston
Presenters: Jocelyn McDougal
Evaluators: Lyndsay Gormley

TITLE: Effect of $0 Copayment on Medicare Beneficiary Adherence to CMS Star Ratings Generic Medications
AUTHORS: Jocelyn McDougal, Abigail Wedoff, Tom Delate, Karan Patel, Rachana Patel, Naomi Yates
OBJECTIVE: Describe the impact of $0 copayments on medication adherence within the Medicare population.
SELF ASSESSMENT QUESTION: Which three disease states have medications included in the CMS Star Ratings - Medication Adherence Measure?
BACKGROUND: Medication adherence is associated with improved clinical outcomes and quality of life, yet studies report that as many as 50% of patients with chronic conditions are nonadherent to their prescribed regimen. Numerous factors can impact adherence, including prescription drug copayments (copays). The purpose of this study was to evaluate how a $0 copay benefit for Medicare beneficiaries impacted 1-year adherence rates to generic renin-angiotensin system (RAS) antagonists, hydroxymethylglutaryl-CoA reductase inhibitors (statins), and non-insulin antihyperglycemics.
METHODOLOGY: This was a multi-site, observational study at two integrated healthcare delivery systems. Eligible participants were identified using data provided by the Centers for Medicare and Medicaid Services (CMS) contractor Acumen, LLC. Medicare beneficiaries who received ≥1 generic RAS antagonist, statin, and/or non-insulin antihyperglycemic medication in both 2021 and 2022 were grouped by whether or not they had a $0 copay benefit in both years. Adherence was measured with the proportion of days covered (PDC)—a ratio of the days supplied by a prescription during a given measurement period. The primary outcome was the change in 1-year PDC from 2021 to 2022.
RESULTS: There were 36,571 beneficiaries taking RAS antagonists, 53,827 beneficiaries taking statins, and 9,438 beneficiaries taking non-insulin antihyperglycemic medications included in this IRB-approved study. Beneficiaries were racially diverse, older, and had high baseline PDCs (means ~94.0%). The mean PDC changes for the non-$0 copay versus $0 copay cohorts were -0.4% (±11.2) vs -0.3% (±10.8) (adjusted p=0.030) for RAS antagonists, -0.2% (±10.2) vs <0.1% (±10.0) (adjusted p=0.038) for statins, and 0.4% (±11.9) vs 0.1% (±12.0) (adjusted p=0.696) for non-insulin antihyperglycemics.
CONCLUSIONS: While a $0 copay benefit might statistically significantly improve PDC for some medications in patients with a high baseline PDC, the impact is likely to be clinically negligible.

2:40pm – 3:00pm B **Expansion of a Pharmacist Led Battlefield Acupuncture Clinic in a Veteran Community** Olympia 1

Moderators: Nicole Bookstaver
Presenters: Fayza Griffin
Evaluators: Haley Smith

TITLE: Expansion of a Pharmacist Led Battlefield Acupuncture Clinic in a Veteran Community
AUTHORS: Fayza Griffin, Jenna Griffin, Andrea Chappell
OBJECTIVE: PRIMARY OBJECTIVE:
Determine the interest level of alternative treatment option for pain management in a Veteran community

SECONDARY OBJECTIVE:
Illustrate the benefit of BFA in a Veteran community
SELF ASSESSMENT QUESTION: Which of the following patient(s) may be a good candidate for BFA?
A.) 26-year-old female 22 weeks pregnant with complaints of back pain
B.) 19-year-old male with allergy to gold with complaints of a migraine headache
C.) 76-year-old female with an aversion to needles and complaints of joint pain
D.) 58-year-old male with no allergies and complaints of low back pain

BACKGROUND: Recent studies have shown almost two-thirds of the Veteran population report chronic, uncontrolled pain affecting their quality of life. Battlefield acupuncture (BFA) has been shown to decrease pain by modulating auricular pain receptors via insertion of aiguille semipermanente (ASP®) or Dong Bang Corporation (DBCTM) Press Acupuncture Needles into 5 locations on the ear – Cingulate Gyrus, Thalamus, Omega 2, Point Zero, and Shen Men. Targeting these receptors may provide rapid and effective pain relief. The purpose of this quality improvement initiative was to assess Veteran interest in BFA as an alternative pain management modality in an effort to improve reported pain scores and enhancing the Veteran's overall quality of life.
METHODOLOGY: This quality improvement initiative was a prospective, cohort analysis, and was exempt from Institutional Review Board (IRB) approval. The target population included Veterans assigned to a Community-Based Outpatient Clinic (CBOC) with an ICD-10 diagnosis of musculoskeletal pain. Opioid Therapy Risk Reports (OTRR) and clinical referrals were utilized to identify the target Veteran population. Focus was on Veterans with at least one appointment between March and October 2022. Data collection utilized the Computerized Patient Record System (CPRS) to review completed BFA appointment notes and questionnaires. Microsoft Excel® was used to document the number of BFA sessions, pre/post BFA pain score and supplemental questionnaire scores for each appointment. Primary endpoints were defined as the percentage of Veterans with at least one appointment for BFA after receiving education from a Clinical Pharmacist Practitioner (CPP) and Veterans with more than one appointment for BFA post CPP education. Secondary endpoints were defined as the percentage of Veterans with a decrease in Defense and Veterans Pain Rating Scale (DVPRS) pain score immediately after BFA administration, an overall decrease in DVPRS pain score, and a decrease in Department of Defense/Veterans Affairs (DoD/VA) pain supplemental questions scores for activity, mood, sleep and stress.
RESULTS: A total of 43 Veterans with qualifying musculoskeletal pain were offered at least one BFA session and were included in data analysis. Thirty-four Veterans were amendable to at least one BFA appointment (79.1%). Sixteen Veterans participated in multiple BFA sessions (47.1%).
Twenty-six Veterans reported a decrease in immediate pain (76.5%), twenty-nine Veterans reported a decrease in overall pain (85.3%), twenty-five Veterans reported improvement of overall activity (73.5%), twenty-seven Veterans reported improvement in sleep overall (79.4%), twenty-two Veterans reported improvement of overall mood (64.7%) and twenty-three Veterans reported improvement in overall stress (67.6%).
CONCLUSIONS: Within the sample Veteran population, BFA was associated with improved immediate pain ratings as well as improved overall well-being for the majority of Veterans that utilized the service.

2:40pm – 3:00pm B **Suicide-Related Events Among the Use of Glucagon-Like Peptide-1 Receptor Agonists in a Veteran Population** Olympia 2

Moderators: Edoabasi McGee

Presenters: Gina Heilman

Evaluators: Skyler Brown

TITLE: Suicide-Related Events Among the Use of Glucagon-Like Peptide-1 Receptor Agonists in a Veteran Population

AUTHORS: Gina Heilman, Maxwell Lamb, Haley Henry, Ashley Thomas

OBJECTIVE: The objective of this study is to assess for a difference in incidence of suicide-related events in Veterans treated with a GLP-1 RA who have a history of a mental health condition compared to those without.

SELF ASSESSMENT QUESTION: Will be contained within the formal presentation.

BACKGROUND: Results from the Effect of Liraglutide on Body Weight in Non-diabetic Obese Subjects or Overweight Subjects With Co-morbidities: SCALE™ trial raised concern for the risk of suicidal ideation and use of glucagon-like peptide-1 receptor agonists (GLP-1 RA), leading to the addition of a warning within prescription labeling. There is a lack of literature addressing the possible impacts of GLP-1 RAs on mental health. The objective of this study is to assess for a difference in incidence of suicide-related events in Veterans treated with a GLP-1 RA who have a history of a mental health condition compared to those without.

METHODOLOGY: This was a single-centered, retrospective cohort review conducted at a Veterans Affairs Healthcare System. Veterans were included in the study if they received at least one glucagon-like peptide-1 receptor agonist (GLP-1 RA) prescription from 05/01/2019 to 10/01/2022. Two cohorts were compared: Veterans with a current or historic mental health condition(s) compared to Veterans without history of a mental health condition(s) as documented in the electronic medical record (EMR). The primary outcome assessed the incidence of suicide-related events, defined as an admission or emergency-department visit for suicidal ideation, attempt, or death by suicide. The occurrence of the primary outcome was further delineated for those diagnosed with T2DM compared to those without. Secondary outcomes were evaluated for time to primary outcome from start of GLP-1 RA, dose at time of primary outcome, and incidence of primary outcome stratified by existing mental health condition(s). The presence of a high-risk suicidal ideation chart flag was collected to further describe the mental health cohort. Data was collected via a combination of warehouse extraction and manual chart review. Primary and secondary outcomes were determined by the presence and review of specified notes that indicate possible suicide-related events within the EMR.

RESULTS: Among the 1,224 charts evaluated, 6 patients experienced the primary outcome of a suicide-related event while prescribed GLP-1 RA therapy . All 6 patients were in the cohort of Veterans with a current or historic mental health condition(s) (0.01%), with zero events occurring in the cohort of Veterans without mental health condition(s). These patients were all male with a mean age of 56.3 (± 5.68) years. Of those 6 Veterans, 4 were prescribed dulaglutide (66.67%) therapy. The remaining 2 patients were prescribed liraglutide 0.6mg (16.67%) and semaglutide 2.4mg (16.67%) respectively. The majority of patients who experienced a primary outcome were receiving GLP-1 RA therapy for an indication of diabetes versus weight loss (4 [66.67%] vs 2 [33.33%]).

CONCLUSIONS: This study provides insight into the potential impact of GLP-1 RAs on mental health as it pertains to suicidality, given there was a noted difference in incidence of suicide-related events in Veterans treated with a GLP-1 RA who have a history of a mental health condition, compared to those without. Further research on GLP-1 RA utilization in a Veteran population at risk of suicide-related events is warranted.

2:40pm – 3:00pm C **Evaluation of appropriate antithrombotic prescribing in patients with primary ASCVD in a community hospital** Athena D

Moderators: Elizabeth Hudson
Presenters: Sarah McGrath
Evaluators: Lauren Rass

TITLE: Evaluation of appropriate antithrombotic prescribing in patients with primary ASCVD in a community hospital

AUTHORS: Sarah R. McGrath, R. Bowers, C. Baker

OBJECTIVE: At the conclusion of this presentation, the participant will be able to recognize the percentage of appropriately prescribed antithrombotic medications based on guideline recommended medications and durations of therapy in patients with ASCVD based on the initial event, defined as SIHD, minor stroke/TIA, or ACS.

SELF ASSESSMENT QUESTION: Which of the following is the appropriate duration of DAPT therapy in ACS based on the 2016 ACC/AHA guidelines?

A.21 days, followed by monotherapy for 90 days
B.1-month minimum
C.6-month minimum
D.12 months

BACKGROUND: The World Health Organization lists cardiovascular disease (CVD) to be the leading cause of death worldwide and a key public health concern, as 17.9 million people die from CVD per year. Patients diagnosed with atherosclerotic cardiovascular disease (ASCVD) remain at risk for residuary atherothrombotic events including myocardial infarction, stroke, and death. Guidelines for ischemic heart disease (SIHD), minor stroke/trans ischemic attack (TIA), and acute coronary syndrome (ACS) have indications for dual antiplatelet therapy (DAPT) to reduce the risk of secondary cardiovascular (CV) events. Guideline recommended duration of DAPT varies upon indication, making treatment for these life-threatening conditions complex. Furthermore, despite availability of these guidelines, antithrombotics are frequently prescribed beyond the recommended duration. The purpose of this study is to evaluate the appropriateness of antithrombotic prescribing in patients with primary ASCVD defined as SIHD, minor stroke/TIA, or ACS in order to identify prescribing deficits and identify barriers to optimal patient care.

METHODOLOGY: This single center retrospective cohort study identified patients through a computer-generated report based on diagnosis of primary ASCVD defined as SIHD, minor stroke/TIA, or ACS receiving antithrombotic medications during hospitalization between June 1, 2020 – June 1, 2021. Discharge summaries and outpatient fill histories at 1 month, 3 months, 6 months, or 12 months were used to assess antithrombotic prescribing appropriateness based on indication. The primary objective was to compare the percentage of appropriately prescribed antithrombotic medications based on guideline recommended medications and durations of therapy in patients with ASCVD based on the initial event. Secondary objectives included percentage of appropriate antithrombotic medication prescribing at discharge, and percentage of appropriate antithrombotic medication prescribing in patients based on those receiving an oral anticoagulant, patient self-identified race, and insurance status.

RESULTS: In progress

CONCLUSIONS: In progress

2:40pm – 3:00pm R **Comparison of Ketamine Dosing on Total Morphine Milligram Equivalents in Trauma Patients** Athena H

Moderators: Brittany Wheeler

Presenters: Morgan Beattie

Evaluators: Eva Wong

TITLE: Comparison of Ketamine Dosing on Total Morphine Milligram Equivalents in Trauma Patients

AUTHORS: Morgan Beattie, Michael Wagner, John David Cull, Alex Ewing, Jenna Sorgenfrei

OBJECTIVE: Not required for abstract submission

SELF ASSESSMENT QUESTION: Not required for abstract submission

BACKGROUND: Trauma patients experience pain from various stimuli, often resulting in inadequate pain control. Therefore, a multimodal approach to pain is recommended. Low-dose ketamine has been shown to reduce opioid use while still reducing pain scores. However, the dose range for sub-dissociative ketamine is wide, 0.83-16.7 micrograms per kilogram per minute. The objective of this study was to compare the non-inferiority between two dosing strategies of ketamine within the standard sub-dissociative dosing range.

METHODOLOGY: A single-center, retrospective study was conducted on adult patients admitted to the trauma surgery service and initiated on low-dose ketamine continuous infusion for adjunctive pain management within 72 hours of admission. The study population was divided into two comparator groups. One group included patients treated with 1-2.5 micrograms per kilogram per minute of ketamine, and the other group included patients treated with greater than 2.5-5 micrograms per kilogram per minute of ketamine. Patients who were mechanically ventilated, treated with ketamine for less than 24 hours, prescribed a partial opioid agonist or opioid antagonist prior to admission, and who crossed over from one comparator group to another were excluded. Pregnant and incarcerated patients were excluded as well. The primary outcome was the difference in total morphine milligram equivalents (MME) between the two groups at 24 hours. Key secondary outcomes included difference in total MME between the two groups at 48 and 72 hours, total duration of ketamine use, difference in numeric pain scores at 12-hour intervals during the first 72 hours of ketamine use, ICU length of stay, hospital length of stay, and early discontinuation of ketamine due to side effects.

RESULTS: In Progress

CONCLUSIONS: In Progress

2:40pm – 3:00pm R **Incidence of Hypoglycemia Following Intravenous Insulin Administration for the Treatment of Hyperkalemia** Athena G

Moderators: ShaRhonda Watkins
Presenters: Rachel Cutshaw
Evaluators: Andrew Kessell

TITLE: Incidence of Hypoglycemia Following Intravenous Insulin Administration for the Treatment of Hyperkalemia

AUTHORS: Rachel Cutshaw, Derrick Clay, Dorothy Williams

OBJECTIVE: To evaluate the incidence of hypoglycemia following administration of intravenous regular insulin for the treatment of hyperkalemia within the emergency department. Additionally, to observe the difference in hypoglycemia effects between 10 units vs. less than 10 units of intravenous regular insulin.

SELF ASSESSMENT QUESTION: Is there a difference in hypoglycemic events when comparing 10 units vs. less than 10 units of intravenous regular insulin when utilized for the treatment of hyperkalemia?

BACKGROUND: Despite the high prevalence of hyperkalemia, the initial treatment course remains inconsistent. The hypoglycemic effects of intravenous regular insulin last longer than the initial bolus dose of intravenous dextrose utilized for the treatment of hyperkalemia. This clear pharmacokinetic mismatch is highly underestimated and a large contributor to the incidence of hypoglycemic events during hyperkalemia treatment. The question remains for what dose of IV regular insulin holds the lowest risk for hypoglycemia development and adequate serum potassium shifting.

METHODOLOGY: This was a retrospective cohort study analyzing the incidence of hypoglycemia occurring in the emergency department after the administration of intravenous regular insulin for the treatment of hyperkalemia. Subjects eligible for inclusion were adult patients who were treated in the emergency department for hyperkalemia and received at least one dose of intravenous regular insulin. The primary outcome assessed the incidence of hypoglycemia in patients who received 10 units versus less than 10 units of intravenous regular insulin. Secondary outcomes include percentage of patients developing hypoglycemia within 6 hours of receiving at least one dose of intravenous regular insulin, average time from insulin administration to hypoglycemia, average number of blood glucose checks within 6 hours following insulin administration, average number of serum potassium checks within 24 hours following insulin administration, mean change of serum potassium levels following insulin administration, number of hypoglycemic rescue therapies administered, number of adjunct medications utilized for the treatment of hyperkalemia, and the frequency of utilization of the physician pathway in the emergency department at our institution.

RESULTS: A total of 142 patients were included in this study. Baseline characteristics were similar among both groups. There was no difference in the incidence of hypoglycemia in patients who received 10 units versus less than 10 units of insulin (32% vs. 31%, p= 1.00). The average time to developing hypoglycemia was similar between both groups (1.99 vs. 2.47 hours, p=0.217). No differences were found in the secondary outcomes except for the utilization of the physician pathway in the emergency room (75% vs. 31%, p=<0.0001).

CONCLUSIONS: Although this study found no difference in the incidence of hypoglycemia among patients who received 10 versus less than 10 units of intravenous insulin for the treatment of acute hyperkalemia, it is still important to observe the onset times of hypoglycemia development. With the average onset time of hypoglycemia being within 3 hours of insulin administration, this solidifies the importance of having strict monitoring parameters for patients receiving insulin for the treatment of hyperkalemia.

2:40pm – 3:00pm G **Evaluation of Empagliflozin Use in Older Adult Veterans** Parthenon 1

Moderators: Dave Brackett
Presenters: Lucy Yang
Evaluators: Lisa Kluttz

TITLE: Evaluation of Empagliflozin Use in Older Adult Veterans

AUTHORS: Lucy Yang, LaWanda Kemp, Anna Mirk, and Kimberly Manns

OBJECTIVE: Determine if high quality prescribing was utilized when prescribing SGLT2i to older adults

SELF ASSESSMENT QUESTION: T/F: Using an SGLT2i in older adults may cause adverse events such as dehydration, urinary traction infections, polyuria?

BACKGROUND: Sodium glucose cotransporter-2 inhibitors (SGLT2i) promote renal excretion of glucose and have shown to reduce cardiovascular events, all-cause mortality, and progression of renal decline in select populations. In 2014, SGLT2i were added to clinical practice guidelines for type 2 diabetes, resulting in expanded use of the medication class. Although, SGLT2i may have a beneficial role in the geriatric population, the side effect profile may be concerning. Therefore, we evaluated prescribing practices and adherence to SGLT2i in older adults at a Veterans Affairs (VA) hospital.

METHODOLOGY: We conducted a retrospective chart review of 100 patients ≥ 65 years old with diabetes and prescribed empagliflozin at one VA hospital from January 2016 to December 2021. Baseline characteristics such as renal function, hemoglobin A1c, urinary conditions, concurrent diabetes medications, and dose of empagliflozin were collected at the time of therapy initiation. Descriptive analysis was used to assess prescribing practices (e.g., medication appropriateness per manufacturer prescribing information, counseling, follow-up visit within 30 days), medication adherence (refill history), and reported adverse drug events in the subsequent year.

RESULTS: Eighty-three percent of older adults were prescribed empagliflozin appropriately and documented medication counseling was found in 85% of patient records at initiation. Only 36% of patients had a follow up visit within 30 days. Adverse events by age group included 65-70 years old (42%), 71-75 years old (32%), and ≥ 76 years old (35%). Overall, the most common adverse event was polyuria (15%), hypoglycemia (13%), lightheadedness/dizziness (10%), dehydration (8%), and urinary infection (8%). Discontinuation rates of empagliflozin due to adverse events were 22% for age groups 65-70 and 71-75 years old, and 13% for ages ≥ 76 years old. Medication adherence was not affected by dose or age, with 80% of all patients having a medication adherence rate of ≥ 0.80.

CONCLUSIONS: When evaluating appropriate use and counseling, providers utilized high quality prescribing measures. This is likely aided by the use of an established SGLT2i order set. However, older patients appeared to have a high incidence of adverse drug events. As the role of SGLT2i is evolving in clinical practice, incorporating measures to facilitate follow up, deprescribing, and adequate patient counseling may help to minimize adverse drug events.

2:40pm – 3:00pm | **A Comparison of Tocilizumab or Baricitinib for Hospitalized Patients with Severe COVID-19**

Athena B

Moderators: Nicole Metzger

Presenters: Priyanka Aytoda

Evaluators: Donley Galloway

TITLE: A Comparison of Tocilizumab or Baricitinib for Hospitalized Patients with Severe COVID-19

AUTHORS: Priyanka Aytoda, Benjamin Albrecht, Sarah Green, Gavin Harris, Lindsay Busch, Ramzy Rimawi, Mary Sexton, Zanthia Wiley

OBJECTIVE: placeholders

SELF ASSESSMENT QUESTION: placeholders

BACKGROUND: Severe respiratory COVID-19 is associated with a systemic pro-inflammatory response. Baricitinib (BARI) and tocilizumab (TOCI) are two FDA-approved immunomodulating (IM) agents for the treatment of COVID-19 patients with worsening respiratory status. To date, early studies have shown that although these agents have mortality benefits in COVID-19, clinical outcomes do not differ between the two. The purpose of this study is to compare the impact of TOCI and BARI on clinical outcomes in patients with severe COVID-19.

METHODOLOGY: This is a single-center retrospective quasi-experimental analysis of adult patients who received either TOCI or BARI for severe COVID-19 from April 2021 to February 2022. Severe COVID-19 was defined as having a National Institute of Allergy and Infectious Disease (NIAID) Ordinal Scale (OS) score of 6 or 7, which corresponds to hospitalization requiring noninvasive ventilation (NIV) or high flow oxygen (HFO), mechanical ventilation (MV), or extracorporeal membrane oxygenation (ECMO). Patients were excluded if they received TOCI or BARI ≤ 30 days prior to treatment for COVID-19, experienced mortality or participated in a COVID-19 clinical trial ≤ 48 hours after administration. The primary outcome was days to clinical improvement defined as reduction by ≥ 2 scores on the NIAID OS after the first dose of TOCI or BARI (Day 1). Secondary outcomes include hospital and intensive care unit (ICU) length-of-stay (LOS), NIAID score on Day 7, incidence of decrease in NIAID score by 1 level on Day 3, and IM adverse events (AE). The primary outcome is reported as time in days and analyzed using a stratified log-rank test with stratification by the Day 1 NIAID OS score of 6 or 7. Patients who did not show clinical improvement were removed from this analysis. Categorical variables are reported as frequency and analyzed using Chi-square or Fisher's exact test as appropriate. A sub-group mortality analysis was completed to examine the difference in patients requiring NIV/HFO vs. MV/ECMO at baseline. Continuous variables are reported as mean standard deviation or median [25-75% interquartile range (IQR)] and analyzed using Student's t-test or Mann-Whitney U test as appropriate.

RESULTS: Of the 314 patients screened, 258 met inclusion criteria (121 BARI; 137 TOCI). Receipt of standard therapy, baseline characteristics, and any COVID vaccination (23.1% BARI vs. 27.0% TOCI, p=0.25) were similar between groups. Of patients receiving NIV/HFO at baseline (n=224), 33.9% of patients did not show clinical improvement. Based on survival probability graphs, time to clinical improvement did not differ significantly between BARI and TOCI in patients with baseline NIV/HFO (11.9 (SD 1.13) vs. 12.6 (SD 1.49) days respectively; p=0.79). A significant difference in day of clinical improvement was observed in MV/ECMO patients who received BARI or TOCI (7.0 (SD 1.47) vs. 25.7 (SD 12.95) days respectively; p=0.04). Of this group (n=34), 71% did not show clinical improvement. Hospital LOS and ICU LOS were similar between the BARI and TOCI groups; 21.4 vs. 20.3 days (p=0.98) and 12.9 vs. 15.5 days (p=0.29), respectively. AE were similar between groups (8.3% vs. 2.9% for TOCI, p>0.05). Mortality rates were significantly higher in patients who had MV/ECMO at baseline compared to those who received NIV/HFO (50% vs 20.1%, p>0.05).

CONCLUSIONS: Days to clinical improvement did not differ in total between TOCI and BARI. A statistically significant difference in days to clinical improvement was observed in the MV/ECMO group. However, application of this finding to clinical practice in patients with MV/ECMO is limited due to a small subgroup size and overall low rates of survival. Additional studies are necessary to draw conclusions for this group.

2:40pm – 3:00pm | **Evaluating Dalbavancin Suppression Therapy in Patients at High Risk for Recurrent Infections**

Athena A

Moderators: Josheph Kohn

Presenters: Michael Shaw

Evaluators: Jim Beardsley

TITLE: Evaluating Dalbavancin Suppression Therapy in Patients at High Risk for Recurrent Infections

AUTHORS: Michael K. Shaw, Morgan Pizzuti, Julie Ann Justo, Caroline Derrick, P. Brandon Bookstaver

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Dalbavancin is a lipoglycopeptide currently approved by the U.S. Food and Drug Association for the treatment of acute bacterial skin and skin structure infections caused by susceptible gram-positive microorganisms. Due to its extended half-life and convenient dosing, dalbavancin has been successfully used for off-label indications such as infective endocarditis, bloodstream infections, and bone and joint infections. An emerging area of interest is for chronic suppressive therapy in patients with retained hardware and/or those who are unable to achieve adequate source control. Dalbavancin provides a favorable option for chronic suppressive therapy, however, data are limited on long-term safety, effectiveness, and optimal dosing strategy.

METHODOLOGY: This is a multicenter, multinational, retrospective cohort study among eligible patients between January 1, 2018 and March 31, 2023. Adult patients who received as least 1 dose of dalbavancin for chronic suppressive therapy and have available follow-up are eligible for inclusion. Institutional review board approval was granted by the primary site. The primary endpoint is the proportion of patients on dalbavancin suppression therapy who experienced treatment-emergent adverse events. Secondary endpoints include the proportion of patients achieving clinical success. Dosing strategies and those with available therapeutic drug monitoring will be collated and described.

RESULTS: In progress.

CONCLUSIONS: In progress.

2:40pm – 3:00pm

O **Review of Condensed Schedule High Dose Cytarabine for AML Consolidation at Northside Hospital** Athena C

Moderators: Jason Graham
Presenters: Kristen Kilby
Evaluators: Adam Sawyer

TITLE: Review of Condensed Schedule High Dose Cytarabine for AML Consolidation at Northside Hospital

AUTHORS: Kristen Kilby, Jimena Baron, Melhem Solh

OBJECTIVE: Compare data for using condensed schedule HDAC to standard dosing HDAC for consolidation therapy in patients with AML.

SELF ASSESSMENT QUESTION: What are potential benefits to giving HDAC AML consolidation therapy to patients less than 60 years old on days 1, 2, and 3 compared to days 1, 3, and 5?

a.Reduction in duration of neutropenia
b.Lower rates of infection
c.Shorter hospitalization period
d.All of the above

BACKGROUND: Standard acute myeloid leukemia (AML) consolidation therapy for patients less than 60 years old with low to intermediate risk disease is treated with high dose cytarabine (HDAC) cycles given on days 1, 3, and 5. National Comprehensive Cancer Network Guidelines for AML recommend HDAC 3000 mg/m2 over three hours every 12 hours on days 1, 3, 5 (HDAC-135) or days 1, 2, 3 (HDAC-123) for three to four cycles for maintenance therapy in physiologic age less than 60. A study by Jaramillo et al. published in 2017 and one by Dumas et al. published in 2020 have assessed the impact of HDAC-123 in consolidation treatment of younger AML patients in first complete remission. Both studies concluded that HDAC-123 dosing led to a reduction in duration of neutropenia, lower rates of infection, shorter hospitalization periods, and no cumulative hematological toxicity with increasing number of HDAC cycles, while maintaining similar survival end points compared to HDAC-135. Due to these findings, this study is being conducted to assess if similar outcomes are found at Northside Hospital.

METHODOLOGY: This single-center, retrospective study will include patients with AML between 18 and 60 years old who received at least one cycle of HDAC-123 or HDAC-135 at Northside Hospital Atlanta's outpatient clinic from January 1st 2018 to January 1st 2023. Patients with primary refractory AML, uncontrolled infectious disease prior to consolidation therapy, or who received gemtuzumab ozogamicin during consolidation therapy will be excluded. This study has been IRB approved. The objective of this study will be to assess the safety, efficacy, and health care resource consumption associated with HDAC-135 versus condensed HDAC-123 regimen. This will be evaluated by comparing time to hematologic recovery of WBC, ANC, and platelets, as well as the amount of transfusions needed, incidence of documented infections, rate of hospital admission, and length of stay.

RESULTS:There were a total of 51 patients included. There were 21 patients (39 cycles) that received HDAC-123 and 30 (57 cycles) that received HDAC-135. Overall baseline characteristics were similar although hemoglobin and hematocrit were significantly lower in the HDAC-123 group. In the HDAC-123 group compared to the HDAC-135 group, the median day of WBC recovery was 15 and 24 days, respectively (p=< 0.001). The median day of ANC recovery was 16 and 28 days, respectively (p=< 0.001). The median day of platelet recovery was 16 and 20 days, respectively (p=< 0.001). The median number of RBC transfusions was 1.5 in the HDAC-123 arm and 0 in the HDAC-135 arm. This was a statistically significant difference. The same median amount of platelet transfusions were required in both groups. The hospital admission rate was 23.1% in the HDAC-123 group and 38.6% in the HDAC-135 group (p=0.18). Median length of hospitalization was 2 days in the HDAC-123 group and 3 days in the HDAC-135 group (p=0.53). Fever occurred in 12.8% of HDAC-123 cycles and in 28.1% of HDAC-135 cycles (p=0.13). Of the 39 cycles of HDAC-123, there were 5 documented infections and 19 documented infections in the 57 cycles of HDAC-135 (p=0.031). Most common infection sources were blood and urine.

CONCLUSIONS: Overall, the results support the findings of other studies. HDAC-123 demonstrated a significantly reduced time to WBC, ANC, and platelet recovery compared to HDAC-135. HDAC-123 also was associated with lower rates of microbiologically documented infections but did require more RBC transfusions. HDAC-123 may be preferred over HDAC-135 for consolidation therapy in patients less than 60 years old.

2:40pm – 3:00pm D **Impact of Timely Administration of Asthma Directed Therapy on patient disposition from the pediatric emergency department** Athena J

Moderators: Marci Swanson
Presenters: Emily Royal Hightower
Evaluators: Carrington Royals

TITLE: Impact of Timely Administration of Asthma Directed Therapy on patient disposition from the pediatric emergency department

AUTHORS: Emily Royal Hightower, Alicia C. Sanchez, Christopher T. Campbell, Kelli Rummings

OBJECTIVE: N/A - will update

SELF ASSESSMENT QUESTION: N/A - will update

BACKGROUND: Asthma exacerbations are the leading cause of Emergency Department (ED) visits and one of the top three indications for hospitalizations in children. Bronchodilator and corticosteroid therapy are the mainstay of exacerbation management in the ED. Current guidelines for the management of asthma exacerbations in the ED recommend corticosteroid administration within one hour of presentation, as it has been shown to decrease the need for hospitalization as well as reduce the risk of relapse in those with severe exacerbations. The purpose of this study is to demonstrate that timely administration (defined as within one hour) of first line medications in the ED decreases overall hospitalizations from asthma exacerbations in pediatric patients. The primary objective is to determine if there is a difference between the percentage of patients admitted for asthma exacerbations who received a beta-agonist, anticholinergic, and corticosteroid within one hour of ED presentation compared to those who did not.

METHODOLOGY: This was a single-center retrospective chart review at the Children's Hospital of Georgia of pediatric patients (24 months through 18 years), who presented to the ED for an asthma exacerbation and received inhaled albuterol, inhaled anticholinergic, and/or enteral or parenteral corticosteroid for treatment between June 1, 2021 and November 30, 2022. Excluded patients included those with no prior history of wheezing or past use of inhaled beta-agonists, a history of congenital heart disease and/or chronic lung disease, systemic steroids were received within 48 hours of arrival to the ED for asthma exacerbation, or medications were used for other indication. Inclusion and exclusion criteria were chosen based on the institution's asthma pathway. Demographics, clinical asthma score, medication(s) received, time and type of order placed, time of medication administration, and disposition were collected from the medical record. Outcome data includes time to albuterol, anticholinergic, and corticosteroid administration and disposition. The primary outcome was evaluated by Chi-square.

RESULTS: After initially screening 1,805 patients, 679 patients were included. The average included patient was most likely to a 7-year-old, 33.5 kg African American male and present to the ED during day shift between 7 am and 7 pm. Of the included patients, 351 presented with symptoms classified as a mild CAS, 302 in the moderate group, and 26 patients in the severe group. For patients who received all three therapies within 1 hour of triage, 63% were discharged from the ED and 37% were admitted to either the floor or the PICU. For patients who did not receive all three therapies within 1 hour of trigae, 84% had resolving symptoms that met discharge criteria. For patient who received all three therapies within half an hour, 54% were discharged and 46% were admitted to either the floor or the PICU. For patients who did not receive all three therapies within half an hour, 80% were discharged while 20% were admitted. All results were statistically significant. Comparing differences in disposition, for patients who received all three therapies within 1 hour, 26% were admitted to the floor and 11% admitted to the PICU. For those who received all three therapies within half an hour, 31% were admitted to the floor and 16% to the PICU. Patients who did not receive all three therapies within 1 hour or half an hour of triage, more patients were admitted to the floor than the PICU.

CONCLUSIONS: Overall, this study showed that patient who received albuterol, anticholinergic, and corticosteroid within 0.5 hour or 1 hour of ED presentation were more likely to be admitted than discharged. Patients who received all three therapies within 0.5 hour or 1 hour of ED presentation were more likely to be admitted to the floor than the PICU.

3:00pm – 3:20pm **Empty** Parthenon 2

3:00pm – 3:20pm A **Optimizing Package Sizes to Reduce Waste of Single-Dose Medications with Weight-Based Dosing** Athena I

Moderators: Emily Johnston
Presenters: Matthew Sherman
Evaluators: Lyndsay Gormley

TITLE: Optimizing Package Sizes to Reduce Waste of Single-Dose Medications with Weight-Based Dosing
AUTHORS: Matthew M. Sherman, PharmD, MBA; J. Grant Teague, Jr, PharmD, MBA
OBJECTIVE: To identify optimal package sizes of medications frequently billed for waste and determine the savings Medicare would experience as a result of optimized package sizes.

SELF ASSESSMENT QUESTION: What single dose medications do you see producing significant waste at your facility?
BACKGROUND: The 2023 Physician Fee Schedule includes a provision requiring manufacturers to reimburse the Centers for Medicare & Medicaid Services (CMS) for single-dose medication waste that totals ≥ 10% of discarded units based on JW modifier data. CMS estimates that the annual refunds from manufacturers would total approximately $141 million ($35.4 million quarterly).

As an alternative to paying large refunds to CMS, this new rule may incentivize drug manufacturers to introduce new vial sizes to the market.

METHODOLOGY: A list of medications most frequently billed for waste was compiled from published literature that included claims data from Medicare. Common dosing ranges were determined utilizing recommended dosages gathered from medication package inserts. Utilizing the common dosing ranges, optimal package sizes that would minimize waste were identified. Potential waste reduction was calculated from the difference between market available package sizes and the identified optimal package size. Reimbursement amounts paid by Medicare for each product's waste were based on the payment rates included in the October 2022 average sales price (ASP) pricing file.
RESULTS: Compiled a table titled "Drugs with ≥ 10% Waste and ≥ $2,000,000 in JW Modifier Claims" with market available vial sizes, dosing ranges, optimal vial size, waste reduction, and Medicare spend reduction. Using clinical judgment to identify optimal single-dose vial sizes for CMS-identified molecules with ≥ 10% waste and ≥ $2 million in JW modifier claims, we theorize an approximate 10-67% decrease in potential waste, equating to a mean savings of $2,826 per dose.
CONCLUSIONS: Due to economic pressures resulting from this new legislation, manufacturers are likely to introduce new vial sizes to the market. Further studies of claims data will be beneficial in determining the actual operational and financial impact of this legislation.

3:00pm – 3:20pm B **Effectiveness of a Pharmacist-Led Gout Management Program in a Heart Failure Clinic** Olympia 1

Moderators: Nicole Bookstaver

Presenters: Antonia (Remi) Fagbamiye

Evaluators: Haley Smith

TITLE: Effectiveness of a Pharmacist-Led Gout Management Program in a Heart Failure Clinic

AUTHORS: Antonia Fagbamiye, April Britt, Jordan Wilkie

OBJECTIVE: Evaluate the safety and efficacy of pharmacist-led gout management at a heart failure clinic

SELF ASSESSMENT QUESTION: What is the preferred treatment strategy for gout management?

BACKGROUND: Wellstar Center for Cardiovascular Care/Advanced Heart Failure at Kennestone is a referral-based outpatient heart failure clinic that sees 30-40 patients per day. Two clinical pharmacists began managing gout in March 2020 under a collaborative practice agreement. Once a gout diagnosis is made by the provider and the patient is referred for gout management, one of the clinical pharmacists conducts a phone call to assess symptoms, initiate pharmacotherapy, provide medication and disease state education, and establish a plan for follow-up.

METHODOLOGY: This is a single-center retrospective study conducted for patients seen from March 1, 2020 to March 1, 2022 for gout management by the clinical pharmacists in the Wellstar Center for Cardiovascular Care/Advanced Heart Failure at Kennestone. Patients were then followed for 6 months after their first successful gout phone call. The primary objective was the number of patients at their goal serum urate at 6 months. The secondary objectives were length of time for patients to reach their goal serum urate, patient satisfaction at 6 months, incidence of serum urate less than 3 mg/dL, and doses of urate-lowering therapy required to achieve the goal serum urate.

RESULTS: Fifty-two patients completed their first gout phone call by March 1, 2022. There were forty-one male patients (78.8%) with a median age of fifty-nine years. For the primary outcome, thirty-four patients (65.4%) reached the goal serum urate of less than 6 mg/dL. Two patients (3.8%) had an incidence of a serum urate less than 3 mg/dL. It took a median of 23 weeks (IQR 14, 36) to reach their goal serum urate. Patients required a median of 300 milligrams of allopurinol, the primary urate-lowering therapy used (IQR 200, 400). Overall, patients were satisfied with their gout management which was evidenced by a median score of 10.

CONCLUSIONS: Pharmacist-led gout management in the heart failure clinic proved to be efficacious and safe. Patients were satisfied with their gout management, evidenced by the scores on the patient satisfaction survey. The majority of patients reached the goal serum urate at 6 months, and few patients had an incidence of a serum urate less than 3 mg/dL.

3:00pm – 3:20pm C **Co-Prescribing of Oral Anticoagulants with Antiplatelets (OAC-APT): A Medication Safety and De-Prescribing Initiative** Athena D

Moderators: Elizabeth Hudson
Presenters: Linh Hazard
Evaluators: Lauren Rass

TITLE: Co-Prescribing of Oral Anticoagulants with Antiplatelets (OAC-APT): A Medication Safety and De-Prescribing Initiative

AUTHORS: Linh Hazard, Lauren Jones, Christina Goodear, Christy Henry

OBJECTIVE: The purpose of this project is to improve the appropriate and safe use of oral antiplatelet therapy in patients currently prescribed an oral anticoagulant.

SELF ASSESSMENT QUESTION: Which of the following statements reflects the societal guideline consensus on the use of oral antiplatelet in patients taking oral anticoagulant long-term?

a. Oral antiplatelet is recommended for routine use concomitantly with an oral anticoagulant for primary prevention
b. Oral antiplatelet is recommended for routine use concomitantly with an oral anticoagulant for secondary prevention
c. Routine use of oral antiplatelet concomitantly with treatment doses of oral anticoagulant is not recommended except in situations where the benefit of additional antiplatelet therapy is known or highly likely to be greater than the risks of harm from bleeding
d. All of the above

BACKGROUND: Oral anticoagulants and antiplatelets are two of the most used medications in the United States. The 2022 U.S. Preventive Services Task Force (USPSTF) recommends against aspirin use for the primary prevention of cardiovascular disease in adults aged 60 years or older. The 2018 CHEST guideline and the 2020 ESC guideline do not recommend the routine use of oral anticoagulant and oral antiplatelet except in certain situations. De-prescribing oral antiplatelet for primary prevention is needed to improve medication safety in patients currently prescribed an oral anticoagulant.

METHODOLOGY: Eligible participants are patients with a current oral anticoagulant (OAC) prescription prescribed by the VA concomitantly with a current oral antiplatelet (APT) prescription either prescribed by the VA or outside of the VA including over-the-counter. A prescription database evaluation was conducted to identify eligible patients, followed by active intervention to either discontinue the antiplatelet or reduce bleeding risk in patients who refuse to stop by recommending a proton pump inhibitor.

RESULTS: 878 patients were taking an OAC and APT concomitantly. 50 patients were taking an antiplatelet for primary prevention, 91% of those agreed to discontinue. Those who refused recommendation wanted to seek a cardiologist’s recommendation. Proton pump inhibitor was recommended to 1 patient who also refused due to a pending cardiologist follow-up.

CONCLUSIONS: Although antiplatelet use for primary prevention is no longer recommended, there is still a subset of patient taking it that requires intervention to improve medication safety. Most patients were very receptive of pharmacist recommendation with high acceptance rate. The next step is to consider de-prescribing antiplatelet in patients with atrial fibrillation and stable coronary artery disease as risk outweighs benefit as shown in the AFFIRE trial.

3:00pm – 3:20pm R **Comparison of Outcomes with Titratable versus Fixed Dose Heparin Use in Continuous Renal Replacement Therapy** Athena G

Moderators: ShaRhonda Watkins

Presenters: Austin Paytes

Evaluators: Andrew Kessell

Title: **Comparison of Outcomes with Titratable versus Fixed Dose Heparin Use in Continuous Renal Replacement Therapy**

Authors: Austin Paytes; Carrie Faith Lutheran; Elizabeth Martin

Background:

Circuit clotting in continuous renal replacement therapy (CRRT) reduces total therapy time, resulting in decreased efficacy, increased blood loss, increased treatment cost, and increased work for nursing staff.1 Regional anticoagulation with low-dose unfractionated heparin (UFH) is the most frequently used strategy to prevent filter clotting in the CRRT circuit.2 Historically, our institution has used a nurse-driven UFH titration protocol utilizing activated clotting time (ACT) to maintain filter patency due to the ease and speed of point-of-care testing for dose titrations. However, numerous studies have demonstrated significant variability in ACT values, depending on device, as well as variability between ACT values, activated partial thromboplastin times (aPTT), and anti-Xa values which are more reliable measures of heparin anticoagulation.3

The purpose of this study was to evaluate a fixed-dose, weight-based heparin dosing strategy compared to a nurse-driven, ACT-based, titratable heparin dosing strategy for CRRT filter anticoagulation. Ultimately, a fixed-dose heparin titration strategy could reduce bleeding, overall heparin dosages, and cost, while still maintaining filter patency.

Methods:

This was a multi-center, IRB-reviewed and exempt, prospective study with a historical control. Before study initiation, an order set for fixed-dose UFH titration was built into the electronic health record (EHR) which provided an initial weight-based dose and dose-adjustments based on filter clotting, or at physician discretion. Patients in the historical group utilized ACT-based heparin dose titrations, while members of the prospective group utilized the fixed-dose titration strategy.

Patients were eligible for inclusion if they were on CRRT for at least 72 hours and the CRRT filter circuit was anticoagulated with heparin. Patients were excluded if they had concurrent use of systemic anticoagulation, heparin was used off-protocol, or baseline INR and/or aPTT value was 1.5 times greater than normal (INR >1.5, aPTT >66s).

The primary objective was filter life span (hours). Secondary objectives included rate of circuit clotting over duration of CRRT therapy, filter downtime due to clotting (hours), total heparin dose (units) used for duration of CRRT therapy, total heparin dose (units) per kilogram of patient body weight, intensive care unit (ICU) length of stay (days), rate of minor and major bleeding events, and incidence of aPTT values greater than 102 seconds. The primary objective was assessed using a two-sample Wilcoxon Rank Sum Test, and secondary objectives were assessed using descriptive statistics.

Preliminary Results

The historical control group included 37 patients from April 2017 through July 2022 on CRRT using UFH for circuit anticoagulation with ACT-based dose titrations. In July 2022, the CRRT order set was updated to reflect the fixed-dose heparin titration protocol. The historical control group was compared against a prospective group of 8 patients on CRRT adhering to the fixed-dose titration protocol between July 2022 and March 2023. Preliminary results demonstrated a median reduced filter life of approximately 18 hours in the prospective group compared to the historical control (historical 46.49 vs. prospective 28.5 hours, P=0.11) and a higher average of clots per hour in the prospective group (0.007 vs. 0.016 clots/hr, P=0.19). However, heparin doses were reduced in the group utilizing fixed-dose heparin both in units per hour (730.45 vs. 1,402.81 units/hr, P<0.001) and weight-based dosing (7.61 vs. 14.29 units/kg/hr, P<0.001). Bleeding rates were also reduced in the prospective vs. historical control groups (0 vs. 9 bleeding events) with increased major bleeding events in the historical control group compared to the prospective group (5 vs. 0 bleeding events, P=0.57).

Conclusions:

Fixed-dose UFH regional anticoagulation of the CRRT circuit resulted in shorter median filter life and increased rates of clotting compared to ACT-based UFH titration. However, there was significantly less heparin exposure and less bleeding events in the group using fixed-dose titrations.

3:00pm – 3:20pm R **Impact of a Dexmedetomidine Weaning Protocol at a Community-based Hospital** Athena H

Moderators: Brittany Wheeler
Presenters: Joseph Oh
Evaluators: Eva Wong

TITLE: Impact of a Dexmedetomidine Weaning Protocol at a Community-based Hospital
AUTHORS: Joseph Oh, Rachel Anderson
OBJECTIVE: To be included in presentation
SELF ASSESSMENT QUESTION: To be included in presentation
BACKGROUND: Dexmedetomidine is an alpha-2 adrenergic receptor agonist approved for sedation of intubated and non-intubated patients for up to 24 hours. Due to its favorable pharmacodynamic properties, it has become a widely used agent for sedation in the intensive care setting. Furthermore, prolonged infusions beyond 24 hours have become more prevalent with studies demonstrating safety up to 5 days. However, abrupt discontinuation of dexmedetomidine has been associated with symptoms such as tachycardia, reflex hypertension, agitation, and other hypersympathetic adverse events. A dexmedetomidine weaning protocol was developed at this institution to assist patients in getting patients off of dexmedetomidine infusions. The purpose of this study was to evaluate clinical outcomes associated with the implementation of a dexmedetomidine weaning protocol.
METHODOLOGY: This was a single center, retrospective cohort analysis. Chart review was utilized to compare patients receiving dexmedetomidine infusions before and after the implementation of a weaning protocol. Inclusion criteria included adults 18 years of age or older who received at least 72 hours of a continuous dexmedetomidine infusion. The primary outcome was ICU length of stay. Secondary outcome measures included mean RASS score at 24, 48, and 72 hours after wean initiation, incidence of withdrawal symptoms, use of rescue sedatives, use of rescue antipsychotics, duration of dexmedetomidine infusion prior to weaning, total duration of dexmedetomidine infusion, and cost.
RESULTS: 37 patients were included for analysis (n = 32 in the pre-implementation group and n = 5 in the post-implementation group). There was no difference in ICU length of stay between the pre-implementation versus post-implementation groups (10 vs 11 days respectively, p = 0.67). Duration of total dexmedetomidine infusion was significantly shorter in the post-implementation group versus the pre-implementation group (5 versus 9 days respectively, p = 0.007).
CONCLUSIONS: The implementation of a dexmedetomidine weaning protocol did not have an impact on patient ICU length of stay. Implementation of the weaning protocol did lead to overall shorter durations of dexmedetomidine infusions. Additional research is needed to further evaluate the clinical impact of dexmedetomidine weaning protocols.

3:00pm – 3:20pm | **Long-term dalbavancin for suppression of Gram-positive chronic left ventricular assist device infections** Athena B

Moderators: Nicole Metzger
Presenters: Sarah Rowe
Evaluators: Donley Galloway

TITLE: Long-term dalbavancin for suppression of Gram-positive chronic left ventricular assist device infections
AUTHORS: Sarah Rowe, Sarah Green, Benjamin Albrecht, Stephanie Pouch
OBJECTIVE: Evaluate the safety and efficacy of dalbavancin for suppression of chronic Gram-positive left ventricular assist device infections

SELF ASSESSMENT QUESTION: What dalbavancin dosing strategies can be utilized for patients requiring suppression of chronic Gram-positive LVAD infections?
BACKGROUND: Infection is the leading cause of morbidity and mortality in patients with left ventricular assist devices (LVADs). Previous studies have shown that infection is one of the most common adverse effects and can be seen in up to 37% of patients within the first year of device placement. Prolonged suppressive therapy should be strongly considered and is often utilized in patients with recurrent infections when source control cannot be achieved. Dalbavancin, a long-acting lipoglycopeptide antibiotic that inhibits cell wall synthesis, is a promising option in VAD patients requiring prolonged durations of antibiotic therapy, especially when no oral alternatives are available. Dalbavancin has exhibited potent activity against Gram-positive organisms that cause bone and joint infections. In addition, the long half-life of dalbavancin allows for weekly or biweekly infusions, making it an ideal option for outpatient antibiotic treatment. The practices of utilizing dalbavancin for infection suppression in LVAD patients as well as continuous, repeat dosing of dalbavancin over several months are unique and have not been described in the literature. The goal of this retrospective, observational, multi-site study is to describe patient outcomes of dalbavancin for chronic driveline infection suppression in LVAD patients.
METHODOLOGY: This is a multi-center, observational, retrospective chart review of left ventricular assist device (LVAD) patients receiving dalbavancin for the chronic suppression of Gram-positive infections at Emory University Hospital and Emory St. Joseph's Hospital between July 1st, 2017 and November 30th, 2022. The primary objective was to examine the overall incidence of breakthrough infections while on dalbavancin. The secondary objectives include incidence of breakthrough infection at 1, 3, 6, and 12 months, dalbavancin related adverse effects, duration of suppression therapy, and reason for dalbavancin discontinuation if applicable.
RESULTS: The overall incidence of breakthrough infections occurred in five out of the eight patients included in the study. In regard to the secondary outcomes, one patient experienced an early breakthrough infection within 1 month of dalbavancin initiation. Another patient experienced a breakthrough infection within 3 and 6 months of dalbavancin initiation and the final three patients experienced a breakthrough infection within 6 and 12 months. Of note, two of the patients who experienced a Gram-positive infection were not consistently receiving dalbavancin infusions. Despite this, these patients still remained suppressed for 8 and 11 months respectively. The remaining three patients that experienced breakthrough infections occurred for unknown reasons. Notably, three patients did not have a breakthrough infection after more than 12 months of suppressive therapy. The average duration of dalbavancin suppression therapy amongst all patients was 182 days and no adverse effects were reported. The most common reasons for dalbavancin discontinuation included need for treatment of breakthrough infections, transition to oral suppression therapy, heart transplantation, and LVAD replacement.
CONCLUSIONS: Dalbavancin is a promising option in patients who require long-term suppression for chronic Gram-positive LVAD infections given its unique pharmacokinetic profile and excellent tissue penetration. The utilization of biweekly dalbavancin infusions in our 8 patients prevented infection for an extended period of time despite some of the patients not being able to consistently receive infusions. Larger studies are needed to determine the efficacy and safety of utilizing dalbavancin for long term suppression of Gram-positive LVAD infections

3:00pm – 3:20pm | **The Impact of e-Plex Blood Culture Identification Panel on Antimicrobial Optimization in a Resource Limited Setting** Athena A

Moderators: Josheph Kohn
Presenters: Tyler Martin
Evaluators: Jim Beardsley

TITLE: The Impact of e-Plex Blood Culture Identification Panel on Antimicrobial Optimization in a Resource Limited Setting

AUTHORS: Tyler Martin, Shreena Advani, Sheetal Kandiah, Joseph Torrisi, Eli Wilber, Manish Patel, Paulina A. Rebolledo, Yun F. Wang

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The GenMark Diagnostics e-Plex blood culture identification (BCID) panel rapidly identifies a wide array of bacterial and fungal pathogens along with various resistance genes. Early organism identification via BCID has been associated with a reduction in time to optimal therapy and decreased use of broad-spectrum antimicrobials. At Grady Memorial Hospital, BCID panels are run on positive blood cultures daily between 7AM and 4PM. In addition to interpretation guides that accompany BCID results in the electronic medical record, the antimicrobial stewardship team (AST) provides audit and feedback to providers for all positive blood cultures during business hours Monday through Friday. Restricted utilization of BCID panels and a lack of twenty-four seven AST availability may impact previously demonstrated benefits of BCID use. The purpose of this study is to assess whether these benefits persist despite limitations in resource availability.

METHODOLOGY: This single-center, retrospective cohort study was conducted at Grady Memorial Hospital in Atlanta, Georgia. Positive aerobic and anaerobic blood cultures from February 1, 2022 through April 30, 2022 were included. Exclusion criteria included growth of an organism not identifiable by BCID, discordant results between BCID and standard blood culture techniques, repeated growth of the same species within five days of the index culture, initiation of optimal antimicrobial regimen ≥ 48 hours prior to drawing blood cultures, lack of antimicrobial administration, and patient death, discharge, or transfer to hospice within 24 hours of blood culture collection. Cultures identified via BCID were compared to those identified using standard microbial identification techniques (MALDI-TOF mass spectrometry for organism identification and VITEK2 serial broth dilution for antimicrobial susceptibility testing). The primary outcomes were median time to optimal therapy, median time to de-escalation of anti-MRSA (methicillin-resistant Staphylococcus aureus) agents, and median time to de-escalation of anti-pseudomonal agents. Optimal therapy was defined as the antimicrobial agent and dose expected to result in the best clinical outcomes as determined by independent review of two study investigators. The secondary outcomes were median time to organism identification, median vancomycin days of therapy (DOT) for coagulase-negative Staphylococcus species (CoNS) growing in one of two blood cultures, all-cause hospital mortality, median hospital length of stay, and cost savings due to the reduction in anti-MRSA and anti-pseudomonal agents use. In addition to the main analysis, a sub-analysis was conducted in which cases where antibiotics were clearly directed at an additional separate infection from the index bacteremia were excluded.

RESULTS: In total, 253 blood cultures were included in this study (153 BCID and 100 standard). BCID use was associated with a reduction in the median time to optimal antimicrobial therapy (43.4 vs. 72.1 hours), median time to de-escalation of anti-MRSA agents (27.7 vs. 46.7 hours), and median time to de-escalation of anti-pseudomonal agents (38.8 vs. 54.8 hours). Regarding secondary outcomes, BCID use was associated with a reduction in median time to organism identification (23.9 vs 45.3 hours) and median vancomycin DOT (3 vs. 4 days). Hospital all-cause mortality was similar between groups (10.5% vs. 9.0%), and BCID use was associated with a longer median hospital length of stay (17.4 vs. 14.4 days). In the subgroup analysis, BCID was associated with similar reductions in time to optimal therapy (32.4 vs. 61.3 hours), time to anti-MRSA agent de-escalation (23.2 vs. 38.4 hours), and time to anti-pseudomonal agent de-escalation (30.9 vs. 45.9 hours).

CONCLUSIONS: Despite resource limitations, BCID use was associated with earlier initiation of optimal therapy and pathogen identification with subsequent de-escalation of empiric broad-spectrum antimicrobials. Results were not significantly impacted by antimicrobials aimed at other infection sites. With the exception of hospital length of stay, results of this study are comparable to previous studies.

3:00pm – 3:20pm L **Effect of patiromer or sodium zirconium cyclosilicate on serum potassium concentrations in patients with acute hyperkalemia** Athena J

Moderators: Marci Swanson

Presenters: Erin Anderson

Evaluators: Carrington Royals

TITLE: Effect of patiromer or sodium zirconium cyclosilicate on serum potassium concentrations in patients with acute hyperkalemia

AUTHORS: Erin Anderson, Sarah Hardeman, T.J. Hodge, Skyler Brown, A. Shaun Rowe, Sonya Khimani, Ellie Gantenbein, Kimberly R. Keller

OBJECTIVE: Determine if patiromer is non-inferior to sodium zirconium cyclosilicate in the treatment of acute hyperkalemia along with standard of care therapies.

SELF ASSESSMENT QUESTION: Describe which patient groups may benefit using patiromer over sodium zirconium cyclosilicate for hyperkalemia treatment.

BACKGROUND: Acute hyperkalemia is a common, life-threatening electrolyte abnormality in hospitalized patients. Few studies exist on the role of potassium binders in acute hyperkalemia, and none have compared two medications head-to-head. The purpose of this study is to determine if the use of single dose patiromer is non-inferior to the use of single dose sodium zirconium cyclosilicate in the management of acute hyperkalemia.

METHODOLOGY: This was a single-center, retrospective cohort study. Patients greater than 18 years old with the institution’s Hyperkalemia Pathway ordered and receipt of either patiromer or sodium zirconium cyclosilicate were eligible for inclusion. Patients without a follow-up potassium level between 2 and 8 hours post dose, crossover potassium binder use within 24 hours of administration, treatment with a potassium binder within previous 24 hours, pseudo-hyperkalemia, and dialysis treatment prior to first potassium level were excluded. The primary outcome measured was a change in serum potassium level between 2 and 8 hours post potassium binder administration. Secondary outcomes included change in serum potassium between 8 and 12 hours, change in serum potassium between 12 and 24 hours, and whether treatment with a non-study potassium binder during hospitalization was required. It was determined that 78 patients per group would yield 80 percent power to detect a 0.1 milliequivalent per liter change, with a non-inferiority margin of 0.5 milliequivalent per liter difference between the groups for the primary outcome.

RESULTS: For the primary outcome, the patiromer group was found to be non-inferior to the sodium zirconium cyclosilicate group for change in serum potassium between two and eight hours (mean change difference 0.2 [95% CI ∞, -0.148]; p

3:00pm – 3:20pm M **Quality Improvement in Medication Reconciliation** Olympia 2

Moderators: Edoabasi McGee
Presenters: Makayla Garcia
Evaluators: Skyler Brown

TITLE: Quality Improvement in Medication Reconciliation

AUTHORS: Makayla Garcia, Stephen Turner, Rachel Simons, Shannon Fountain, Amanda Williams, Kelly Huff

OBJECTIVE: Discuss common medication discrepancies that can occur during transitions of care

SELF ASSESSMENT QUESTION: The foundation of an accurate medication reconciliation relies on a complete PTA list. True or False

BACKGROUND: The medication reconciliation process serves to compile an accurate list of medications prescribed to a patient. Changes in patient care settings increase opportunities for medication related errors. Joint Commission requires medication reconciliation to be performed within 24 to 48 hours of hospital admission. This study evaluated the medication reconciliation process against a standardized evaluation tool created by a nonprofit healthcare quality improvement organization, the Leapfrog Group.

METHODOLOGY: This study was an IRB approved, prospective, randomized chart review. Eligible patients were 18 years of age or older and admitted for a minimum of 24 hours with a completed medication reconciliation. The evaluation tool, called the gold standard medication history (GSMH), was collected by the research pharmacist and compared to both the medication history completed on admission and the orders placed on admission. Medication reconciliations were completed by pharmacy or nursing staff. The primary outcome was the rate at which unintentional medication events occurred per medication. The secondary outcomes included the time to complete the initial medication reconciliation, the types of discrepancies occurring post medication reconciliation completion, and any identified adverse events related to medication reconciliation discrepancies.

RESULTS: Eighty-three patients were included in the study, with 47 (57%) patients in the nursing group and 36 (43%) patients in the pharmacy group. Nursing completed medication reconciliations had a rate of 0.313 unintentional medication discrepancies per medication, compared to 0.086 in the pharmacy group. The average time to complete a medication reconciliation for nursing and pharmacy was 11.8 hours (0.05-293.3 hours) and 31 hours (0.35-168 hours), respectively. The most common type of discrepancy was an omission of a medication; cumulatively 66 (79%) of patients had at least one omission within admission orders. No medication reconciliation related adverse were discovered.

CONCLUSIONS: Overall, pharmacy medication reconciliations were completed with a lower rate of discrepancies, but took longer to complete. While medication reconciliations completed by nursing were deemed complete sooner, there was a higher rate of discrepancies identified. Additional resources such as education for nursing staff and expanding the current transitions of care department are needed to ensure safer transitions of care.

3:00pm – 3:20pm N **Impact on Door to Needle Times and Associated Clinical Outcomes In Acute Ischemic Stroke Patients When Switching Preferred Therapy From Alteplase to Tenecteplase** Parthenon 1

Moderators: Dave Brackett

Presenters: Marshall Hardee

Evaluators: Lisa Kluttz

TITLE: Impact on Door to Needle Times and Associated Clinical Outcomes In Acute Ischemic Stroke Patients When Switching Preferred Therapy From Alteplase to Tenecteplase

AUTHORS: Marshall Hardee, Stephanie Smith, Haley Hubbard

OBJECTIVE: The purpose of this study is to determine if the implementation of tenecteplase for use in acute ischemic stroke reduces the facility's door-to-needle time compared to historic alteplase use and thus improve patient outcomes.

SELF ASSESSMENT QUESTION: Not Applicable

BACKGROUND: Reduction in door to needle time for thrombolytic administration has been shown to improve patient outcomes. To reduce door to needle times and medication administration errors through simpler reconstitution and administration steps, a 295-bed community hospital is in the process of switching from alteplase to tenecteplase.

METHODOLOGY: A single-center pre-post design study will be completed for patients with clinically diagnosed ischemic stroke that received alteplase to analyze door-to-needle times and associated patient outcomes from initial use at the facility until January 31st, 2023, which will constitute the retrospective portion of the study. The prospective portion of this study will focus on the use of tenecteplase in patients that have been clinically diagnosed with an acute ischemic stroke. Data collection for tenecteplase will be gathered daily once tenecteplase administrations begin to occur (estimated to begin March 1st, 2023). The data points that will be collected include patient demographics, pertinent vital signs, thrombolytic drug administered, dose of thrombolytic administered, pre-, and post-thrombolytic NIH stroke scale scores, door-to-needle time, and rates of post-thrombolytic administration bleeding events.

RESULTS: In Progress

CONCLUSIONS: In Progress

3:00pm – 3:20pm

O **Evaluation of the impact of CYP3A5 polymorphisms on efficacy and toxicity of post-transplant cyclophosphamide (PTCy) in haploidentical transplantation** Athena C

Moderators: Jason Graham

Presenters: Wendy Caba Piloto

Evaluators: Adam Sawyer

TITLE: Evaluation of the impact of CYP3A5 polymorphisms on efficacy and toxicity of post-transplant cyclophosphamide (PTCy) in haploidentical transplantation

AUTHORS: Wendy Caba Piloto, Katie Gatwood, Lindsay Orton, Adetola Kassim, Bhagirathbhai Dholaria, Reena Jayani, Bipin Savani, Tae Kon Kim, Leena Choi, Elizabeth McNeer

OBJECTIVE: The purpose of this study is to investigate the association between CYP3A5 polymorphisms and incidence of PTCy toxicity when used as GVHD prophylaxis in haploidentical stem cell transplantation.

SELF ASSESSMENT QUESTION: True or False: There was an association found between acute GVHD and the CYP3A5 poor metabolizer phenotype?

BACKGROUND: Post-transplant cyclophosphamide (PTCy) has shown to reduce incidences of graft-versus-host-disease (GVHD), and non-relapse mortality in haploidentical stem cell transplantation (haploSCT). CYP3A5 is predominantly involved in the metabolism of cyclophosphamide and some of its toxic metabolites have been associated with serious adverse effects. Based on current literature, the incidence and severity of PTCy toxicity seem to be influenced by genetic variants in the enzymes involved in cyclophosphamide metabolism. However, data correlating CYP3A5 polymorphisms with PTCy toxicity are conflicting. The purpose of this study is to investigate the association between CYP3A5 polymorphisms and incidence of PTCy toxicity when used as GVHD prophylaxis in haploSCT.

METHODOLOGY: This is a single-center, retrospective cohort study including patients ≥ 18 years of age who underwent haploSCT with CYP3A5 pharmacogenomic data available and received PTCy between July 2020 and July 2022. The primary outcome was the composite incidence of PTCy toxicity, including hemorrhagic cystitis (HC), cardiac arrhythmias, (CA),and veno-occlusive disease (VOD). Key secondary outcomes were the incidence and grading of the individual toxicities using the Common Terminology Criteria for Adverse Events (CTCAE). Other secondary outcomes included the incidence and max grade of acute and chronic GVHD, relapse and mortality, within the first 180 days post-transplant.

RESULTS: There were a total of 30 patients included in the study which were grouped into three different subgroups: poor metabolizer, intermediate metabolizer, and extensive metabolizer with most patients (22) being poor metabolizers. The intermediate and extensive metabolizer groups (I/E) were also combined into one group due to small sample size when compared to the poor metabolizer group for statistical analysis purposes. There was no statistically significant difference observed in incidence of patients experiencing PTCy related toxicity between the three groups and two groups (p=0.686, p=0.474). The incidence and grading of the individual toxicities (HC, CA, and VOD) showed no statistically significant difference among all groups (p=0.483, p= 0.256, p= 0.829, respectively). Lastly, no statistically significant differences were detected for any other of the secondary outcomes, except for the incidence of acute GVHD which was seen between the poor metabolizer and the I/E combined group (p=0.024).

CONCLUSIONS: The incidence of PTCy toxicity among the three groups occurred at similar frequencies. Event though, there was no significant difference observed in incidence and max grade of acute and chronic GVHD among the three groups, a significant difference was demonstrated when comparing the combined group (I/E) and the poor metabolizer group in the incidence of acute GVHD. Furthermore, association between CYP3A5 polymorphisms and incidence of PTCy toxicity, as well as the impact of polymorphisms in other CYP enzymes should be further evaluated in larger, prospective studies.

3:20pm – 3:40pm **Empty** Parthenon 2

3:20pm – 3:40pm A **Optimizing workflow for sterile compounding pharmacy technicians in an inpatient pharmacy**

Athena I

Moderators: Emily Johnston

Presenters: Bethany Fuchs

Evaluators: Lyndsay Gormley

TITLE: Optimizing workflow for sterile compounding pharmacy technicians in an inpatient pharmacy

AUTHORS: Bethany Fuchs; Brian Host

OBJECTIVE: Recognize the importance of regularly evaluating and updating workflow processes as institutional needs change.

SELF ASSESSMENT QUESTION: What is one potential way to maximize productivity in sterile compounding while also adhering to national and institutional standards?

BACKGROUND: National standards for the safe compounding of sterile products are outlined in the United States Pharmacopoeia Chapter , though institutions must apply these standards while also optimizing workflow. This study seeks to maximize the efficiency of sterile compounding technicians by moving from two 12-hour sterile product cart-fills to four 6-hour cart-fills per day across three daily shifts. The primary objective is to determine whether this change in sterile compounding workflow allows technicians to be productive while reducing redundant work and streamlining daily duties.

METHODOLOGY: This IRB-approved study will take place at a 434-bed community hospital that employs 11 sterile compounding technicians. Technicians will be observed in two separate 2-week time periods to measure the amount of time required to complete daily tasks of cart-fill, cart delivery, and batching. Time studies will be compared in aggregate to contrast time spent completing each task both before and after implementation of the new cart-fill schedule. The number of sterile products prepared on cart-fill and batching will also be quantified in each time period. Descriptive statistics will be used to determine differences between the two time periods.

RESULTS: Technicians are scheduled to work 8 hour shifts . In the two cart fill system approximately 4.5 hours dedicated to completing daily tasks associated with sterile compounding. Batching duties accounted for 45% of time measured, while patient-specific preparations required nearly 33%.

Before implementation of the modified workflow, preliminary data indicated that batched items accounted for 26% of the total cart-fill items, and patient-specific compounds represented only 12.6%. The percentage makeup of individual components is similar across all carts, but the number of products to be dispensed did vary greatly between instances.

Findings after implementation showed that there were more patient-specific doses that fell on cart-fill within 24 hours, and technicians spent more time preparing these doses. Data also showed that there were more batched items on 24-hour cart-fill, but much less time was spent preparing the items. There was more time spent delivering doses to the appropriate units, but this was expected as the same locations were being visited four times per day instead of twice.

CONCLUSION: Though some of these results were unexpected, there was a significant time savings seen in the batching category. Overall, the change was positively received by all inpatient pharmacy staff as the workload was more proportionately distributed throughout the day.

Optimizing workflows is crucial for enhancing efficiency and productivity in any organization. By employing the strategies and practices derived from this research, other organizations can potentially improve their workflow, resulting in increased efficiency and better outcomes.

Presentation objective: Recognize the importance of regularly evaluating and updating workflow processes as institutional needs change.

Self-assessment: During which task was the most time-savings seen after the implementation of a new workflow?

3:20pm – 3:40pm B **Requirements for true access to SGLT2 inhibitors in a heart failure population** Olympia 1

Moderators: Nicole Bookstaver

Presenters: Lucy Rinehuls

Evaluators: Haley Smith

TITLE: Requirements for true access to SGLT2 inhibitors in a heart failure population

AUTHORS: Lucy Rinehuls, Andrew Mardis, and Laura Straw

OBJECTIVE: Identify and evaluate barriers to consistent, sustainable access of SGLT2 inhibitors for the treatment of heart failure

BACKGROUND: The number of individuals living with heart failure in the United States has been increasing in recent years. Per the 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure, sodium-glucose cotransporter-2 (SGLT2) inhibitors are newly recommended to reduce morbidity and mortality in patients with heart failure regardless of ejection fraction. Of the commercially available SGLT2 inhibitors, empagliflozin and dapagliflozin have the most robust data to support their role to reduce cardiovascular death and heart failure hospitalizations in patients with heart failure with either reduced or preserved ejection fraction. An increasing concern with the addition of another brand-name only medication to guideline-directed medical therapy is whether patients have consistent and reliable access to these therapies. Several studies have examined the role of pharmacists and other healthcare professionals in the procurement of medications to improve patient access, but little data exist on identifying barriers to obtaining SGLT2 inhibitors and ways to overcome these to improve access. This study aims to evaluate the barriers to consistent, sustainable patient access to SGLT2 inhibitors in a heart failure patient population and the role that pharmacists have in overcoming such obstacles.

METHODOLOGY: This is a single-center, retrospective cohort study in an outpatient advanced heart failure clinic. The primary objective of the study is to identify and evaluate barriers to consistent, sustainable access to SGLT2 inhibitors for the treatment of heart failure in this setting. Secondary endpoints include time to medication access, defining the pharmacist role in medication access, and impact on direct cost to the patient. Adult patients with visits from May 1, 2022 to July 31, 2022 were screened for study inclusion. Inclusion criteria consisted of adults with a clinical diagnosis of heart failure who were prescribed an SGLT2 inhibitor by a heart failure provider within the clinic. The frequency of patient access resources being utilized for medication access to SGLT2 inhibitors and additional barriers limiting such access were evaluated. Patient access resources analyzed via chart review included the use of drug samples, copayment cards, free trial cards, the need for prior authorizations, formulary-mandated product changes, patient assistance foundations, and referral to other funding programs. Statistical analysis will include descriptive statistics as there is no active comparator in this trial.

RESULTS: The average patient was 65 years old, male, and almost 58% were African American. The majority of patients had a documented reduced ejection fraction and about 37% also had a diagnosis of Type II Diabetes. Just over half had Medicare prescription coverage. About one-sixth had commercial or Medicaid, and 10% were uninsured. Approximately 70% had a pharmacist intervention. Within those with a documented intervention, 21 received samples and 16% of patients' SGLT2 inhibitors required a PA. Between 18 and 23% received a free trial or copay card or applied for a patient assistance foundation. Also, 19 of the 128 did not have documented fill history for their prescribed SGLT2 inhibitor. Almost 70% of the 128 patients included had their medication within the week it was prescribed with over 50% having received it the same day. It was discovered that patients with Medicaid prescription drug coverage were more likely to experience a delay in first fill. It is also noted that those who were initially prescribed empagliflozin received their prescriptions more promptly. Most patients were able to receive his or her SGLT2 inhibitor for less than $50 for a 30-day supply.

CONCLUSIONS: Many interventions are available to improve reliable patient access to SGLT2 inhibitors prescribed for the treatment of heart failure. Clinical pharmacist interventions may lower actual costs to patient and time to medication acquisition.

3:20pm – 3:40pm Y **Implementation and perception of outpatient pharmacists prescribing hormonal contraceptives in North Carolina** Athena D

Moderators: Elizabeth Hudson
Presenters: Joseph Martinez
Evaluators: Lauren Rass

TITLE: Implementation and perception of outpatient pharmacists prescribing hormonal contraceptives in North Carolina

AUTHORS: Joseph Martinez, Katie Trotta, James Honeycutt, Charles Herring.

OBJECTIVE: Quantify the number of North Carolina pharmacists surveyed who have provided hormonal contraceptives in an outpatient setting

SELF ASSESSMENT QUESTION: In which outpatient settings are pharmacists most often providing hormonal contraceptives to their patients?

BACKGROUND: North Carolina House Bill 96 (HB 96), passed in August 2021 and made law in February 2022, allows for an immunizing pharmacist to provide hormonal contraceptives (HCs). The NC Board of Pharmacy requires completion of a five-hour advanced training course designed by the North Carolina Association of Pharmacists (NCAP) before pharmacists can provide HCs. Prior to HB 96, survey data focused on the attitudes and perceptions of pharmacist prescribing was collected. Overall, pharmacists approved the prospect, but raised concerns about barriers to providing HCs. The purpose of this study was to gather and collate information regarding successes and challenges from pharmacists who have provided HCs in an outpatient practice to assist others in the implementation of this service.

METHODOLOGY: The primary objective was to assess the proportion of NC pharmacists who developed this service and provided HCs in an outpatient setting. The secondary objectives were to (1) quantify the outcomes and barriers of prescribing HCs, (2) assess the proportion of pharmacists who have not completed the NCAP training, implemented a clinical service, or provided HCs, and (3) categorize barriers to providing HCs for pharmacists. A cross-sectional, web-based survey was sent in December 2022 to NC pharmacists enrolled in the NCAP HC training. A reminder email was sent in January 2023, with all responses between December 2022 and January 2023 considered.

Inclusion criteria included pharmacists who were licensed in NC at the time of survey receipt, registered for the NCAP training, and performed at least 50% of their clinical practice in an outpatient setting. Branching logic in the survey selected for inclusion criteria and directed participants based on their responses. Demographic information including age, length of time as a pharmacist, type of outpatient practice, and location of pharmacy practice was collected. The primary endpoint was the percentage of pharmacists who had prescribed HCs out of pharmacists surveyed. The secondary endpoints were (1) successes and challenges of providing HCs, (2) percentage of pharmacists who had either completed the NCAP training or implemented a service, but had not provided HCs, and (3) barriers of pharmacists attempting to provide HCs. Primary and secondary endpoints were analyzed using descriptive statistics.

RESULTS: The survey was sent to a total of 1633 pharmacists. Responses were received from 131 people, with 96 completed surveys by pharmacists who met the inclusion criteria included in the analysis (131/1633, 8.02% response rate and 5.88% completion rate). Of those who completed the survey, 19 (19.8%) developed a HC service at their practice site, and 15 of these pharmacists have provided HCs through this service (15/96, 15.63%). 6 respondents indicated they provided HCs to only one patient. Of the successes that were reported, all 15 respondents reported positive patient feedback, while 7 reported improved job satisfaction. The barriers reported include a lack of appropriate reimbursement, cost prohibitions for patients, and time constraints. 11 (11.5%) respondents had yet to complete the NCAP training, while 66 respondents had completed the training without implementing a clinical service (66/96, 68.75%). Of those who started a service but were unable to prescribe, 3 people reported patient reluctance/unawareness as a barrier. 13 (86.7%) of the pharmacists who have provided HCs work in an independent pharmacy, with 8 of those pharmacies were in a rural setting.

CONCLUSIONS: A small proportion of advance-trained NC outpatient pharmacists are providing HCs to their patients, mostly in rural independent pharmacies. Addressing the numerous barriers (appropriate reimbursement, public awareness, etc.) would expand the scope of this service and innovate the outpatient pharmacy setting.

3:20pm – 3:40pm R **Impact of a Standardized Vasopressor Weaning Protocol in the Medical Intensive Care Unit** Athena H

Moderators: Brittany Wheeler

Presenters: Brianna S Beldon

Evaluators: Eva Wong

TITLE: Impact of a Standardized Vasopressor Weaning Protocol in the Medical Intensive Care Unit

AUTHORS: Brianna S Beldon, Madeline Mitchell, Michael Maccia, Daniel Smith, Lesley Wilson

OBJECTIVE: Assess the implementation of a standardized vasopressor weaning protocol in a medical intensive care unit (ICU)

SELF ASSESSMENT QUESTION: Does a standardized vasopressor weaning protocol result in improved patient outcomes?

BACKGROUND: Increased vasopressor dose is associated with both increased mortality and intensive care unit length of stay (LOS). Current literature has also found that each increase of 10 mcg/min of norepinephrine is associated with an increased risk of 30-day mortality, and patients with septic shock receiving multiple vasopressors have higher mortality than those managed with vasopressor monotherapy. Vasopressors are also associated with several adverse events related to reduced blood flow to vascular beds including acute kidney injury and limb ischemia. Because of the increased mortality and adverse effects associated with escalating vasopressor agents and doses, once a patient is stable, vasopressor use should be reduced in a safe, but efficient manner. Currently, there are no guideline recommendations or standard of practice for weaning vasopressors when multiple agents are used, with nursing normally directing this down titration. The purpose of this study was to develop and initiate use of a standardized vasopressor weaning protocol to compare time on vasopressor therapies and ICU LOS.

METHODOLOGY: This multi-center, IRB-reviewed, determined-exempt, pre-post analysis study aimed to evaluate time on vasopressor therapies for adult patients admitted to two medical ICUs (MICUs). Patients with septic shock and active orders for multiple vasopressor therapies for at least 24 hours were included in the study. Pertinent exclusion criteria included death before vasopressor weaning, patients placed on comfort care measures only, and patients who were pregnant. The primary outcome was the comparison of time on all vasopressors before and after implementation of the weaning protocol, defined as time from the first vasopressor infusion start to discontinuation of all vasopressor therapies. Main secondary outcomes include ICU LOS, inpatient mortality, incidence of acute kidney injury, incidence of digital or limb ischemia, incidence of rebound hypotension, adherence to the weaning protocol, and nursing and provider satisfaction after the initiation of the vasopressor weaning protocol.

RESULTS: Initially, 173 patients were identified using information from Alaris IV Infusion Pumps, which alerted investigators to patients on more than one vasopressor. After accounting for the prespecified inclusion and exclusion criteria, 42 patients were included in the data analysis. Of these patients, 17 were included in the pre-protocol group and 25 were included in the post-protocol group. There was a trend towards less median time spent on vasopressors in the post-protocol group (6 vs 3 days), but this was not statistically different ($p = 0.1337$). There was also no difference in ICU LOS, inpatient mortality, incidence of acute kidney injury, incidence of digital or limb ischemia, or incidence of rebound hypotension at this sample size, but there was more rebound hypotension in the pre-protocol group (82% vs 52%, $p = 0.057$), In terms of adherence to the weaning protocol, 7 patients (29%) in the post-analysis group were weaned according to the protocol.

CONCLUSIONS: The use of a standardized vasopressor weaning protocol was not associated with improved patient outcomes, but there were promising trends in terms of time of vasopressor therapy and rebound hypotension despite suboptimal protocol adherence.

3:20pm – 3:40pm R **The Evaluation of Modified Fixed Dose Non-Activated Four-Factor Prothrombin Complex Concentrate for Warfarin Reversal** Athena G

Moderators: ShaRhonda Watkins
Presenters: Meghan Peterson
Evaluators: Andrew Kessell

TITLE: The Evaluation of Modified Fixed Dose Non-Activated Four-Factor Prothrombin Complex Concentrate for Warfarin Reversal

AUTHORS: Meghan E. Peterson, Megan P. Jaynes, Sarah Berardi, Colleen Morton

OBJECTIVE: The objective of this study is to assess the efficacy of a modified fixed dose 4F-PCC regimen versus package insert weight and INR based dosing regimen for warfarin reversal

SELF ASSESSMENT QUESTION: Is a modified fixed dose 4F-PCC dosing regimen as efficacious as package insert INR and weight based 4F-PCC dosing regimen for the achievement of an INR < 2 regardless of reversal indication? Yes or No.

BACKGROUND: Non-activated four-factor prothrombin complex concentrate (4F-PCC) has emerged as the preferred emergent reversal strategy for patients on vitamin K antagonists (VKA). Current dosing recommendations for 4F-PCC require pre-treatment international normalized ratio (INR) and bodyweight values, resulting in significant ordering and administration delays. However, previous studies have provided some evidence that alternative dosing regimens may be safe and efficacious. The purpose of this study was to assess the efficacy of a pharmacist driven modified fixed-dose 4F-PCC regimen versus package insert weight and INR based dosing regimen for warfarin reversal.

METHODOLOGY: A retrospective, single-center, pre- and post-protocol analysis of 4F-PCC use was conducted to evaluate the efficacy of a fixed dose 4F-PCC protocol. The modified fixed dose 4F-PCC protocol went into effect on May 1, 2020. Therefore, the pre-protocol cohort group contained patients between April 1, 2018 through April 30, 2020. The post-protocol cohort contained patients between June 1, 2020 and August 31, 2022. All patients who received 4F-PCC in May 2020 were excluded as this provided a protocol washout period. The primary outcome was achievement of target INR defined as INR < 2. Secondary outcomes included median dose and cost of 4F-PCC administered, median time from admission and order entry to medication administration, and incidence of concomitant vitamin K administration. Safety outcomes examined included incidence of thrombosis within 7 days of 4F-PCC administration. Statistical analysis was performed using IBM SPSS Statistics Version 27. Descriptive statistics was used for categorical variables, Mann-Whitney U test was used for continuous variables, and Chi-squared test was used for nominal variables.

RESULTS: A total of 254 records were assessed for eligibility based on 4F-PCC administration and warfarin on a patients prior to admission mediation list. A total of 59 records were excluded with the most common reason exclusion being a pre-4F-PCC INR less than 2 which occurred in 13% of records. Following this exclusion, a total of 195 patients were included in this study with 74 patients included in the pre-cohort analysis and 121 patients included in the post-cohort analysis. Baseline characteristics were similar between groups with the most common indication for warfarin use being atrial fibrilation (48.6% in the pre-cohort and 47.1% in the post-cohort) and the most common indication for warfarin reversal being intracerebral hemorrhage (68.9% in the pre-cohort and 43.0% in the post-cohort). Achievement of the primary endpoint occurred in 68 patients (92%) in the pre-cohort and 115 patients (95%) in the post-cohort (p = .097). A statistically significant difference was seen between cohorts in regards to median dose of PCC administered 2620 units in the pre-cohort versus 1644 units in the post-cohort (p < .001) and median cost of PCC administered $8,934.20 in the pre-cohort versus $5,606.04 in the post-cohort (p < .001). A total of 11 thromboembolic events all being deep vein thrombosis occurred with 3 events in the pre-cohort and 8 events in the post-cohort (p .453).

CONCLUSIONS: A fixed dose of 1500 units of 4F-PCC was effective in reversing INR to less than 2 in most patients regardless of reversal indication with minimal thrombotic risks. Furthermore, this study demonstrated that a modified fixed dose 4F-PCC dosing regimen can effectively be implemented for urgent warfarin reversal, decreasing costs associated with this therapy.

3:20pm – 3:40pm G **Evaluation of Tolerability and Changes in Renal Function with Initiation of Empagliflozin in Older Adults at a Veterans Affairs Health Care System (VAHCS)** Parthenon 1

Moderators: Dave Brackett

Presenters: My Nguyen

Evaluators: Lisa Kluttz

TITLE: Evaluation of Tolerability and Changes in Renal Function with Initiation of Empagliflozin in Older Adults at a Veterans Affairs Health Care System (VAHCS)

AUTHORS: My Nguyen, Courtney Hines, Camille Robinette, Brittany Melville

OBJECTIVE: Discuss factors affecting safety and tolerability of empagliflozin therapy in older adults.

SELF ASSESSMENT QUESTION: What is one monitoring parameter that should be considered when initiating empagliflozin therapy in older adults?

BACKGROUND: Empagliflozin is a sodium-glucose co-transporter 2 (SGLT2) inhibitor indicated for the treatment of diabetes and the management of heart failure. Use of empagliflozin within the Salisbury Veterans Affairs Health Care System (SVAHCS) has increased as a result of ongoing literature to support clinical benefit, changes in guidelines recommendations, and the removal of criteria for use within the SVAHCS. Some hesitation remains, however, in initiating therapy in older adults, who are thought to be more susceptible to adverse effects such as volume depletion, hypotension, and urinary complications.

METHODOLOGY: Eligible participants were Veterans at the Salisbury Veterans Affairs Health Care System (SVAHCS) aged 75 years or greater with a new-start prescription for empagliflozin between January 1st, 2022 and August 31st, 2022. Participants' electronic medical records were reviewed to assess tolerability, changes in renal function, renal monitoring practices among prescribers, and changes in blood pressure medications and diuretics at 16 weeks after initiation. Data was analyzed using descriptive statistics.

RESULTS: A total of 132 Veterans were included. The mean age for the study was 78.5 +/- 4.2 years and consisted of predominantly male Veterans (99.2%). Baseline serum creatinine (SCr) and estimated glomerular filtration rate (eGFR) were 1.34 +/- 0.38 mg/dL and 58.5 +/- 18.3 mL/min/1.73m2, respectively. Empagliflozin use was tolerated in 124 Veterans (93.9%) at 16 weeks, with only eight discontinuations (6.1%). Two discontinuations (1.5%) were due to changes in renal function with subsequent acute kidney injury (AKI) and two (1.5%) were due to changes in blood pressure; other discontinuations were due to infection, urinary complaints, diarrhea/nausea, and affecting balance and thirst. The change in renal function was overall modest: 0.09 +/- 0.24 mg/dL for SCr and -2.7 +/- 8.9 mL/min/1.73m2 for eGFR, with a variable mean time to collection of first follow-up renal assessment at 79.7 +/- 59.2 days. Blood pressure medications and diuretics were unchanged in 98 Veterans (74.2%) and 112 Veterans (84.8%), respectively, during the 16-week period.

CONCLUSIONS: Empagliflozin was safe and tolerable in most older adult Veterans. Changes in renal function, blood pressure medications, and diuretics at 16 weeks after initiation were generally minimal. These findings contribute to the ongoing literature supporting use of empagliflozin in older adults, who may benefit from therapy. Although this study was reassuring for safety and tolerability of empagliflozin in the general population of older adults at the SVAHCS, it did not separately analyze those at higher risk of adverse effects (e.g., renal impairment at baseline). Future studies may be helpful in identifying the magnitude of such risk and appropriate monitoring practices in these patients.

3:20pm – 3:40pm | **Comparison of Isavuconazole versus Voriconazole in Patients with Invasive Aspergillosis**

Athena A

Moderators: Josheph Kohn
Presenters: Sophea Chan
Evaluators: Jim Beardsley

TITLE: Comparison of Isavuconazole versus Voriconazole in Patients with Invasive Aspergillosis
AUTHORS: Sophea Chan, Laura Leigh Stoudenmire, Xianyan Chen, Duna Zhan, Daniel B. Chastain
OBJECTIVE: To describe the rate of treatment completion of voriconazole with isavuconazole.
SELF ASSESSMENT QUESTION: Which of the following are reasons to consider isavuconazole instead of voriconazole for aspergillosis (select all that apply)?
a)Linear pharmacokinetics
b)Decreased healthcare cost
c)Improved tolerability
Answer: a, c, d

BACKGROUND: Invasive aspergillosis (IA) is a life-threatening mold infection in immunodeficient patients for which voriconazole continues to be preferred based on guideline recommendations. However, isavuconazole was non-inferior to voriconazole for IA and was better tolerated with fewer adverse events. Isavuconazole can potentially decrease total healthcare cost per patient by more than seven thousand dollars based on cost-effective analyses. The purpose of this study was to compare outcomes between patients with IA treated with isavuconazole versus voriconazole.
METHODOLOGY: Patients at least 18 years of age with IA treated with either voriconazole or isavuconazole as monotherapy between January 1, 2017 and August 31, 2020 were identified from the IBM® MarketScan® Research Databases using the International Classification of Disease, Tenth Revision, Clinical Modification diagnosis codes. The index date was the first fill date for either isavuconazole or voriconazole during the study period.
To be included in the study, patients were required to have continuous medical and pharmacy benefits enrollment before the index date, throughout the treatment period, and for at least 28 days after treatment ended and must have filled a prescription for either isavuconazole or voriconazole (index date) for at least 7 days. Patients with a history of liver transplant or hepatic dysfunction before the index date were excluded from the study. Patients who met the inclusion criteria were divided into two cohorts based on initial treatment with either voriconazole or isavuconazole and followed for 28 days after the last dose of IA antifungal therapy.
The primary outcome was to compare the rate of treatment completion (treatment duration for 42 or more days) of isavuconazole to voriconazole.

RESULTS: In Progress
CONCLUSIONS: In Progress

3:20pm – 3:40pm | **Guidance on Beta-Lactam Allergies in Hospitalized Adult Patients** | Athena B

Moderators: Nicole Metzger
Presenters: Grishma Patel
Evaluators: Donley Galloway

TITLE: Guidance on Beta-Lactam Allergies in Hospitalized Adult Patients
AUTHORS: Grishma Patel, Tiffany Goolsby, Andrew Webster
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: A penicillin allergy label is NOT benign. Patients with a penicillin allergy label are likely to receive treatment with antibiotics that are more broad-spectrum, toxic, expensive, and less effective. In addition, the inability to use first line agents in patients with beta-lactam allergies can result in a higher risk of treatment failure, antibiotic resistance, healthcare associated infections, and increased mortality. It is known that penicillin allergy de-labeling can reduce treatment failures and healthcare costs. However, the most effective method to institutionalize systematic penicillin allergy evaluation and antibiotic selection without allergy testing in a hospital setting remains unknown. The purpose of this project is to develop an institutional guidance to provide a step-wise approach in evaluation of a beta-lactam allergy to improve antibiotic selection in hospitalized adult patients.
METHODOLOGY: A literature search was conducted utilizing PubMed and Google Scholar with the following phrases: penicillin allergy management, penicillin cross-reactivity, beta-lactam allergy and management, and beta-lactam cross reactivity. Primary literature, meta-analyses, review articles, and expert guidance were reviewed to identify safe and effective management strategies in patients with reported beta-lactam allergies and assess the risk of cross-reactivity between beta-lactams. An inpatient institutional guidance and nursing protocols for desensitization and drug challenges were developed from the literature reviewed and in collaboration with local Infectious Diseases physicians.

Prior to implementation, the guidance and protocols will be reviewed and require approval from Infectious Diseases clinicians and the Antimicrobial Stewardship Committee. The guidance and protocols will be amended based upon the feedback received, and then, will be presented to the Pharmacy and Therapeutics Committee for final approval. Once approved, education materials will be disseminated and nursing staff and inpatient healthcare providers will be educated on the new guidance and protocols.
RESULTS: An inpatient institutional beta-lactam allergy guidance, desensitization protocol, and drug challenge protocol will be developed and implemented. The desensitization and drug challenge protocols will be added into the Computerized Patient Record System (CPRS) as a standardized inpatient order set to streamline ordering and mitigate errors. Subsequently, education on the new guidance and protocols will be provided to medical staff for awareness and successful implementation . Final results are still in progress.
CONCLUSIONS: Beta-lactam allergy evaluation has evolved as a more risk-based approach to identify patients who may be able to tolerate beta-lactams based on clinical history rather than allergy testing. Prior to this project, no institutional guidance was implemented for patients with beta-lactam allergies at the Atlanta Veterans Affairs Medical Center (AVAMC). Although AVAMC does not currently have allergy skin testing available, guidance was successfully developed using a risk-based approach for management and evaluation of hospitalized patients with beta-lactam allergies. Future investigation should review the impact of this guidance on antibiotic prescribing and use of broad-spectrum antibiotics. Final conclusions are still in progress.

3:20pm – 3:40pm L **Evaluation of Pharmacist-Directed Heparin Infusion Management** Athena J

Moderators: Marci Swanson

Presenters: Kaitlynn Krupp

Evaluators: Carrington Royals

TITLE: Evaluation of Pharmacist-Directed Heparin Infusion Management

AUTHORS: Kaitlynn Krupp, Shelby Harris, Sarah-Anne Blackburn, Elan Champion

OBJECTIVE: To analyze the safety and efficacy of the institution's current heparin infusion protocol to improve patient outcomes, safety, and comfort levels while decreasing costs.

SELF ASSESSMENT QUESTION: What laboratory parameters are best used to monitor continous heparin infusions?

BACKGROUND: Unfractionated heparin is commonly used to prevent and treat deep vein thromboses (DVT) and pulmonary embolisms (PE); infusions are monitored using either anti-Xa or aPTT levels. Many institutions have developed their own protocols to manage these infusions. This study evaluated the safety and efficacy of our institution’s current heparin infusion protocol.

METHODOLOGY: This study was a retrospective chart review involving patients meeting the following inclusion criteria: 19 years of age or older and prescribed a heparin infusion for at least 48 hours between January 2020 and January 2022. The primary outcome was the achievement of three consecutive therapeutic aPTTs within 48 hours of initiation. Secondary outcomes included indication for heparin, bleeding events, number of aPTT levels drawn within 48 hours, and the number of patients who received additional heparin boluses.

RESULTS: One hundred patient charts met inclusion criteria and were analyzed in this study. Sixteen of these patients achieved the primary outcome of three consecutive therapeutic aPTT levels within 48 hours. There was a significant difference in the number of aPTT levels drawn during the duration of the heparin infusion with 16.63 in the therapeutic group and 22.87 in the non-therapeutic group ($p = 0.0497$). Both groups had about a 20% incidence of bleeding events. There were no significant differences in the remainder of outcomes measured.

CONCLUSIONS: Of the one hundred patients studied, three consecutive therapeutic aPTT levels per institution protocol within 48 hours as achieved in sixteen patients (16%). Therefore, the current policy requires revision in order to improve patient outcomes, safety, and comfort as well as decrease the cost of care. Possible changes could include switching to Anti-Xa monitoring instead of aPTT monitoring, decreasing the heparin bolus when levels are subtherapeutic to minimize the bleeding risk, and considering extending the therapeutic range for aPTT monitoring. After changes are implemented, the new protocol should be studied in comparison to show if the changes made a difference in patient outcomes.

3:20pm – 3:40pm M **Evaluating Small Volume Intravenous Administration Techniques to Assess Proper Dosing**

Olympia 2

Moderators: Edoabasi McGee

Presenters: Lacey George

Evaluators: Skyler Brown

TITLE: Evaluating Small Volume Intravenous Administration Techniques to Assess Proper Dosing

AUTHORS: Lacey George, PharmD and Ann Hylton, PharmD, BCCCP

OBJECTIVE: To evaluate compliance with manufacturer IV pump set up specifically related to small volume infusions.

SELF ASSESSMENT QUESTION: Potential under dosing of intravenous medications can occur as a result of which intravenous fluid administration error?

BACKGROUND: Anti-infective medications and electrolytes are commonly administered as a small volume intravenous (IV) infusion on an IV smart pump. Improper infusion setup and administration can result in possible medication dosing errors. Small volume infusions are often administered as a secondary infusion by the IV smart pump. Secondary infusions pause the primary IV fluid while infusing the small volume secondary medication. The BD Alaris IV pump uses peristaltic gravity to create hydrostatic pressure to ensure adequate flow rates for the primary and secondary infusions. The head height differential (the vertical distance between two IV infusions) should be 9.5 inches. Incorrect distance between infusions can lead to dosing errors. Alternatively, if a small volume infusion is administered as a primary infusion, medication can remain in the IV line resulting in incomplete administration. Both scenarios can result in suboptimal medication dosing. The purpose of this study is to assess setup and delivery of small volume infusions.

METHODOLOGY: This was an observational study conducted at Bristol Regional Hospital for the month of February 2023. Patients on all floors were evaluated including intensive care units. Small volume infusions were identified for observation from a report. Eligible patients are those 18 years of age and older who were receiving a small volume infusion identified as an infusion of 100 mL or less. Data collected included the drug or electrolyte infusing, the volume of the infusion in milliliters, patient location, infusion being administered as primary or secondary, head-height differential measured in inches, if the hanger was folded or fully extended, roller clamp open or closed, and if the primary was paused while the secondary was being administered.

RESULTS: 38.9% met the manufacturer recommended head height differential while 61.1% did not meet the head height differential.

CONCLUSIONS: The head height differential did not make a difference in IV administration. Approximately 20% of the dose is not administered to the patient. More research is needed to assess implications on patient care and clinical cure.

3:20pm – 3:40pm

O **Evaluation of bleeding risk between apixaban and rivaroxaban in patients with gastrointestinal cancer** Athena C

Moderators: Jason Graham
Presenters: Parker Gundersen
Evaluators: Adam Sawyer

TITLE: Evaluation of bleeding risk between apixaban and rivaroxaban in patients with gastrointestinal cancer
AUTHORS: Parker Gundersen, Alexa Basilio, Amber Draper, Emily Tiao, Marin Abousaud, Olumide Gbolahan
OBJECTIVE: To evaluate the real-world safety outcomes of patients with GI cancers who were treated with apixaban or rivaroxaban for VTE
SELF ASSESSMENT QUESTION: Does apixaban or rivaroxaban create a higher chance of bleeding in patients with GI cancer?
BACKGROUND: Patients with cancer are at a higher risk for developing venous thromboembolisms (VTEs), leading to further complications. The National Comprehensive Cancer Network (NCCN) guidelines currently recommend using low-molecular-weight heparin (LMWH) or direct oral anticoagulants (DOACs) for the treatment of VTEs in oncology patients. Other trials compare DOACs with LMWH to determine the risk of bleeding. The Select-D trial found that rivaroxaban had a higher risk of bleeding in patients with gastrointestinal (GI) cancer as compared to LMWH. However, the Caravaggio trial found that apixaban had no increase of bleeding for patients with GI cancer. Due to the inherent risk of major bleeding shown in the subgroup analysis of the trials above, the guidelines recommend LMWH as the preferred agent for patients with GI cancers. At Winship Cancer Institute, DOACs are used for the treatment of cancer-associated VTE for patients with GI malignancies.
METHODOLOGY: This study is a single-center, retrospective chart review of patients 18 years or older with GI cancer receiving treatment for VTE with either apixaban or rivaroxaban. The study looks to review bleeding outcomes in patients who started their VTE treatment from January 1, 2017 – December 31, 2021. The primary outcome of this study was to evaluate the rates of major bleeding between apixaban and rivaroxaban. Major bleeding was defined as a decrease in hemoglobin of ≥ 2g/dL over 24 hours, transfusion of ≥2 units of red blood cells, bleeding that requires surgical intervention, or bleeding at critical sites. Secondary outcomes included clinically relevant non-major bleeding (CRNMB) defined by bleeding compromising hemodynamics, hematemesis, hemoptysis, rectal bleeding, or hematuria, VTE recurrence, and death from bleeding. Data collected to measure these outcomes included patient characteristics such as renal function, weight, primary cancer site, medication dosing, and duration and indication of treatment.
RESULTS: A total of 300 patients qualified for inclusion of this study. Of these, 89 were in the apixaban group and 211 in the rivaroxaban group. Major bleeding occurred in 3 patients in the apixaban group (3.4%) and 18 in the rivaroxaban group (8.5%) [Odds Ratio (95% CI), 0.42 (0.13-1.37); p = 0.152]. CRNMB occurred in 2 patients in the apixaban group (2.2%) and 16 patients in the rivaroxaban group (7.6%) [OR (95% CI), 0.34 (0.09-1.32); p = 0.119]. VTE recurrence occurred in 4 patients in the apixaban group (4.5%) and 9 patients in the rivaroxaban group (4.3%) [OR (95% CI), 1.10 (0.30-4.05); p = 0.882].
CONCLUSIONS: This is the only study to date to evaluate DOACs head to head and their bleeding risk in cancer patients. Apixaban was associated with lower rates of major bleeds and CRNMB, but relatively similar rates of VTE recurrence. The results of this study warrant consideration of using DOACs for patients with GI cancers in the upfront setting.

3:50pm – 4:10pm **Empty** Parthenon 2

3:50pm – 4:10pm B **A retrospective study of patients ≥ 65 years old with Type 2 Diabetes Mellitus and characteristics associated with sulfonylurea utilization** Olympia 2

Moderators: Yolanda Whitty

Presenters: Rosemary Shafack

Evaluators: Michelle Wilcox

TITLE: A retrospective study of patients ≥ 65 years old with Type 2 Diabetes Mellitus and characteristics associated with sulfonylurea utilization

AUTHORS: Rosemary Shafack, Sharmon P Osae, Bryan Jimenez

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: American Diabetes Association (ADA) guidelines for treating diabetes does not provide a specific recommendation for a class of medications shown to be beneficial in patients ≥ 65 years old with Type 2 Diabetes Mellitus (T2DM). Sulfonylurea's are currently on the 2019 American Geriatrics Society (AGS) Updated Beers Criteria list of potentially inappropriate medication use in older adults, due to an increased risk of prolonged hypoglycemia effects within this patient population. The purpose of this study is to identify characteristics of patients ≥ 65 years old with a diagnosis of Type 2 Diabetes Mellitus, who are prescribed a sulfonylurea at a Southwest Georgia Primary Care Clinic.

METHODOLOGY: A 1-year retrospective study conducted at a Primary Care Clinic in Albany, Georgia, included patients ≥ 65 years old with a confirmed diagnosis of Type 2 Diabetes Mellitus on a sulfonylurea. The primary objective was to identify the demographic and clinical characteristics associated with patients ≥ 65 years old on a sulfonylurea. All demographic and clinical data was obtained from an Electronic Medical Record (EMR), entered into a secure web application, REDCap, and randomized using the randomization module on the website. There was no comparison group used in this study. A total of thirteen variables were examined to identify characteristics within this cohort. The statistical analysis was performed within REDCap and it will solely consist of descriptive statistics.

RESULTS: In progress

CONCLUSIONS: In progress

3:50pm – 4:10pm B **Impact Of Pharmacist Involvement In A Multidisciplinary Amyotrophic Lateral Sclerosis (Als) Clinic** Olympia 1

Moderators: Geren Thomas

Presenters: Kellie Ball

Evaluators: Erin Pace

TITLE: Impact Of Pharmacist Involvement In A Multidisciplinary Amyotrophic Lateral Sclerosis (Als) Clinic

AUTHORS: Kellie Ball, Sarah Byers, Abigail Wiggins

OBJECTIVE: Determine what impact a pharmacist within an ALS clinic can make

SELF ASSESSMENT QUESTION: What is a potential benefit of a pharmacist within an ALS clinic?

A) Decreased access to medications for patients

B) Optimization of medications

C) Increased cost to patients

BACKGROUND: To describe the implementation and impact of pharmacist involvement in a multidisciplinary amyotrophic lateral sclerosis (ALS) clinic given the sparse literature available on pharmacist inclusion in a disease state with a variety of medication needs.

METHODOLOGY: A retrospective chart review was completed for patients diagnosed with ALS seen in clinic within the period of August 1st, 2021, to October 19th, 2022. Patients were excluded if they were seen via a telehealth visit. The primary endpoint was the total number of pharmacist interventions or recommendations per patient encounter. These interventions focused on deprescribing unnecessary medications, changing dosage forms of medications as ALS progressed, ordering appropriate laboratory monitoring, and assisting with medication affordability as well as various other interventions. Secondary outcomes included the total number of each individual intervention type and cost savings as a result of either deprescribing medications or assisting the patient in obtaining patient assistance. This study was deemed exempt by hospital and university institutional review boards.

RESULTS: A total of 92 patient encounters were included for analysis. Pharmacist involvement resulted in 0.88 interventions per patient encounter. The majority of these interventions were to add medications, to change formulation of a medication, to discontinue medications, or to assist in medication access.

CONCLUSIONS: This study shows that having a pharmacist within a multidisciplinary ALS clinic results in interventions that improve patient care. It supports the implementation of pharmacists within ALS clinics to assist with a variety of medication related needs that occur due to the progression of the disease. While there are only three medications that are used in the treatment of ALS, patients will have progressive symptoms from the disease that require either additional therapies or change in formulation of therapies that are being utilized. Pharmacists are the best medical professionals to assist with these medication-related problems.

3:50pm – 4:10pm C **Efficacy and Safety of SGLT2 Inhibitors in Patients with a Left Ventricular Assist Device** Athena D

Moderators: Natalie Morgan

Presenters: Erik Preheim

Evaluators: Erin Himes

TITLE: Efficacy and Safety of SGLT2 Inhibitors in Patients with a Left Ventricular Assist Device

AUTHORS: Erik Preheim, Laura B. Straw, B. Andrew Mardis

OBJECTIVE: Describe the safety and efficacy of SGLT2 inhibitors in patients supported by an LVAD

SELF ASSESSMENT QUESTION: What assessed measurement was significantly improved at 1 year from baseline?

BACKGROUND: Left ventricular assist devices (LVAD) are beneficial to extend and optimize life for patients with ACC/AHA Stage D heart failure, but optimal medication therapy for this patient population is not well established. Sodium-glucose cotransporter 2 (SGLT2) inhibitors are beneficial in the general heart failure population to reduce morbidity and mortality, but their role in the LVAD patient population is unknown. The purpose of this study is to examine the safety and efficacy of SGLT2 inhibitors in patients supported by an LVAD.

METHODOLOGY: This is a retrospective cohort study at a single non-transplant center. Patients supported by an LVAD who were initiated on an SGLT2 inhibitor from March 1, 2021 to July 31, 2022 were evaluated. The co-primary outcomes are the rate of heart failure hospitalizations following the initiation of SGLT2 inhibitor and the rate of discontinuation due to untoward effect. Intolerability is defined as permanent discontinuation of an SGLT2 inhibitor due to adverse evets, renal insufficiency or injury, or provider preference. Secondary objectives include changes in heart failure/diuretic therapy, change in mean arterial pressure, and instances and reasons for temporary therapy interruptions. Categorical data will be compared with either Chi-square or Fisher's exact tests, while continuous data will be evaluated via the Student's t-test.

RESULTS: A total of 66 patients were evaluated. The sample population was predominantly African American and male. A total of 23 patients (34.8%) experienced a worsening heart failure event with a median time to event at 90 days. A total of 18 patients (27.3%) discontinued SGLT2 inhibitor therapy with a median time to discontinuation at 70 days. There was a total of eight temporary interruptions; most common reason for interruption in therapy was hypovolemia, dizziness, or hypotension. At 3 months and 1 year, mineralocorticoid antagonist and beta blocker therapy addition was a significant change from baseline, respectively ($p<0.05$). From baseline, the mean loop diuretic dose decreased from an average of 119.6 mg daily to 67.7 mg daily at 1 year. Mean arterial pressure was significantly decreased from baseline to 1 year ($p<0.05$).

CONCLUSIONS: SGLT2 inhibitors appear to be safe and effective in LVAD patients. MAP was significantly reduced in patients that continued therapy for at least 1 year. Hypovolemia and dizziness were the most common reasons for discontinuation or interruption in therapy. A longer study duration is needed to increase the ability to observe potential events or interruptions. A larger sample population, including patients without SGLT2 inhibitors, would provide a comparator group to determine the differences in event rate.

3:50pm – 4:10pm R **Evaluating the effectiveness of diuresis in patients with acute decompensated heart failure managed in the clinical decision unit (CDU)** Athena G

Moderators: Jessica Brinkley
Presenters: Amari Marshall
Evaluators: Michael Saavedra

TITLE: Evaluating the effectiveness of diuresis in patients with acute decompensated heart failure managed in the clinical decision unit (CDU)
AUTHORS: Amari Marshall, Claudia Cooper, Lauren Howell, Stephanie Zack, Rachel Swearingen, Lindsey Branstetter, Michael Ross

OBJECTIVE: Evaluate the relationship between the dose of IV loop received in the first 24 hours and CDU disposition in patients with acute decompensated heart failure.
SELF-ASSESSMENT QUESTION: True or False? Based on the findings of this study, all patients admitted to EUHM's CDU should receive more than 2.5 times their home dose of IV loop diuretics to minimize inpatient hospital admission.

BACKGROUND: Patients hospitalized for acute decompensated heart failure (ADHF) have an increased risk of both short term and long-term mortality. The 2022 AHA/ACC/HFSA Guidelines for the Management of Heart Failure recommend loop diuretics to improve symptoms of congestion in fluid retention, however, do not specify a dosing strategy. The DOSE trial was a two-by-two factorial design that studied patients diagnosed with ADHF. Patients were randomized to a high-dose (two and one-half times their home dose of loop diuretic) arm or a low-dose (home dose of loop diuretic) arm. The trial found a trend towards greater symptom improvement in the high-dose arm at 72 hours post-treatment.

METHODOLOGY: This is a single-center, retrospective chart review of adults diagnosed with acute decompensated heart failure admitted to the CDU at Emory University Hospital Midtown. Patients will be categorized into those who received more than two and one-half times their home loop diuretic dose intravenously and those who did not. The primary outcome is disposition from the clinical decision unit, with patients either being admitted to an inpatient unit or discharged home. Secondary outcomes include cumulative intravenous loop diuretic dose in the first twenty-four hours, incidence of abnormal serum sodium, potassium, and magnesium levels, development of renal injury within the first 24 hours, and incidence of hypotension in the first 24 hours. The primary outcome will be analyzed using a chi-squared test, with a sample size of 366 patients needed for 80% power assuming 50% of patients in the high-dose group versus 50% of patients in the low-dose group are discharged home and an alpha of 0.05 will be to determine statistical significance.

RESULTS: A total of 120 patients were included in this study. The high dose group consisted of 82 patients and the low dose group consisted of 38 patients. 44 (53.7%) of patients in the high dose group and 16 (42.1%) of patients in the low dose group were discharged home (p=0.66). Patients in the high dose group received an average of 234.6 mg of IV loop diuretics in the first 24 hours compared to an average of 164.2 mg in the low dose group. There was a higher observed amount of electrolyte abnormalities, incidences of hypotension, and renal injury in the high dose group compared to the low dose group. However, both groups had similar observed lengths of stay in the CDU.

CONCLUSIONS: IV loop diuretic doses did not impact CDU disposition in patients being treated for an acute heart failure exacerbation at EUHM.

3:50pm – 4:10pm R **Evaluation of invasive fungal infections in the burn ICU** Athena I

Moderators: Yona Roberts

Presenters: Sam Pournezhad

Evaluators: Ben Albrecht

TITLE: Evaluation of invasive fungal infections in the burn ICU

AUTHORS: Sam Pournezhad, PharmD ; Elaina Etter, PharmD; Rita M. Gayed, PharmD, BCCCP; Rohit Mittal, MD.

OBJECTIVE: To retrospectively characterize risk factors associated with development of invasive fungal infection, describe fungal organisms and surgical and pharmacological management

SELF ASSESSMENT QUESTION: What are some common fungal organisms

BACKGROUND: Fungal infections are increasingly associated with critical illness, especially in major burn injury. The risk factors of invasive fungal infections include central venous catheter (CVC) placement, mechanical ventilation, broad-spectrum antibiotics, renal replacement therapy (RRT), and total parental nutrition. Critically ill burn patients have additional risk factors including extensive wounds, impaired immune system, and repeated surgical intervention. Despite significant morbidity and mortality caused by invasive fungal infections, efforts to prevent them with antifungal prophylaxis have not improved outcomes. In patients who develop invasive fungal infection, appropriate empiric antifungal therapy is imperative to reduce morbidity and mortality especially in the setting of delayed culture and sensitivity data. The purpose of this study was to characterize risk factors associated with the development of invasive fungal infection, invasive fungal infection organisms and surgical and pharmacological management.

METHODOLOGY: A retrospective chart review was completed of adult patients admitted to the burn ICU found to have an invasive fungal infection (defined as at least one positive blood or tissue fungal infection and receipt of systemic antifungal therapy). The primary outcome was to identify common fungal organisms. Secondary outcomes included susceptibility pattern of the organism, location of infection, surgical management including debridement and amputation, pharmacological management, median ICU and hospital length of stay, and in hospital mortality.

RESULTS: A total of 40 patients with a median 45% TBSA burns were evaluated at this time. The most common yeast species included candida albicans; mold species included a variety of organisms such as fusarium, zygomycete and paecilomyces. Common risk factors among these patients included CVC access (57%), mechanical ventilation (43%), and RRT (43%). Yeast infections were primarily treated with anidulafungin and fluconazole, while mold infections were managed with systemic amphotericin as backbone in addition to voriconazole or isavuconazole. Patients underwent aggressive surgical debridement for source control. Median ICU stay was 70days with a median hospital stay of 73 days, and 50% mortality.

CONCLUSIONS: Fungal infections among critically ill burn patients are associated with the high morbidity and mortality rates. Therefore, mitigation of modifiable risk factors is of utmost importance. This retrospective review of common fungal growth in our unit will inform future empiric antifungal management for patients with concern of invasive fungal infections.

3:50pm – 4:10pm R **Timing of dual antiplatelet therapy (DAPT) initiation post mechanical thrombectomy with stent placement in acute ischemic stroke** Athena H

Moderators: Sara Anne Meyer
Presenters: Mallory Stringer
Evaluators: Eric Marr

TITLE: Timing of dual antiplatelet therapy (DAPT) initiation post mechanical thrombectomy with stent placement in acute ischemic stroke

AUTHORS: Mallory Stringer, Osman Perez, Eric Shaw, Emily Bowers

OBJECTIVE: The purpose of this study is to assess the safety of early initiation (less than 24 hours) of dual antiplatelet therapy (DAPT) compared to standard initiation (24 hours or greater) in AIS patients that underwent MT and stent placement.

BACKGROUND: Optimal timing of antiplatelet therapy following mechanical thrombectomy (MT) in acute ischemic stroke (AIS) patients remains unclear. Antiplatelets are often delayed 24 hours after MT in patients receiving concomitant thrombolytic therapy, but current guidelines do not address appropriate timing following MT without thrombolytic administration. AIS patients presenting with high grade stenosis secondary to tandem occlusions may undergo acute stent placement during MT in order to achieve revascularization. Extensive literature from coronary interventions supports early antiplatelet administration to prevent acute stent thrombosis, but literature in the AIS population is lacking.

METHODOLOGY: This was a retrospective chart review conducted at a 622-bed academic medical center and DNV certified comprehensive stroke center. Adult patients admitted for AIS who received DAPT with aspirin and clopidogrel following MT and stent placement were reviewed for inclusion. The primary outcome was bleeding, defined as any radiologic evidence of intracranial hemorrhage. Secondary outcomes included a composite neurological outcome of unplanned neurosurgical intervention and/or neurologic decompensation (change in mental status or Glasgow Coma score, or need for intubation), blood pressure control, length of stay, and discharge disposition.

RESULTS: Fourteen patients met criteria for inclusion, with 7 patients in the early initiation group and 7 patients in the standard initiation group. There was no difference in the primary outcome of bleeding in the early versus standard initiation group (2 patients [29%] vs. 4 patients [57%], p=0.6). Average time to DAPT administration from MT was 14 hours in the early group and 34 hours in the standard group. Composite neurological outcome, blood pressure control, and hospital discharge disposition were similar between groups.

CONCLUSIONS: Initiation of DAPT within 24 hours of MT and acute stent placement did not result in an increased risk of bleeding compared to initiation at 24 hours or greater within this small sample size. A larger population is needed to confirm the safety of early DAPT after MT and stenting.

3:50pm – 4:10pm | **Assessing Target Attainment with Pre-Steady State Versus Steady State Vancomycin Levels in Obesity with Bayesian Monitoring** Athena C

Moderators: J. Luke Britton

Presenters: Trey Willoughby

Evaluators: Benjamin Casey

TITLE: Assessing Target Attainment with Pre-Steady State Versus Steady State Vancomycin Levels in Obesity with Bayesian Monitoring

AUTHORS: Trey Willoughby, Cassandra Karas, Sandi E. Perry, Harrison Riggs, Elizabeth W. Covington, Darrell Childress

OBJECTIVE: Evaluate the frequency of vancomycin area under the curve (AUC) target attainment using Bayesian modeling in the obese population.

SELF ASSESSMENT QUESTION: Bayesian modeling is the preferred method of measuring AUC24 according to the 2020 consensus vancomycin dosing guidelines. True/False.

BACKGROUND: According to the 2020 consensus vancomycin dosing guidelines, Bayesian monitoring is a recommended method to calculate area under the curve over 24 hours (AUC24). The Bayesian method of vancomycin monitoring uses software that incorporates prior population data coupled with patient-specific data to produce an estimate of patients' pharmacokinetic profiles. The guidelines state that levels can be collected pre-steady state when using Bayesian monitoring; however, evidence for this is lacking within the obese population. The aim of this study was to assess if pre-steady state levels result in similar incidence of target attainment compared to steady state levels in patients with obesity.

METHODOLOGY: This was a retrospective, cohort study that compared the time to target attainment in obese patients when obtaining pre-steady state versus steady state vancomycin levels using Bayesian monitoring. In this study, pre-steady state was defined as any level prior to the third dose while steady state was considered any level obtained after the third dose. Patients were included if they received at least 48 hours of vancomycin from December 1, 2020 to June 30, 2022, had a body mass index greater than or equal to 30 kg/m2, had one calculated AUC24, and were at least 19 years of age. Exclusion criteria include vulnerable populations, severe renal impairment, inappropriate measurement of vancomycin levels, intermittent or trough-based vancomycin dosing, malignancy, central nervous system infections, and cystic fibrosis. All initial vancomycin doses were calculated by pharmacists using allometric scaling with initial frequency based on kidney function. Eligible patients were divided based on when the initial vancomycin level was drawn, pre-steady or steady state, and then randomized until there were 100 patients in each group. The primary outcome evaluated was target attainment, defined as the first AUC24 within 400-600 milligrams*hour/liter (mg*h/L), within 72 hours. Secondary outcomes included incidence of acute kidney injury (AKI), length of hospital stay, mean highest AUC24, and target attainment within 24, 48, and 96 hours. This data was collected using an internet-based Bayesian monitoring program and Cerner software.

RESULTS: Within the study, 200 patients were included, with 100 in each arm.. The pre-steady state group average age was 63 years compared to the steady state group which was 58.7 years. The median Charlson Comorbidty Index score was higher in the pre-steady state group when compared to the steady state group (3.5 vs 3, p=0.0052). The primary outcome of target attainment within 72 hours was significantly higher in the steady state group (60% vs 84%, p=0.0003). AKI rates were similar between the two groups. The mean highest AUC was higher in the steady state group when compared to the pre-steady state group (447.2 vs 501.9, p=

3:50pm – 4:10pm | **Impact of a Clinical Decision Support System on Antibiotic Prescribing Durations** | Athena B

Moderators: Regan Porter

Presenters: Marcus Mize

Evaluators: Ashley Thomas

TITLE: Impact of a Clinical Decision Support System on Antibiotic Prescribing Durations

AUTHORS: Marcus Mize; Nicolo Vargas; LeAnn Harward; Vickie Malloy; Jennifer Wood; Serina Tart

OBJECTIVE: To determine the impact of a clinical decision support system with linked antibiotic durations on treatment duration of UTI and CAP in an inpatient setting.

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: Historically, at CFVMC, antibiotic orders defaulted to a 10-day duration unless otherwise specified. This 10-day duration exceeds recommended durations of therapy for the most common infections such as urinary tract infections (UTIs) and community acquired pneumonia (CAP). The Joint Commission recently updated their standards for Antibiotic Stewardship to address elements of performance (EP) that include implementing evidence-based guidelines to improve antibiotic use (EP 18) and to evaluate adherence to these newly implemented evidence-based guidelines (EP 19). The purpose of this study will be to determine the impact of a clinical decision support system with linked antibiotic durations on treatment duration of UTI and CAP in an inpatient setting.

METHODOLOGY: This single center, retrospective, quality improvement cohort study evaluated patients receiving antibiotics while admitted at CFVMC. Adult patients >18 years or older who received antibiotics for CAP or UTI from October 1, 2022 through November 30, 2022, and January 1, 2023 through February 28, 2023 were eligible for inclusion. Exclusion criteria included SARS-2-CoV infection, death from any cause during admission, discharge to another facility, concomitant infections requiring prolonged intravenous antibiotics, and/or patients documented as having left against medical advice

The primary endpoint was the percentage of patients who received appropriate antimicrobial therapy duration before and after implementation of clinical decision support systems with indication specific, guideline directed durations of therapy. Secondary endpoints included: the percentage of patient who received evidence-based antimicrobial durations for UTI or CAP and the differences in durations of therapy before and after implementation of clinical decision support systems.

RESULTS: A total of 211 patients were included in the pre-implementation group and 164 patients were included in the post-implementation group. The percentage of patients recieving appropriate guidelines before and after implementation did not differ significantly (54.5% vs 63.41% p=0804).

CONCLUSIONS: A clinical decision support system improved appropriate antibiotic durations by nearly 10 percent, although it was not statistically significant. Durations in excess of guideline recommendations did not differ greatly following a clinical decision support tool. Further interventions, including provider education, may be needed to reduce excessive antimicrobial prescribing. Thorough review of inpatient antibiotic duration is critical prior to prescribing antibiotics at discharge.

3:50pm – 4:10pm | **Impact of pharmacist intervention on discharge antibiotic therapy for community-acquired pneumonia** Athena A

Moderators: Alyson Ghizzoni Burns
Presenters: Hallie Butler
Evaluators: Taylor Childress

TITLE: Impact of pharmacist intervention on discharge antibiotic therapy for community-acquired pneumonia
AUTHORS: Hallie Butler, Linda Johnson
OBJECTIVE: Will be included in presentation
SELF ASSESSMENT QUESTION: Will be included in presentation
BACKGROUND: Patients are commonly discharged from the hospital on prolonged courses of antibiotics. Excessive antibiotic exposure may lead to adverse events and increased antimicrobial resistance. It has been shown that increasing total antibiotic duration beyond five days in clinically stable patients with community-acquired pneumonia (CAP) has no benefit. Most patients complete their antibiotic course after being discharged from the hospital, therefore, it is imperative for antimicrobial stewardship initiatives to target patients at the point of discharge. A pharmacist driven initiative was implemented at CHI Memorial to target patients with the diagnosis of CAP. This study aims to measure the effectiveness of this service on discharge CAP antibiotic therapy.
METHODOLOGY: A quasi-experimental study was performed on adult inpatients with a diagnosis of CAP. Patients had to be admitted for at least 48 hours and meet criteria for five days of treatment for CAP per hospital guidelines. Patients were excluded if they completed their antibiotic course more than 24 hours before discharge, had concomitant infections, bacteremia, or had a cavitary pneumonia or lung abscess. Patients were also excluded if they had pneumonia caused by or suspected to be caused by MRSA, Pseudomonas, or a multi-drug resistant gram negative rod. The primary endpoint was median antibiotic duration of therapy pre-and post-intervention. Secondary endpoints include appropriateness of discharge antibiotics, length of stay, 30-day readmission for pneumonia, antibiotic resistance seen in subsequent cultures, and antibiotic side-effects.
RESULTS: 36 patients were included in the pre-invernetion group and 37 in the post-intervention. The total median duration of therapy was 6 days in the pre-intervnetion group vs 5 days in the post-intervention group (p-value=0.142). The median duration of discharge antibiotics was 3 days in the pre-intervention group vs 2 days in the post-intervnetion (p value=0.039).
CONCLUSIONS: The median duration of total antibiotics & discharge antibiotics decreased by one day in the post-intervention group.Most pharmacist interventions were related to duration of antibiotics. Majority of the discharge antibiotics were deemed appropriate, although most appropriate in post-intervention (91.7% and 97.3%, respectively).40.5% of patients in the post-intervention group had pharmacist interventions and 100% of interventions were accepted.

3:50pm – 4:10pm P **Impact on Inpatient Opioid Consumption in Post Cardiac Surgery Patients After Implementation of a Multimodal Pain Management Protocol** Parthenon 1

Moderators: Josh Pruitt

Presenters: Michelle Dobrzynski

Evaluators: Andrea Chappell

TITLE: Impact on Inpatient Opioid Consumption in Post Cardiac Surgery Patients After Implementation of a Multimodal Pain Management Protocol

AUTHORS: Michelle Dobrzynski, PharmD; Jordan Brooke Bibb, PharmD; Michelle Wilcox, PharmD; Jeannie Watson, PharmD, BCPS

OBJECTIVE: Identify the effect a multimodal pain management protocol has on inpatient opioid consumption in post cardiac surgery patients

SELF ASSESSMENT QUESTION: Does a multimodal pain management protocol affect inpatient opioid consumption in post cardiac surgery patients?

BACKGROUND: The opioid epidemic has been recognized as one of the greatest public health problems that the United States faces. In previously published literature, the use of scheduled analgesics with different mechanisms of action has been predicted to decrease the use of opioids postoperatively; however, no single recommended pain protocol exists. During the week of June 14, 2021, Ascension Saint Thomas Hospital West implemented a multimodal pain order set with the intention of reducing inpatient opioid use amongst patients. The purpose of this study was to determine the effect of a multimodal pain management protocol on inpatient opioid consumption in post cardiac surgery patients.

METHODOLOGY: Retrospective chart review of patients who underwent cardiac surgery via median sternotomy at Ascension Saint Thomas Hospital West during two time periods: December 1, 2020 through May 31, 2021 and December 1, 2021 through May 31, 2022. This is a single center (Ascension Saint Thomas Hospital West) study, and includes up to 100 patients total. Patients at least 18 years of age and who were extubated within 48 hours were included. Patients were excluded if they had any of the following: endocarditis; repeat cardiac surgery or minimally invasive/robotic surgeries; left ventricular assist device, heart transplant, total artificial heart, extracorporeal membrane oxygenation, Impella®, balloon pumps; history of substance use disorder or concurrent use of buprenorphine, methadone, or naltrexone; pregnancy or incarceration; COVID-19 positive during hospital admission for cardiac surgery; and in the post-cohort group, if scheduled acetaminophen was not started by the end of postoperative day 1. Primary outcomes include morphine milligram equivalent (MME) usage between the two cohorts. Secondary outcomes include postoperative intensive care unit and hospital length of stay, pain severity, bowel function, antiemetic use, and oversedation before and after implementation of a multimodal pain management protocol.

RESULTS: One hundred patients were included in the study. Patients were placed into the pre-cohort or post-cohort based on the date of their cardiac surgery, before or after the implementation of the multimodal pain management protocol. There were 50 patients in both the pre- and post-cohort. The use of scheduled acetaminophen in the post-cohort group did not significantly impact the amount of morphine milligram equivalents used between the two groups. The post-cohort group had a significantly shorter postoperative hospital length of stay and lower average pain scores on postoperative day 1 and 2. The secondary outcomes, including postoperative intensive care unit length of stay, average pain scores on day 3, bowel movement, antiemetic use, and naloxone use were similar between the two cohorts.

CONCLUSIONS: In this study, we observed that the multimodal pain management protocol did not have a significant effect on inpatient opioid consumption; however, postoperative hospital length of stay and pain scores were significantly reduced in the post-cohort group.

3:50pm – 4:10pm D **Impact of Milrinone on Neonates with Persistent Pulmonary Hypertension of the Newborn** Athena J

Moderators: Sarah Frye
Presenters: Brianna Gray
Evaluators: Brittney Howard

TITLE: Impact of Milrinone on Neonates with Persistent Pulmonary Hypertension of the Newborn
AUTHORS: Brianna Gray, Katie Farris, Deidra Easley, Christy Post, Abigail Grimm
OBJECTIVE: Evaluate the impact of the addition of milrinone to iNO for the treatment of PPHN
SELF ASSESSMENT QUESTION: How many hours did the duration of iNO decrease after the addition of milrinone?
BACKGROUND: Persistent pulmonary hypertension of the newborn (PPHN) occurs as a result of failure of normal circulatory transition at birth. Inhaled nitric oxide (iNO) is the gold standard treatment for PPHN. However, not all patients adequately respond to iNO and will need adjunctive therapy. Milrinone is a selective phosphodiesterase type 3 (PDEIII) inhibitor that increases the concentration of cyclic adenosine monophosphate (cAMP) in pulmonary and systemic arterial smooth muscle as well as in cardiac muscle, which leads to a reduction of pulmonary vascular resistance and pulmonary arterial pressure. The purpose of this study is to evaluate the impact of the addition of milrinone to iNO for the treatment of PPHN.
METHODOLOGY: This is an institutional review committee approved multi-center, retrospective chart review of patients who were admitted to the neonatal intensive care units (NICUs) at Baptist Medical Center South and Baptist Medical Center East in Montgomery, Alabama before and after the addition of milrinone for PPHN. The time frame of charts reviewed was from July 2010 to July 2022. Patients were included if they received iNO for PPHN. Patients were excluded if they received iNO with or without milrinone for any indication other than PPHN. Patients were also excluded if they did not receive a diagnosis of PPHN on echocardiography and did not have a difference in pre- and post-ductal saturations greater than 10% prior to iNO initiation. The primary outcomes of the study included the duration of iNO use (hours), the duration of mechanical ventilation (hours), the need for transfer to another facility for higher level of care, and all-cause mortality. The secondary outcomes of the study included whether or not echocardiography was done prior to iNO initiation, difference in pre- and post-ductal saturation greater than 10% prior to iNO initiation, diagnosis of PPHN on echocardiography prior to iNO initiation, occurrence of hypotension after milrinone initiation, discontinuation of milrinone due to hypotension, number of vasopressors, name of vasopressors, and duration of vasopressor use (hours).
RESULTS: A total of 99 patient charts were reviewed. Sixty-five patients met inclusion criteria and were included in the study. Thirty-three patients received both iNO and milrinone, and thirty-two patients received only iNO. The average duration of iNO was 84.56 hours in the iNO + milrinone group compared to 97.3 hours in the iNO group (p=0.52). The average duration of mechanical ventilation was 134.58 hours in the iNO + milrinone group compared to 219.84 hours in the iNO group (p=0.11). A total of 21 patients were transferred to another facility for higher level of care, of which 13 had received both iNO and milrinone, and 8 had received only iNO. The all-cause mortality rate was 9.2% with a total of 6 deaths. Four of those patients had received both iNO and milrinone, and 2 had received only iNO.
CONCLUSIONS: The addition of milrinone to iNO reduced both the duration of iNO and mechanical ventilation. A higher transfer rate and mortality rate was observed in patients with PPHN that received both iNO and milrinone. A small sample size, differences in acuity between the groups, and impact of other concurrent disease states in patients likely contributed to this difference. Future research is warranted on a larger scale to evaluate the effects iNO and milrinone on the outcomes of neonates with persistent pulmonary hypertension.

4:10pm – 4:30pm **Empty** Parthenon 2

4:10pm – 4:30pm B **Optimizing Surveillance of Patients with Cirrhosis in a Department of Veterans Affairs Health System** Olympia 1

Moderators: Geren Thomas
Presenters: Jonathan Schnider
Evaluators: Erin Pace

TITLE: Optimizing Surveillance of Patients with Cirrhosis in a Department of Veterans Affairs Health System

AUTHORS: Jonathan Schnider, Pharm.D., Nathaniel Swanson, Pharm.D., BCACP, Alexis Pruitt, Pharm.D., BCPS, Marci Swanson, Pharm.D., BCACP

OBJECTIVE: The primary objective of this performance improvement project is to increase the number of Veterans with a diagnosis of cirrhosis who are receiving nonselective beta-blocker therapy. As a secondary objective, we set out to restore the integrity of the data contained on the advanced liver disease dashboard so that it can be used as an interdisciplary tool for the effective management of patients with cirrhosis.

SELF ASSESSMENT QUESTION: Which nonselective beta-blocker is preferred in compensated cirrhosis for the prevention of esophageal varices?

BACKGROUND:
Cirrhosis, like congestive heart failure and chronic obstructive pulmonary disease, represents end-stage damage to a major vital organ and a significant cause of morbidity and mortality. According to the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC), cirrhosis is the 12th leading cause of death in the United States, claiming 30,000 lives annually. Among persons aged 45-54 years and 55-64 years, chronic liver disease and cirrhosis are the 4th and 7th leading cause of death, respectively. Cirrhosis has two main stages: compensated and decompensated, each with distinct presentation and prognosis. The compensated stage is asymptomatic; thus often challenging to diagnose and requires a high index of suspicion. This stage has a median survival time of greater than 12 years. In contrast, patients in the decompensated stage will present with obvious complications of cirrhosis such as variceal hemorrhage (VH), ascites, and/or hepatic encephalopathy and the median survival time is less than 2 years. Portal hypertension is the main pathophysiologic driver for these complications. Nonselective beta-blockers (NSBBs) have been the mainstay for the treatment of portal hypertension in cirrhosis since the early 1980s and currently remain the single drug class recommended for long-term therapy in portal hypertension. NSBBs act by decreasing portal venous inflow; thus, reducing portal pressure in patients with clinically significant portal hypertension. Randomized controlled trials have shown that NSBBs prevent first variceal hemorrhage in patients with cirrhosis and high-risk esophageal varices, and this led to guidance recommendations for their use.

METHODOLOGY:
The primary objective of this performance improvement project is to increase the number of Veterans with a diagnosis of cirrhosis who are receiving nonselective beta-blocker therapy. Utilizing a virtual dashboard known as the “advanced liver disease dashboard,” a Clinical Pharmacist Practitioner (CPP) will identify Veterans in need of intervention using the following inclusion criteria: (1) diagnosed cirrhosis of the liver, (2) platelet count < 150 x 103 per µL, and (3) No record of EGD within the last 3 years and/or no record of receiving nonselective beta-blocker therapy. The CPP will then provide disease-state education to the patients identified by outlining the role of NSBB therapy and importance of regular esophageal screenings. The CPP will also stress the importance of maintaining a “liver friendly” lifestyle. (i.e. abstinence from alcohol) Utilizing a guideline-based treatment algorithm, patient specific factors, and clinical judgment the CPP will initiate NSBB therapy. After medication initiation, patients will be referred to their primary care team CPP for ongoing management. As a secondary objective, Veterans who are found to be outside of the recommended window of time between esophageal imaging studies will be referred to the CV VAMC Gastroenterology team for follow-up and scheduling.

RESULTS:
At the start of this performance improvement project, 51 patient profiles were identified by the advanced liver disease dashboard as being overdue for review. These profiles were evaluated against inclusion and exclusion criteria for the project. 36 Veterans did not meet inclusion criteria while 15 did. Of these 15 patients who met inclusion criteria, 3 patients were initiated on carvedilol 3.125mg twice daily, and 1 patient was initiated on propranolol 20mg twice daily. 2 patients were found to have a blood pressure of 97/61 and a heart rate of 64, respectively which contraindicated nonselective beta-blocker therapy. 1 patient died before nonselective beta-blockers could be initiated, and 1 patient declined therapy. 4 patients were followed by non-VA

gastroenterologists and total care was deferred to those providers. Nonselective beta-blocker therapy was discontinued for 1 patient due to bradycardia.

CONCLUSIONS:
Nonselective beta-blockers play a key role in the management of clinically significant portal hypertension by preventing the formation of esophageal varices and by delaying decompensation. This performance improvement initiative met its primary objective by recapturing a patient population and by playing a role in increasing the rate of esophageal varices surveillance at the Carl Vinson VA Medical Center. Further, this project proved that a pharmacist could make effective interventions through medication management in yet another ambulatory care disease state.

4:10pm – 4:30pm B **PHARMACIST-LED REMOTE PATIENT MONITORING TO IMPROVE BLOOD PRESSURE CONTROL** Olympia 2

Moderators: Yolanda Whitty
Presenters: Juliane Park
Evaluators: Michelle Wilcox

TITLE: PHARMACIST-LED REMOTE PATIENT MONITORING TO IMPROVE BLOOD PRESSURE CONTROL
AUTHORS: Juliane Park, Drew Cates, Kandon Render, Lorenzo Villa Zapata
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: This study aims to evaluate the effectiveness of blood pressure management using remote patient monitoring (RPM) when led by a pharmacist.
METHODOLOGY: Eligible patients are those 65 years and older enrolled in remote patient monitoring (RPM) with a diagnosis of hypertension from July 2021 to October 2022 with at least 3 months of blood pressure data. Patients are provided with a blood pressure device with instructions to take measurements daily or as indicated by their prescriber and the data is sent directly to the clinic. Every 2-3 weeks, the pharmacist reviews the patient's blood pressure recordings and assesses the trend. Pharmacists are prompted to call the patient for significantly high or low blood pressure readings, lack of blood pressure readings, and/or concerning blood pressure trends. A retrospective chart review was complete on these patients to determine the difference in average systolic blood pressure at baseline, defined as average systolic blood pressure at month 1 of enrollment, to months 3, 6, 9, and 12, and the difference in average diastolic blood pressure at baseline, defined as average diastolic blood pressure at month 1 of enrollment, to months 3, 6, 9, and 12.
RESULTS: Sixty-eight patients were included in the retrospective chart review. Of the 68 patients, 61 patients had 3 or more months of blood pressure data, 52 patients had at least 6 months of blood pressure data, 44 patients had at least 9 months of blood pressure data, and 38 patients had 12 months of blood pressure data in the RPM program. The mean baseline blood pressure (average blood pressure at month 1 of enrollment) of all 68 patients was 135/79 mmHg. The difference in average systolic blood pressure from baseline to months 6 and 9 were decreased by 2.6 mmHg and 5.6 mmHg, respectively, however, neither results were significant ($p = 0.8331$ and 0.066, respectively). The difference in average systolic blood pressure from baseline to month 12 was 8.49 mmHg and was significant ($p = 0.0088$). The difference in average diastolic blood pressure from baseline to months 6, 9, and 12 were significant and decreased by 4.05 mmHg ($p = 0.008$), 4.95 mmHg ($p = 0.001$), 6.06 mmHg ($p = 0.0002$), respectively.
CONCLUSIONS: Pharmacist-led remote patient monitoring resulted in significant reductions in systolic and diastolic blood pressure from baseline to month 12.

4:10pm – 4:30pm C **CaptopRil to lisInopril converSion in pEdiatric Cardiac Patients less than 7 years of age (RISE-7)**
Athena D

Moderators: Natalie Morgan
Presenters: McKenzie Anderson
Evaluators: Erin Himes

TITLE: CaptopRil to lisInopril converSion in pEdiatric Cardiac Patients less than 7 years of age (RISE-7)
AUTHORS: McKenzie Anderson, Pharm D, Asaad Beshish, MD, Joshua Branstetter, PharmD BCPPS, Hania Zaki, Pharm D
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Hypertension after cardiothoracic surgery is a common side-effect requiring pharmacologic management. The recommended first-line enteral antihypertensive in pediatrics is an angiotensin converting enzyme inhibitor (ACE-I). There are only 3 ACE-I that are FDA approved for use in children and they are enalapril, lisinopril and captopril, with lisinopril only having approval for patients > 7 years of age. At our institution, patients are often initiated on captopril in the cardiac intensive care unit (CICU) due to its relatively short half-life and quick onset of action and transitioned to lisinopril for the convenience of once daily dosing. The aim of this study is to evaluate the safety and efficacy of converting from captopril to lisinopril in patients < 7 years of age post cardiothoracic surgery.
METHODOLOGY: This is a retrospective chart review including patients less than 7 years of age admitted to the CICU for cardiothoracic surgery who received both captopril and lisinopril from January 01, 2017 to June 01, 2022. The primary outcome is to evaluate the mean change in systolic blood pressure (SBP) from baseline 72 hours after conversion of captopril to lisinopril. The secondary efficacy endpoints are to evaluate the mean change in diastolic blood pressure (DBP) from baseline 72 hours after, the number of patients that required an increase or decrease in dose of lisinopril 72 hours after conversion, and the number of patients that required use of additional antihypertensive therapy for control of blood pressure. The secondary safety endpoints are to evaluate occurrence of acute kidney injury and hyperkalemia after conversion.
RESULTS: will be submitted within final slides.
CONCLUSIONS: will be submitted within final slides.

4:10pm – 4:30pm R **Analysis of the cost to reverse bleeding events associated with apixaban as compared to rivaroxaban** Athena H

Moderators: Sara Anne Meyer
Presenters: Connor Floyd
Evaluators: Eric Marr

TITLE: Analysis of the cost to reverse bleeding events associated with apixaban as compared to rivaroxaban

AUTHORS: Connor Floyd; Dustin Orvin; Joseph Crosby; John Carr

OBJECTIVE: To assess for a difference in the cost of reversing a major bleed secondary to apixaban or rivaroxaban

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: Major bleeding events secondary to direct oral anticoagulants (DOACs) are rare but can lead to devastating outcomes. Apixaban and rivaroxaban have never been compared in a prospective design, but retrospective comparisons suggest apixaban may be safer. Andexanet alfa and 4-factor prothrombin complex concentrate (4-PCC) can be used for major bleeds and because their dosing depends on the dose and timing of the DOAC, the cost to the health system may vary depending on the DOAC used. The aim of this study is to assess any difference in the cost of reversing a major bleed secondary to apixaban or rivaroxaban.

METHODOLOGY: This investigation was a retrospective, observational cohort, chart-review in a two-hospital health system. Patients were included if they were admitted for a major bleed while receiving apixaban or rivaroxaban and required anticoagulant reversal from Jan 1, 2015, to Oct 1, 2022. Patients were excluded if they did not receive a reversal agent or did not meet International Society on Thrombosis and Hemostasis criteria for a major bleed. The primary outcome was overall cost of reversal agents utilized to reverse anticoagulation. Secondary outcomes included length of hospital stay, length of ICU stay, number of units of blood transfused, thrombotic events, and the number and type of therapeutic procedures performed. Additional data collected include the patient's age, sex, weight, indication for anticoagulation, and significant past medical history. Data regarding dose and frequency of anticoagulants and number of doses of reversal agents given was collected as well. Data on hemostasis was also collected, including hemoglobin on admission and total number of blood transfusions required. Chi-square analysis was used to compare the categorical data while a t-test was used for the continuous data. A p-value of < 0.05 was considered statistically significant.

RESULTS: 232 patients received anticoagulant reversal while receiving either apixaban or rivaroxaban from Jan 1, 2015, to Oct 1, 2022. Ninety-two patients were excluded because they did not meet criteria for a major bleed when they received a reversal agent. A total of 140 patients were included, 101 on apixaban and 39 on rivaroxaban prior to the bleed. Baseline characteristics were similar between the two groups, however patients in the rivaroxaban group weighed more and were more often male. In the apixaban group, fifty-two patients received andexanet alfa, forty-eight received (4-PCC), and one patient received both. In the rivaroxaban group, sixteen received andexanet alfa and twenty-three received 4-PCC. Of the patients that received andexanet alfa, 62.5% of the rivaroxaban group received high dose versus only 12% in the apixaban group. Similarly, the rivaroxaban group received a higher average total dose of 4-PCC compared to the apixaban group. Patients in the apixaban group experienced longer average hospital and ICU lengths of stay. In the apixaban group, 11.9% of patients experienced a thrombotic event versus 5.1% of patients in the rivaroxaban group. Therapeutic procedures for bleeds were performed at a similar rate in each group.

CONCLUSIONS: Major bleeds secondary to DOACs carry the risk for significant consequences if not managed appropriately. The aim of this study was to assess for differences in the cost of reversing bleeds associated with apixaban versus rivaroxaban. The rivaroxaban group received higher doses of andexanet alfa and 4-PCC while the apixaban group had longer hospital and ICU lengths of stay. The cost difference in reversing bleeds associated with these two DOACs is not entirely obvious given the differences in therapies and lengths of stay. Limitations include the retrospective design, small sample size, and that the reversal agent dosing was not always appropriate.

4:10pm – 4:30pm R **Evaluation of Compliance with the Three Hour Early Management Bundle for Sepsis in the Emergency Department** Athena G

Moderators: Jessica Brinkley

Presenters: Emilee Howard

Evaluators: Michael Saavedra

TITLE: Evaluation of Compliance with the Three Hour Early Management Bundle for Sepsis in the Emergency Department

AUTHORS: Emilee Howard, Rachel Settle, Sarah Talley

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The Society of Critical Care Medicine Surviving Sepsis Campaign recommends the administration of antimicrobials within one hour for septic shock and three hours for sepsis without shock. The Centers for Medicare and Medicaid Services requires public reporting for the SEP-1 Early Management Bundle which includes fluid resuscitation, antimicrobials, lactate levels and blood cultures within three hours from identification of sepsis. The purpose of this project was to evaluate current practices in management of sepsis in the emergency department within a community hospital.

METHODOLOGY: A retrospective, single-center chart review from January to March of 2022 was conducted on adult patients 19 years of age and older that are identified as having sepsis or septic shock in the emergency department. The baseline characteristics included: age, sex, race, weight, antibiotics, microbiological culture data, vital signs, use of vasopressors, admission to an intensive care unit and survival to discharge. The primary endpoint was time to administration of antibiotics from identification of sepsis. Secondary endpoints were evaluating sepsis order set utilization, initial lactate level collected within three hours, blood cultures drawn within three hours, and the appropriateness of fluid administration.

RESULTS: Of the 125 medical records reviewed, 85 patients did not meet at least one requirement of the three hour bundle. The median (IQR) time to administration of antibiotics from time zero was 66 (39.75 - 131.25) minutes for the patients that completed the bundle versus 121 (48 - 204) minutes for the patients that did not complete the bundle. Of the 85 patients that did not meet the three hour bundle, 91.8% of patients did not receive the correct fluid volume, 71.8% of providers did not utilize the sepsis order set, 9.4% of initial lactate levels were not completed in time, and 20% of blood cultures were not drawn within three hours. From a pharmacy perspective, 92% of patients received antibiotics within three hours, and all patients reviewed received appropriate antibiotic therapy.

CONCLUSIONS: This study revealed that 68% of medical records reviewed between January and March of 2022 did not meet at least one of the requirements for the three hour bundle. The component of the three hour bundle that was missed most commonly was the administration of appropriate fluids either due to inappropriate fluid volume or lack of documentation justifying exclusion of fluid administration. Moving forward, areas of opportunity identified are to recommend improving and consolidating sepsis order sets, as well as education to healthcare staff on appropriate documentation and fluid selection.

4:10pm – 4:30pm R **High-dose Milrinone Use for Refractory Cerebral Vasospasms after Subarachnoid Hemorrhage**

Athena I

Moderators: Yona Roberts

Presenters: Duyen Vo

Evaluators: Ben Albrecht

TITLE: High-dose Milrinone Use for Refractory Cerebral Vasospasms after Subarachnoid Hemorrhage

AUTHORS: Duyen Vo, Sarah Jung

OBJECTIVE: At the conclusion of my presentation, the participant will be able to describe the role of high-dose milrinone use in aneurysmal subarachnoid hemorrhage patients

SELF ASSESSMENT QUESTION: Which of the following statements about milrinone use in aneurysmal subarachnoid hemorrhage is true?

A.Milrinone is first-line treatment for cerebral vasospasm in aSAH

B.Milrinone is contraindicated in patients with aSAH due to its negative inotropic effects

C.Milrinone has been shown to improve cerebral blood flow and functional disability

D.Milrinone has no effect on mortality or functional outcomes in patients with aSAH

BACKGROUND: Aneurysmal subarachnoid hemorrhage (aSAH) can lead to permanent brain damage and increase the risk of mortality. One of the main complications of aSAH is delayed cerebral ischemia (DCI) as a result of cerebral vasospasms. Currently, data on the use of vasodilators for treatment of aSAH-induced cerebral vasospasms is limited. Milrinone exhibits direct vasodilatory activity in cerebral vasculature through inhibition of the enzyme phosphodiesterase III, thus potentially reversing cerebral vasospasm. At Wellstar Kennestone Hospital, milrinone is indicated if severe vasospasms continue despite inducing hypertension, maintaining euvolemia, and trialing intrathecal nicardipine. Milrinone doses up to 1.25 mcg/kg/min have been successfully utilized in previous trials, however the results are heterogenous. Based on this data, our institution increased maximum titration parameters for milrinone from 0.75 mcg/kg/min to 1.25 mcg/kg/min. The purpose of this study was to evaluate the efficacy and safety of high-dose milrinone use in aSAH patients with severe vasospasms.

METHODOLOGY: A drug utilization report was used to identify patients with vasospasms who received high-dose milrinone while admitted at Wellstar Kennestone Hospital from January to December 2021. Patient charts were reviewed retrospectively to collect information regarding the efficacy and safety outcomes of high-dose milrinone. Data collection and analysis was performed using Microsoft Excel®.

RESULTS: A total of 15 patients were identified. Common baseline risk factors were hypertension (47%) and smoking (60%). 87% of patients were female with median age of 48 years. 40% of patients presented with a Hunt & Hess grade of III and 53% presented with modified Fischer score of IV. 80% patients received an external ventricular drain placement, and all patients had their aneurysms coiled. The onset of vasospasm occurred on average at 4.5 days from admission and the most common location of the offending aneurysm was on the anterior communicating artery. 66% of patients were able to tolerate milrinone infusion rates of at least 1.0 mcg/kg/min with a median duration of therapy of 12 days. Majority (93%) of patients had hypotension while on milrinone therapy, requiring vasopressor support. 9 (60%) of patients achieved a 90-day Modified Rankin Score (mRS) of ≤2. Higher doses of milrinone did not correlate with better mRS score. 60% of patients received ≤3 angiography procedures. During the procedure, milrinone and verapamil were the intra-arterial medications of choice. 53% of patients had confirmed delayed cerebral ischemia. Patients spent an average of 31 days in the hospital and 25 days in the ICU. Mortality was limited to one patient.

CONCLUSIONS: High-dose milrinone use in aSAH patients with vasospasm has potential benefits in improving functional and clinical outcomes. However, the use of milrinone was associated with high rates of hypotension. Further large-scale, non-retrospective studies are needed to determine whether milrinone is superior to usual care in achieving good clinical and functional outcomes after aSAH.

4:10pm – 4:30pm

Assessing the Incidence of Acute Kidney Injury in Hospitalized Patients on Combination Therapy with Vancomycin plus Piperacillin-Tazobactam versus Vancomycin plus Cefepime

Athena A

Moderators: Alyson Ghizzoni Burns

Presenters: Taylor Strickland

Evaluators: Taylor Childress

TITLE: Assessing the Incidence of Acute Kidney Injury in Hospitalized Patients on Combination Therapy with Vancomycin plus Piperacillin-Tazobactam versus Vancomycin plus Cefepime

AUTHORS: Taylor Strickland, Jennifer Campbell, Allison Cid, Heather Gibson, Christina Thurber

OBJECTIVE: *Will include in presentation

SELF ASSESSMENT QUESTION: *Will include in presentation

BACKGROUND: Use of vancomycin plus piperacillin-tazobactam is a common regimen of choice for empiric sepsis coverage in the hospital setting, but recent studies have shown that this combination can result in an increased incidence of acute kidney injury in some patients. The purpose of this study was to determine whether vancomycin plus cefepime has a lower incidence of acute kidney injury when compared to vancomycin plus piperacillin-tazobactam.

METHODOLOGY: A retrospective chart review was performed on patients admitted during August 2022 at a community hospital who were treated with vancomycin plus piperacillin-tazobactam or vancomycin plus cefepime that had incidence of acute kidney injury during therapy. The primary outcome was the incidence of acute kidney injury within 48 hours of initiation of either vancomycin plus piperacillin-tazobactam or vancomycin plus cefepime. Acute kidney injury was defined as an increase in serum creatinine of greater than or equal to 0.3 mg/dL over 48 hours per the 2012 Acute Kidney Injury Network (AKIN) and Kidney Disease Improving Global Outcomes (KDIGO) guidelines. Patients were included in the study if they were prescribed combination vancomycin plus piperacillin-tazobactam therapy or vancomycin plus cefepime therapy for greater than 48 hours and had known baseline creatinine upon admission. The secondary outcome analyzed was the incidence of acute kidney injury in patients with concomitant nephrotoxic agents including aminoglycosides, loop diuretics, IV contrast, and vasopressors. Patient demographic information, baseline labs, and microbiology culture information were obtained from the electronic medical record. Patients who were less than 18 years of age, pregnant, had chronic kidney disease or end stage renal disease requiring dialysis were excluded.

RESULTS: A total of 156 patients being treated with vancomycin plus piperacillin-tazobactam and 82 patients being treated with vancomycin plus cefepime were identified utilizing a data analytics tool within the electronic medical record. Out of the 238 patients hospitalized during August 2022 treated with either therapy combination, 56 met the inclusion criteria for the vancomycin plus piperacillin-tazobactam group and 32 met the inclusion criteria for the vancomycin plus cefepime group. Of those patients in the vancomycin plus piperacillin-tazobactam group, 19.6% (11 out of 56) experienced acute kidney injury and of the patients in the vancomycin plus cefepime group, 18.8% (6 out of 32) experienced acute kidney injury. Out of the 11 patients that experienced acute kidney injury in the vancomycin plus piperacillin-tazobactam group, 1 patient received an aminoglycoside, 6 received loop diuretics, 8 received IV contrast, and 4 received vasopressors. Out of the 6 patients that experienced acute kidney injury in the vancomycin plus cefepime group, 4 received loop diuretics, 5 received IV contrast, and 2 received vasopressors.

CONCLUSIONS: The 2020 therapeutic monitoring of vancomycin for serious methicillin-resistant Staphylococcus aureus infections guidelines mention that recent studies show the combination of vancomycin plus piperacillin-tazobactam has been shown to increase the risk of acute kidney injury. There is also a higher risk of acute kidney injury when given concurrently with other nephrotoxic agents. Data collection at our facility did not show this risk. There was no increased risk of acute kidney injury in patients on vancomycin plus piperacillin-tazobactam compared to those on vancomycin plus cefepime. One hypothesis for these discordant results is the implementation of AUC-based vancomycin dosing in accordance with the 2020 vancomycin guideline updates. FirstHealth of the Carolinas utilizes InsightRx®, a fully integrated Bayesian-software program to dose vancomycin at all of its facilities which allows for improved efficacy and decreased risk of acute kidney injury. There is the potential that utilizing this software decreases the overall risk of acute kidney injury with vancomycin, therefore decreasing the risk in combination with piperacillin-tazobactam.

4:10pm – 4:30pm | **Impact of an Outpatient Fluoroquinolone Order Set on Prescribing Rates and Usage** | Athena B

Moderators: Regan Porter

Presenters: Rebekah Wooten

Evaluators: Ashley Thomas

TITLE: Impact of an Outpatient Fluoroquinolone Order Set on Prescribing Rates and Usage

AUTHORS: Rebekah Wooten, Lauren Blumenfeld, Parmida Parvaz, Milner Staub, Hannah Fetsch, Jessica Wallace, Ashleigh Powers

BACKGROUND: Fluoroquinolones are frequently used in healthcare due to their favorable administration frequency, high oral bioavailability, and broad spectrum of activity. However, fluoroquinolones are associated with numerous serious adverse events including increased risk of tendinitis and tendon rupture, blood glucose alterations, aortic dissection and aortic aneurysm rupture, and Clostridioides difficile infection. Fluoroquinolone prescribing rates are highest in the southeastern United States, where our Veterans Affairs facility resides. To optimize fluoroquinolone prescribing, our facility implemented an outpatient order set along with provider education. This study aimed to evaluate the impact of such stewardship interventions on the frequency and appropriateness of fluoroquinolone prescribing.

METHODOLOGY: We conducted a single-center, retrospective, interventional analysis of patients prescribed oral fluoroquinolones three months before and three months after implementation of an outpatient fluoroquinolone order set on August 15th, 2022. Patients were excluded if their fluoroquinolone prescription was started inpatient and continued in the outpatient setting, was not a Veterans Affairs prescription, was prescribed for one-time use for surgical prophylaxis, or was prescribed by a bone marrow transplant provider. Outpatient fluoroquinolone ordering was restricted to the quick order set, which follows evidence-based guidelines and literature. The primary outcome of this study is frequency of fluoroquinolone prescribing. The secondary efficacy outcomes are average day supply of fluoroquinolones and rate of inappropriate fluoroquinolone prescribing. The safety endpoints analyzed include recurrence of infection indicated by use of antibiotics within thirty days for same indication and fluoroquinolone-related adverse events. Kappa inter-rater reliability rate between three chart reviewers for inappropriateness for prescribed indication was 86.67% with a kappa inter-rater reliability score of 0.73.

RESULTS: There were 255 prescriptions in the pre-intervention cohort and 185 prescriptions in the post-intervention cohort. Baseline characteristics were similar between groups. Most fluoroquinolone prescriptions were ordered by Urgent Care/Emergency Department providers. Recurrence of infection was similar between pre-intervention data at 10.98% and post-intervention data at 10.27%. Of the instances of recurrence in the pre-intervention cohort, 25% of the subsequent antibiotic prescriptions were for a fluoroquinolone, while 31.5% of the subsequent antibiotic prescriptions in the post-intervention cohort were for a fluoroquinolone. Incidence of abdominal aortic aneurysm or aortic dissection, tendinitis, and C. difficile infection remained similar between pre-intervention and post-intervention cohorts (<1% for each cohort).

4:10pm – 4:30pm P **Impact of a Pharmacy-led Pain Stewardship Program Utilizing an EHR Integrated Dashboard**
Moderators: Josh Pruitt Parthenon 1
Presenters: Savannah Elliott
Evaluators: Andrea Chappell
TITLE: Impact of a Naloxone Quality Improvement Plan Utilizing an EHR integrated dashboard

AUTHORS: Savannah Elliott, PharmD, Janine Short, PharmD, Katherine Mieure, PharmD, Danielle Neal, PharmD, Meredith Hollinger, PharmD

OBJECTIVE: To compare the proportion of patients administered naloxone prior to and after the implementation of a quality improvement plan.

SELF ASSESSMENT QUESTION: What assessment can measure actual against expected results to identify suboptimal or missing strategies or processes?
BACKGROUND: Opioid-related morbidity and mortality continues to escalate in the United States. In 2021, the Centers for Disease Control reported more than 107,000 people died from a drug overdose, with 75% of those deaths involving an opioid. In response to the opioid epidemic, pain stewardship standards have been published by The Joint Commission to ensure safe and appropriate use of analgesic medications. To ensure compliance to pain standards and best practices, Atrium Health Wake Forest Baptist Medical Center hired a pain management pharmacist to develop an institution-wide pain stewardship program. One of the first quality improvement processes our pain pharmacist tackled was a gap analysis by the The Joint Commission to evaluate gaps for improvement. The first initiative that the department decided to tackle were both relate to safety of pain management and opioid use. The purpose of this study is to evaluate the safety of inpatient opioid prescribing within the general medicine population and assess the impact of quality improvement projects on naloxone administrations

METHODOLOGY: A electronic health record integrated dashboard to track naloxone administrations will be designed and implemented. Baseline data will be assesed to determine administration trends. A single-center, retrospective observational study will be performed to determine the impact of the pain stewardship program. Data will be collectedcompare the proportion of patients administered naloxone prior to and after the implementation of a quality improvement plan. This data will be evaluated using chi-square. Institution-specific patient risk factors for opioid induced respiratory depression will be analyzed using descriptive statistics and logistic regression.

RESULTS: Dashboard development and implementation are in progress. Preliminary results to be presented.

CONCLUSIONS: Dashboard development and implementation are in progress. Preliminary results to be presented.

4:10pm – 4:30pm D **Characterization and effect of pharmacologic monotherapy and combination therapy for patent ductus arteriosus** Athena J

Moderators: Sarah Frye
Presenters: Shelby Go
Evaluators: Brittney Howard

TITLE: Characterization and effect of pharmacologic monotherapy and combination therapy for patent ductus arteriosus

AUTHORS: Shelby Go, Meredith Chanas

BACKGROUND: Patent ductus arteriosus (PDA), failure of closure of the ductus arteriosus, commonly occurs in preterm neonates and can lead to increased pulmonary circulation and decreased systemic circulation resulting in significant multi-organ comorbidities. In neonates with symptomatic or hemodynamically significant PDA, the American Academy of Pediatrics recommends treatment with cyclooxygenase (COX) inhibitors (ibuprofen or indomethacin) over surgical closure of PDA and recommends acetaminophen as rescue therapy or if COX inhibitors are contraindicated, based on expert opinion. While the combination of ibuprofen and acetaminophen is utilized, there is limited clinical data evaluating its safety and efficacy.

This IRB-approved study aims to characterize the pharmacologic agents used for the closure of PDA in neonates at East Carolina University (ECU) Health Medical Center and to evaluate the safety and efficacy of ibuprofen and acetaminophen combination therapy for the closure of PDA.

METHODOLOGY: This retrospective, single-site, observational review included patients admitted to the neonatal intensive care unit (NICU) or the special care nursery (SCN) between January 1, 2016 and November 1, 2022. Patients with a documented chromosomal abnormality, significant congenital malformation, or complex congenital heart disease that contraindicated the patient from receiving PDA therapy were excluded. Safety and efficacy analysis utilized the initial pharmacologic regimen selected and patient demographics, status, and organ morbidity development were evaluated. Descriptive statistics were utilized to characterize the pharmacologic regimens.

RESULTS: Of the 60 patients were included for analysis, 33.3% received ibuprofen monotherapy, 31.7% received acetaminophen monotherapy, 18.3% received indomethacin monotherapy, and 16.7% received combination therapy as the initial pharmacologic regimen. The average birth weight was 814 ± 271 grams and the average gestational age was 25.6 ± 1.9 weeks. Based on the initial pharmacologic regimen administered, 45% of the ibuprofen group, 15.8% of the acetaminophen group, 63.6% of the indomethacin group, and 40% of the combination group achieved pharmacologic PDA closure on post-treatment echocardiogram ($p = 0.059$). The average number of pharmacologic courses received for the ibuprofen, acetaminophen, indomethacin, and combination therapy groups was 2.1 ± 0.9, 2.7 ± 1.4, 2.3 ± 1.3, and 1.3 ± 0.5 courses ($p = 0.021$), respectively. 40% of patients in the ibuprofen group, 57.9% in the acetaminophen group, 18.1% in the indomethacin group, and 90% in the combination therapy group developed end-organ morbidity ($p = 0.007$).

CONCLUSIONS: The most common initial pharmacologic regimen utilized at ECU Health Medical Center was ibuprofen monotherapy followed by acetaminophen monotherapy, indomethacin monotherapy, and combination therapy. No difference in the rate of pharmacologic PDA closure was observed. While patients in the combination therapy group received a fewer number of courses, they were more likely to develop end-organ morbidity. The results of this study suggest that combination therapy can reduce neonatal exposure to PDA pharmacologic regimens without compromising efficacy but may be associated with increased end-organ morbidity. Further studies are needed to evaluate the safety and efficacy of combination therapy for the closure of PDA.

4:10pm – 4:30pm T **Impact of an Updated Post Discharge Nursing Note Template on Continuation of Care** Athena C

Moderators: J. Luke Britton
Presenters: Morgan Rambo
Evaluators: Benjamin Casey

TITLE: Impact of an Updated Post Discharge Nursing Note Template on Continuation of Care
AUTHORS: Morgan Rambo; Meredith Thompson; Carla Veronese; Mary Martin McGill
OBJECTIVE: To evaluate the impact of using an updated nursing template for 2-Day Post-Discharge Calls that prompts consultation of other providers and assess how that affects continuity of patient care.
SELF ASSESSMENT QUESTION: Does an updated note template that prompts consultation of other providers increase number of patient referrals and follow-up appointments scheduled within 30 days of contact with the patient?
BACKGROUND: At this health system, nursing staff is responsible for contacting patients within 48 hours after discharge from the hospital and ensuring patients have received disease state education, medication, and have the proper supplies to monitor themselves at home. The current Primary Care Post Discharge Telephone Note template does not prompt nor designate what provider should be contacted when a patient needs additional care. The purpose of this study is to evaluate the impact of using an updated nursing template for 2-Day Post-Discharge Calls that prompts consultation of other providers and assesses how that affects continuation of patient care.
METHODOLOGY: This project will consist of a retrospective chart review of current processes and a prospective evaluation with the updated intervention tool utilizing a daily report of discharged patients to identify patients in need of follow-up. As the nurse conducts the patient visit the new note will include prompts that notifies them when referral is needed, and which provider should be tagged regarding the patient's care. The number of consults and referrals resulting from this nursing phone call will be evaluated and compared before and after implementation of the updated note template. Endpoints will include the number of referrals resulting from this telephone visit, categorization of what kind of referrals are made, and the number of follow-up appointments scheduled within 30 days of contact with the patient.
Inclusion Criteria:
-Patients discharged from Birmingham Veteran's Affairs Medical Center for heart failure exacerbation, chronic obstructive pulmonary disease exacerbation, diabetes with complications, stroke/ transient ischemic attack, myocardial infarction, pneumonia, hypertensive crisis, or alcohol related disorders
Exclusion Criteria:
-Patients contacted by a nurse not using the Primary Care Post Discharge Telephone Note, discharged to a skilled nursing facility, transferred to another hospital or VA facility, discharged to inpatient rehab, or on hospice
RESULTS: In progress.
Retrospectively, 79 patients who were admitted for one of the included disease states were selected from a daily report of discharges over the month of October 2022. After exclusion, 38 patients were included in the retrospective portion of this study. Of the 38 phone calls completed, 5 referrals were made as a result of that contact. These referrals included: 1 prosthetics consult, 1 social work consult, and 3 referrals for home telehealth. Of those 38 patients, 24 scheduled follow-up appointments within 30 days. Prospective evaluation using the updated note template is still in progress.
CONCLUSIONS: In progress.

4:30pm – 4:50pm **Empty** Parthenon 2

4:30pm – 4:50pm B **Evaluating Clinical Pharmacy Technicians and Their Impact on Optimizing Clinical Pharmacist Practitioner Roles and Patient Care Within Anticoagulation and PACT Clinics.** Olympia 1

Moderators: Geren Thomas
Presenters: Brittany Griffin
Evaluators: Erin Pace

TITLE: Evaluating Clinical Pharmacy Technicians and Their Impact on Optimizing Clinical Pharmacist Practitioner Roles and Patient Care Within Anticoagulation and PACT Clinics.

AUTHORS: Brittany Griffin, PharmD.; Marci Swanson, PharmD., BCACP; Ria Mathew, PharmD., BCACP

OBJECTIVE: The purpose of this project is to evaluate the outcomes of implementing a Clinical Pharmacy Technician (CPhT), at the Carl Vinson VA Medical Center, by analyzing the following: amount of time saved by a CPhT, correlation of time saved and therapeutic outcomes, and rate of appointment no-shows.

SELF ASSESSMENT QUESTION: Clinical Pharmacy Technicians assist in all of the following tasks except:
A.Triaging telephone calls
B.Conduct Population Management appointments
C.Make therapy adjustments
D.Conduct Pre-appointments with Veterans
E.Contact Veterans for appointment reminders

BACKGROUND: Clinical Pharmacist Practitioners (CPPs) are pharmacists with an advanced scope of practice, that practice in specialty clinics, such as anticoagulation and ambulatory care. They have a variety of responsibilities that include clinical and clerical tasks. Clerical responsibilities include, but are not limited to, answering phone calls, refilling medications, preparing and completing notes, and inputting return to clinic orders. The Carl Vinson Veterans Affairs (VA) Medical Center (CVVAMC) provides health care services to approximately 39,000 veterans in Central and South Georgia. There are 5.5 full time equivalent (FTE) anticoagulation CPPs and 11.5 FTE CPPs in the ambulatory care clinics. CVVAMC has hired 2 CPhTs for the anticoagulation clinics and 1 CPhT for ambulatory care clinics. Prior to CPhT implementation, CPPs were performing both clinical and administrative tasks. The purpose of this project is to evaluate the utilization and effectiveness of CPhTs.

METHODOLOGY: The quality improvement project was approved by the P&T Committee in September 2022. A retrospective review was completed to analyze Veterans that interacted with clinical pharmacy technicians. Inclusion criteria included Veterans at the Carl Vinson VA Medical Center who were assisted by the anticoagulation CPhT from October 2022 to December 2022 and those who were assisted by the ambulatory care CPhT from June 1, 2022 to December 31, 2022. Within the anticoagulation clinic, the following information will be collected: the number of patients with therapeutic INRs contacted by the CPhT, the amount of time to complete a visit, as well as if the medication management plan was appropriate and accurate. CPhTs were shadowed over a period of time to evaluate the administrative and clinical duties performed.

Within the ambulatory care clinics, the following information will be collected including: clinical outcomes through population management and evaluation of administrative tasks performed and time saved through utilization of the clinical pharmacist technician.

In addition, an anonymous questionnaire was distributed to the CPPs in clinics that utilize a CPhT to assess CPP satisfaction with implementation of a CPhT.

RESULTS: The average age of anticoagulation patients was 66 years old. Most patients were Caucasian (57%) or African American (32%). 99% of Veterans seen are male. 93.7% of anticoagulation patients utilize DOACs and 6.3% are on warfarin. Within two months, CPhTs completed 54 DOAC and 90 warfarin direct patient visits with 100% accuracy. The CPhT spent an average of 323 mins per day completing tasks that would otherwise be completed by the anticoagulation CPPs. The average age of PACT patients was 63.5 years old. 90% of patients were male, and the majority of patients were African American (59.5%) or Caucasian (35.9%). Prior to implementation, the Clinic Utilization Summary Statistics (CUSS) reports, showed no-show rates for face to face and VVC visits were 17.7% and 14.4%, respectively. The CUSS report post-implementation shows no-show rates for face to face and VVC visits were 10.5% and 6.9%, respectively, an improvement for both categories. 63 patients were enrolled in population management by the CPhT. 25 patients for gout, 38 for type 2 diabetes. 6 patients with gout saw uric acid improvements. 19 diabetics saw a reduction in HgbA1c. Total time saved by the CPhT completing clinical tasks was 47 minutes per day.

CONCLUSIONS: Clerical duties performed by a CPhT at Carl Vinson VA Medical Center from June 2022 through

December 2022 prove to be beneficial in various ways. The implementation of a CPhT alleviates a percentage of the workload from CPPs within both clinics. Time saved by the CPhT may provide the CPP additional time to focus on medication management and therapeutic outcomes. There appears to be a positive correlation between the CPhT conducting appointment reminders and a reduction in no-show rates. CPhT implementation may also increase patient access to care.

4:30pm – 4:50pm B **Persistence of biologics in the treatment of psoriasis** Olympia 2

Moderators: Yolanda Whitty
Presenters: Connor Lockridge
Evaluators: Michelle Wilcox

TITLE: Persistence of biologics in the treatment of psoriasis
AUTHORS: Connor Lockridge, Nathalie See, Dylan Wallace
OBJECTIVE: Identify the potential impact of patient specific factors in the persistence of biologics in the treatment of psoriasis.
SELF ASSESSMENT QUESTION: What patient specific factors impact the persistence of biologics in the treatment of psoriasis?
BACKGROUND: Psoriasis is a chronic, autoimmune disease that affects approximately 1% to 4% of the world population. Psoriasis most often presents as red, inflamed skin, covered with itchy, loose, silver-colored scales, and is commonly found on the knees, elbows, trunk, and scalp. Per the 2019 American Academy of Dermatology guidelines for psoriasis, treatment for mild to moderate cases should begin with topical therapy or phototherapy. The aforementioned guidelines also state that in moderate to severe cases, or in cases with insufficient response to previous therapy, patients may require treatment with biologics, such as adalimumab. Biologics are generally well-tolerated and efficacious. However, previous literature has shown that switching or discontinuing biologics does occur for a multitude of reasons such as comorbidities, smoking status, age, and gender. Two of the most common reasons for discontinuation include: an insufficient response and adverse drug reactions (e.g. reactivation of tuberculosis or shingles).

Given the reasons above, discontinuation or switching therapy has become more common in clinical practice. Thus, treatment persistence, defined as the difference in time between the initiation of drug therapy and therapy discontinuation, is an important factor in the treatment of psoriasis. Evaluating factors reducing persistence is important, because longer persistence has been correlated with earlier remission, which is the ultimate goal of psoriasis treatment.

While there are several studies that review treatment persistence of biologics and its associated factors, there is a lack of consistency in the results. In addition, ethnic minorities are often underrepresented in dermatological studies. With a large ethnic minority population at Grady Health System, the results from this study could contribute to the gap in literature regarding biologic treatment persistence in psoriasis in this patient population. In addition, this study aims to identify modifiable and non-modifiable factors that influence the persistence of biologic treatment for psoriasis.
METHODOLOGY: A single-center, retrospective chart review was conducted on adult patients (age ≥ 18 years) with a diagnosis of psoriasis who were treated with a subcutaneous biologic between January 1, 2019 and September 30, 2021. Patients with concomitant autoimmune disease(s) (e.g. Crohn’s disease, etc.), or those who obtained their biologic(s) from a pharmacy other than a Grady Pharmacy were excluded. The primary outcome analyzed was biologic persistence, measured in days, in the treatment of psoriasis in Grady’s largely minority patient population. Secondary outcomes included treatment adherence, type of biologic, and cause of biologic discontinuation.
RESULTS: A total of 91 patients met the inclusion criteria and were included in data analysis. The was no difference in the primary outcome of biologic persistence duration amongst the seven different agents included in the study ($p = 0.287$). For secondary outcomes, comparator groups were divided based on days of biologic persistence, and 20 of the 91 patients persisted for < 180 days, while the remaining 71 patients persisted for ≥ 180 days. Patients that persisted for < 180 days had a significantly higher incidence of hyperlipidemia at baseline ($p = 0.03$) but a similar incidence of other comorbidities including hypertension and diabetes. All other baseline characteristics were similar between the groups. Those individuals who persisted for < 180 days discontinued their biologic therapy due to treatment failure at a significantly higher rate than those who persisted for ≥ 180 days. Other reasons for biologic discontinuation were similar between the groups and included lost to follow-up or lack of medication access.
CONCLUSIONS: Duration of biologic persistence does not appear to be influenced by age, BMI, gender, insurance, comorbidities (excluding hyperlipidemia), or smoking status. However, social challenges, economic burden, and health literacy may influence biologic persistence in ethnic minorities, but further studies are needed to investigate these factors.

4:30pm – 4:50pm C **Impact of Vasoactive-Inotropic Score on Outcomes in Patients with Cardiogenic Shock Secondary to Acute Myocardial Infarction** Athena D

Moderators: Natalie Morgan

Presenters: Megan Avery

Evaluators: Erin Himes

TITLE: Impact of Vasoactive-Inotropic Score on Outcomes in Patients with Cardiogenic Shock Secondary to Acute Myocardial Infarction

AUTHORS: Megan Avery, Jonathan Emling, David Freeland, J. Barr Biglane, Christopher Cropsey, Adam L. Wiss

OBJECTIVE: To determine the association between VIS and clinical outcomes in patients with cardiogenic shock secondary to acute MI receiving temporary MCS.

SELF ASSESSMENT QUESTION: Is a higher VIS associated with worse clinical outcomes in patients with cardiogenic shock secondary to acute MI receiving MCS?

BACKGROUND: Acute myocardial infarction complicated by cardiogenic shock (AMICS) is a serious complication with high mortality rates. Management of cardiogenic shock includes early revascularization, medical management with inotropes and vasopressors, and mechanical circulatory support (MCS) devices when necessary in order to restore blood flow and prevent end-organ damage. However, inotropic and vasopressor therapies can also lead to adverse events such as arrhythmias, cardiac and peripheral ischemia, and multiple organ dysfunction. The vasoactive-inotropic score (VIS) can be utilized to quantify the amount of pharmacological support required in a patient receiving vasoactive medications and prior studies in heterogeneous shock populations have shown a higher score is associated with worse outcomes. The purpose of this study was to determine if a higher VIS was associated with worse clinical outcomes in patients with AMICS who received MCS as compared to a lower VIS.

METHODOLOGY: This single-center, retrospective chart review included adult patients presenting with AMICS requiring MCS at Ascension Saint Thomas Hospital West between January 1, 2017 and October 1, 2022. Patients were excluded if they were pregnant, incarcerated, had incomplete documentation, or died within 6 hours of admission. Patients were divided into two groups based on the highest VIS prior to MCS placement: low VIS (

4:30pm – 4:50pm R **Comparison of Safety with Tenecteplase versus Alteplase for Acute Ischemic Stroke** Athena G

Moderators: Jessica Brinkley

Presenters: Carrie Lutheran

Evaluators: Michael Saavedra

TITLE: Comparison of Safety with Tenecteplase versus Alteplase for Acute Ischemic Stroke

AUTHORS: Carrie Lutheran, PharmD; Ginger Gamble PharmD, MSCR, BCCCP; Chelsie Sanders, PharmD, BCCCP

OBJECTIVE: The objective of this study is to compare the safety of alteplase and tenecteplase for acute ischemic stroke.

SELF ASSESSMENT QUESTION: True or false: There was a significant difference seen between alteplase and tenecteplase groups for rates of intracranial hemorrhage or reversal.

BACKGROUND: Thrombolytics are used to reduce disability after a stroke but can increase risk of intracranial hemorrhage (ICH). The optimal thrombolytic agent for treatment of acute stroke has become controversial, and recognition of the advantages of tenecteplase over alteplase has led to a steady increase in its off-label use. East Carolina University Health Medical Center (ECUHMC) now uses tenecteplase in preference over alteplase for the treatment of acute ischemic stroke. Patient outcomes have not been evaluated since this change at ECUHMC, therefore, the objective of this study is to compare the safety of these two thrombolytic agents for the treatment of acute ischemic stroke.

METHODOLOGY: This was a retrospective IRB-reviewed and exempt study. Eligible patients were at least 18 years of age presenting with acute ischemic stroke treated with alteplase or tenecteplase at ECUHMC between January 2019 and November 2022. Patients administered thrombolytics at an outside hospital were excluded. The primary outcome was instance of intracranial hemorrhage using ECASS III criteria or administration of thrombolytic reversal within 7 days. Secondary outcomes include any intracranial hemorrhage within 48 hours, any major extracranial hemorrhage within 48 hours using ISTH bleeding criteria, blood pressure control within 24 hours, all-cause mortality during admission and within 90 days, and occurrence of angioedema.

RESULTS: For this study, 275 patients treated between January 2019 and November 2022 were analyzed, with 129 patients in the alteplase group and 146 in the tenecteplase group. Overall rates of the primary outcome symptomatic intracranial hemorrhage within 7 days or reversal were low, with 8 (6%) and 12 (8%) instances in the alteplase and tenecteplase groups, respectively (relative risk 0.75 (95% CI 0.32-1.79, p=0.64). Any intracranial hemorrhage was more common with alteplase patients than tenecteplase (18% vs 11%, p=0.12). Patients meeting the primary outcome and treated with tenecteplase spent more time outside of goal blood pressure range than those treated with alteplase for both systolic (10.3% vs 7.5%) and diastolic (10% vs 8.3%) measures. Maximum diastolic pressure was also greater for tenecteplase compared to alteplase groups (p=0.04).

CONCLUSIONS: There was no significant difference between groups in symptomatic intracranial hemorrhage. Blood pressure control was worse for patients treated with tenecteplase, which reflects an area of improvement for the care of stroke patients. Further studies with larger sample sizes will be beneficial to truly assess safety comparing thrombolytics for stroke.

4:30pm – 4:50pm R **Efficacy and safety of weight-based enoxaparin for venous thromboembolism chemoprophylaxis in patients with polytrauma** Athena I

Moderators: Yona Roberts
Presenters: Kennedy Manning
Evaluators: Ben Albrecht

TITLE: Efficacy and safety of weight-based enoxaparin for venous thromboembolism chemoprophylaxis in patients with polytrauma

AUTHORS: Kennedy Manning, Jennifer Beavers, Leanne Atchison, Edward Woo, Andrew Medvecz, Robel Beyene, Michael Smith, Bradley Dennis

OBJECTIVE: To analyze the efficacy and safety of weight-based enoxaparin dosing compared to fixed-dose enoxaparin in patients with polytrauma

SELF ASSESSMENT QUESTION: Weight-based enoxaparin is associated with a significant reduction in incidence of venous thromboembolism in patients with polytrauma who are normal weight and low risk. A. True B. False

BACKGROUND: Venous thromboembolism (VTE) is a common complication following inpatient admission due to traumatic injury. Without chemoprophylaxis, the incidence of VTE occurs in >50% of patients, further emphasizing the importance of chemoprophylaxis. Enoxaparin remains the recommended anticoagulant for VTE chemoprophylaxis, yet debate persists regarding optimal dosing in this patient population. Traditionally, enoxaparin 30 mg twice daily has been the standard VTE chemoprophylaxis dose; however, updated guidelines currently support the use of increased doses as recent literature suggests that weight-based dosing leads to more favorable anti-Xa levels without an increase in bleeding complications. The purpose of this study was to analyze the efficacy and safety of weight-based enoxaparin dosing for venous thromboembolism prophylaxis in patients with polytrauma.

METHODOLOGY: A single-center, retrospective, pre-/post-protocol study comparing traditional enoxaparin dosing to weight-based dosing was performed at an ACS-accredited level 1 trauma center. Patients were included if they were >18 years of age, admitted to the trauma service, received >1 dose of enoxaparin for VTE chemoprophylaxis. Patients were excluded if they were on anticoagulation prior to admission, received subcutaneous heparin or aspirin for VTE prophylaxis, initiated on therapeutic anticoagulation while inpatient for a non-extremity VTE indication, or initially received the incorrect weight-based enoxaparin dose. The primary outcome was incidence of VTEs. Secondary outcomes included time to appropriate enoxaparin regimen, weight-based dose of enoxaparin needed to achieve appropriate anti-Xa level, and significant bleeding.

RESULTS: A total of 2,547 patients were included in the final analysis with 1,194 patients in the fixed dose group and 1,353 patients in the weight-based dose group. Baseline characteristics were similar between the two groups. Most patients were white males with a median weight of 77-kilograms (kg). There was a low percentage (20%) of patients considered to be very high risk for VTE. The average injury severity score was 14 and the type of injury was predominantly blunt force traumas. The incidence of VTE did not differ significantly between the fixed dose and the weight-based dose regimens in patients with polytrauma (p=0.65). The risk of clinically significant bleeding was not significantly different between the two groups (p=0.87). A logistic regression controlling for confounding variables for the primary outcome and secondary outcome of clinically significant bleeding complications was performed. There was no difference in risk of VTE between the fixed dose and weight-based dose groups (odd ratio [OR] 0.78; 95% confidence interval [CI], 0.44-1.38, p=0.396). A weight category of 90- to 129-kg (OR 2.38; 95% CI 1.32-4.29, p=0.004) and traumatic brain injury (TBI) (OR 2.36; 95% CI 1.29-4.32, p=0.005) significantly increased the risk of VTE. Additionally, TBI significantly increased the risk of clinically significant bleeding (OR 1.48; 95% CI 1.01-2.17, p=0.042).

CONCLUSIONS: Weight-based enoxaparin is as effective as fixed dose enoxaparin at preventing VTE in patients with polytrauma who are normal weight and low risk. The risk of bleeding with enoxaparin does not differ significantly between a fixed dose and weight-based dose approach.

4:30pm – 4:50pm R **Impact of Pharmacist-Driven Fluid Stewardship in Critically Ill Patients** Athena H

Moderators: Sara Anne Meyer
Presenters: Cristy Davenport
Evaluators: Eric Marr

TITLE: Impact of Pharmacist-Driven Fluid Stewardship in Critically Ill Patients

AUTHORS: Cristy Davenport, Sydney Butler, Joseph Camp, Donley Galloway

OBJECTIVE: Presentation objective: Identify ways fluid stewardship interventions made by pharmacists can impact patients

SELF ASSESSMENT QUESTION: How can the implementation of pharmacist-driven fluid stewardship impact patient outcomes?

BACKGROUND: Intravenous (IV) fluids are one of the most commonly prescribed medications in the intensive care unit (ICU) and can have a negative impact on patient outcomes if not utilized properly.4 Hawkins et. al demonstrated the feasibility of a pharmacist-driven fluid stewardship initiative in the setting of a community hospital. The 4 rights (drug, patient, route, dose) and ROSE model (rescue, optimization, stabilization, evacuation) as components of fluid stewardship offer a novel opportunity to mitigate sequelae of positive fluid balance proactively with the goal of improving patient outcomes. While previous studies have demonstrated the feasibility of a pharmacist-driven fluid stewardship initiative, studies are still needed to further define the role of the pharmacist in fluid stewardship and to evaluate the impact on patient outcomes. This study aims to identify the impact of pharmacist-driven fluid stewardship on the incidence of fluid overload in critically ill patients.

METHODOLOGY: This single-center study utilized a before-after study design and included patients aged 18 years or older who are critically ill and are directly admitted to the critical care unit (CCU), neuro ICU (NICU), or surgical trauma ICU (STICU) for longer than 72 hours. Patients were excluded if transferred from an outside hospital, receiving total parenteral nutrition (TPN), were pregnant, or had a history of end-stage renal disease (ESRD) on dialysis. The study period was May 1, 2022 to July 31, 2022 for the pre-implementation group and October 1, 2022 to December 31, 2022 for the post-implementation group.

A retrospective chart review was performed on all patients meeting the inclusion criteria to record changes in weight to evaluate the primary outcome. Other information collected from the patients' electronic medical records included need for renal replacement therapy, pharmacist interventions, and acceptance rate were also. The study intervention was education provided to pharmacists regarding fluid stewardship.

RESULTS: The pre-implementation group (PRI) had 101 patients while the post-implementation group (POI) had 43. There was a statistically significant reduction in the primary outcome of rate of fluid overload 27% in the PRI compared to 9.3% in the POI (p=0.02; 95% CI: 0.07-0.27). A non-statistically significant reduction in use of renal replacement therapy occurred with 6 of 101 (5.9%) patients in the PRI and 1 of 43 (2.3%) in the POI (p=0.36; 95% CI:-0.02-0.09). Mean ICU length of stay was 7.66 days in PRI and 10.3 days in the POI (p=0.12). The POI had one patient admitted for 57 days.

A total of 66 fluid stewardship interventions were documented by pharmacists: convert medication from IV to PO (80.3%), stop maintenance fluids (10.6%), adjust dose/rate (6%), change type of maintenance fluid (1.5%), concentrate drip (1.5%). Of the interventions made 43 (65%) were completed per protocol, 20 (30.3%) were recommendations accepted by providers, and 3 (4.5%) were rejected. Around 60% of the POI patients had more than one intervention documented.

CONCLUSIONS: Pharmacists play a key role in identifying patients at risk for fluid overload. Automatic pharmacist conversion protocols played a large role in this study, reinforcing the need for pharmacist evaluation of patient profiles. Making recommendations to stop maintenance fluids and utilizing pharmacist IV to PO conversion protocols reduces fluid overload in critically ill patients.

4:30pm – 4:50pm | **Impact of Removal of Penicillin/Cephalosporin Allergy Cross-Reaction Alert on Antibiotic Prescribing** Athena A

Moderators: Alyson Ghizzoni Burns
Presenters: Lauren Shelton
Evaluators: Taylor Childress

TITLE: Impact of Removal of Penicillin/Cephalosporin Allergy Cross-Reaction Alert on Antibiotic Prescribing
AUTHORS: Lauren Shelton, Stephanie Milliken, Andrew Conner, Kelly Gamble
OBJECTIVE: Will have available at time of presentation.
SELF ASSESSMENT QUESTION: Will have available at time of presentation.
BACKGROUND: Cross-reactivity between penicillin and cephalosporin allergies has been a topic of contention within the medical field. Due to this theoretical cross-reactivity, many electronic health records (EHRs) include an alert to warn against prescribing cephalosporins to patients with a penicillin allergy. While many providers are comfortable using a cephalosporin in a penicillin-allergic patient when prompted, alternative agents are often prescribed initially due to these alerts. McLeod Health removed cross-reactivity alerts in December 2021. This project evaluated incidence of cephalosporin use as initial antibiotic prescribed in patients with documented penicillin allergy before and after the removal of cross-reactivity allergy alerts.
METHODOLOGY: This was a retrospective cohort study was conducted from June 2021 to December 2022. An electronic list of patients meeting the prespecified inclusion criteria of > 18 years of age, admission to any McLeod Health facility, documented penicillin allergy, and reception of at least one dose of antibiotic during admission were eligible for randomization. Patients that had an additional antibiotic allergy documented were excluded. Patients were categorized into either the pre-alert removal group or the post-alert removal group based on admission date. A sample size of 240 patients, 120 patients in each group, was calculated to be appropriate using an α of 0.05 and a β set at 0.2. Initial cephalosporin use was anticipated to be 15% in pre-removal group and 30% in post-removal group. Descriptive statistics and Chi-square tests were used for nominal outcome measures and percentage-based measures. The primary outcome assessed was the percentage of patients in each group prescribed a cephalosporin as initial antibiotic. Secondary outcomes compared between groups included analyzing cephalosporin usage during any point of admission, prescribing of aztreonam as initial antibiotic, prescribing of a fluoroquinolone as initial antibiotic, prescribing of a carbapenem as initial antibiotic, usage of piperacillin/tazobactam at any point during admission, and incidence of allergic reaction noted during admission including type of reaction.
RESULTS: Two hundred forty-three patients were included in this study. Of the participants included, 50.6% were in the pre-removal group while 49.4% were in the post-removal group. Cephalosporin as initial antibiotic was significantly different between the pre-removal group and post-removal group (56.1% vs. 75.8%; p = 0.0012). Cephalosporin usage during anytime of admission increased once alerts were removed (65.9% vs. 79.2%; p = 0.0206). Initial use of fluoroquinolone decreased between the groups (36.6% vs. 24.2%; p = 0.0362). There were no instances in either group of a carbapenem or aztreonam prescribed as the initial antibiotic. Piperacillin/tazobactam showed no difference between groups (4.9% vs. 2.5%; p = 0.3237). Only one allergic reaction occurred in the pre-removal group (0.8% vs. 0.0%; p = 0.3272).
CONCLUSIONS: Removing penicillin/cephalosporin allergy cross-reactivity alerts increased initial use of cephalosporins without resulting in allergic reactions. Cephalosporins were shown to be a safe antibiotic option allowing for reduced initial use of fluoroquinolones. Removal of alerts allowed for more appropriate antibiotic therapy without an increase in safety concerns.

4:30pm – 4:50pm | **Incidence of clinical treatment failure in MRSA pneumonia treated with linezolid with an MIC of 4 µg/mL versus less than or equal to 2 µg/mL** Athena B

Moderators: Regan Porter
Presenters: Kacy Oldsen
Evaluators: Ashley Thomas

TITLE: Incidence of clinical treatment failure in MRSA pneumonia treated with linezolid with an MIC of 4 µg/mL versus less than or equal to 2 µg/mL

AUTHORS: Kacy Oldsen, Eric Shaw, Sarah Ellen Stephens, Stephanie Lesslie

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Methicillin resistant Staphylococcus aureus (MRSA) is often considered one of the most frequently identified pathogens in patients with pneumonia. The Infectious Disease Society of America (IDSA) guidelines recommend intravenous vancomycin, intravenous or oral linezolid, or intravenous or oral clindamycin for patients with MRSA pneumonia. When vancomycin has a minimum inhibitory concentration (MIC) of 2 or greater, it is unlikely that therapeutic levels can be achieved without being toxic to the patient. When this occurs, linezolid is often used. The Clinical and Laboratory Standards Institute (CLSI) categorizes linezolid with an MIC of less than or equal to 4 µg/mL as sensitive for MRSA. There have been recent studies evaluating the pharmacokinetics of linezolid among different patient populations and infections, including pneumonia, when the MIC is ≤ 2 µg/mL. These studies describe that the pharmacokinetic targets were not met and suggest the need for therapeutic drug monitoring when using linezolid in these different populations and infections to ensure therapeutic levels are reached, however, they do not address linezolid with an MIC of 4 µg/mL. In the absence of widespread access to therapeutic drug monitoring, it is important to evaluate clinical outcomes in linezolid with higher MICs. This study aimed to evaluate the incidence of clinical treatment failure in patients with MRSA pneumonia that were treated with linezolid with an MIC of 4 µg/mL compared to an MIC of 2 µg/mL or less.

METHODOLOGY: A retrospective chart review was utilized to evaluate patients ages 18 years or older from July 2015 to July 2022 that had MRSA pneumonia that was treated with linezolid. Patients were excluded if there was simultaneous use of an anti-MRSA agents, if linezolid was discontinued before 24 hours of therapy had been completed, if there was a concomitant MRSA osteomyelitis, bacteremia, or necrotizing fasciitis infection, or if there were multiple bacterial isolates on the first MRSA respiratory culture. The primary outcome was clinical deterioration within 96 hours of definitive antibiotic initiation resulting in one or more of the following: development or worsening of hemodynamic instability, appearance of respiratory failure, radiographical progression, persistence or reappearance of fever > 38oC, or clinician determination of treatment failure defined as a change in antibiotics. Secondary outcomes included ICU mortality and length of stay.

RESULTS: A total of 40 patients were included, 25 in the MIC ≤ 2 µg/mL group and 15 patients in the MIC of 4 µg/mL group. Baseline characteristics were similar between groups. The composite endpoint of clinical deterioration occurred in 64% of patients in the MIC ≤ 2 µg/mL group and in 67% of patients in the MIC of 4 µg/mL group (p=0.864). Mean length of stay was 30 days in the MIC of ≤ 2 µg/mL group and 23 days in the MIC of 4 µg/mL group (p=0.417). ICU mortality occurred in 16% of patients that in the MIC of ≤ 2 µg/mL group and 27% of patients in the MIC of 4 µg/mL group (p=1.000).

CONCLUSIONS: Based on these results, there was no association between MIC of linezolid and clinical treatment failure identified.

4:30pm – 4:50pm L **The Use of Inhaled Corticosteroids in COPD: A Clinical Conundrum?** Athena J

Moderators: Sarah Frye
Presenters: Luke Hentrich
Evaluators: Brittney Howard

TITLE: The Use of Inhaled Corticosteroids in COPD: A Clinical Conundrum?
AUTHORS: Luke Hentrich, Hannah Denham, Danielle Dennis, Jason Green, Katherine Kite, Andrea Franks
OBJECTIVE: Describe best practices for prescribing inhaled corticosteroids in the COPD patient population.
SELF ASSESSMENT QUESTION: According to the 2023 GOLD Report, when would an inhaled corticosteroid be considered as part of an initial pharmacotherapy regimen for a newly diagnosed patient with COPD?
BACKGROUND: Current guideline recommendations for chronic obstructive pulmonary disease (COPD) state that inhaled corticosteroids (ICS) have benefit in patients with elevated eosinophil counts and a history of hospitalizations. Historical evidence has shown a significantly increased risk of pneumonia with any regimen containing an inhaled corticosteroid in COPD patients; therefore, stewardship of these medications is critical to prevent adverse outcomes in this patient population. The purpose of this study was to characterize the appropriateness of inhaled corticosteroid prescription at hospital discharge in patients admitted for a COPD exacerbation.
METHODOLOGY: The institutional review board approved this single-center, retrospective study conducted using the electronic health record of a large, academic medical center. Inclusion criteria were patients at least 40-years-old admitted from January 1, 2021 to December 31, 2021 for an acute exacerbation of COPD (AECOPD), or patients with a diagnosis of pneumonia and a documented history of COPD. Exclusion criteria were patients less than 40-years-old, having a concurrent asthma diagnosis, death prior to discharge, hospital exit against medical advice, discharged to hospice, history of tracheotomy, active lung cancer, interstitial lung disease, or pulmonary vasculitis. The primary endpoint was the proportion of patients prescribed guideline-concordant inhaled corticosteroid treatment at hospital discharge following hospitalization for an AECOPD. Secondary endpoints included the proportion of patients receiving guideline-concordant inhaled pharmacotherapy at discharge, the proportion of current smokers with documented smoking cessation counseling during hospitalization and pharmacotherapy prescribed at discharge, and rates of 30-day readmission related to ICS use. Statistical analysis involved the use of chi-square values for categorical data and t-tests for comparison of means.
RESULTS: 200 patients met criteria for inclusion into the study. Acute fluctuations in eosinophil counts were seen throughout the duration of hospitalization. 134 patients were prescribed inhaled corticosteroids at hospital discharge, with 41% of these patients determined as receiving guideline-concordant inhaled corticosteroids. 33% of 30-day hospitalizations for patients prescribed inhaled corticosteroids were for pneumonia. 34% of patients were deemed to have a guideline-concordant inhaled pharmacotherapy regimen at discharge. Of the 113 current smokers included in the study, 65.5% had documented smoking cessation counseling during hospitalization, with 6.2% receiving smoking cessation pharmacotherapy at discharge.
CONCLUSIONS: Further guidance is needed to determine the appropriateness of inhaled corticosteroid prescription at hospital discharge given the acute fluctuations in eosinophil counts that were seen in this inpatient analysis. This study confirms the associated risk of prescribing inhaled corticosteroids and the incidence of pneumonia. Smoking cessation for COPD patients remains a key area of optimization in the inpatient setting.

4:30pm – 4:50pm N **Evaluating an Optimal Time to Anticoagulant Reversal in Intracerebral Hemorrhage** Parthenon 1

Moderators: Josh Pruitt
Presenters: Haley Peters
Evaluators: Andrea Chappell

TITLE: Evaluating an Optimal Time to Anticoagulant Reversal in Intracerebral Hemorrhage
AUTHORS: Haley Peters, Emily Harman, Leslie Roebuck
OBJECTIVE: At the conclusion of my presentation, the participant will be able to explain the importance of expedited anticoagulation reversal in patients with intracerebral hemorrhage.
SELF ASSESSMENT QUESTION: What is a potential benefit of earlier anticoagulation reversal in patients with intracerebral hemorrhage?
BACKGROUND: The utilization of long-term oral anticoagulation is steadily expanding due to the growing number of patients diagnosed with thromboembolic disease. Anticoagulation use can exacerbate hematoma expansion and increase intracerebral hemorrhage (ICH) volume resulting in high mortality and severe morbidity. The management of hemorrhagic stroke, specifically the optimal time to reversal, is not clearly defined in guidelines. Observational studies have evaluated the effect of time to reversal and were associated with improved mortality and reduced hematoma enlargement.
METHODOLOGY: This retrospective, IRB- approved, observational cohort study included anticoagulated adult patients diagnosed with an intracerebral hemorrhage who received anticoagulation reversal between January 1, 2018 – September 30, 2022. Patients were excluded if administered desmopressin or had a non-ICH diagnosis on computerized tomography (CT) scan. The primary outcome was change in functional outcomes for ICH patients who received anticoagulation reversal within 90 minutes of presentation. Secondary outcomes included the change in functional outcomes for ICH patients who received anticoagulation reversal within 60 or 30 minutes of presentation and incidence of thrombotic events after reversal.
RESULTS: 61 patients met inclusion criteria with 36 patients receiving reversal within 90 minutes and 25 receiving reversal after 90 minutes of arrival. Baseline characteristics were similar between groups. Overall, there was no change in functional outcomes for patients who received anticoagulation reversal within 90 minutes (75% vs. 52%, p=0.07); 60 minutes (71% vs. 63%, p=0.49) or 30 minutes of arrival (100% vs. 64%, p=0.3) compared to after these time points. There was a similar incidence of rebleed (3% vs. 4%) and thrombotic events (6% vs. 0%) between groups.
CONCLUSIONS: Functional outcomes were similar for intracerebral hemorrhage patients who received anticoagulation reversal within 90 minutes compared to those who received it after 90 minutes of ED arrival.

4:30pm – 4:50pm

O **Melphalan Dosing for Autologous Stem Cell Transplantation in Patients with Multiple Myeloma**

Athena C

Moderators: J. Luke Britton

Presenters: Zachary Brown

Evaluators: Benjamin Casey

TITLE: Melphalan Dosing for Autologous Stem Cell Transplantation in Patients with Multiple Myeloma

AUTHORS: Zachary Brown, Campbell Scott, Andrea Clarke, Amany Keruakous, Anand Jillella, Ramses Sadek, Amber B. Clemmons

OBJECTIVE: The objective of this study is to compare the outcomes of patients with MM who underwent ASCT at AU Medical Center who received melphalan 200 mg/m2 versus those who received 140 mg/m2.

SELF ASSESSMENT QUESTION: Which dose of melphalan (Mel140 vs Mel200) were patients with reduced renal function more likely to receive?

BACKGROUND: Multiple myeloma (MM) is an incurable hematologic plasma B-cell malignancy characterized by significant morbidity and mortality. Patients with MM receive induction chemotherapy followed by myeloablative melphalan therapy and consolidation with an autologous stem cell transplant (ASCT), if eligible, followed by maintenance chemotherapy. The myeloablative conditioning regimen of melphalan is usually 200 mg/m2(Mel200); however, given the significant hematologic and gastrointestinal toxicity of this agent, reduced doses of melphalan at 140 mg/m2 (Mel140) are commonly used for elderly patients or those with renal impairment. No standard age or creatinine clearance cutoff currently exist for dose reduction. Prior literature has demonstrated conflicting results, with limited evaluation of patients greater than 65 years of age and a creatinine clearance of 30-59 mL/min specifically. This study aims to identify and evaluate the relationships between melphalan dose, age, and renal function.

METHODOLOGY: This is a single-center, IRB-approved, retrospective medical record review that includes patients 18 years or older with a diagnosis of MM who received ASCT between January 1, 2010, and November 2, 2022. Patients were excluded if they had a diagnosis of amyloidosis, were receiving dialysis at the time of transplant, previously received an ASCT, or had relapsed or refractory MM. The primary outcome of this study is progression-free survival (PFS) with secondary efficacy outcomes including all-cause mortality at 100 days, 12 months, and 24 months after ASCT as well as disease remission status at 100 days and overall survival. Secondary toxicity endpoints include time to engraftment, hospital length of stay (LOS), in-hospital mortality, as well as incidence of mucositis, acute kidney injury (AKI), febrile neutropenia (FN), and intensive care unit (ICU) transfer. T-test, Chi square/Fishers exact, and other tests depending on data normality will be performed on primary and secondary endpoints. Summary statistics for continuous variables will include the mean/median, standard deviation, and range/interquartile range. Categorical variables will be presented as frequency counts and percentages while time-to-event variables will be summarized by Kaplan-Meier medians and survival plots. Further analysis by a biostatistician will evaluate outcomes by sub-groups of age (less than 65 years, greater than or equal to 65 years) and renal function (CrCl less than 30 mL/min, 30-59 mL/min, greater than or equal to 60 mL/min), as well as the interaction between age and renal function.

RESULTS: A total of 390 patients with MM underwent ASCT during the evaluation period. Of these, 322 (82.6%) met all criteria and were included. Of the patients included, 82 (25.5%) of the patients received Mel140 and 240 (74.5%) received Mel200. Of these patients, 155 in the Mel200 group and 45 in the Mel140 group had disease remission status at 100 days recorded. In the Mel200 group 95 (61.3%) patients achieved complete remission compared to 24 (53.3%) patients in the Mel140 group (P=0.4661). Similarly, no statistical difference was present across safety outcomes in preliminary analyses.

CONCLUSIONS: Although additional statistical analyses still need to be performed, no difference likely exists between the safety and efficacy of 140 mg/m2 melphalan and 200 mg/m2 melphalan when used as conditioning chemotherapy for ASCT in patients with MM.

4:50pm – 5:10pm **Empty** Parthenon 2

4:50pm – 5:10pm B **Assessment of Patient Outcomes from a Pharmacist-led Interprofessional Transitions of Care Service** Olympia 1

Moderators: Geren Thomas
Presenters: Jennifer Le
Evaluators: Erin Pace

TITLE: Assessment of Patient Outcomes from a Pharmacist-led Interprofessional Transitions of Care Service

AUTHORS: Jennifer Le, Courtney E. Gamston, Mafe Zmajevac, Jingjing Qian, Bang Truong, Salisa Westrick, Kimberly B. Lloyd

OBJECTIVE: To determine the impact of a pharmacist-led transitions of care (TOC) service on patient outcomes.

SELF ASSESSMENT QUESTION: Identify at least one example intervention completed by pharmacists in the outpatient setting that could potentially reduce readmission rates.

BACKGROUND: In the United States, medication-related problems are responsible for approximately 40% of all hospital readmissions; if classified as a distinct disease, this would rank as the 5th leading cause of death. Approximately 14% of these medication-related hospital readmissions are preventable. In 2021, there were 3.8 million 30-day all-cause adult hospital readmissions, with a 14% readmission rate, and an average cost of $15,200 per admission. Pharmacist-led interventions have been associated with a 13% reduction in readmissions and a 22% reduction at 30 days post-discharge. East Alabama Medical Center (EAMC) is the largest hospital in the East Alabama region and the only hospital serving Lee County, Alabama. A pharmacist-led TOC-service was initiated to help to lower the 30-day readmission rate in patients with multiple visits (MV), defined as 2 or more admissions in the previous year with 1 or more admission within the last 6 months, or with a heart failure (HF) diagnosis.

METHODOLOGY: This project is an IRB-approved service evaluation. A retrospective chart review for patients enrolled from 1/15/2022 to 12/15/2022 was completed to assess 30-day readmission. Participants were categorized into 2 groups: TOC-enrolled patient with at least one pharmacist outpatient visit (Visits) and TOC-enrolled patients with no outpatient pharmacist visits (No visits). Demographics were summarized using descriptive statistics. The primary outcome was investigated using the T test. Analyses were adjusted for age, sex, insurance type, number of previous admissions using inverse probability weighting.

RESULTS: There were 137 eligible patients with 56 patients included in the Visits group, and 21 patients in the No Visit group. There were no significant differences in the baseline characteristics between groups. Patients displayed the following baseline characteristics: 60.08 ± 14.9 years old, 49.4% female, 43% white, 57% black, length of hospital stay of 6.91 ± 4.5 days, 2.2 ± 2.1 previous inpatient visits within the last year, 4.7 ± 1.8 barriers to care, and 10.4 ± 3.9 discharge diagnoses. There was an average of 2.8 outpatient visits for the Visits group, and 2.1 outpatient visits across the entire population. The readmission rates for the Visits versus No Visits groups were 23.2% and 52.4% (p0.05).

CONCLUSIONS: Participants completing at least one outpatient visit experienced a significant reduction in the 30-day hospital readmission rate compared to those who completed zero visits. This pharmacist-led TOC service model reduces the risk for 30-day readmission and may potentially be applicable in similar settings.

4:50pm – 5:10pm C **Comparison of Bleeding Rates Between Rivaroxaban and Apixaban Among NSAID Users and Non-NSAID Users** Athena D

Moderators: Natalie Morgan
Presenters: Rebecca Worsham
Evaluators: Erin Himes

TITLE: Comparison of Bleeding Rates Between Rivaroxaban and Apixaban Among NSAID Users and Non-NSAID Users
AUTHORS: Rebecca Worsham, Andrea Radford, Robert Wood
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Post hoc analyses of randomized clinical trials have shown an increased bleeding risk in oral anticoagulation with concomitant non-steroidal anti-inflammatory drug (NSAID) use. However, these trials analyzed the combined bleeding risk among both direct oral anticoagulants (DOACs) and warfarin with NSAIDs. Studies evaluating the bleeding risk with NSAID use among DOACs alone are limited. This study aims to provide further information on bleeding risks with NSAID use and DOACs. Additionally, this study will assess the impact that NSAID selectivity or co-prescribing of a proton pump inhibitor (PPI) may have on any potential difference detected.
METHODOLOGY: Post hoc analyses of randomized clinical trials have shown an increased bleeding risk in oral anticoagulation with concomitant non-steroidal anti-inflammatory drug (NSAID) use. However, these trials analyzed the combined bleeding risk among both direct oral anticoagulants (DOACs) and warfarin with NSAIDs. Studies evaluating the bleeding risk with NSAID use among DOACs alone are limited. This study aims to provide further information on bleeding risks with NSAID use and DOACs. Additionally, this study will assess the impact that NSAID selectivity or co-prescribing of a proton pump inhibitor (PPI) may have on any potential difference detected.
RESULTS: In progress
CONCLUSIONS: In progress

4:50pm – 5:10pm R **Development and Implementation of a Minnesota Detoxification Scale (MINDS)-based Alcohol Withdrawal Treatment Protocol at a Large Community Hospital** Athena H

Moderators: Sara Anne Meyer
Presenters: Jackson Spradlin
Evaluators: Eric Marr

TITLE: Development and Implementation of a Minnesota Detoxification Scale (MINDS)-based Alcohol Withdrawal Treatment Protocol at a Large Community Hospital
AUTHORS: Jackson Spradlin, Mickala Thompson, Nellie McKee
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: For patients experiencing or at risk for alcohol withdrawal syndrome (AWS), implementation of evidence-based treatment and monitoring protocols has been shown to reduce complications such as seizures and the need for mechanical ventilation or intensive care unit (ICU) admission. The purpose of this project is to update the current institutional AWS treatment protocol to include the adoption of a new bedside patient assessment scale (MINDS), a more logical reorganization of the existing orders to facilitate appropriate selection by providers, and a redesign of the ICU-specific benzodiazepine and barbiturate dose-escalation orders.
METHODOLOGY: A retrospective chart review was conducted to identify opportunities for optimization of the existing hospital AWS protocol by evaluating patients with alcohol-related diagnosis codes admitted between January and February 2022. A primary literature review was performed to identify evidence-based treatment recommendations and monitoring tools specific for this patient population. A nursing assessment for MINDS was incorporated into the electronic health record. Protocol orders were categorized based on risk of severe AWS development with a newly devised treatment protocol for patients with symptoms requiring ICU admission. Following institutional approval, providers, nurses, and pharmacists will be educated on the revised protocol. Finally, post-implementation data will be collected to assess safety and adherence to the updated protocol and patient assessments while also determining the protocol’s impact on the incidence of mechanical ventilation, alcohol withdrawal seizures, and ICU admissions.
RESULTS: In progress
CONCLUSIONS: In progress

4:50pm – 5:10pm R **Plasma matrix metalloproteinase-3 predicts mortality in acute respiratory distress syndrome**

Athena I

Moderators: Yona Roberts

Presenters: Timothy Jones

Evaluators: Ben Albrecht

TITLE: Plasma matrix metalloproteinase-3 predicts mortality in acute respiratory distress syndrome

AUTHORS: Timothy W. Jones, Sultan Almuntashiri, Aaron Chase, Abdullah Alhumaid, Payaningal R. Somanath, Andrea Sikora, Duo Zhang

OBJECTIVE: Evaluate the prognostic and diagnostic value of matrix metalloproteinase-3 in a secondary analysis of a randomized controlled trial of patients with acute respiratory distress syndrome

SELF ASSESSMENT QUESTION: Does a high matrix metalloproteinase-3 plasma concentration predict 90-day mortality?

BACKGROUND: Matrix metalloproteinase-3 (MMP-3) is a proteolytic enzyme involved in the pathophysiology of acute respiratory distress syndrome (ARDS) that may serve as a lung-specific biomarker in ARDS. This study characterized MMP-3 in plasma from patients enrolled in the Albuterol for the Treatment of Acute Lung Injury (ALTA) trial to determine the prognostic value for patient outcomes in our subgroup of ALTA patients.

METHODOLOGY: This study was a secondary biomarker analysis of a prospective randomized controlled trial. MMP-3 was measured in patient plasma samples by enzyme-linked immunosorbent assay from samples collected on day zero (baseline enrollment) and day three. The primary outcome was the area under the receiver operating characteristic (AUROC) of MMP-3 at day 3 for the prediction of 90-day mortality. Secondary outcomes included AUROC for the change in day zero and three MMP-3 concentrations on 90-day mortality, the ability of MMP-3 concentration to predict ARDS, and differences in mortality, length of stay, and ventilator-free days (VFD) between patients stratified by high and low MMP-3 plasma concentration. Multivariate logistic regression evaluated the association between mortality and high and low MMP-3 level.

RESULTS: A total of 100 unique patient samples were evaluated with an average age of 51 (standard deviation: 15.6) years old and were 54% male. AUROC analysis of day three MMP-3 showed an AUROC of 0.77 for the prediction of 90-day mortality (95% confidence interval: 0.67 to 0.87) corresponding to a sensitivity of 92% and specificity of 63% and an optimal cutoff value of 18.4 ng/mL. Patients in the high MMP-3 group (greater than or equal to 18.4 ng/mL) showed higher mortality compared to the non-elevated MMP-3 group (less than 18.4 ng/mL) (47% vs. 4%, p less than 0.001). A positive difference in day zero and day three MMP-3 concentration was predictive of mortality with an AUROC of 0.74, 73% sensitivity, 81% specificity, and an optimal cutoff value of positive 9.5 ng/mL. When both ARDS and healthy control samples were analyzed, day three MMP-3 had diagnostic value for ARDS with an AUROC of 0.86 (95% CI: 0.76 to 0.93).

CONCLUSIONS: Day three MMP-3 concentration and difference in day zero and three MMP-3 concentrations demonstrated acceptable AUROCs for predicting 90-day mortality with a cut-point of 18.4 ng/mL and positive 9.5 ng/mL, respectively. MMP-3 was also able to predict the diagnosis of ARDS with acceptable accuracy. These results suggest a prognostic role of MMP-3 in ARDS.

4:50pm – 5:10pm R **Venous thromboembolic event incidence in patients receiving subcutaneous unfractionated heparin vs subcutaneous enoxaparin prophylaxis in critically ill patients on a vasopressor**

Athena G

Moderators: Jessica Brinkley

Presenters: Katie Stang

Evaluators: Michael Saavedra

TITLE: Venous thromboembolic event (VTE) incidence in patients receiving subcutaneous unfractionated heparin vs subcutaneous enoxaparin prophylaxis in critically ill patients on a vasopressor

AUTHORS: Katie Stang, PharmD, John Carr, PharmD, BCPS, BCCCP, Madison Fielding, PharmD Candidate, Joseph Crosby, PhD, RPh, Sabrina Croft, PharmD, BCPS

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Venous thromboembolic events (VTEs) are a common complication of critically-ill patients. Unfractionated heparin (UFH) and low-molecular weight heparin (LMWH) have similar safety as thromboprophylaxis agents and are recommended agents for VTE prevention. However, enoxaparin has been associated with a lower incidence of deep vein thrombosis (DVT) and is recommended over UFH in critically-ill patients. Currently there is no evaluation between agents for thromboprophylaxis in critically-ill patients requiring vasopressor support. This study evaluated whether any difference exists between the incidence of VTE among critically ill patients receiving UFH vs LMWH while on vasopressor(s), specifically norepinephrine with or without vasopressin.

METHODOLOGY: This investigation was a retrospective, observational cohort, chart-review within a two-hospital health system that evaluated adult patients in the intensive-care units who received either UFH or LMWH as VTE prophylaxis and also received norepinephrine with or without vasopressin. Patients were excluded if they received any therapeutic anticoagulant, received an anticoagulant dose other than standard prophylaxis dosing, received a vasopressor other than norepinephrine and vasopressin, underwent major surgery in the previous three days, was admitted < five total days, had a VTE in the past three months, showed signs of disseminated intravascular coagulation, had an active diagnosis of heparin-induced thrombocytopenia, had a BMI ≥ 40 kg/m2, were pregnant, and/or had vasopressor use < three days. A computer-generated list identified patients who received norepinephrine from December 1, 2018 to December 31, 2019. Thromboprophylaxis was recorded for all patients. Of those who met study criteria, patients were evaluated for a primary outcome of incidence of VTE event. Secondary outcomes evaluated VTE incidence among patients with increased risk factors including ventilator status, fluid overload, and patient BMI. Additional collected data included age, sex, height, weight, severity of illness with APACHE-II scores, ICU length of stay, renal function, D-dimer, and concomitant anti-platelet medication use. Chi-square analysis was utilized to compare the categorical data and a p-value of < 0.05 was used to determine statistical significance.

RESULTS: 672 patients received norepinephrine within the ICU from December 1, 2018 to December 31, 2019. Of these patients, 625 patients were excluded. Hospital stay < five days was the most common reason for exclusion (136 patients) followed by major surgery within three days (110 patients). Among the patients that were included, the enoxaparin group consisted of 35 patients and the unfractionated heparin group consisted of 12 patients. The primary outcome of VTE incidence occurred in 2 patients in the enoxaparin group and 1 patient in the unfractionated heparin group (5.71% vs 8.33%, p=0.7488). VTE incidence among patients on a ventilator (2.86% vs 0%, p=0.5539), fluid overloaded (5.71% vs 0%, p=0.3974), and a BMI > 40kg/m2 (50% vs 50%, p=0.4174) were similar among the two groups.

CONCLUSIONS: Our study was underpowered to show statistical difference among the two groups. Other limitations included a lack of previous information on the topic and it being an observational study. Out of the 47 patients included, 6.38 % of patients had a VTE incident. Vasopressors may increase the risk of VTE incidence in the critically-ill population. However, it is uncertain if the choice of VTE thromboprophylaxis makes a difference in this incidence rate, and further study targeting higher enrollment is warranted.

4:50pm – 5:10pm G **Identification of Patient Values and Alignment of Care in a Home-Based Primary Care Program**

Parthenon 1

Moderators: Josh Pruitt

Presenters: Kelly Jamieson

Evaluators: Andrea Chappell

TITLE: Identification of Patient Values and Alignment of Care in a Home-Based Primary Care Program

AUTHORS: Kelly Jamieson, Opeyemi Ogedengbe, Aanand Naik, Tasha Woodall

OBJECTIVE: Describe common recommendations for alignment of care with patients' health outcome goals and values following implementation of Patient Priorities Care within a Home-Based Primary Care population.

SELF ASSESSMENT QUESTION: Which of the following value domains is being addressed by the care alignment recommendation written below:

Care Alignment

"**Start**: Refer to occupational therapy to assist patient in becoming more independent with transfers from the bed to a motorized wheelchair."

A) Connecting
B) Managing Health
C) Functioning
D) Enjoying Life

BACKGROUND: Home-Based Primary Care (HBPC) is an innovative healthcare delivery model that expands care to populations with limited access, most notably older adults. An HBPC program established in 2020 within a large family medicine practice utilizes Patient Priorities Care (PPC), an interdisciplinary, team-based approach to identifying patients' health outcome goals and care preferences and aligning their care with What Matters Most, defined as the "One Thing" they most wish to focus on when it comes to their health. The purpose of this study is to describe the predominant values associated with the identified health priorities of an HBPC population and summarize common recommendations for alignment of care with these priorities.

METHODOLOGY: A random sample of 50 patients was selected for retrospective chart review and included Medicare or dual-eligible men and women with limited mobility or other barriers to accessing primary care, who had documentation of an initial HBPC visit with a PPC priorities identification discussion. PPC conversations were led by pharmacists and/or medical providers in person or by phone. Two researchers independently performed chart reviews to identify each patient's documented health outcome goals, their "One Thing," and components of care alignment as part of the initial HBPC visit. Following chart review, health outcome goals and the "One Thing" were classified into one or more of the following value domains: Connecting, Enjoying Life, Managing Health, and/or Functioning. Care alignment was assessed to identify common themes and recommendations for stopping, starting, or adjusting care based on identified goals. Data collected during chart reviews were documented and analyzed via REDCap.

RESULTS: Patients ranged in age from 40 to 97 (median 77). A total of 226 value domains were represented through identification of 50 patients' health outcome goals. The predominant value associated with patients' top health priority, also known as the "One Thing," was Functioning (66%), followed closely by Managing Health (62%). Enjoying Life (48%) and Connecting (28%) were less commonly represented by patients' top health priority. Several patients identified goals focused on improving their health so that they could continue to care for themselves and live and move independently. Often, more than one value domain was represented by a single health outcome goal. A total of 175 recommendations for care alignment were documented. Common recommendations for care alignment included stopping potentially harmful medications (n=20), starting physical or occupational therapy (n=14), and adjusting medications (n=38) to align care with stated goals and values.

CONCLUSIONS: Through the implementation of PPC within an HBPC program, patients' values were identified and care was adapted to aid in attainment of individualized health outcome goals. Referral to physical or occupational therapy services emerged as a common theme, illustrating an effort to align care with the predominant value domain identified among patients: Functioning. Recommendations for stopping potentially harmful medications and adjusting medications aligned with the second most predominant value domain: Managing Health. The representation of more than one value domain for a single health outcome goal demonstrates the interconnectedness of different values, suggesting that achievement of one value may indirectly aid in the achievement of other values. In conclusion, PPC serves as a valuable tool for identifying and tailoring care to What Matters Most, further advancing efforts to improve healthcare coordination while providing truly person-centered care.

4:50pm – 5:10pm | **Evaluation of infections caused by ampC-producing HECK-Yes organisms treated with ceftriaxone compared with cefepime or carbapenems** Athena B

Moderators: Regan Porter

Presenters: Landon Johnson

Evaluators: Ashley Thomas

TITLE: Evaluation of infections caused by ampC-producing HECK-Yes organisms treated with ceftriaxone compared with cefepime or carbapenems

AUTHORS: Landon Johnson, Samantha Walker, Brandon Hawkins

OBJECTIVE: Describe the treatment of infections caused by organisms at moderate to high risk of clinically significant ampC induction.

SELF ASSESSMENT QUESTION: What antibiotics are preferred for the treatment of infections caused by organisms at moderate to high risk of clinically significant ampC production?

BACKGROUND: AmpC beta-lactamases are a class of bacterial enzymes that, when expressed, give rise to resistance to most beta-lactam antibiotics. While constitutive ampC production leaves clear treatment options, varying levels of clinically significant enzyme induction among select organisms complicates treatment selection. Furthermore, ceftriaxone and piperacillin/tazobactam's ability to be readily hydrolyzed by ampC have caused them to fall out of favor for the treatment of organisms at moderate to high risk of ampC induction, such as the recently termed "HECK-Yes" group. Given the heterogeneity of literature involving ampC infections, additional studies are required to explore outcomes with select beta-lactam antibiotics in infections due to organisms at moderate-to-high risk of ampC induction.

METHODOLOGY: This was a single-center, retrospective cohort study conducted in patients with infections caused by Hafnia alvei, Enterobacter cloacae complex, Citrobacter freundii complex, Klebsiella aerogenes, or Yersinia enterocolitica admitted between January 1st, 2014, and April 1st, 2022. Eligible patients included adults with an infection caused by one of the study pathogens treated with ceftriaxone, cefepime, or a carbapenem. Exclusion criteria were infections with limited source control, polymicrobial infection, patients discharged to hospice, pregnancy or active breastfeeding, withdrawal of care, ceftriaxone resistance on index culture, death within 24 hours of definitive treatment initiation, or concomitant treatment with additional antimicrobial agents with activity against the isolated organism. Patients transitioned to oral third generation cephalosporins were included, but other oral agents were excluded. The primary outcome was treatment failure expressed as a composite of hospital readmission, recurrent infection, or required change in antibiotic. Secondary outcomes included emergence of phenotypic ampC resistance and mortality.

RESULTS: 59 patients were included in the ceftriaxone group; 41 patients were included in the cefepime/carbapenem group. The most common organisms included were from the Enterobacter cloacae complex with 22 (37%) isolates in the ceftriaxone group and 28 (68%) in the cefepime/carbapenem group (P = 0.002). Infections of urinary source were significantly higher in the ceftriaxone group compared to the cefepime/carbapenem group (80% vs 22%, P < 0.001). Treatment failure occurred in 18 (31%) patients in the ceftriaxone group and 15 (37%) patients in the cefepime/carbapenem group (P = 0.525). The composite was primarily driven by readmission in both groups with 18 (31%) and 15 (37%) in the ceftriaxone and cefepime/carbapenem groups, respectively (P = 0.273). Recurrent infections occurred in 5 (9%) patients in the ceftriaxone group and 4 (10%) patients in the cefepime/carbapenem group (P = 1.000). A change in antibiotic was required in 3 (5%) patients in the ceftriaxone group and 5 (13%) patients in the cefepime/carbapenem group (P = 0.259). Phenotypic ampC resistance was present in 3 (5%) repeat cultures in the ceftriaxone group compared with 1 (2.4%) in the cefepime/carbapenem group (P = 0.615).

CONCLUSIONS: Among patients with infections caused by organisms at moderate to high risk of clinically significant ampC production, there was not a statistically significant difference in rates of treatment failure or individual components of the composite for patients receiving ceftriaxone versus cefepime or carbapenems as definitive treatment. However, a statistically significant difference in urinary source was present between groups along with differences in the causative organisms. Further investigation of the role of ceftriaxone in non-urinary infections due to organisms at moderate-to-high risk of ampC induction is required.

4:50pm – 5:10pm | **Pharmacist Utilization of MRSA PCR Nasal Swabs for anti-MRSA Therapy Discontinuation** Athena A

Moderators: Alyson Ghizzoni Burns
Presenters: Tamia Jones
Evaluators: Taylor Childress

TITLE: Pharmacist Utilization of MRSA PCR Nasal Swabs for anti-MRSA Therapy Discontinuation
AUTHORS: Tamia Jones, Morgan Pizzuti, Steven Asbill, Celeste R. Caulder, Ismaeel Yunusa
OBJECTIVE: Describe the difference in time to anti-MRSA therapy discontinuation for pneumonia based on pharmacist involvement
SELF ASSESSMENT QUESTION: Which of the following statements best describes the primary outcome of this study? (A) Statistically significant difference in total duration of anti-MRSA therapy for the primary outcome (B) Patients with pharmacist involvement had quicker time to anti-MRSA therapy discontinuation (C) Patients without pharmacist involvement had quicker time to anti-MRSA therapy discontinuation

BACKGROUND: The incidence of methicillin resistant Staphylococcus aureus (MRSA) is approximately 5% of patients admitted to hospitals in the United States, according to the Centers for Disease Control (CDC). However, the Infectious Diseases Society of America (IDSA) has suggested empiric use of anti-MRSA therapy in certain patient populations. Empiric anti-MRSA therapy for hospitalized patients can include intravenous (IV) vancomycin, IV/oral (PO) linezolid or IV daptomycin. Empiric anti-MRSA therapy is often initiated in Emergency Department (ED) settings, prior to bacterial cultures and susceptibilities being available. Clinicians may be hesitant to de-escalate anti-MRSA therapy in absence of definitive culture results. Thus, empiric anti-MRSA therapy is often started and continued longer than is necessary for most patients with community-acquired infections.

MRSA polymerase chain reaction (PCR) nasal swabs identify the presence of MRSA DNA in the nares and are screening tools for MRSA colonization. This can reduce time to de-escalation due to its negative predictive value of 94% to 99%. Previous studies have shown implementation of a pharmacist-driven MRSA PCR nasal swab screening protocol for pulmonary infections results in shorter duration of therapy for vancomycin.

Of recent interest, clinicians have found MRSA PCR nasal swabs may be useful for de-escalation of non-pulmonary infections. A retrospective cohort study of patients with MRSA PCR nasal swabs in the Veterans Affairs Healthcare System determined the sensitivity, specificity, positive and negative predictive values for non-pulmonary infectious sources, which showed promising evidence that MRSA PCR nasal swabs may be a de-escalation tool for non-pulmonary infections.

The study was conducted at Prisma Health Richland (PHR), in Columbia, SC. PHR is a 641-bed community academic medical center and is the largest campus of Prisma Health Midlands. Per protocol, pharmacists are allowed to order MRSA PCR nasal swabs if anti-MRSA therapy is ordered for pneumonia.

This study will analyze the pharmacists' involvement in anti-MRSA therapy discontinuation for pneumonia. In addition, the rate of MRSA PCR nasal swab utilization as a de-escalation tool for non-pulmonary infections will be assessed.

METHODOLOGY: A multi-center retrospective chart review was conducted for adult patients hospitalized from March 1, 2021, to August 31, 2022, receiving anti-MRSA therapy defined as IV or PO linezolid and/or IV vancomycin for treatment of pneumonia in addition to IV daptomycin for non-pulmonary indications. The primary objective was the time to anti-MRSA therapy discontinuation after MRSA PCR nasal swab resulted in patients with pneumonia with pharmacist involvement vs those without pharmacist involvement. Pharmacy involvement was defined as a pharmacist ordering an MRSA PCR nasal swab and/or discontinuing a patient's final inpatient order of anti-MRSA therapy for treatment of pneumonia. Data was collected using REDCap and analyzed with descriptive statistics. For all statistical tests, a 2-tailed p-value of < 0.05 was considered statistically significant.

RESULTS: Among 72 patients with pneumonia, 39 (54.2) had pharmacist involvement. Overall, mean age was 60 years, 44 (61.1%) were men, mean charlson comorbidity index was 3.8, 60 (83.3%) patients had a MRSA PCR nasal swab ordered within 7 days of anti-MRSA therapy initiation, and 28 (39%) patients were admitted to an ICU within 48 hours of anti-MRSA therapy initiaton. The median total duration of anti-MRSA therapy did not differ significantly between pharmacist involvement (4 days) and no pharmacist involvement (3 days), p=0.09. The time to anti-MRSA therapy discontinuation when the MRSA PCR nasal swab was negative was 2.6 days with pharmacist involvement and 3.5 days with no pharmacist involvement, p=0.67.

CONCLUSIONS: Patients in the primary cohort with pharmacist involvement had quicker time to anti-MRSA therapy discontinuation when MRSA PCR nasal swabs were negative.

4:50pm – 5:10pm L **Early vs. late initiation of adjunctive phenobarbital for alcohol withdrawal in non-critically ill patients** Athena J

Moderators: Sarah Frye
Presenters: Ashton Mason
Evaluators: Brittney Howard

TITLE: Early vs. late initiation of adjunctive phenobarbital for alcohol withdrawal in non-critically ill patients
AUTHORS: Ashton Mason, Stefanie Sarratt
OBJECTIVE: Describe the differences in lorazepam requirements in those with early vs. late adjunctive phenobarbital initiation in non-critically ill patients.
SELF ASSESSMENT QUESTION: Is there a difference in the amount of lorazepam required when adding on phenobarbital therapy within 48 hours of alcohol withdrawal treatment initiation?
BACKGROUND: The current guidelines for alcohol withdrawal syndrome treatment recommend the use of symptom-triggered benzodiazepines utilizing the CIWA scoring system. Currently, there are a limited number of studies available surrounding the use of phenobarbital for alcohol withdrawal treatment, especially in the general medicine population. The studies that are available in this population focus on phenobarbital monotherapy rather than adjunctive treatment with benzodiazepines. The purpose of this study is to assess the clinical effectiveness of early (≤48 hours) versus late (>48 hours) addition of adjunctive phenobarbital to symptom-triggered benzodiazepines for the treatment of alcohol withdrawal in the general medicine population.
METHODOLOGY: This was a single-center, retrospective analysis of non-critically ill patients who were > 18 years of age and received at least 24 hours of both phenobarbital and lorazepam for the treatment of alcohol withdrawal syndrome. The addition of phenobarbital will be defined as early or late initiation occurring within 48 hours of the initial benzodiazepine order. The primary outcome was the average amount of lorazepam required during admission. Secondary outcomes included the occurrence of alcohol withdrawal-related complications, days of pharmacologic treatment, hospital length of stay, need for ICU admission, and maximum CIWA-Ar score.
RESULTS: A total of 192 patients were included in the analysis. Patients who received early treatment with phenobarbital were found to have a median cumulative lorazepam dose of 30 mg in comparison to 66 mg in the late group ($p<0.0001$). Earlier initiation of phenobarbital was also associated with a decreased length of stay (6.94 days vs. 9.49 days, $p=0.0006$) and total days of treatment for AWS(6 days vs. 7 days, $p=0.012$).
CONCLUSIONS: Earlier initiation of phenobarbital was associated with reduced cumulative doses of lorazepam, duration of alcohol withdrawal treatment, and hospital length of stay. These results indicate that phenobarbital may be an appropriate adjunctive treatment option in general medicine patients being treated for alcohol withdrawal syndrome.

4:50pm – 5:10pm M **The Risk Of UTI & Genital Mycotic Infections In The Veteran Patient Population Receiving Empagliflozin** Olympia 2

Moderators: Yolanda Whitty
Presenters: Cammi Fletcher
Evaluators: Michelle Wilcox

TITLE: The Risk Of UTI & Genital Mycotic Infections In The Veteran Patient Population Receiving Empagliflozin
AUTHORS: Cammi Fletcher, Holly Hogan
OBJECTIVE: The purpose of this study is to evaluate if empagliflozin is associated with an increased risk of genital urinary infections in the veteran patient population and therefore, if it may be safely prescribed.
SELF ASSESSMENT QUESTION: Which of the following are adverse drug reactions to SGLT2i's? Select all that apply
Genital urinary infection (GUI)
Urinary tract infection (UTIs)
Pyelonephritis
Necrotizing fasciitis (perineum)
All of the above
None of the above

BACKGROUND: Background: Sodium-glucose co-transporter-2 inhibitor (SLGT2i) class of drugs was approved by the FDA in 2014 for treatment of T2DM. These drugs decrease blood sugar by inhibiting glucose reabsorption into the proximal tubular cells of the kidneys, causing mild dysuria. Genitourinary tract infections (GUI) both bacterial and mycotic have been reported in major clinic trials for SGLT2i's. Newer studies have shown no difference in the incidence of UTI between SGLT2i groups and placebo. However, the incidence of genital mycotic infections has been higher. The purpose of this study is to evaluate if empagliflozin is associated with an increased risk of GUI's in the veteran patient population and therefore, if it may be safely prescribed.
METHODOLOGY: Methods: This study was a retrospective medication use evaluation focused on safety. Veterans were included if they were prescribed empagliflozin from January 1st 2018 to October 30th 2021, and a list was generated. Data was retrieved for 1 year prior and post empagliflozin initiation date for the following: 1) receipt of an GUI antimicrobial medication, 2) ICD-10 codes for GUI as listed in appendix A, 3) positive urine cultures or positive urinalysis defined in appendix B, 4) allergy listed for empagliflozin from Veterans Affairs Adverse Drug Event Reporting System. After receiving all of the compiled data, manual chart review was used to confirm the GUI. Primary endpoint was calculated using a McNemar's test to calculate the increased risk of GUI before and after starting empagliflozin. Secondary endpoints were calculated using multivariant tests such as a backwards step wise conditional test which was applied to identify variables independently associated with increased risk of GUI.
RESULTS: Results: The primary endpoint of the study was % increase risk for having a GUI after starting empagliflozin and while receiving treatment. After randomization of the initial cohort, 476 patients met criteria for chart review. 194 events were confirmed in 122 patients with 77 events occurring before and 117 events after initiation of empagliflozin and while having an active prescription. A McNemar's test showed veterans were at a 53.6% increased risk of developing a GUI after empagliflozin was initiated (P-value

4:50pm – 5:10pm

O **Comprehensive financial evaluation of biosimilar utilization management at a community cancer center** Athena C

Moderators: J. Luke Britton
Presenters: Emma Ueland Paytes
Evaluators: Benjamin Casey

TITLE: Comprehensive financial evaluation of biosimilar utilization management at a community cancer center
AUTHORS: Emma Ueland, Emma Sullivan, Andre Harvin
OBJECTIVE: The objective of this study was to evaluate the financial impact of biosimilars in the context of a health system.
SELF ASSESSMENT QUESTION: N/A
BACKGROUND: After initial approval by the Pharmacy and Therapeutics (P&T) committee, there is rarely further assessment of utilization and cost of high-value cancer therapeutics. Proactive evaluation of cost utilization data is an evolving practice of evaluating the utilization and cost of these anticancer medications has emerged to provide high-quality cancer care that is cost effective for both patients and providers. The increase in FDA-approved biosimilar products, especially in the field of oncology, has made the evaluation of drug use necessary as reimbursement rates vary per medication and insurance coverage. This project aims to evaluate the current state of biosimilar financial reimbursement, assess potential cost savings by tailoring biosimilar selection based on insurance coverage, and streamline biosimilar utilization in a health system's outpatient cancer center.
METHODOLOGY: This was an IRB-reviewed and determined exempt, single-center, multi-site, pre-post study evaluating retrospective and prospective outcomes over a 5-month period. Biosimilar oncology products on formulary at Cone Health Cancer Centers were included. Due to quarterly changes to Medicare cost structure, the average drug cost for each biosimilar in 2020 and 2022 were calculated. Remittance data was obtained through the health system's internal dashboard. Payors were grouped by Commercial, Medicare, and Medicaid to protect proprietary information. During the prospective phase, a multidisciplinary oncology committee was created with the intention to meet monthly to review use of the included drugs. Encounters with available biosimilar reimbursement and utilization data from two cancer centers prior to January 1, 2023 were included. The primary outcome was the net profit margin in biosimilar adoption. Net margin was calculated using the average payment for fiscal year 2020 and 2022 and the medication cost for the respective years. The secondary outcome was biosimilar optimization defined as the missed margin opportunity for not substituting the insurance preferred oncology biosimilar product at Cone Health cancer centers.
RESULTS: There were 1615 encounters for Q3 in 2020 and 1393 encounters for 2022 Q3. The primary outcome of profit margin was not significant due to lack of data for reference drugs. There was a numeric increase in percent net margin for trastuzumab and pegfilgrastim biosimilar adoption of 4.2% and 17.5% respectively for Medicare insurance in 2020. There was a 7.1% increase in utilization of biosimilars for bevacizumab for commercial insurance in 2022. Biosimilar utilization remained unchanged at 30% from 2020 to 2022. The annualized net margin when accounting for payer covered products only for the Cone utilized product vs the margin optimized product was a total missed annualized margin opportunity of $2,552,255.12.
CONCLUSIONS: The advent of biosimilars creates an opportunity for significant cost savings with the incorporation of these agents into hospital formularies, however the optimization of biosimilar selection with consideration to insurance coverage and reimbursement rates remain a challenge. Tailoring biosimilar selection based on payer reimbursement and biosimilar unit price may maximize net profit margin and result in considerable cost savings. Evidence from this retrospective analysis suggest the potential for significant cost savings both through improved net margin and reduced net cost.

5:10pm – 5:30pm **Empty** Parthenon 2

5:10pm – 5:30pm **Empty** Parthenon 1

Moderators: Josh Pruitt
Evaluators: Andrea Chappell

5:10pm – 5:30pm A **Productivity model assessing IV robots in hazardous drug preparation** Athena I

Moderators: Yona Roberts
Presenters: Marin Weiskopf
Evaluators: Ben Albrecht

TITLE: Productivity model assessing IV robots in hazardous drug preparation

AUTHORS: Marin Weiskopf, Andre Harvin

OBJECTIVE and SELF-ASSESSMENT QUESTION will be included in the final presentation.

BACKGROUND: With the increasing availability of different technology and automation designed for safe and effective oncology pharmacy practice, the optimization of workflow and utilization are still largely unknown. At Cone Health, there are 6 different centers that provide cancer care with 9 pharmacist FTEs, 11 pharmacy technician FTEs, and 2 Apoteca IV robots who use a shared patient population to optimize efficiency and safety. Studies have proven the safety for patients and staff, accuracy of compounded sterile products (CSPs), and reduction of environmental contamination with the use of compounding robots.1-3 Although IV robotic technologies have been incorporated into hazardous dug compounding, there have been limited studies on the effect of productivity and the ability of pharmacy staff to prioritize other meaningful clinical tasks. In this study, we set out to characterize and compare the time to compound and relative value units (RVUs) between the IV robot and pharmacy technicians to understand the impact on productivity.

METHODOLOGY: This is an IRB reviewed, determined non-human subject research, retrospective study. Data was collected from 6 cancer centers in a single health system from September 2021 through September 2022. The manufacturer of the IV robots and the electronic medical record provided data on time to compound, medication, device, and total number of preparations. The technician RVU values account and standardize for the time to compound preparations. Medications were included in the final data analysis if they had compounding data from both the Apoteca IV robot and pharmacy technicians. All pharmacy technician RVUs, from either the Apoteca IV robot or technician compounding, were averaged between the different manufacturers due to limitations of combining datasets collected from different sources. The two cancer centers with the Apoteca IV robots, Alamance Regional (ARMC) and Wesley Long (WL), were used as the main comparators for RVUs between the Apoteca IV robots and technician time to compound; however, the median time to compound compared all Cone Health devices including the IV Apoteca robot and all guided technician preparations from all 6 cancer centers. Descriptive statistics and unpaired, unweighted t-tests were used to characterize and compare the time to compound for Apoteca IV robots and guided technician compounding. Unpaired, weighted t-tests were used to compare technician RVUs to assess differences in value between the different compounding methods based on time to compound and volume.

RESULTS: Preliminary results using descriptive statistics, revealed the average time to compound for the Apoteca IV robots were 5.7 minutes, the technician guided preparation at all locations were 3.0 minutes, and all Cone Health device preparations were 4.3 minutes. The median values were 5.37 minutes, 2.07 minutes, and 3.59 minutes respectively for the Apoteca IV robot, technician guided preparation, and all Cone technicians. The 2 Apoteca IV robots prepared 36.7% and guided preparation on the PS devices accounted for 63.3% of all CSPs. RVUs varied depending on each preparation, with the IV Apoteca robot providing higher RVUs on average when compared to guided technician preparation.

CONCLUSIONS: There were significant statistical differences between the unweighted time to compound for the Apoteca IV robot and guided technician preparation and the weighted RVU values for the IV Apoteca robots and guided technician preparation at ARMC and WL. Future direction includes an intent to optimize use of our robot program through new standard workflows.

5:10pm – 5:30pm B **Impact of Coadministration of Sodium-Glucose Cotransporter-2 Inhibitors (SGLT2i) and Diuretics in Patients with Chronic Kidney Disease (CKD)** Olympia 1

Moderators: Geren Thomas
Presenters: Hanna Azimi
Evaluators: Erin Pace

TITLE: Impact of Coadministration of Sodium-Glucose Cotransporter-2 Inhibitors (SGLT2i) and Diuretics in Patients with Chronic Kidney Disease (CKD)
AUTHORS: Hanna Azimi, Kyree Henry, Kate O'Connor

OBJECTIVE: Describe patients that may be indicated for a diuretic modification when starting a SGLT2i.
SELF ASSESSMENT QUESTION: In patients with CKD maintained on a diuretic who are starting a SGLT2i, what percent increase in serum creatinine should prompt clinical review? 30-35% increase from baseline

BACKGROUND: No formal guidance exists on the management of diuretics when sodium-glucose cotransporter-2 inhibitor(s) (SGLT2i) are started. Specifically, in patients who may have a predisposition to acute kidney injury (AKI), the timing of follow-up of renal function is unclear. The purpose of this study is to characterize changes in renal function following initiation of SGLT2 inhibitors in patients with CKD who are maintained on diuretics.

METHODOLOGY: This was a single-center, retrospective chart review of adult patients with a diagnosis of CKD stage 3 or higher (eGFR less than 60 mL/min/1.73m2 for greater than 3 months) who were using a loop and/or thiazide diuretic, prescribed a SGLT2i between July 1, 2021 and June 30, 2022, and are managed by an outpatient provider. The primary outcome was percent change of SCr at 1-3 months after SGLT2i initiation. Secondary outcomes included change in blood pressure (BP) after SGLT2i initiation, percent change in total daily dose of diuretics, and percentage of patients who had antihypertensive doses reduced or discontinued after 3 months of starting a SGLT2i. The incidence of AKI was assessed for the safety outcome. For the purpose of this study, AKI is defined as a 100% increase or doubling of serum creatinine (SCr) at 3 months after SGLT2i initiation.

RESULTS: Thirty-five patients were included in this IRB-approved study. The majority of patients had CKD Stage 3A or 3B (94%). Eighteen (51%) patients were prescribed dapagliflozin and twenty-four (69%) were prescribed a loop diuretic. After an average of about 4 months after starting an SGLT2i, there was a 15% average increase in SCr from baseline, which was statistically significant (mean difference 0.2 mg/dL, p-value less than 0.05). After an average of about 3 months from baseline, there was a 1.8 mmHg reduction in systolic BP and a 1.9 mmHg reduction in diastolic BP. There was a 14% decrease in the diuretic dose and eleven (31%) patients had an antihypertensive reduced or discontinued within about 3 months of starting a SGLT2i. Seven (20%) patients had a provider-identified AKI within 3 months after starting a SGLT2i, all of which were multifactorial, multi-drug induced, and none were due to doubling of SCr. Of patients with a provider identified AKI, there was an average increase of 0.6 mg/dL in SCr over a follow-up period of about 2 months. Developing an AKI was associated with a greater percent reduction in total daily diuretic dose (p-value less than 0.001) and dose reduction or discontinuation of an antihypertensive (p-value less than 0.001), likely because the incidence of AKI prompted diuretic and/or antihypertensive dose reduction or discontinuation. Developing an AKI was also associated with having earlier follow-up between BP measurements (p-value less than 0.05), SGLT2i initiation and BP (p-value less than 0.05), and SGLT2i initiation and diuretic dose adjustments (p-value less than 0.05).

CONCLUSIONS: In patients with CKD maintained on diuretics who are starting a SGLT2i, there were no patients that developed a predefined AKI. These findings may be consistent with the guideline suggestion that the risk of AKI is similar among patients with or without the use of diuretics. However, there are several limitations that preclude definite conclusions and merit further research. The small sample size, prolonged follow-up time of SCr, and definition of AKI that was used may have led to underrepresentation of AKI. Certain patients with a predisposition to AKI may warrant a temporary dose reduction in diuretic upon initiation of a SGLT2i. Standardization of monitoring of renal function with follow-up at 1 and 3 months is suggested due to variations in monitoring for patients with a predisposition to AKI and the need for consistent monitoring to draw definite conclusions.

5:10pm – 5:30pm Y **Assessment of Medication Persistence in Patients Prescribed PCSK9 Inhibitors** Athena D

Moderators: Natalie Morgan

Presenters: Lindsey Loutzenhiser

Evaluators: Erin Himes

TITLE: Assessment of Medication Persistence in Patients Prescribed PCSK9 Inhibitors

AUTHORS: Lindsey Loutzenhiser, Kathy Bricker, Buzz Custer, Danielle Raymer, Jen Young, Kyle Hansen

OBJECTIVE: Describe the patient characteristics associated with PCSK9 inhibitor therapy medication persistence

SELF ASSESSMENT QUESTION: What was the percent LDL reduction found for patients persistent on PCSK9 inhibitors at 12 months?

A. 25%

B. 92%

C. 56%

D. 75%

BACKGROUND: Preventive cardiology requires continuous long-term medication persistence, defined as the duration of time from initiation to discontinuation of therapy. Approximately 60% of patients taking proprotein convertase subtilisin/kexin type 9 inhibitors (PCSK9 inhibitors) maintain persistence after 1 year; however, within a specialty pharmacy model, up to 80% of patients are persistent after 1 year. This suggests some aspects of specialty pharmacy services may alleviate reasons for non-persistence among patients prescribed PCSK9 inhibitors. This study aims to evaluate patient characteristics associated with medication persistence for patients filling prescriptions for PCSK9 inhibitor medications at a health system specialty pharmacy.

METHODOLOGY: This study was a retrospective cohort review performed at a single academic medical center. Patients were included if aged 18 years and older and initiated on a PCSK9 inhibitor dispensed through Atrium Health Wake Forest Baptist Specialty Pharmacy between December 2018 – October 2021. Patients were excluded if the PCSK9 inhibitor therapy was transitioned to an outside pharmacy during the study period. Information collected from the electronic health record included baseline characteristics such as age, sex, comorbidities, smoking status, atherosclerotic cardiovascular disease (ASCVD) status, and family history of major ASCVD events; both past and current hyperlipidemia medications; indication for use (primary or secondary prevention); risk factors for primary prevention; whether the patient received any counseling through specialty services; low-density lipoprotein (LDL) at initiation and after 12 months; history of self -injectable medication use. The primary outcome was PCSK9 inhibitor persistence at 12 months (primary versus secondary prevention). Secondary outcomes compared PCSK9 inhibitor persistence at 12 months in patients with and without the following characteristics: family history of a major ASCVD event, history of self-injectable use, specialty pharmacy counseling, and previous non-persistence on statin therapy. Chi-squared tests were used to analyze all categorical data.

RESULTS: Of the 192 patients were included in this study. Of those 192 patients, 88 were prescribed a PCSK9 inhibitor for primary prevention and 104 for secondary prevention. Within both populations, 75% of patients were persistent at 12 months (p=NS). Of patients with a family history of a major ASCVD event 78% were persistent at 12 months versus 65% of those with no family history. Of patients with a history of self-injectable medication use, 72% were persistent at 12 months versus 76% with no history of self-injectable medications. Of patients who received specialty pharmacy counseling, 76% were persistent at 12 months versus 69% with no specialty counseling. Of patients with a history of statin non-persistence, 74% were persistent at 12 months versus 76% of patients who had previously been persistent on statins. There were no statistically significant differences in secondary outcomes.

CONCLUSIONS: In a specialty pharmacy setting, PCSK9 inhibitor persistence was high, although outcomes were not statistically influenced by study-specific patient characteristics.

5:10pm – 5:30pm R **Evaluation of the Efficacy and Safety of Nicardipine versus Clevidipine for Blood Pressure Control in Hypertensive Crisis** Athena H

Moderators: Sara Anne Meyer
Presenters: Cortney Storey
Evaluators: Eric Marr

TITLE: Evaluation of the Efficacy and Safety of Nicardipine versus Clevidipine for Blood Pressure Control in Hypertensive Crisis

AUTHORS: Cortney Storey, Jon Pouliot

OBJECTIVE: Will be available with the presentation.

SELF ASSESSMENT QUESTION: Will be available with the presentation.

BACKGROUND: Hypertensive crisis is defined as an acute, severe increase in blood pressure above 180/120 mmHg. Nicardipine and clevidipine are both dihydropyridine calcium channel blockers that work to reduce systemic vascular resistance in the peripheral vasculature with minimal effects on cardiac contractility or conduction. Both agents are available for IV administration and are used in a variety of setting to acutely control blood pressure including hypertensive crisis. There is limited high-quality evidence to inform clinicians which first-line IV antihypertensive agent provides the most benefit with minimal adverse effects for the treatment of hypertensive crisis. This study is being conducted to evaluate blood pressure control and safety outcomes with the use of nicardipine or clevidipine for the treatment of hypertensive crisis.

METHODOLOGY: This is a single-center, retrospective cohort study. Eligible patients are those who received either nicardipine or clevidipine for the treatment of hypertensive crisis. Patients were excluded if either agent was used for blood pressure control in the treatment of stroke or if the patient was transferred to another hospital prior to admission. The primary outcome is the percentage of patients who achieved a 25% reduction in mean arterial pressure (MAP) at 1 hour. The secondary outcome is the percentage of patients who achieved a systolic blood pressure (SBP) of < 160 mmHg at 2-6 hours from the start of the infusion. The safety outcomes include the incidence of hypotension during the infusion or an overcorrection of blood pressure defined as a greater than 25% reduction in MAP at 1 hour. Appropriate statistical tests were used based on the type of data collected with a p-value of less than 0.05 being considered statistically significant.

RESULTS: This study included 156 patients with 74 in the nicardipine group and 82 in the clevidipine group. Baseline characteristics were overall similar between groups. The average age was 60 years old with 40% male and majority white race. The clevidipine group included more patients with hyperlipidemia, diabetes and more antihypertensive agents used outpatient. The SBP on admission and at the start of the infusion was similar between groups. For the primary outcome, there was no difference between groups in achieving a 25% reduction in MAP at one hour. The nicardipine group achieved a systolic blood pressure (SBP) goal of ≤ 160 at 2-6 hours post infusion significantly more than the clevidipine group (89.2% vs 73.2%; P-value 0.011). There was no difference between groups in the occurrence of hypotension during the infusion. However, the nicardipine group experienced more overcorrection of blood pressure at one hour as compared to the clevidipine group (29.7% vs 15.9%; P-value 0.04). The nicardipine group received significantly more medication volume per patient as compared to the clevidipine group (939 mL vs 186 mL; P-value < 0.001), but it realized a significant cost savings ($191 vs $359; P-value 0.002).

CONCLUSIONS: This study suggests that there is no difference between agents for initial blood pressure control using the MAP for the treatment of hypertensive crisis. However, nicardipine showed a more sustained SBP control with a lower risk of rebound hypertension when the drip is discontinued. Also, nicardipine showed a significant per vial cost savings as compared to clevidipine. Therefore, nicardipine showed better blood pressure control with lower risks of adverse effects and cost savings as compared to clevidipine for the treatment of hypertensive crisis.

5:10pm – 5:30pm R **EVALUTION OF CLONIDINE USE FOR DEXMEDETOMIDINE WEANING IN PATIENTS ADMITTED TO THE TRAUMA SERVICE** Parthenon 1

Presenters: Rhea Soltau

Evaluators: Andrea Chappell

TITLE: EVALUTION OF CLONIDINE USE FOR DEXMEDETOMIDINE WEANING IN PATIENTS ADMITTED TO THE TRAUMA SERVICE

AUTHORS: Rhea Soltau, Madalyn Kirkwood, Amanda Bridges

OBJECTIVE: N/A

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: Dexmedetomidine was approved by the Food and Drug Administration (FDA) in 1999 as a short-term (<24 hours) sedative. Compared to other sedatives, dexmedetomidine had similar efficacy with less adverse effects leading to more frequent use for long-term sedation in critically ill patients. Yet, it also led to increased reports of hypertension, tachycardia, and agitation associated with the timing of discontinuation. Due to clonidine's similar mechanism of action and benefit of being orally available, it was considered as an option for weaning dexmedetomidine, yet strong supportive data is lacking. This study aims to evaluate the use of enteral clonidine to facilitate weaning of dexmedetomidine in trauma patients.

METHODS: A retrospective chart review was performed to identify patients admitted to the trauma service at Our Lady of the Lake Regional Medical Center between 7/1/2017 – 8/31/2022 who were administered dexmedetomidine and concomitant enteral clonidine. Of the identified patients, those who were on dexmedetomidine for less than 72 hours were excluded. Additionally, those who had clonidine initiated prior to 72 hours, or were initiated for any reason other than dexmedetomidine weaning, were excluded. The final list comprised the dexmedetomidine and clonidine group. A comparator group of patients on dexmedetomidine only, without the use of clonidine for weaning, was then generated and any patients on dexmedetomidine for less than 72 hours were excluded. Patients from the dexmedetomidine only list were randomly selected for inclusion in analysis. Patients were excluded if they are < 18 years old, pregnant, prisoners on admission, or patients on any form other than oral tablet for clonidine, in addition to previously described reasons for exclusion.

RESULTS: A total of 115 patients, 56 in the dexmedetomidine and clonidine group and 59 in the dexmedetomidine only group, were included in this IRB-approved study. Dexmedetomidine duration prior to weaning was 5.4 days vs. 4.5 days (p=0.05) in the dexmedetomidine and clonidine group and dexmedetomidine only group, respectively. Dexmedetomidine dose at wean initiation was higher in the dexmedetomidine only group (0.6 vs. 1.3; p<0.001). There was no difference in the dexmedetomidine wean duration between groups (1.9 vs. 2.5 days; p=0.16). The dexmedetomidine group did restart dexmedetomidine more often than the dexmedetomidine and clonidine group (7% vs. 59%; p<0.01). There was no difference in total ventilator days or hospital length of stay. Dexmedetomidine withdrawal symptoms were experienced in 71% of the dexmedetomidine and clonidine group and 52% of the dexmedetomidine only group (p=0.037). The most common symptom was agitation, which was experienced more often in the dexmedetomidine and clonidine group (82% vs. 58%; p=0.02).

CONCLUSION: The use of enteral clonidine for dexmedetomidine weaning in patients admitted to the trauma ICU did not result in a faster time to dexmedetomidine discontinuation. Patients in the dexmedetomidine only group were more likely to require restart of dexmedetomidine. The clinical significance of this is unclear as hospital length of stay was not different between groups and significantly more patients in the dexmedetomidine and clonidine group experienced agitation. It is important to note that patients in the dexmedetomidine and clonidine group were on dexmedetomidine longer prior to the start of the wean, which could explain certain outcomes outcomes. Larger studies are needed to confirm these findings.

5:10pm – 5:30pm R **The impact of changes to the continuous renal replacement therapy protocol on clinical outcomes in critically ill patients** Athena G

Moderators: Jessica Brinkley
Presenters: William Jenkins
Evaluators: Michael Saavedra

TITLE: The impact of changes to the continuous renal replacement therapy protocol on clinical outcomes in critically ill patients

AUTHORS: William Jenkins Megan Lail Ann Maxwell

OBJECTIVE: Will be available on presentation

SELF ASSESSMENT QUESTION: Will be available on presentation

BACKGROUND: Appropriate initiation and dosing of Continuous Renal Replacement Therapy (CRRT) may affect patient outcomes. The Kidney Disease: Improving Global Outcomes (KDIGO) guidelines state that CRRT should be initiated emergently when life threatening changes in fluid, electrolyte, and acid-base imbalance exist. To deliver the optimal therapeutic therapy rate (TTR) recommended by KDIGO, a prescribed rate of 30-35 ml/kg/h is recommended with anticipation that 20-25ml/kg/h will be delivered. McLeod Regional Medical Center has recently revised their CRRT protocol to achieve more appropriate dosing, with plans to implement the use of regional anticoagulation with citrate. The purpose of this study is to evaluate the impact of changes to the CRRT protocol on clinical outcomes in critically ill patients.

METHODOLOGY: This study will be conducted as a nonrandomized pre/post design. A pre-formed electronic list of all patients receiving CRRT will be used to identify patients for a 6-month period before the protocol changes (May – November 2021) and for a 6-month period after changes were implemented (May – November 2022). We will include patients 18 years of age or older requiring CRRT in the timeframe allotted for the study. Pregnant patients and prisoners will be excluded from the study. Data will be collected on an electronic spreadsheet for all patients meeting inclusion criteria. The primary outcome measure will be the overall mortality in each group defined as survival to discharge. Secondary outcome measures include duration of time on CRRT, percentage of patients with appropriate TTR, percentage of patients achieving renal recovery, percent of patients with adverse events including bleeding and clotting, and total number of filters used. Statistical analysis will be performed using descriptive statistics and the Chi-square test for percentage based and nominal outcome measures. In case of low incidence of outcomes, the Fischer exact test will be used.

RESULTS: In total 74 patients were included in this study. 43 patients were included in the pre-protocol revision group and 31 patients were included in the post-protocol revision group. The primary endpoint of all-cause mortality was not statistically significant between the two groups and occurred in 79.1% (34 participants) pre-revision and 83.9% (26 participants) post-revision (P=0.6). The number of participants on the appropriate TTR was higher in the pre-revision group 37.2% (16 participants) vs 32.3% (10 participants) post-revision (p=0.66). The average number of days on CRRT and total filters used was lower in the post-revision group vs the pre-revision group for both; (3.7 vs 3.47 days) and (2.94 vs 2.06 filters) respectively. The number of patients with adverse events was also lower in the post-revision group 32.3% (10 participants) compared to the pre-revision group 53.5% (23 participants). The number of days until starting CRRT after meeting criteria was lower in the post-revision group (5 days) compared to the pre-revision group (4.6 days).

CONCLUSIONS: McLeod Regional Medical Center updated its protocol to improve CRRT adherence to current guideline recommendations. This study showed that the number of patients on the appropriate TTR did not increase in the post-revision group. Of note, a single provider who typically prescribes a higher TTR was present in the pre-revision group but not the post-revision group, which could have skewed the data. No patients in either group received regional anticoagulation with citrate due to product unavailability. The changes to the protocol did not improve mortality or renal recovery rates, likely due to providers not adhering to the protocol. Thus, our plan moving forward will be to take the data collected and identify areas for improvement to the critical care team, nephrology team, and administration. We will also re-evaluate in six months now that trisodium citrate is available for use.

5:10pm – 5:30pm | **Comparison of the Timing of De-escalation from an Echinocandin to an Azole Antifungal for Susceptible Candidemia** Athena B

Moderators: Regan Porter
Presenters: Megan Kelly
Evaluators: Ashley Thomas

TITLE: Comparison of the Timing of De-escalation from an Echinocandin to an Azole Antifungal for Susceptible Candidemia

AUTHORS: Megan Kelly, Summer Sizemore, Sarah Green, Benjamin Albrecht, K. Ashley Jones, Kristen Paciullo, Roland Tam, Trinh Vu, Claire Wan, Jessica Howard-Anderson, Sujit Suchindran

OBJECTIVE: Describe benefits of early de-escalation from an echinocandin to a susceptible azole antifungal for candidemia

SELF ASSESSMENT QUESTION: What are potential benefits of early de-escalation from an echinocandin to a susceptible azole antifungal for candidemia?

BACKGROUND: Candidemia is associated with high all-cause and in-hospital mortality with 90-day crude mortality rates as high as 42.4%. Data from a nationwide surveillance study found that Candida species cause 9% of nosocomial bloodstream infections. The 2016 Infectious Diseases Society of America Guideline for Management of Candidiasis recommends an echinocandin as initial therapy for candidemia in neutropenic and non-neutropenic patients. Echinocandins are recommended as initial therapy due to the risk of azole resistance and the potential benefit of fungicidal activity against Candida species in early, high-inoculum infections. De-escalating from an echinocandin to an azole can be considered after 5-7 days for patients who are clinically stable, have isolates susceptible to an azole, and have negative repeat blood cultures.

Azole antifungals have superior tissue penetration to many critical infection sites, including the central nervous system and vitreous cavity, which may make earlier de-escalation desirable in some patients. Given the various pharmacokinetics and pharmacodynamics of the antifungal agents, time to await finalized blood cultures, and overall clinical picture, providers may choose to de-escalate to an azole antifungal sooner in the treatment course. The objective of this study is to assess differences in adverse outcomes associated with early de-escalation, defined as de-escalation at or before 72 hours following initial positive blood culture, from an echinocandin to a susceptible azole.

METHODOLOGY: This retrospective cohort study encompasses patients across four Emory Healthcare institutions between January 1, 2014 and May 1, 2022. Hospitalized adult patients with confirmed candidemia initially treated with an echinocandin then de-escalated to a susceptible azole antifungal were included in this study. Patients were excluded if they met the following criteria: death or transition to comfort care prior to de-escalation, left against medical advice prior to de-escalation or transition, candidemia with an organism resistant to fluconazole, or candidemia while on an azole for an alternative indication. The primary outcome is microbiologic success defined as eradication of Candida species present at baseline as determined on follow-up cultures, or the presumed eradication at 7 days. Secondary outcomes include successful global response encompassed by microbiologic success and clinical success.

RESULTS: This study supports that early de-escalation is safe and effective for most adult patients with azole susceptible candidemia. The primary outcome, microbiologic success, occurred in 47 (32.4%) of patients in the greater than 72 hour group and 58 (52.3%) of patients within the less than or equal to 72 hour group (p= 0.001). De-escalation at or before 72 hours does not have a worse impact on microbiologic success or successful global response compared to de-escalation after 72 hours.

CONCLUSIONS: Early de-escalation to susceptible azole antifungals should be considered in most patients with candidemia. Further studies are warranted to evaluate optimal time frame and clinical factors to de-escalation.

5:10pm – 5:30pm

STAPHYLOCOCCUS AUREUS BACTEREMIA MORTALITY RATES AT PRISMA HEALTH UPSTATE

Athena A

Moderators: Alyson Ghizzoni Burns

Presenters: Kira Adkins

Evaluators: Taylor Childress

TITLE: STAPHYLOCOCCUS AUREUS BACTEREMIA MORTALITY RATES AT PRISMA HEALTH UPSTATE

AUTHORS: Kira Adkins, Carmen Faulkner-Fennell, Caroline Jozefczyk

OBJECTIVE: *Will include in presentation slides*

SELF ASSESSMENT QUESTION: *Will include in presentation slides*

BACKGROUND: National 30-day mortality rates of Staphylococcus aureus bacteremia (SAB) have remained at approximately 20% over the past thirty years. For management, the Infectious Diseases Society of America (IDSA) suggests a minimum of 2 weeks of antibiotic therapy, repeat blood cultures to confirm eradication of bacteremia, source control, and evaluation for endocarditis. Despite having several management strategies, national mortality rates of SAB remain unchanged. Therefore, the aim of this study is to evaluate SAB mortality rates across eight community hospitals and examine the effects of targeted interventions, including expansion of infectious diseases consult services and introduction of rapid diagnostic technology, on mortality.

METHODOLOGY: A multicenter, retrospective, interrupted time series to evaluate and examine the effects of targeted interventions on SAB mortality rates across eight community hospitals between January 2016 and December 2018. Targeted interventions include utilization of BioFire Blood Culture Identification (BCID) panels, introduction of telemedicine infectious diseases (ID) consults, and change in methicillin-resistant Staphylococcus aureus (MRSA) surveillance methodology. Patients included are at least 18 years of age with a documented first positive blood culture for Staphylococcus aureus (S. aureus) per index admission. Exclusion criteria consists of confirmation of polymicrobial bloodstream infection, concurrent non-S. aureus infection, transfer to an outside facility within 48 hours of admission, transfer from an outside facility after 48 hours of admission, and positive blood culture less than 48 hours prior to discharge. The primary outcome is in-hospital mortality, defined as a discharge disposition of dead or hospice. Secondary outcomes involve time to ID consult, antibiotic utilization, recurrence of infection during admission, and 30-day SAB-related readmission rates. The safety outcome assessed is development of SAB-related complications such as endocarditis.

RESULTS: In progress

CONCLUSIONS: In progress

5:10pm – 5:30pm L **Direct Oral Anticoagulants for the Treatment of Venous Thromboembolism in Obesity** Athena J

Moderators: Sarah Frye
Presenters: Quinn Hattaway
Evaluators: Brittney Howard

TITLE: Direct Oral Anticoagulants for the Treatment of Venous Thromboembolism in Obesity

AUTHORS: Quinn Hattaway, Jessica Starr, Nathan Pinner

OBJECTIVE: Evaluate the safety and efficacy of DOACs versus warfarin for the treatment of VTE in patients with obesity

SELF ASSESSMENT QUESTION: Are DOACs safe and efficacious for the treatment of VTE in patients with obesity?

BACKGROUND: Studies describing the use of direct oral anticoagulants (DOACs) in patients with obesity are limited. Pharmacokinetic (PK) and pharmacodynamic studies of DOAC analogs in obese patients have shown a modest effect on PK parameters including reduced drug exposure and lower peak concentrations, however, the clinical significance is unknown. The purpose of this retrospective study is to evaluate the safety and efficacy of DOACs versus warfarin for the treatment of venous thromboembolism (VTE) in obese patients.

METHODOLOGY: This is a single center, retrospective, institutional review board-approved study conducted from January 2015 through July 2022. Electronic medical records of obese patients who were treated with a DOAC or warfarin for VTE were reviewed. Included patients are 19 years of age or older, treated with a DOAC or warfarin for VTE, and have a BMI greater than or equal to 40 kg/m2 or weight greater than 120 kg. Patients with cancer, hypercoagulable disorders, end-stage renal disease (ESRD) or creatinine clearance less than 15 mL/min, on chronic anticoagulation at the time of index admission, or pregnancy, were excluded. The primary outcome was occurrence or recurrence of VTE within twelve months of the index admission date while on VTE treatment. Secondary outcomes include occurrence of pulmonary embolism (PE) and deep vein thrombosis (DVT) events separately within the study time frame, and major bleeding (defined as fatal bleeding, symptomatic bleeding in a critical area or organ, or a drop in hemoglobin of greater than or equal to 2 mg/dL or requiring greater than or equal to 2 units of packed red blood cells) and minor bleeding (any bleeding event not classified as a major bleed) events.

RESULTS: Two hundred twenty patients were included. VTE recurrence occurred in four patients (4.35%) in the DOAC group and in three patients (10.71%) in the warfarin group (P=0.35). Three events occurred in patients on apixaban, one event occurred with rivaroxaban, and three events occurred with warfarin. DVT occurred in 6 patients (5%). Of those, two patients (4%) were receiving apixaban, one patient (2.38%) was receiving rivaroxaban, and three patients (10.7%) were receiving warfarin. PE occurred in one patient (2%) who was receiving apixaban. Major bleeding events occurred in two patients (1.67%). Of those, one patient (0.83%) was receiving rivaroxaban and one patient (0.83%) was receiving warfarin (P=0.41). Minor bleeding events occurred in ten patients (8.33%). Of those, six events (6.5%) occurred in patients receiving a DOAC and four events (14.3%) occurred in patients receiving warfarin (P=0.28). The most common location of minor bleeding was gastrointestinal (60%, n=6), followed by uterine (20%, n=2), vaginal (10%, n=1), and hematoma (10%, n=1).

CONCLUSIONS: The use of DOACs for the treatment of VTE in patients with obesity was not associated with an increased rate of VTE recurrence or major and minor bleeding events compared to warfarin. Therefore, based on this study DOACs appear to be a safe and efficacious alternative to warfarin for the treatment of acute VTE in obese patients. Limitations to this study include retrospective design and a small patient population. Future studies are needed in larger patient populations to further elucidate the role of DOACs for the treatment of VTE in patients with obesity.

5:10pm – 5:30pm M **Evaluation of the safety of accelerated ferric gluconate regimen** Olympia 2

Moderators: Yolanda Whitty
Presenters: Erica Gray
Evaluators: Michelle Wilcox

TITLE: Evaluation of the safety of accelerated ferric gluconate regimen
AUTHORS: Erica Gray, Tate Parrott, Lauren McCluggage
OBJECTIVE: In progress
SELF ASSESSMENT QUESTION: In progress
BACKGROUND: Inpatient use of intravenous (IV) iron products has increased in recent years for several reasons, including recommendations for use in patients with heart failure (HF) or renal disease. Ferric gluconate is a formulary IV iron formulation traditionally given once daily. Twice daily (BID) dosing has been utilized recently to provide repletion of iron in a more timely manner, typically two days instead of the traditional four days. However, there is limited data to support the safety of the BID dosing regimen. The aim of this study is to further investigate the BID dosing regimen for ferric gluconate and compare its safety to the daily dosing regimen in order to validate the current practice of BID ferric gluconate dosing.
METHODOLOGY: Retrospective, observational study of adult patients admitted to a large academic medical center who received IV ferric gluconate between January 1, 2022 and April 3, 2022. Patients received ferric gluconate 250 mg either daily or BID and were excluded if a different dosing frequency was used or if they only received one dose of ferric gluconate. The primary outcome was a composite safety outcome of hypotension (defined as a decrease of at least 10 mmHg of the mean arterial pressure [MAP]), utilization of the anaphylaxis kit or any of its components, an infusion reaction or rapid response noted in the patient chart, or an escalation in level of care. Secondary outcomes included total amount of iron received, hospital length of stay (LOS), and post-IV iron ferritin, hemoglobin, TSAT, and transferrin. Statistical analysis was conducted using SPSS.
RESULTS: A total of 126 patients were included in this study, with 63 patients receiving BID dosing and 63 patients receiving daily dosing. Further results in progress.
CONCLUSIONS: In progress.

5:10pm – 5:30pm O **Safety and Efficacy of Early Antibiotic Discontinuation in Febrile Neutropenic Patients** Athena C

Moderators: J. Luke Britton
Presenters: Vayou Chittavong
Evaluators: Benjamin Casey

TITLE: Safety and Efficacy of Early Antibiotic Discontinuation in Febrile Neutropenic Patients

AUTHORS: Vayou Chittavong, Brook Jacobs, Sajia Kotwal

OBJECTIVE: To evaluate the safety and efficacy outcomes of early discontinuation of antibiotics in febrile neutropenic patients

SELF ASSESSMENT QUESTION:

Which of the following was true for febrile neutropenic patients who had early discontinuation of antibiotics versus late?

A.There was a higher incidence of ICU admission

B.There was a higher mortality rate

C.There was a shorter hospital length of stay

D.None of the above

BACKGROUND: Febrile neutropenia (FN) is usually treated with empiric antibiotics until the patient has been afebrile for 48 hours and has an absolute neutrophil count (ANC) of at least 500 cells/mL. However, in recent years, due to the risks associated with prolonged antibiotic use, there is a push for earlier discontinuation of antibiotics in stable patients regardless of the ANC. The aim of this study is to evaluate whether early discontinuation of antibiotics has any significant safety and efficacy outcomes in FN patients.

METHODOLOGY: This is a single center, retrospective chart review study. Inclusion criteria includes adults at least 18 years of age admitted to medical and oncology units, no growth on culture data, afebrile for 48 hours, and received intravenous (IV) empiric antibiotics treatment for FN between August 1st, 2020 to July 30th, 2022. Exclusion criteria includes patients directly admitted to Intensive Care Unit (ICU), patients with known source of infection, patients initiated on IV antibiotics prior to admission for FN or other indications, and patients with community acquired Clostridium difficile (C. diff) infection upon admission. Patients were divided into two groups: antibiotics discontinued within 48 hours versus antibiotics continued past 48 hours after no growth on cultures and afebrile for 48 hours. The primary end point is the incidence of antibiotic re-initiation within 48 hours after antibiotic discontinuation. The secondary endpoints include incidence of inpatient mortality, ICU admission, positive cultures, recurrent fever within 72 hours of antibiotic discontinuation, hospital acquired C. diff infection, and hospital length of stay (LOS). Data were analyzed using descriptive statistics and Chi-squared test.

RESULTS: Of 96 patients who received antibiotics for FN, 45 patients were included in the study. Twenty-five patients were included in the early antibiotic discontinuation and 16 patients were included in the late antibiotic discontinuation group. Demographics were similar among groups except there were fewer patients with solid tumors in late antibiotic group and fewer patients with hematologic malignancies in early antibiotic discontinuation group. Incidence of antibiotic re-initiation within 48 hours was not statistically difference among the two groups (P = 0.452). There was no case of inpatient mortality, incidence of positive culture and incidence of ICU admission reported in both groups. No difference existed in two groups in recurrence fever within 72 hours of antibiotic discontinuation and hospital acquired *C. diff* (P > 0.05). The average duration of antibiotic was 3.24 days in early group and approprixmately double duration in the late group. Patients in early antibiotic discontinuation group had shorter length of stay (LOS) compared to patients in late antibiotic discontinuation group (6.1 vs 11.5 days, P = 0.0002).

CONCLUSIONS: Overall, early discontinuation of antibiotics did not affect patient outcomes. There were no differences in the two groups in terms of mortality, ICU admission, incidence of positive cultures, and recurrent fever. Nonetheless, patients in the early discontinuation group had a shorter hospital length of stay.

A Administration (ADM) B Ambulatory Care (AMB) C Cardiology (CAR) Y Community Pharmacy (CP)

R Critical Care/Emergency Medicine (CCM) G Geriatrics (GER) I Infectious Disease (ID)

L Internal Medicine (IM) M Medication Safety (MES) N Neurology (NEU) O Oncology (ONC)

P Pain Management (PM) D Pediatric (PED) S Psychiatric Pharmacy (PSY) T Transitional Care (TC)

1 Transplant (TRP)

APRIL 28 • FRIDAY

7:30am – 8:30am		**Breakfast**	Ballroom EF
8:30am – 8:50am	A	**Understanding the pharmacy experience and perceived barriers of Latino- and Arab Americans with limited English proficiency in Middle TN: an exploratory, quality improvement project**	Athena I

Moderators: Kaci Shuman
Presenters: Juan Rodriguez
Evaluators: Cassidy Moses

TITLE: Understanding the pharmacy experience and perceived barriers of Latino- and Arab Americans with limited English proficiency in Middle TN: an exploratory, quality improvement project

AUTHORS: Juan Rodriguez, Erin Neal, Autumn Zuckerman, Gary Owen, Mackenzie Farrar, Chelsea Renfro
OBJECTIVE: To understand Latino- and Arab American LEP patients' experiences and perceived barriers when navigating pharmacy services
SELF ASSESSMENT QUESTION: True or False: Limited English proficiency is a major risk factor for adverse health outcomes.
BACKGROUND: Patients with limited English Proficiency (LEP) are at an increased risk for adverse health outcomes compared to non-LEP patients; furthermore, lack of medication understanding is a major contributor of poor health literacy in this patient demographic. The purpose of this quality improvement project is to assess the influence that limited English proficiency has on patients' pharmacy navigation experience and how that influence impacts patients' behavior when navigating pharmacy services. This project also aims to evaluate LEP patients' perceived barriers and facilitators when navigating pharmacy services.
METHODOLOGY: This single-center, exploratory, focus group quality improvement project was conducted at Vanderbilt University Medical Center in Nashville, Tennessee. Four moderator-facilitated focus group discussions were conducted: (a) 2 groups of Spanish speaking, LEP individuals and (b) 2 groups of Arabic speaking, LEP individuals. Each group consisted of 2-9 participants and lasted for a total of up to 90 minutes. Qualitative analysis of focus group discussions was conducted using a hierarchical coding system to create a theoretical framework of themes based on the full range and depth of participant response. De-identified, isolated quotes from qualitative analysis were used for the purpose of validating common themes from the collective participants' experiences.
RESULTS: Amongst the total participants (n = 15) in the four focus group discussions, participants identified primarily as female (n = 9) and of Hispanic, Latino, or of Spanish origin (n = 11). Most participants (n = 9) also identified as speaking English less than well or limited. Amongst participants speaking English less than well or limited, 100% (n = 9) indicated that a language barrier made it harder for them to pick up medications and had previously left the pharmacy with questions unanswered due to staff communication barriers, respectively. Most participants (n = 6) speaking English less than well or limited also indicated they did not utilize pharmacy-offered translation services if encountered and were not satisfied with their pharmacy experience, respectively. Qualitative analysis of themed responses is still pending.
CONCLUSIONS: LEP patients in Middle TN experience pharmacy service barriers due to their English proficiency status. Findings from this project indicate the underutilization of pharmacy-offered translation resources by LEP patients. Preliminary analysis of focus group discussions indicate that LEP patients would prefer pharmacy-offered translation services that do not require to be requested.

8:30am – 8:50am B **Implementation of Pharmacist-Led Levothyroxine Monitoring and Management in a Veteran Population** Olympia 2

Moderators: Kristen Kilby
Presenters: Amy Wangerin
Evaluators: Brandi Dahl

TITLE: Implementation of Pharmacist-Led Levothyroxine Monitoring and Management in a Veteran Population
AUTHORS: Amy Wangerin, Taylor DeRocha, Stephanie Hopkins
OBJECTIVE: Evaluate the impact of expanding pharmacist-led levothyroxine monitoring and management in a veteran population.
SELF ASSESSMENT QUESTION: Which of the following interventions can a Clinical Pharmacist Practitioner make to help manage patients' levothyroxine?
A. Order updated TSH
B. Refer to endocrinology
C. Identify drug-interactions
D. Decrease levothyroxine dose
E. All of the above

BACKGROUND: In Americans, approximately one in twenty people 12 years of age or older are affected by hypothyroidism. The preferred treatment for hypothyroidism is levothyroxine monotherapy based on chemical stability, low cost, once daily dosing, and more uniform potency compared to other thyroid hormone options. Levothyroxine is a narrow therapeutic index drug meaning small changes in the dose or concentration can affect the efficacy. Management requires frequent thyroid stimulating hormone monitoring and extensive patient counseling. This quality improvement project aims to expand pharmacy services by demonstrating the role of a clinical pharmacy practitioner (CPP) in the monitoring and management of levothyroxine.
METHODOLOGY: Population management tools were utilized to identify patients 18 years of age and older who are currently prescribed levothyroxine and follow with one of the prespecified primary care teams. Patients were included if they had a notable lab result outside of the prespecified range, were overdue for thyroid function tests, or were overdue for levothyroxine refill. Patients were excluded if their active prescription for levothyroxine is obtained outside of the VA, they follow with a primary care provider outside of the prespecified clinics or follow with an endocrinology clinic and if pregnant. Once identified, patients were contacted by the primary investigator to schedule a clinic appointment for levothyroxine management and order/coordinate labs if appropriate. At follow-up appointment patients were provided education, lab results were reviewed, and levothyroxine dosing recommendations were provided, if necessary, with lab follow-up. Documentation was completed in the patient’s medical record using a standardized note template. The number of recommendations were recorded and analyzed. The primary endpoint of this project is the number of levothyroxine dose adjustments made. Secondary endpoints include the number of patients recommended to update thyroid function tests, number of patients who completed updated thyroid function tests, type of pharmacologic interventions made, the number of drug-drug interactions, number of patients receiving levothyroxine education and the number of patients referred to endocrinology.
RESULTS: A total of 46 patients met inclusion criteria. Of those patients 15 were flagged for overdue medication refill, 25 patients were flagged for thyroid function tests being out of range and 15 patients were flagged for overdue thyroid function tests. Of the 46 patients who met inclusion criteria, 31 patients were contacted and 15 were unable to be contacted. For the primary endpoint, 20 levothyroxine dose adjustments were made. The most frequent type of pharmacologic intervention made was a levothyroxine dose decrease (n=12), followed by no change (n=20), administration change (n=6), dose increase (n=1), and medication discontinuation (n=1). A total of 28 patients were ordered thyroid function tests with 6 patients completing additional thyroid function tests. 26 patients received hypothyroidism and levothyroxine education.
CONCLUSIONS: In conclusion, this service implementation was able to identify a disease state area where Clinical Pharmacist Practitioners (CPP) have the ability to make an impact and expand pharmacy services within the Fayetteville VA Health Care Center. CPP’s have the ability to provide levothyroxine monitoring, management, and education through this service expansion to help improve patient care. In the future, further protocols will need to be developed for bi-monthly or quarterly generation of the High-Risk Drug Monitoring reports for levothyroxine patients to be followed by the CPP.

8:30am – 8:50am B **Pharmacist Impact on the Use of First-Line Antihypertensive Medications in the African American Population** Olympia 1

Moderators: Devin Lavender

Presenters: Mia Reid

Evaluators: Drew Cates

TITLE: Pharmacist Impact on the Use of First-Line Antihypertensive Medications in the African American Population

AUTHORS: Mia Reid, Jamie Coates, Naomi Yates

OBJECTIVE: At the end of this presentation attendees should be able identify strategies to better optimize blood pressure control in hypertensive patients.

SELF ASSESSMENT QUESTION: How can providers help to improve blood pressure in African American patients with hypertension?

BACKGROUND: Hypertension affects millions of adults in the United States and can lead to end-organ damage if not managed. The 2017 American College of Cardiology/American Heart Association Clinical Practice Guidelines and 2020 International Society of Hypertension Global Practice Guidelines recommend angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, thiazide/thiazide-type diuretics, and dihydropyridine calcium channel blockers as first-line agents in treating hypertension. However, for African American patients, only thiazide/thiazide-type diuretics and calcium channel blockers are preferred as first-line therapies. The purpose of this study is to examine the current usage of first-line antihypertensive medications in the African American population within an integrated healthcare system.

METHODOLOGY: This was a region-specific (Kaiser Permanente Georgia), retrospective, matched, data-only cohort analysis using existing data from administrative databases to confirm outcomes. Eligible patients were African American adults (≥ 18 years of age) diagnosed with hypertension who had not been prescribed first-line antihypertensives (thiazide/thiazide-type diuretics or calcium channel blockers) as of September 1, 2021. African American patients with hypertension on no first-line antihypertensive followed by ambulatory care clinical pharmacist specialists (CPSs) were compared to African American patients with hypertension on no first-line antihypertensive not followed by the ambulatory care CPSs. Patients were matched up to 1:4 based on age and sex and patient comorbidities were compared between groups. The primary outcome was the number of African American patients started on first-line antihypertensives after working with ambulatory care CPSs as compared to patients not working with ambulatory care CPSs. Secondary outcomes were the number of African American patients who achieved goal blood pressure less than 135/85 mmHg after working with ambulatory care CPSs and the change in blood pressure observed. Collected data was analyzed by Kaiser Permanente data analysts using descriptive and inferential statistics with McNemar’s test. Results will employ an intent-to-treat analysis, and conditional logistic regression will be used to analyze study outcomes. Patients were followed from September 1, 2021 to September 30, 2022, graduation from the remote pharmacy hypertension service, or KP membership termination, whichever came first. The study was reviewed by the Kaiser Permanente investigational review board.

RESULTS: A total of 865 patients followed by ambulatory care CPSs were matched to 3,192 patients who were not followed by ambulatory care CPSs. The patients who were followed by ambulatory care CPSs were started on first-line antihypertensives at a significantly higher rate compared to those who were not (OR 1.98, 95% CI 1.626-2.412). Approximately 33% of patients working with ambulatory care CPSs achieved blood pressure less than 135/85 mmHg with just 3 to 6 pharmacist interactions. After working with ambulatory care CPSs, a clinically significant improvement in blood pressure was observed with systolic blood pressure improving 22 points and diastolic blood pressure improving 13 points.

CONCLUSIONS: A higher percentage of African American patients with hypertension were started on guideline recommended first-line antihypertensives after working with ambulatory care CPSs. There was no statistically significant difference in achieving blood pressure control. Despite this, patients followed by ambulatory care CPSs exhibited a change in systolic blood pressure greater than 20 points and diastolic blood pressure greater than 10 points which helps to support ambulatory care CPS involvement in hypertension management.

8:30am – 8:50am C **Evaluating Apixaban Dosing and Associated Outcomes in Patients with Atrial Fibrillation on Dialysis** Athena D

Moderators: Elisabeth Webb
Presenters: Kaylee Croft
Evaluators: Kirby Benson

TITLE: Evaluating Apixaban Dosing and Associated Outcomes in Patients with Atrial Fibrillation on Dialysis
AUTHORS: Kaylee Croft, Ethan Gerrald, Rachel Hemberger, Erica Roman, Laura Beth Parsons
OBJECTIVE: Evaluate associated outcomes in patients with ESRD that received apixaban 2.5 mg vs 5 mg twice a day.

SELF ASSESSMENT QUESTION: •Per package insert, in a patient with ESRD and AF, who is apixaban 2.5 mg BID appropriate in?
BACKGROUND: Atrial fibrillation (AF) is a common diagnosis in patients with chronic kidney disease (CKD) due to volume increases in the chambers in the heart. Patients with end-stage renal disease (ESRD) dependent on dialysis have been excluded from most AF apixaban trials. Apixaban is dosed at 5 mg twice daily in AF per package insert. Apixaban is decreased to 2.5 mg twice daily in patients meeting two of three criteria (age > 80, weight ≤ 60 kg, and SCr ≥ 1.5 mg/dL.) However, these dosing recommendations do not directly address patients receiving hemodialysis (HD) or peritoneal dialysis (PD). Studies addressing this population have conflicting outcomes regarding safety and efficacy. The aim of this study is to assess apixaban prescribing patterns along with safety and efficacy outcomes in patients receiving dialysis.
METHODOLOGY: This study was a retrospective chart review of patients receiving both dialysis and apixaban for AF. Patients were included if they were admitted to TriStar Centennial Medical Center from July 1, 2019-July 31, 2021 and met diagnoses criteria. Patients were identified through ICD-10 codes for AF and ESRD. They were then categorized into two arms based on apixaban dosing (Group 1: apixaban 2.5 mg twice daily; Group 2: apixaban 5 mg twice daily). Primary outcome was appropriate dosing of apixaban based off package insert. Secondary outcomes included stroke, other ischemic event (VTE), bleeding, and death. Categorical data was analyzed using Fischer's exact test or the Chi-squared test. Descriptive statistics were used to describe patient's demographics and comorbidities.
RESULTS: A total of 69 patients were included, 43 patients in the apixaban 2.5 mg arm and 26 patients in the apixaban 5 mg arm. All patients in the apixaban 5 mg arm were prescribed based off package insert recommendations while 30% of patients in the apixaban 2.5 mg BID arm were prescribed based off package insert recommendations ($p<0.01$). The bleeding and stroke outcomes for both arms were not statistically significant.
CONCLUSIONS: All patients in the apixaban 5 mg arm followed package insert recommendations. Patients in the apixaban 2.5 mg arm that do not follow package insert recommendations can lead to opportunities to explore indications for lowering the apixaban dose.

8:30am – 8:50am R **Incidence of Post-intubation Hypotension Requiring Initiation of a Vasopressor when Intravenous Push Propofol is Used for Rapid Sequence Intubation Versus Other Induction Agents** Athena G

Moderators: Sara Gattis

Presenters: Hannah Schmoock

Evaluators: Rachel Larry

TITLE: Incidence of Post-intubation Hypotension Requiring Initiation of a Vasopressor when Intravenous Push Propofol is Used for Rapid Sequence Intubation Versus Other Induction Agents

AUTHORS: Hannah Schmoock, PharmD; Robin Fischer, PharmD, BCPS; Elizabeth Robinette, PharmD, BCCCP; Steven Robinette, PharmD, BCCCP

OBJECTIVE: Will be updated on actual power point presentation. Not available at this time.

SELF ASSESSMENT QUESTION: Will be updated on actual power point presentation. Not available at this time.

BACKGROUND: Rapid sequence Intubation (RSI) is commonly utilized to obtain and secure an airway with an endotracheal tube in patients at risk for pulmonary aspiration. Literature has described the incidence of post-RSI cardiac arrest as occurring in 1 out of 40 procedures with high immediate and 28-day mortality. The choice of the induction agent prior to intubation may be associated with adverse outcomes, including cardiac arrest. The purpose of this research study was to assess the differences in induction agents utilized during RSI and whether the agent given impacted the occurrence of hypotension requiring vasopressor use, or other adverse outcomes.

METHODOLOGY: This was a retrospective cohort study. An electronic list of patients who presented to McLeod Regional Medical Center between October 2019 and June 2022 who underwent RSI and were given either propofol or an alternate induction agent were included. Data was collected via an electronic spreadsheet. The primary outcome measured was the percentage of patients in each group (propofol versus alternate induction agent) who developed hypotension requiring a vasopressor within one hour of RSI. Descriptive statistics were utilized. Chi-square tests were utilized for percentage based and nominal outcome measures while student t-tests were used for continuous variables.

RESULTS: Two-hundred participants were included in the study. Baseline characteristics among the two groups were similar. Of the 200 included, 20.5% (41 participants) received propofol as their induction agent and 79.5% (159 participants) received either etomidate or ketamine as their induction agent. In those receiving propofol, 22% (9 participants) required vasopressors within an hour after induction. Only 7.5% (12 participants) of those receiving other induction agents required vasopressors within an hour post-induction (p= 0.007). For the average number of hours in the ICU, patients in the propofol group had longer average stays at 372.24 hours versus to 258.24 hours in the comparison group (p= 0.0096). Statistical significance was also seen for the difference in average total number of hours in the hospital, with 482.4 hours in the propofol group versus 366 hours in the comparison group (p=0.0423). Incidence of death was also found to be statistically significant, with 58.5% of individuals dying in the propofol group versus 32.7% in the comparison group, following RSI (p=0.0025).

CONCLUSIONS: Rapid sequence intubation (RSI) is a commonly used practice in the hospital setting. The medications used can cause side effects for the patients undergoing this procedure. This retrospective cohort study demonstrated a statistically significant increase in the need for vasopressors, hospital length of stay, and incidence of death among those who underwent RSI with propofol.

8:30am – 8:50am R **Outcomes Associated with Four-Factor Prothrombin Complex Concentrate for Anticoagulant-Associated Upper Gastrointestinal Bleeds** Athena H

Moderators: Kelly Norris
Presenters: Bailey Powell
Evaluators: Ashley Woodhouse

Title: Outcomes Associated with Four-Factor Prothrombin Complex Concentrate for Anticoagulant-Associated Upper Gastrointestinal Bleeds

Authors: Bailey Powell, Charles Wingerson, Brittany NeSmith, Taylor Servais, Evan McDonald

Objective: To determine whether 4F-PCC is associated with improved outcomes among patients receiving treatment for anticoagulant-associated UGIB

Self Assessment Question: *True / False:* There have been recent updates to clinical practice guidelines suggesting against the use of 4F-PCC for the reversal of factor Xa inhibitors for UGIB?

Background

Recent updates to Canadian clinical practice guidelines outline the utilization of reversal agents for patients on anticoagulation experiencing an upper gastrointestinal bleed (UGIB). Guidelines suggest against the use of four-factor prothrombin complex concentrate (4F-PCC) for the reversal of factor Xa inhibitors (FXaI) and were inconclusive regarding the use of vitamin K antagonist (VKA) reversal for anticoagulant-associated UGIB, though treatment for this indication is common in clinical practice. This study aims to determine whether 4F-PCC is associated with improved outcomes among patients receiving treatment for anticoagulant-associated UGIB.

Methods

This was a multi-center retrospective cohort study of patients previously admitted to either St. Francis Downtown or Eastside campuses. Patients were identified using the ICD10 code for gastrointestinal hemorrhage. Eligibility criteria included age ≥ 18 years, hospitalization for UGIB, and use of VKA or FXaI prior to hospitalization. Patients were excluded if they received fresh frozen plasma during initial management up to 12 hours, have a history of heparin induced thrombocytopenia, or have any allergy to any component of 4F-PCC. The primary outcome was bleeding cessation defined as stable hemoglobin levels without the need for hemostatic agents or blood product transfusions. Secondary outcomes included the need for blood product transfusion 12 hours post presentation, in-hospital mortality, ICU admission, thrombotic events, and length of stay. Descriptive and inferential statistics were utilized to compare the two cohorts.

Results

A total of 88 patients diagnosed with an anticoagulant-associated UGIB were included in the study. Of the 88 patients evaluated, 29 received 4F-PCC and 59 did not receive a reversal agent. Patients who received 4F-PCC were more likely to have a history of hepatic disease or prior coagulopathy, and presented with greater hemodynamic instability at baseline. The primary outcome of bleeding cessation occurred in 58.1% of patients who received 4F-PCC and 91.5% of patients without reversal agents. Transfusion requirements within the first 12 hours included 1.1 units versus 0.6 units of packed red blood cells for patients receiving 4F-PCC versus no reversal agent. In-hospital mortality occurred in 6.9% versus 8.5%, respectively. ICU admission was required in 31% versus 11.9%, respectively, leading to an average length of stay of 5.3 days and 4.4 days. An evaluation of safety included the rate of thrombotic events, where 6.9% of patients receiving 4F-PCC experienced a thrombotic event versus no patients who were not reversed.

Conclusions

Our study demonstrated a higher rate of bleeding cessation among patients that did not receive 4F-PCC, however, this may be attributed to the fact that these patients presented more hemodynamically stable and had less severe anemia. There were 2 instances of thromboembolic events following the administration of 4F-PCC, however the presence of these emboli prior to the administration of 4F-PCC cannot be ruled out as patients were not assessed at baseline.

This study did have several limitations in its design. First, this was a retrospective chart review, therefore, the collection of patient history and outcomes was limited to appropriate charting and documentation. Also given its retrospective study design, there was no set protocol for which repeat labs were to be drawn. This allowed for some deviations in the definitions of bleeding cessation as “12-hour” and “48-hour” repeat draws were merely estimates. Lastly, the study population was small, and the two cohorts were unevenly matched at baseline, potentially biasing the results in favor of patients that likely presented with less severe characteristics.

8:30am – 8:50am | **Evaluation of cephalosporin use after pharmacist-driven education on beta-lactam allergy cross-reactions and electronic health record alert suppression** Athena B

Moderators: Brandon Beers
Presenters: Johann Mani
Evaluators: Erica Bowles

TITLE: Evaluation of cephalosporin use after pharmacist-driven education on beta-lactam allergy cross-reactions and electronic health record alert suppression

AUTHORS: Johann Mani, Macy Pike, John Starks

OBJECTIVE: •Evaluate cephalosporin prescribing within 72 hours of hospital admission before and after pharmacist-driven education and suppression of certain allergic reactions.

SELF ASSESSMENT QUESTION: What is the cross-reactivity rate between cephalosporins and penicillins with dissimilar side chains?

BACKGROUND: Beta-lactams are first-line antibiotics for many infectious diseases and are well-tolerated among patients. However, patient-reported penicillin allergies discourage providers from selecting cephalosporins and instead promote the use of broad-spectrum antibiotics such as carbapenems or non-beta-lactams. Studies have shown the use of non-beta-lactams is associated with poor outcomes and that cross-reactivity between penicillins and cephalosporins is much lower than previously documented. The purpose of this study is to evaluate cephalosporin prescribing within 72 hours of hospital admission before and after pharmacist-driven education on beta-lactam cross-reactivity and suppressing “rash,” “itching,” and “unknown” cross-reaction alerts during order entry in an electronic health record.

METHODOLOGY: A retrospective chart review was conducted to examine antibiotics prescribed within the first 72 hours of hospital admission from May 22, 2022, to August 22, 2022. The intervention included pharmacist-driven education to emergency department, intensivist, and hospitalist groups, and suppression of non-IgE-mediated allergic cross-reaction alerts in the electronic health record. Pharmacist-driven education incorporated a beta-lactam side chain cross-reactivity chart indicating appropriate beta-lactam options, with the intent to promote antimicrobial stewardship and reduce prescribing of broad-spectrum antibiotics in these patients. Post-education, antibiotic prescribing rates were evaluated from November 2, 2022, to February 2, 2023. Inpatient cephalosporin prescribing rates before and after pharmacist-driven education and suppression of certain allergic cross-reactions were the primary outcome.

RESULTS: 150 patients selected via convenience sampling were evaluated in both pre- and post-intervention cohorts. In both cohorts, the most common allergic reaction to penicillin was dermal (44% vs. 42.7%, $p = 0.95$). More patients with reported anaphylactic reactions to penicillin, including “hives” and “urticaria”, received cephalosporins post-intervention (22.7% vs. 32%, $p = 0.05$). Cephalosporins were the most common antibiotic class prescribed in both cohorts, with cephalosporin use significantly increasing post-intervention (27.7% vs. 36%, $p = 0.03$). Although overall cephalosporin use saw an increase post-intervention, total broad-spectrum antibiotic use saw a significant decrease
($p = 0.05$). In patients with beta-lactam allergies that received a cephalosporin antibiotic, none developed IgE-mediated reactions during treatment.

CONCLUSIONS: Pharmacist-driven education on beta-lactam cross-reactivity and electronic health record suppression of cross-reactivity alerts saw a significant decrease in total broad-spectrum antibiotic prescribing. Cephalosporin prescribing significantly increased and no patients developed IgE-mediated reactions, including patients with reported anaphylactic reactions to penicillin. Implementation of a beta-lactam cross-reactivity tool and suppression of cross-reactivity alerts between reacting cephalosporins and penicillins may reduce the use of broad-spectrum antimicrobial agents and improve stewardship practices.

8:30am – 8:50am | **Evaluation of Trough-based vs AUC-based Vancomycin Dosing in Number of Initial Therapeutic Vancomycin Levels** Athena A

Moderators: Bruce Jones
Presenters: Amber Adams
Evaluators: Lynsey Neighbors

TITLE: Evaluation of Trough-based vs AUC-based Vancomycin Dosing in Number of Initial Therapeutic Vancomycin Levels
AUTHORS: Amber Adams, Caroline Gresham, Jae Yook, Marianne Ray

OBJECTIVE: Evaluate the efficacy of AUC-based in comparison to trough-based vancomycin dosing as determined by initial therapeutic levels in a community hospital.
SELF ASSESSMENT QUESTION: Is two-level area-under-the-curve (AUC) based vancomycin monitoring effective compared to trough-based vancomycin dosing in this study? Why?

BACKGROUND: Recent guidelines now recommend that institutions target a 24-hour area under the curve (AUC) of 400-600 mg•hr/L for therapeutic monitoring of vancomycin rather than the trough target of 15-20 mg/L. This change was recommended due to the association of vancomycin troughs with imprecise estimation of AUC and possibly increasing risk of acute kidney injury (AKI). The purpose of this study was to determine the efficacy (measured by number of initial therapeutic levels), safety, and practicality of implementing two-sample AUC-based vancomycin monitoring within our institution.

METHODOLOGY: This study was a single-center, IRB exempt, pre-post interventional study of non-pregnant adult patients on general medicine floors who received scheduled vancomycin for ≥ 3 doses. Patients were excluded if levels were drawn more than 1 hour out of specified time ranges (60-120 minutes after infusion ends for peaks and 30 minutes before next dose for troughs). For pre-intervention data, patients on trough-based dosing from April 1, 2022 to August 31, 2022 were retrospectively evaluated. Post-intervention data was collected prospectively after implementation of a pilot AUC-based dosing protocol from September 9, 2022 to January 31, 2023. The primary outcome was the number of initial therapeutic levels compared between the pre- and post-intervention groups. Secondary outcomes were incidence of AKI, number of levels checked before reaching initial therapeutic levels, average total daily vancomycin dose (TDD) at therapeutic levels, percentage of levels drawn at the correct time, and AUC comparison with trough levels in the post-intervention group. Statistical analyses were completed using IBM SPSS Statistics Version 29.0.0.0. Continuous data was analyzed using the Mann Whitney U test and reported as median and interquartile range (IQR). Categorical data was analyzed using the Chi-square test and reported as number and proportion (%). Statistical significance was determined at an alpha level of ≤ 0.05.

RESULTS:A total of 184 patients were included: 100 in the pre-intervention group and 84 in the post-intervention group. Baseline characteristics were similar in both groups except for weight (post-intervention 91.6 kg [IQR 74.7-122.9] vs pre-intervention 78.7 kg [IQR 66.5-100.8], p=0.004) and vancomycin indication (p=0.014). The post-intervention group included more bone and joint infections, febrile neutropenia and intra-abdominal infections; the pre-intervention group included more pneumonia, bacteremia and sepsis of unknown origin. The post-intervention group achieved significantly more therapeutic levels at the initial level drawn (39 [46.4%] vs 19 [19.0%], p<0.001). The median number of levels (peak and trough set counted as one level in the post-intervention group) drawn until reaching initial therapeutic levels was significantly less in the post-intervention group (1 [IQR 1-1] vs 2 [IQR 1-2], p=0.002). In the pre-intervention group, 37 out of 208 [17.7%] patients screened were excluded due to levels being drawn outside of acceptable window compared to 17 out of 101 [16.8%] screened patients in the post-intervention group (p=0.83). There were no differences between the groups in incidence of AKI (post-intervention 5 [5.9%] vs pre-intervention 6 [6.0%], p=0.989) or the average TDD at therapeutic levels (post-intervention 2500 mg [IQR 2000-3750] vs pre-intervention 3000 mg [IQR 2000-4000], p=0.23). In the post-intervention group, 63.1% of troughs accurately estimated AUC, 32.1% of troughs underestimated AUC, and 4.8% of troughs overestimated AUC.

CONCLUSIONS: In this study, AUC-based dosing was a more effective vancomycin dosing strategy compared to trough-based dosing as there were significantly more initial therapeutic levels and less sets of levels drawn until therapeutic. The similar proportion of patients with incorrect draw times in both groups suggest that attainment of two levels for two-sample AUC-based vancomycin monitoring is practical.

8:30am – 8:50am O **Evaluation of a Subcutaneous Rituximab Protocol at an Outpatient Cancer Center** Athena C

Moderators: Molly Thompson
Presenters: Laura Nguyen
Evaluators: Emily Johnson

TITLE: Evaluation of a Subcutaneous Rituximab Protocol at an Outpatient Cancer Center

AUTHORS: Laura Nguyen, Tushar Patel, Amber Keeton, Bianca Rivera-Ramirez

OBJECTIVE: The objective of this study was to compare the safety of SUBQ rituximab versus IV rituximab.

SELF ASSESSMENT QUESTION: Which of the following benefits were observed with SUBQ rituximab administration?

BACKGROUND: Rituximab is an anti-CD20 monoclonal antibody currently approved to treat CD20-positive B-cell non-Hodgkin's Lymphoma (NHL) and chronic lymphocytic leukemia (CLL). Rituximab is typically given as an intravenous (IV) infusion, with the initial infusion duration lasting up to six hours and up to four hours for subsequent infusions. Although IV rituximab is most commonly used, the most serious adverse effect is infusion reactions. In 2017, the subcutaneous (SUBQ) formulation of rituximab, in combination with hyaluronidase, was approved by the U.S. Food and Drug Administration (FDA). This formulation is administered over five to seven minutes as opposed to prolonged infusion times with IV formulations. Several studies have observed that the administration of SUBQ rituximab has reduced medication preparation, administration, and monitoring times, reducing nursing workload and patient infusion chair time. Clinical trials such as the SABRINA, SAWYER, and MabEASE trials reported that the frequency of adverse events was similar in both SUBQ and IV rituximab, with neutropenia being the most common grade 3 or higher adverse event across all research studies. Both routes of administration have similar efficacy and safety profiles.

METHODOLOGY: A retrospective chart review was conducted at the John B. Amos Cancer Center (JBACC) to compare patients receiving IV rituximab before implementing the SUBQ rituximab protocol versus patients receiving SUBQ rituximab after the implementation. Patients who tolerated at least one dose of IV rituximab and have the FDA-approved or National Comprehensive Cancer Network (NCCN) indications for SUBQ rituximab were included in the study. Patients who experienced infusion-related reactions to IV rituximab and lacked documentation were excluded from the study. Data from the pre-implementation of the SUBQ protocol consisted of patients who received IV rituximab from May 2022 to July 2022. The post-implementation phase consisted of patients who received SUBQ rituximab from October 2022 to March 2023. The primary objective was to compare the safety of SUBQ rituximab and IV rituximab, which was determined by the percentage of patients who developed grade 3 or 4 administration-related reactions. The secondary objectives include the total pharmacy preparation time, patient chair time, nursing adherence to the SUBQ protocol, and satisfaction with the SUBQ rituximab administration.

RESULTS: During the pre-implementation phase, one patient experienced a grade 3 reaction and five patients experienced grade 1 or 2 reactions from IV rtuximab. The total pharmacy preparation time for IV rituximab from second verification to final product check was 25 minutes and the patient chair time from the beginning of the IV rituximab infusion to its completion was 105 minutes. One patient was included during the post-implementation phase and did not experience any adverse reaction from receiving SUBQ rituximab. The average pharmacy preparation time was 9 minutes and the total patient chair time for the SUBQ rituximab administration was 5 minutes.

CONCLUSIONS: From the administrations included in this study, SUBQ rituximab has shown potential to improve pharmacy preparation time, patient chair time, and nursing satisfaction. Limitations such as insurance, capped number of cycles, and cost was a barrier to convert to SUBQ rituximab in this study. Based on the current data available, SUBQ rituximab is well-tolerated and have similar efficacy and safety compared to IV rituximab, which supports the use SUBQ rituximab to allow patients to receive it in a more convenient delivery.

8:30am – 8:50am D **Evaluation of Pediatric Enoxaparin Dosing Practices** Athena J

Moderators: Michelle Turner
Presenters: Mitchell Thelen
Evaluators: Giannopoulos Figg

TITLE: Evaluation of Pediatric Enoxaparin Dosing Practices
AUTHORS: Mitchell Thelen, Alex Ewing, Heather Hughes
OBJECTIVE: Not required.
SELF ASSESSMENT QUESTION: Not required.
BACKGROUND: The American College of Chest Physicians recommends venous thromboembolism treatment dosing with enoxaparin 1.5 mg/kg/dose in patients less than 2 months old and 1 mg/kg/dose in patients at least 2 months old. This recommendation is only supported by one study, conducted in 1996, with a patient population of 32. It has since been speculated, through recently published literature, that much higher mean maintenance doses are required in the pediatric population for various reasons regarding patient-specific characteristics. The purpose of this study is to evaluate the relationship between proper/improper enoxaparin dosing and anti-Xa levels in the pediatric population.
METHODOLOGY: A single-center, retrospective, cohort study will be conducted on pediatric patients admitted to a community children's hospital between February 2020 and August 2022 who require either prophylaxis or treatment with enoxaparin for venous thromboembolism. Compliance to protocol defined by proper time to anti-Xa level measurement, whether patients met criteria, and adherence to the order set will be the primary outcome. Secondary outcomes include number of anti-Xa levels collected, percentage of anti-Xa levels in goal, number of anti-Xa levels required to reach therapeutic range, weight and age-appropriate dosing, and clinically relevant bleeding occurrences. Patient characteristics deemed to have a correlation with volatile dosing and anti-Xa level measurements will be analyzed, including patients less than 5.9 months old, preterm neonates, obese or overweight, of critical care status, or of Native American ethnicity. Patients will be excluded if there is any sign of active bleeding, platelet count less than 50,000/mm3, already receiving anticoagulation prior to enoxaparin initiation, invasive procedure planned within 24 hours, epidural catheter removal within 12 hours, or patient/guardian refusal.
RESULTS: In progress
CONCLUSIONS: In progress

8:30am – 8:50am S **Impact of psychiatric pharmacists within population health management: An evaluation of alcohol use disorder telephone outreach** Parthenon 2

Moderators: Tabitha Carney

Presenters: Megan Jackson

Evaluators: Heather Snyder

TITLE: Impact of psychiatric pharmacists within population health management: An evaluation of alcohol use disorder telephone outreach

AUTHORS: Megan Jackson, Kyrsten Chaplin

OBJECTIVE: 1. Percentage of telephone outreach attempts completed by psychiatric pharmacist via AUD Patient Report resulting in successful alcohol related interventions

2. Characterize interventions completed

SELF ASSESSMENT QUESTION: What interventions were completed by psychiatric pharmacists using telephone outreach for patients with a positive AUDIT-C screening?

BACKGROUND: Alcohol consumption is one of the leading preventable causes of death in the United States. The number and rate of alcohol related deaths increased approximately 25% between 2019 and 2020. Alcohol use is a modifiable risk factor for many medical and mental health conditions. One of the major treatment barriers is that many who consume alcohol do not meet the official criteria for alcohol use disorder (AUD) but may still have unhealthy alcohol consumption. The VA National Academic Detailing Services AUD Patient Report was developed to help detect those who have reported unhealthy alcohol use based off recent Alcohol Use Disorder Identification Test - Consumption (AUDIT-C) scores. Interdisciplinary healthcare team members are able to utilize this data to identify patients who may benefit from outreach to discuss their alcohol consumption, provide brief interventions, and offer treatment options.

METHODOLOGY: This is an IRB exempt, multicenter, observational, retrospective, cohort study that will be conducted at 2 separate VA facilities. Patients will be identified for inclusion based on attempted outreach intervention as documented by psychiatric pharmacists in the AUD Patient Report. Data will be collected via electronic chart review and dashboard analysis. Patients will be included if they were selected by a pharmacist for attempted telephone outreach interventions between 5/1/2022 and 12/31/2022. Interventions will be categorized as follows: intervention completed, intervention in progress, intervention indicated, intervention not indicated, and intervention unsuccessful. A successful intervention will be defined as the following: brief intervention completed, AUDIT-C performed, pharmacotherapy for alcohol use initiated, referral to substance use disorder specialty care, linkage to alcohol detoxification services, or referral to general mental health care.

RESULTS: In progress

CONCLUSIONS: In progress

8:30am – 8:50am 1 **IMPACT OF TRANSPLANT PHARMACIST-PROVIDED EDUCATION ON HEPATITIS C-POSITIVE KIDNEY ACCEPTANCE** Parthenon 1

Moderators: Emily Harman
Presenters: Victoria Burnette
Evaluators: Sarah Blackwell

TITLE: IMPACT OF TRANSPLANT PHARMACIST-PROVIDED EDUCATION ON HEPATITIS C-POSITIVE KIDNEY ACCEPTANCE

AUTHORS: Victoria Burnette, Kwame Asare, Caroline Gatzke, Robin Tagatz

OBJECTIVE: Identify the effect of transplant pharmacist-provided education on patient consent rate for Hepatitis C NAT-positive kidneys.

SELF ASSESSMENT QUESTION: Does the method of pharmacist-provided education affect consent rate for Hepatitis C NAT-positive kidneys?

BACKGROUND: Historically, organ donors with Hepatitis C virus (HCV) were ineligible to donate to candidates without HCV. This practice has changed over the past eight years due to the FDA-approval of direct-acting antivirals (DAA). Currently, up to 15% of organ donors are HCV positive via nucleic acid testing (NAT); however, these organs are still underutilized due to candidate perception of increased risk associated with contracting HCV and the stigma surrounding the virus. However, utilization of HCV NAT-positive kidneys has risen dramatically since the introduction of DAAs, a class of medications that has resulted in HCV cure rates of 95% to 100%. Not only have DAAs provided a cure of a devastating infection for a large majority of patients infected with HCV, they have opened a pathway for the use of HCV viremic donor organs into HCV-negative recipients. When comparing patients who received a kidney from a HCV NAT-positive donor versus those who received a kidney from a HCV NAT-negative donor, clinical outcomes, including the need for postoperative dialysis, rates of rejection in the first year post-transplant, and one-year survival are comparable. Our facility accepts organs from HCV NAT-positive donors and has implemented a transplant pharmacist-provided education program for candidates; its purpose is to provide candidates with information about the benefits and risks associated with accepting a HCV NAT-positive organ in order for the candidate to make an informed decision. The purpose of this study was to determine the effect of transplant pharmacist-provided education on transplant candidates' consent to accept a kidney from a HCV NAT-positive donor.

METHODOLOGY: This study is a retrospective chart review of transplant candidates who were educated by a transplant pharmacist at Ascension Saint Thomas Hospital West (ASTHW) between March 2021 and November 2022. This is a single center study, and includes a total of 485 patients. Kidney transplant candidates at least 18 years of age were included. Patients were excluded if they received a dual organ transplantation, were antibody positive but NAT-negative when tested for HCV, or were pregnant or incarcerated at the time of evaluation. Primary outcome compared proportion of candidates who consented to a HCV NAT-positive kidney after education by a transplant pharmacist versus transplant coordinator-provided education. Secondary outcomes included acceptance rate based on education method, change in consent status, and baseline characteristic differences between candidates who consented and those who did not consent.

RESULTS: Four hundred and sixty-two patients were included in the study. Four hundred and fifty-five patients were educated by a transplant coordinator prior to being educated by a pharmacist. Seven patients were only educated by a pharmacist. Pharmacist-provided education significantly increased the HCV NAT-positive kidney acceptance rate compared to coordinator-provided education (91% versus 32%, $p = < 0.001$). Education by a pharmacist was equally effective regardless of education method (acceptance rate of 91% in-person versus 92.1% via telephone, $p = 0.825$). There was no statistical difference in baseline characteristics between patients who consented and those who did not consent.

CONCLUSIONS: In this study, we observed that pharmacist-provided education increased patient consent rate to accept a kidney from a HCV NAT-positive donor compared to coordinator-provided education at ASTHW.

8:50am – 9:10am B **Analysis of INR control of a pharmacy-run vs. cardiology-run warfarin clinic** Olympia 2

Moderators: Kristen Kilby

Presenters: Marc Ramgoolam

Evaluators: Brandi Dahl

TITLE: Analysis of INR control of a pharmacy-run vs. cardiology-run warfarin clinic

AUTHORS: Marc Ramgoolam, Maggie Green, D. Ryan Oliver

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Background/Purpose: Through seven decades of use, warfarin has gained approval in prevention and treatment of deep vein thrombosis (DVT), pulmonary embolisms (PE), and prevention of stroke in patients with atrial fibrillation (AF), valvular heart disease, or prosthetic heart valves. The establishment of anticoagulation clinics has been essential in assisting patients with control of their INR. Warfarin's narrow therapeutic index has remained a challenge for patients, and when coupled with the various existing drug – drug, drug – food, and drug – disease interactions. often cause complications in meeting these INR goals. Pharmacist – run anticoagulation clinics are becoming more prominent with the emergence of both collaborative practice agreements and clinical pharmacists. However, comparisons between pharmacist-run and physician-run clinics have shown head-to-head data based on different populations or clinic locations. Even fewer studies are available comparing the TTR with clinics that were once physician – led and have transitioned to being pharmacist – led. The necessity of studying a previously physician – led anticoagulation clinic which transitioned to a fully controlled, pharmacist – led operation is warranted to determine whether outcomes in TTR showed a substantial benefit in the same patient population. The purpose of this study was to determine whether a population of patients who had anticoagulation managed by cardiology practitioners and transitioned to a pharmacists managed clinic had better control of their INR by measuring time in therapeutic range (TTR) before and after transition.

METHODOLOGY: Methodology: This is a retrospective quasi – experimental retrospective study that collected data from October 31, 2020 – October 31, 2022. INR data was collected using AllScripts electronic health record and hospitalizations were collected using Soarian Clinicals electronic health record. The primary outcome was the difference in TTR between the pharmacy-led and cardiology-led clinic. An unpaired student t – test was used to analyze the data with the use of Microsoft Excel and graphpad.com which provides a free t – test calculator. Eligible patients were ≥ 18 years of age, managed by the anticoagulation clinic through the data collection time frame, and required lifelong anticoagulation treatment with warfarin despite potential changes in goal INR.

RESULTS: Results: There were 43 patients in the Cardiology group and 53 patients in the Pharmacy group for a total of 96 patients in the study. The average TTR for Cardiology vs. Pharmacy was 55.8% vs. 59.1%, respectively (P value = 0.429). There was a total of 35 hospitalizations with 9 occurring with cardiology group and 26 occurring with pharmacy group. Of the 35 hospitalizations the majority were surgeries or scheduled procedures such as heart catheterizations and other miscellaneous events such as shortness of breaths and chest or abdominal pain. The remaining five instances of hospitalizations involved bleeds which all occurred during the Pharmacy-ran clinic, however none of the bleeds met criteria for clinically significant bleeding as defined by the International Society of Thrombosis and Hemostasis.

CONCLUSIONS: Conclusion: During this retrospective chart review study there was no statistically significant difference between the cardiology-ran vs. pharmacy-ran anticoagulation clinics. A longer trial period or larger sample size may have identified a statistically significant difference between the two groups.

8:50am – 9:10am B **Population Health Outcomes in Diabetes Care: Pharmacist Impact on Hemoglobin A1c Reduction** Olympia 1

Moderators: Devin Lavender

Presenters: Ryan Cromer

Evaluators: Drew Cates

TITLE: Population Health Outcomes in Diabetes Care: Pharmacist Impact on Hemoglobin A1c Reduction

AUTHORS: Ryan Cromer, Courtney McDonald, Jamie Crossman, Jennifer Hayes, Lori Hornsby, Matthew Holt

OBJECTIVE: To evaluate the impact of pharmacist intervention on hemoglobin A1c values in a type 2 diabetes mellitus patient population

SELF ASSESSMENT QUESTION: How does clinical pharmacist intervention affect appointment follow-up and change in A1c?

a. Improves follow-up and change in A1c

b. Worsens follow-up and change in A1c

c. No change

BACKGROUND: Diabetes mellitus is a chronic disease affecting millions of Americans. Managing diabetes can be burdensome and complex to both the physician and patient. Evidence for opportunities to impact diabetes and its outcomes has grown, leading to development of population health improvement initiatives to prevent burden and reduce long-term complications. The pharmacist's role has expanded in a variety of practice settings, allowing for improved outcomes in diabetes. A pharmacist-led population health initiative was created within a family medicine clinic with pharmacists on site to target patients with diabetes mellitus and A1c ≥9% for intervention. The pharmacists review patient charts, contact patients via telephone, make recommendations to providers, schedule follow-up appointments with providers, and, upon provider referral, see patients in clinic for management of diabetes. During clinic visits pharmacists work with patients to provide diabetes education and glycemic control, and discuss goals, complications, lifestyle modifications, and manage medications. The purpose of this study is to evaluate the impact of a pharmacist-led diabetes program in patients with type 2 diabetes within the healthcare system.

METHODOLOGY: A retrospective chart review was conducted to evaluate the effectiveness of the pharmacist-led diabetes initiative in a clinic with pharmacists on site between October 1, 2021 through February 28, 2023. Patients with type 2 diabetes mellitus and A1c ≥9% were included. The primary outcome was percentage of patients achieving A1c

8:50am – 9:10am C **Assessing the Impact of a Dedicated Heart Failure Team on Guideline-Directed Medical Therapy Initiation During Hospitalization** Athena D

Moderators: Elisabeth Webb

Presenters: Maya Watford

Evaluators: Kirby Benson

TITLE: Assessing the Impact of a Dedicated Heart Failure Team on Guideline-Directed Medical Therapy Initiation During Hospitalization

AUTHORS: Maya Watford and Quwanna Clemons

OBJECTIVE: By the end of the presentation the learner will be able to understand the impact of having a dedicated inpatient heart failure team.

SELF ASSESSMENT QUESTION: What are the benefits of having a dedicated inpatient heart failure team?

BACKGROUND: Heart failure (HF) continues to be one of the most frequent and costly conditions for hospitalizations. Despite extensive evidence demonstrating the efficacy of recommended therapies, most patients are not receiving sufficient therapy. Establishing a dedicated inpatient heart failure team (HFT) who ensures patients receive evidence-based treatments with guideline-directed medical therapy (GDMT) is instrumental to address gaps in care across the continuum of care. The purpose of conducting this study is to assess the rate of GDMT initiation when a dedicated HFT is involved in the hospital setting for patients admitted with acute decompensated reduced HF.

METHODOLOGY: A retrospective, randomized chart review was conducted on adult patients admitted to Wellstar Cobb Hospital with acute heart failure with reduced ejection fraction (HFrEF) exacerbation. A medical chart review utilizing Epic Hyperspace®, an electronic healthcare record software, was performed on patients with acute HFrEF over a four-year period. The first cohort includes patients with acute HFrEF 2 years preceding heart failure team implementation (1/1/2018-1/1/2020). The second cohort is comprised of patients with acute HFrEF 2 years following inpatient heart failure team implementation (5/1/2020-5/1/2022). Primary International Classification of Diseases (ICD-10) codes for acute exacerbation of heart failure or new heart failure diagnosis were utilized to identify the target population. The heart failure team includes a HF transitions of care clinical pharmacist, HF nurse navigator, and a nurse practitioner who works under the direction of a cardiologist champion. A total of 300 patients (150 per group) were randomized. Data points for primary and secondary outcomes were collected via chart review and stored in an encrypted Microsoft Excel database for further analysis. The primary outcome of this study is the rate of GDMT initiation in acute HFrEF patients at discharge compared between a historical group and an intervention group. The secondary outcomes for this study are 30-day heart failure readmission rates, 30 and 60-day GDMT continuation, rate of scheduled 7-day follow-up appointments, and length of stay.

RESULTS: Of 300 total patients included in this study with 150 patients randomized to the pre-HFT and HFT groups, the HFT group was able to initiate more patients on GDMT than the pre-HFT group (n=76, n=62) respectively. This finding, reflective of the primary outcome, was found to be clinically significant, however, not statistically significant (p=0.104). The HFT group also demonstrated a positive impact on 30-day HF readmission rates (pre-HFT=14%, HFT=7%) and rate of scheduled 7-day follow-up appointments (pre-HFT=48%, HFT=70%) that were both statistically significant, (30-day HF readmission rates, p=0.037; rate of scheduled 7-day follow-up appointments, p=0.0001). The average length of stay was greater in the HFT group due to several outliers and there was no difference found among 30 and 60-day GDMT continuation between both groups.

CONCLUSIONS: Having a dedicated HFT improves the outcomes of HF patients with the greatest impact seen with 30-day readmission rates and scheduled 7-day follow-up appointments. Although there was no statistical difference in GDMT initiation the HFT demonstrated clinical significance.

8:50am – 9:10am R **Effect of Steroid Discontinuation Strategy on Shock Resolution in Patients with Septic Shock** Athena H

Moderators: Kelly Norris
Presenters: Haley Parker
Evaluators: Ashley Woodhouse

TITLE: Effect of Steroid Discontinuation Strategy on Shock Resolution in Patients with Septic Shock

AUTHORS: Haley Parker, Tyler Chanas, Lauren Chambers, Douglas Schiller

BACKGROUND: Septic shock is the leading cause of death in hospitalized patients. The Surviving Sepsis Campaign 2021 Guidelines recommended the use of IV corticosteroids in adult patients with septic shock and an ongoing vasopressor requirements. There is no guidance given by the Surviving Sepsis Campaign Guidelines as to the specific treatment course of IV corticosteroids. To determine the optimal steroid discontinuation regimen to balance the potential for hemodynamic instability with the adverse effects that steroids can cause during treatment, there is more data that needs to be collected. Therefore this study was designed to compare treatment courses of patients on IV corticosteroids by looking at outcomes in patients who had the IV corticosteroids stopped abruptly at the end of therapy compared to those who were tapered off.

METHODOLOGY: This was a single-center, retrospective cohort study conducted at ECU Health Medical Center (ECUHMC) from 8/1/21-7/30/22. Patients were included if they were >18 years of age, admitted to the MICU or CICU at ECUHMC, received at least 4 doses of IV hydrocortisone 50mg every 6 hours, and were diagnosed with septic shock which was defined as >10 mcg/min norepinephrine for >4 hours plus a positive culture. They were excluded if they had received concurrent dobutamine, milrinone, or midodrine, had taken corticosteroids outpatient within 14 days of admission, had care withdrawn within 24 hours of hydrocortisone discontinuation, COVID19 positive, mechanical circulatory support, or if the patient passed while on the initial dose of steroids. Patients who discontinued hydrocortisone abruptly were compared to those who received a taper. The primary outcome for the study was re-initiation or dose increase of vasopressors within 24 hours of hydrocortisone discontinuation.

RESULTS: 827 orders for hydrocortisone 50mg every 6 hours were screened and 55 patients were included for analysis. There was no difference seen in the rate of restart or dose increase of vasopressors between groups; 2 patients (4%) in the steroid taper group and 4 patients (7%) in the non-taper group (p=0.3943). Participants in the taper group had a shorter length of ICU stay after the initial order was discontinued at 1.42 days compared to 3.62 days in the non-taper group (p=0.0443). The remainder of the secondary outcomes did not meet statistical significance.

CONCLUSIONS: In this single-center retrospective study there was no difference seen in the number of patients who required a dose increase of vasopressors or vasopressor re-initiation between those who tapered off of IV hydrocortisone compared with those who stopped it abruptly following the resolution of septic shock. However, as this did not meet statistical significance it is difficult to determine the true clinical impact of this outcome.

8:50am – 9:10am R **Evaluation of Phenobarbital for Alcohol Withdrawal in an Emergency Department** Athena I

Moderators: Kaci Shuman

Presenters: Annmarie Vallomthail

Evaluators: Cassidy Moses

TITLE: Evaluation of Phenobarbital for Alcohol Withdrawal in an Emergency Department

AUTHORS: Annmarie Vallomthail, Jessica Rivera, Emily Green

OBJECTIVE: Describe the use of phenobarbital in the management of alcohol withdrawal in the emergency department.

SELF ASSESSMENT QUESTION: What are the potential advantages to using phenobarbital in the management of alcohol withdrawal?

BACKGROUND: Benzodiazepines are first-line treatment options for alcohol withdrawal syndrome but can be associated with poor clinical outcomes such as increased hospital and intensive care unit (ICU) length of stay. Benzodiazepines may also contribute to psychomotor deficits, cognitive impairment, and delirium. They interact with alcohol, opioids, and CNS depressants, increasing the risk of respiratory depression. American Society of Addiction Medicine guidelines for the prophylaxis and management of alcohol withdrawal syndrome are based on the utilization of benzodiazepines, however, there is data to support the safety and efficacy of benzodiazepine-sparing strategies. Phenobarbital is an emerging treatment option that may provide additional advantages given its longer half-life.

METHODOLOGY: This was a retrospective chart review submitted for IRB approval at a large academic medical center. An electronic health record (EHR) database search was conducted to identify patients from 2018 to 2022 who received treatment for alcohol withdrawal in the emergency department. Patients who received phenobarbital in addition to a symptom-triggered lorazepam-based alcohol withdrawal protocol were compared to patients who only received a symptom-triggered lorazepam-based alcohol withdrawal protocol. Those excluded from the study were patients who took phenobarbital as a home medication, were pregnant, left against medical advice within twenty-four hours, died within 24 hours, had a history of epilepsy, received a benzodiazepine prior to phenobarbital administration, or were less than 18 years of age. The primary outcome evaluated was the patient’s final disposition, for example discharge from the emergency department, hospital admission, or ICU admission. Secondary outcomes included ICU and hospital length of stay, need for additional phenobarbital doses, reduction in Clinical Institute Withdrawal Assessment Alcohol Scale Revised (CIWA-AR) scores, incidence of adverse events, and mechanical ventilation. Descriptive statistics were utilized to analyze primary and secondary outcomes as well as baseline characteristics.

RESULTS: A total of 25 patients in the control arm received the symptom-triggered lorazepam-based protocol and 25 patients in the intervention arm received phenobarbital in addition to the symptom-triggered lorazepam-based protocol. Two (8%) patients were discharged from the emergency department in both the control and intervention arm. There were 19 (76%) patients admitted to a general medicine floor in the control arm; whereas, 23 (92%) patients were admitted to a general medicine floor in the intervention arm. A total of 4 (16%) patients were admitted to an ICU in the control arm and no patients were admitted to an ICU in the intervention arm. The median total dose of benzodiazepines in lorazepam equivalents was 15 mg in the control arm versus 8 mg in the intervention arm. The median reduction in CIWA score was 4 points in the control arm and 8 points in the intervention arm. There was no difference in hospital length of stay and no difference in incidence of mechanical ventilation and seizures between the two groups. In the intervention arm, 16 (63%) of patient required an additional dose of phenobarbital based on protocol procedure but did not receive the additional dose.

CONCLUSIONS: Phenobarbital use in alcohol withdrawal resulted in an overall trend in decreased ICU length of stay, decreased benzodiazepine use, and greater reduction in CIWA scores. Adherence to phenobarbital protocol was poor and nursing re-education is needed on proper utilization of the phenobarbital protocol. Further study is needed to evaluate the impact on meaningful clinical outcomes.

8:50am – 9:10am R **Nephrotoxic Risk Associated With Combination Therapy of Vancomycin and Piperacillin-Tazobactam in Critically Ill Patients with Chronic Kidney Disease** Athena G

Moderators: Sara Gattis
Presenters: Tamyah Pipkin
Evaluators: Rachel Larry

TITLE: Nephrotoxic Risk Associated With Combination Therapy of Vancomycin and Piperacillin-Tazobactam in Critically Ill Patients with Chronic Kidney Disease

AUTHORS: Tamyah Pipkin, PharmD; Stuart Pope, PharmD, MSPS, BCCCP; Alley Killian, PharmD, BCCCP; Ben Albrecht, PharmD, BCIDP; Sarah Green, PharmD, BCIDP, AAHIVP; Katherine Nugent, MD, FACEP

BACKGROUND: The combination of vancomycin and piperacillin- tazobactam (VPT) has been associated with acute kidney injury (AKI) in non-critically ill patients when compared to other vancomycin and anti-Pseudomonal beta-lactam combinations. Despite this observed association, VPT remains a widely used empiric therapy combination in critically ill patients. Additional studies examining the nephrotoxic risk of VPT in critically ill patients have not demonstrated the aforementioned association, suggesting that the previously described increased AKI risk with VPT may not be extrapolated to critically ill patients. Furthermore, patients with baseline renal dysfunction have been excluded from almost all of these studies, thus creating a need to examine risk in this particular patient population. The purpose of this study is to evaluate the nephrotoxic risk with VPT in critically ill patients with baseline chronic kidney disease (CKD).

METHODOLOGY: This was a single-center, retrospective cohort analysis of adult intensive care unit (ICU) patients with baseline stage 3 or 4 CKD who received vancomycin plus an anti-Pseudomonal beta-lactam at Emory University Hospital between January 1, 2015 and July 1, 2022. Patients were excluded if study antibiotics were initiated >24 hours before ICU admission, if they received any study antibiotic within 7 days prior to study inclusion, received >1 anti-Pseudomonal beta-lactam within 7 days after study inclusion, developed AKI within 24 hours of study antibiotic initiation, were pregnant or incarcerated, expired within 72 hours of antibiotic initiation, or received renal replacement therapy (RRT) prior to ICU admission. The primary outcome was incidence of AKI. Secondary outcomes included incidence of stage 2 or 3 AKI, time to development of AKI, time to return to baseline renal function, new requirement for RRT, ICU and hospital length of stay, and in-hospital mortality. In addition to descriptive statistics, Chi square or Fis tests were used to assess our dichotomous variables. Student t-test was used for continuous variables.

RESULTS: A total of 109 patients were included. The rates of AKI were not significantly different between the VPT and other beta-lactam combination groups (22/44 [50%] vs 38/65 [58%]; p = 0.4). There were also no statistically significant differences with regard to incidence of stage 2 or 3 AKI (7/44 [15.9%] vs 4/65 [6%]; p = 0.98), time to AKI development (1.7 vs 2 days; p = 0.5), time to return to baseline renal function (4 vs 3 days; p = 0.2), new requirement for RRT (2/44 [4.5%] vs 1/65 [1.5%]; p = 0.3), ICU length of stay (7.3 vs 7.4 days; p = 0.9), hospital length of stay (19.3 vs 20.1 days; p = 0.87) or in-hospital mortality (7/44 [15.9%] vs 7/65 [10.8%]; p = 0.4). There was a significant difference seen in the duration of antibiotic therapy (3.23 vs 2.62 days; p = 0.45), however this was not associated with a greater risk of adverse renal outcomes.

CONCLUSIONS: Our study did not demonstrate an association between VPT and increased risk of AKI compared to other vancomycin / beta-lactam combination therapies in critically ill patients with baseline CKD. We also found no difference in the incidence of stage 2 or 3 AKI, new requirement for RRT, ICU and hospital length of stay or in-hospital mortality. The VPT group had a longer duration of study antibiotics, however this was not associated with a greater risk of adverse renal outcomes. Prospective and more robust clinical studies are warranted to confirm these findings.

8:50am – 9:10am | **Accelerated physician notification of positive Clostridioides difficile result: an analysis** Athena B

Moderators: Brandon Beers
Presenters: Robyn Best
Evaluators: Erica Bowles

TITLE: Accelerated physician notification of positive Clostridioides difficile result: an analysis

AUTHORS: Robyn Best, Alanna Rufe, James Miracle, Nancy Bailey

OBJECTIVE: To assess the efficacy of adding positive Clostridioides difficile results as a critical value (requiring physician notification within one hour) on time to therapy initiation.

SELF ASSESSMENT QUESTION: True or false: making positive Clostridioides difficile results a critical value (requiring physician notification within one hour) resulted in a significant decrease in median time to therapy initiation.

BACKGROUND: Delayed initiation of Clostridioides difficile (C. difficile) therapy is hypothesized to lead to increased morbidity and mortality in patients with Clostridioides difficile infection (CDI). The objective of this evaluation is to assess the effect of adding positive laboratory results for C. difficile to a Critical Tests and Critical Values and Results protocol, which requires positive results to be called to a physician, on the time to initiation of C. difficile-directed therapy.

METHODOLOGY: The study was a retrospective chart review which evaluated patients with positive C. difficile results who were admitted at Jackson Hospital and Clinic from August 1, 2019 to July 31, 2020 (prior to the addition of C. difficile to the physician notification protocol) and from June 1, 2021 to June 31, 2022 (after the protocol amendment). Subjects were excluded if less than 19 years of age, pregnant, incarcerated, not inpatient status, had laboratory-confirmed C. difficile within 56 days prior to admission, or expired within 24 hours of result. The primary outcome was the time between result and initiation of C. difficile-directed therapy, analyzed using the Mann Whitney U test. Key secondary outcomes included time to de-escalation of unnecessary antibiotics, duration of therapy, isolation protocol management, physician specialty consultations, length of stay, time of notification between the laboratory, the nurse, and the physician, and readmission and mortality rates. A power analysis determined 63 patients were needed per group to achieve 80% power with an alpha of 0.05 to detect a 40% reduction in time to therapy initiation, assuming a baseline time of two to ten hours.

RESULTS: After reviewing 206 charts, a total of 178 patients were included. There were 99 patients in the pre-protocol implementation group and 79 included in the post-protocol group. Twenty-eight patients were excluded, primarily for non-inpatient status. Baseline demographics were comparable between the two groups. The mean age was 68 years vs. 67 years, 41.6% vs. 53.6% were male, and 58.4% vs. 48.8% were white in pre- vs post-protocol groups respectively. Fulminant CDI accounted for 43% of the pre-protocol and 31% of post-protocol cases, severe CDI for 25% vs. 36%, and non-severe CDI for 33% in both groups. There was not a statistically significant difference in median time from result to initial regimen ordered between pre- and post-protocol groups (1.5 hours vs. 0.6 hours; p=0.066). Notably, in the post-protocol group, 43% of results were not documented as called to the physician. There was an increase in the percent of guideline-directed regimens in the post-protocol group (29.8% vs. 58.2%). There was no significant difference between pre- and post-protocol groups in recurrence (6.1% vs. 10.1%; p=0.537) or mortality (9.1% vs. 12.7%; p=0.473).

CONCLUSIONS: The addition of C. difficile to the Critical Tests and Critical Values and Results protocol did not significantly decrease the time to provider ordering of anti-CDI therapy although there was a numeric decrease. Clinical outcomes did not significantly differ between groups. However, there was an observed increase in adherence to guideline recommendations, which is an important antimicrobial stewardship goal. Given that protocol adherence was only documented for 57% of cases in the post-protocol group, a key conclusion from this study was the need for ongoing staff education.

8:50am – 9:10am | **Retrospective Assessment of Meropenem At WellStar North Fulton Hospital** | Athena A

Moderators: Bruce Jones
Presenters: Briszeida Soto
Evaluators: Lynsey Neighbors

TITLE: Retrospective Assessment of Meropenem At WellStar North Fulton Hospital

AUTHORS: Briszeida Soto, Essie Samuel

OBJECTIVE:
SELF ASSESSMENT QUESTION:

BACKGROUND: Antibiotics are one of the most frequently prescribed medications in the hospital setting. At Wellstar North Fulton (WSNF), the use of carbapenems, such as meropenem, is not restricted and, therefore, widely used by providers. Within the past couple of years, WSNF's standardized antimicrobial administration ratio (SAAR) data has shown an increase in meropenem use, potentially affecting bacterial strain susceptibility. On last year's antibiogram, the susceptibility of Pseudomonas aeruginosa to meropenem fell below 80%, making it a less favorable selection for empiric coverage at WSNF.

METHODOLOGY: A medication report was used to identify and randomize 100 patients aged 18 years or older who were admitted to WSNF from January 1 to September 30, 2022, and received at least one dose of meropenem. Patient demographic data, indication for antibiotics, cultures, dosing, renal function, and antibiotic history were recorded. Appropriateness of meropenem use was evaluated through examination of the dosing regimen, treatment duration, indication, and proper de-escalation. Safety, such as allergic reactions (rash, hives, etc.), renal adjustments, and neurological effects, were also assessed.

RESULTS: Meropenem was used appropriately in 70% of our population and inappropriately in 30%. Meropenem was used definitively in 59% of our population, with susceptibilities available in only 38% of that population. Close to a third of all meropenem use was for treatment of UTI. 34% (9/26) of meropenem use for UTI was inappropriate. Infectious disease (ID) was consulted in 94% of the patient cases and began the treatment of meropenem in 66% of the patient population. Meropenems safety results showed only 3 adverse events reported from our 100 patients. For renal adjustments 70 patients required no adjustment and 27 patients' dose was adjusted renally within a 24-hour window. 3 patient's meropenem dose was adjusted outside of the 24-hour window.

CONCLUSIONS:The findings of this study show that meropenem usage at NFH was predominately appropriate. When considering the volume of inappropriate use by indication and DOT, the areas in which the greatest impact would be made if prescription practice was improved would be for UTI, pneumonia, and empiric therapy. As well as opportunity to improve antibiotic selection for patients with PCN allergy.

8:50am – 9:10am

O **Evaluating Hepatitis B Screening in Patients Beginning Cancer Treatment at an Academic Medical Center** Athena C

Moderators: Molly Thompson
Presenters: Campbell Scott
Evaluators: Emily Johnson

TITLE: Evaluating Hepatitis B Screening in Patients Beginning Cancer Treatment at an Academic Medical Center
AUTHORS: Campbell Scott, Andrea Clarke, Anna Williams
OBJECTIVE: Evaluate current practices for hepatitis B screening prior to anti-cancer treatment
SELF ASSESSMENT QUESTION: Patients receiving which of the following therapies should receive hepatitis B screening prior to treatment initiation?
A.Anti-CD20 agent B.Parenteral cytotoxic chemotherapy C.Oral chemotherapy D.All of the above
BACKGROUND: Hepatitis B (HBV) is associated with major morbidity and mortality, with immunocompromised patients being at increased risk of complications due to inability to suppress viral antigen load. However, testing in the oncology setting has been inconsistent, with several screening strategies proposed. In 2020 the American Society of Clinical Oncology (ASCO) recommended universal screening of all patients anticipating systemic anti-cancer therapy, a major change from the 2015 recommendations to screen only prior to initiation of anti-CD20 agents or stem cell transplant. To determine a patient's HBV status and risk of reactivation, ASCO recommends obtaining the hepatitis B surface antigen, total core antibody, and surface antibody. The purpose of this evaluation was to assess our current practices for HBV screening, with the goal of updating our processes to follow new guideline recommendations. The primary objective of this study was to determine our HBV screening rates for patients starting systemic anti-cancer therapy. Secondary objectives include determining whether the full recommended screening tests were obtained and if prophylaxis was started for infected patients.
METHODOLOGY: This study is a single-center retrospective chart review of oncology patients age 18 years or older initiated on their first parenteral and/or oral anti-cancer treatment at the Georgia Cancer Center from April to September 2022, with each route of anti-cancer therapy capped at 50 patients. Patients starting hormonal therapy alone were excluded. Data collected includes patient demographics, type of treatment received, HBV screening/results, and use of HBV prophylaxis.
RESULTS: A total of 97 patients were evaluated and all were included in the final analysis. Fifty patients began only parenteral therapy, 37 patients began only oral therapy, and 10 patients started a combination of parenteral and oral therapy during the evaluation period. Sixteen patients (16.5%) received HBV screening, with only 6 of those 16 patients (37.5%) receiving the complete guideline-recommended HBV panel. Of the 16 patients screened, the majority (n= 11, 69%) started parenteral treatment. All 4 patients that received treatment with an anti-CD20 agent were screened while only 8 of 46 patients (17.4%) that received parenteral cytotoxic and 4 of 25 patients (16%) that received oral cytotoxic chemotherapy were screened. One patient was found to have chronic HBV and was initiated on antiviral prophylaxis.
CONCLUSIONS: Results from our internal review revealed low screening rate (16.5%) which did not align with updated ASCO guideline recommendations for universal HBV screening in patients being initiated on anti-cancer therapy. Based on these results, we will educate providers on the importance of hepatitis B screening for all patients receiving anti-cancer therapies based on the updated clinical recommendations. Through interdisciplinary collaboration we will work to develop processes to align institutional HBV screening practices with current ASCO guideline recommendations.

8:50am – 9:10am P **Risk Factors Associated with Adverse Cardiovascular Outcomes and Oral NSAID Use** Parthenon 1

Moderators: Emily Harman
Presenters: Justin Petway
Evaluators: Sarah Blackwell

TITLE: Risk Factors Associated with Adverse Cardiovascular Outcomes and Oral NSAID Use

AUTHORS: Justin Petway, Hannah Thorfinnson, Laura Gressler, Whitney Forbes, Timothy J. Atkinson, Ryan C. Costantino

OBJECTIVE: The objective of this presentation is for the audience to better understand the cardiovascular risk of oral NSAIDs

SELF ASSESSMENT QUESTION: Which risk factors had the most risk attributed to then in association with the Primary outcome?

BACKGROUND: Oral non-steroidal anti-inflammatory drugs (NSAIDs) are widely used analgesic medications and are a cornerstone of treatment of arthritic pain as well as other inflammatory mediated conditions. Despite their analgesic properties, NSAIDs are associated with a spectrum of adverse effects that arise from inhibiting the COX enzymes, thereby increasing the risk for cardiovascular events. Although this risk is highest among COX-2 selective NSAIDs, the increased cardiovascular risk is also recognized among traditional NSAIDs as well. The role of clinical and prescription characteristics, including comorbidities, NSAID dose, and duration of use on cardiovascular risk is not well characterized. The purpose of this study is to identify risk factors associated with adverse cardiovascular events and oral NSAID use.

METHODOLOGY: This study is an internal review board (IRB) approved, retrospective, case-controlled study from fiscal year (FY) 2015-FY2020. Inclusion criteria were, patients ≥ 18 years of age receiving care within the Department of Defense (DoD)/ Veterans Health Administration (VHA) from FY2015 to FY2020 and had received a prescription NSAID for a duration ≥ 1 month as demonstrated by consecutive fill history or prescription for an NSAID ≥ 7 day supply. Exclusion criteria were patients with missing demographic data. Data were utilized from the national DAVINCI/VINCI database between VHA and DoD. The primary endpoint of interest was a composite outcome of nonfatal myocardial infarction, nonfatal stroke, and new onset heart failure. The secondary endpoints of interest were subgroup analyses of the primary outcome. Ten controls were selected per case. T-test were used to compare continuous variables between cases and controls, while chi-square tests were utilized to compare proportions of categorical variables between cases and controls. Risk factors were identified and selected through logistic regression modeling.

RESULTS: During the study period, 231,967 cardiovascular events were identified. These cases were assigned to 2,319,670 controls. A significantly increased odds ratio (OR) of experiencing a cardiovascular event was identified among individuals with a history of myocardial infarction (OR=5.49; 95%CI 5.13 – 5.87), cerebrovascular disease (OR=5.13; 95%CI 5.04 – 5.22), or cardiomyopathy (OR=3.38; 95%CI 3.29 – 3.48). Individuals with a history of dyslipidemia (OR=0.91; 95%CI 0.90 – 0.92) experienced a significantly decreased odds of experiencing the primary outcome. Two NSAID-based characteristics, COX 2 selectivity (OR=1.08;95CI% 1.06-1.11) and non-selective (OR=1.08; 95%CI 1.05 – 1.11) oral NSAIDs, were statistically significantly associated with the primary outcome. Cox 1 selectivity and high dose oral NSAID use were not significantly associated with the primary outcome. Time since initial exposure (days), demonstrated significantly decreased odds after >90 days of exposure. Demographic risk factors showed that age was the most significant, followed by sex (male), and then race. Secondary outcomes generally followed this trend.

CONCLUSIONS: These results are concordant with existing literature as is relates to cardiovascular risk factors and previous events being strong risk factors of future events while on oral NSAIDs. Furthermore, age was the most significant risk factor and in general cardiovascular risk increases with age. Additionally, NSAID selectivity was did not significantly increase risk of an event, which is also has been reported in recent literature. While, some literature has shown a link between cardiovascular events and high dose NSAIDs, that was not seen in this study. Lastly, the longer duration of NSAID use was associated with decreased odds. Overall, it appears that if a cardiovascular event is going to happen, it's going to be early with NSAID use.

8:50am – 9:10am D **Implementation of the KIDs List Criteria and its Effect on Medication Safety in Pediatrics** Athena J

Moderators: Michelle Turner
Presenters: James Thurston
Evaluators: Giannopoulos Figg

TITLE: Implementation of the KIDs List Criteria and its Effect on Medication Safety in Pediatrics
AUTHORS: James Thurston, Bethany Lynch, Alex Ewing
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Pediatric patients are at an increased risk for adverse drug reactions due to unique pharmacokinetics and pharmacodynamics, as well as a lack of literature for medication use in this population. The recently published Key Potentially Inappropriate Drugs in Pediatrics, or KIDs List, is a guide for practitioners to identify medications that may cause harm in pediatric patients. The KIDs List provides improved guidance for appropriate medication use in pediatric patients, but there is limited experience assessing the implementation of these recommendations in real-world settings. The objective of this study is to decrease the number of inappropriate medications orders in pediatric patients through implementation of improved ordering alerts in the electronic medical record.
METHODOLOGY: This is a single-center, retrospective, pre- and post-intervention analysis conducted at Prisma Health Children's Hospital-Upstate that will evaluate the effectiveness of new pediatric medication safety alerts. In the pre-intervention phase, the study team identified KIDs List medications on our hospital formulary without adequate electronic medical record prescribing alerts. In the intervention phase, the study team worked with pediatric providers and information technology analysts to activate medication order alerts that align with KIDs List recommendations and fire upon provider order entry. In the post-intervention phase, the study team will evaluate the number of medication orders for patients

8:50am – 9:10am S **Comparison of Mortality and Benzodiazepine Related Hospitalizations Between Veterans on a Reduced Benzodiazepine Dose and Veterans Who Successfully Discontinue Use Post Benzodiazepine Tapering** Parthenon 2

Moderators: Tabitha Carney
Presenters: Jessica Howington
Evaluators: Heather Snyder

TITLE: Comparison of Mortality and Benzodiazepine Related Hospitalizations Between Veterans on a Reduced Benzodiazepine Dose and Veterans Who Successfully Discontinue Use Post Benzodiazepine Tapering
AUTHORS: Jessica Howington, Christopher Nagengast, Mark LaBossiere, Andrea Zuloaga, Robyn Ward
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Benzodiazepines are quite effective for their indications, however, due to the potential for dependence and harmful withdrawal effects, guidelines generally limit use to no longer than a few weeks. Despite these current recommendations, many individuals continue to be prescribed benzodiazepines for months, years and even decades in some cases. There is limited information available that compares safety outcomes to patients who remain on a low dose benzodiazepine and patients who completely taper off benzodiazepines. The goal of this study is to compare safety outcomes among two different cohorts of patients: successful completion of benzodiazepine taper and partial taper.
METHODOLOGY: Retrospective project examining a cohort of veterans who either successfully or unsuccessfully completed a benzodiazepine taper. Patients were screened using benzodiazepine taper notes from March 1st 2016 to January 1st 2019. Eight months after placement of the taper note determined if the patient had tapered to discontinuation or 3 days during the observation period after classified as a successful taper, benzodiazepine daily dose >60 mg diazepam equivalence at time of benzodiazepine taper note, positive UDS for benzodiazepines after completion of successful taper, patients unable to decrease to

9:10am – 9:30am B **Impact of a Pharmacist-Led Asthma Clinic in a High-Risk Pediatric Population at a Federally Qualified Health Center within a Medically Underserved Area** Olympia 2

Moderators: Kristen Kilby
Presenters: Kaitlyn Phillips
Evaluators: Brandi Dahl

TITLE: Impact of a Pharmacist-Led Asthma Clinic in a High-Risk Pediatric Population at a Federally Qualified Health Center within a Medically Underserved Area

AUTHORS: Kaitlyn Phillips; Carrington Royals; Reagan Barfield; P. Brandon Bookstaver; David Turell

OBJECTIVE: Evaluate the direct impact of pharmacist intervention as part of an interprofessional collaborative team in high-risk pediatric asthma patients.

SELF ASSESSMENT QUESTION: Which of the following includes direct impacts pharmacists can make for children with asthma?

a. measure asthma control via age-appropriate asthma control tests (ACTs), lower inhaler copays, prohibit systemic corticosteroid usage due to asthma

b. reduce emergency room visits and hospitalizations due to asthma, optimize respiratory pharmacotherapy, educate on environmental trigger mitigation and spacer usage

c. demonstrate correct spacer usage, measure asthma control via age-appropriate asthma control tests (ACTs), decrease rescue and maintenance inhaler usage

d. reduce emergency room visits and hospitalizations due to asthma, eliminate inhaler usage, implement asthma action plans

Rationale: B. Maintenance inhaler usage with an inhaled corticosteroid is necessary for all patients with asthma according to asthma management guidelines. Pharmacist education on trigger mitigation, especially in the home, has significant impact on asthma flares. Pharmacists also improved guideline-directed pharmacotherapy for pediatric patients with asthma, including spacer usage. Inhaler copays are not typically subject to change, but pharmacists can assist with formularies and manufacturers. Also, pharmacists can formulate asthma action plans with families. These culminate to reduce emergency room visits and hospitalizations due to asthma. Systemic corticosteroids have to be used in some cases of severe asthma flare-ups.

BACKGROUND: The 2020 NHLBI asthma guidelines identify important asthma management tools and a stepwise approach to pharmacotherapy based on level of control in pediatric patients. However, there are few publications regarding asthma treatment at a federally qualified health center (FQHC), and even fewer regarding the pediatric population at FQHCs. FQHC patients, especially pediatric patients, are considered high-risk as they commonly face a multitude of social determinants of health. This FQHC, Tandem Health, in Sumter, SC, has an established collaborative practice agreement for pharmacist management of pediatric asthma. The purpose of this study is to evaluate the direct impact of pharmacist intervention as part of an interprofessional collaborative team in high-risk pediatric asthma patients.

METHODOLOGY: This single-center, observational study assesses the asthma control of pediatric patients within Tandem Health before and after pharmacist intervention. Patients are included if they have a current diagnosis of asthma aged 4-21 years old and are an active patient of Tandem Health. Patients are referred by Tandem Health pediatric providers to the pharmacist- led asthma clinic where they receive holistic disease state education and guideline-directed changes to asthma pharmacotherapy if needed. Patients and caregivers are surveyed with the age-appropriate asthma control test (ACT) prior to the first appointment with the asthma clinic pharmacist and at each follow-up asthma clinic or pediatric provider visit. The primary endpoint is the change in ACT score from baseline to most recent follow up, where a change of 2-3 has been validated as a clinically meaningful difference. Secondary endpoints include proportion of patients who achieve clinically meaningful increase in ACT, reduced usage of systemic corticosteroids and emergent care, and proportion of patients converted to utilizing Tandem Health’s on-site pharmacy.

RESULTS: In progress

CONCLUSIONS: In progress

9:10am – 9:30am B **Rural Primary Health Care System Administrator Perspectives on Expansion of Clinical Pharmacy Services through Collaborative Drug Therapy Modification** Olympia 1

Moderators: Devin Lavender

Presenters: Suzanne Whitten

Evaluators: Drew Cates

TITLE: Rural Primary Health Care System Administrator Perspectives on Expansion of Clinical Pharmacy Services through Collaborative Drug Therapy Modification

AUTHORS: Suzanne Whitten, Devin Lavender, Sharmon Osae, Russell Palmer, Rebecca Stone, Chelsea Keedy, Beth Phillips

OBJECTIVE: Identify gaps in health system administrator knowledge of pharmacists' abilities and describe perceived elements supporting and challenging integration of CDTM services within this rural primary health care system.

SELF ASSESSMENT QUESTION: What is a perceived barrier that Rural Health System Administrators identified as it relates to expanding pharmacy services to include CDTM?

BACKGROUND: Collaborative Drug Therapy Modification (CDTM) allows for the adjustment of dosages, dosage schedules, and/or medications within a defined protocol under physician supervision. Less than 1% of Georgia Pharmacists have a CDTM license. Pharmacist-led CDTM can positively impact health outcomes and lead to reduced healthcare expenditures. The purpose of this study was to obtain feedback from rural primary health care system administrators to assist in increasing CDTM services to expand access to patient care services in Georgia.

METHODOLOGY: A qualitative research design was utilized. A complete target population sampling was used to increase likelihood of data saturation. In January 2023, all seven health system administrators were interviewed regarding administrator's knowledge of pharmacists and pharmacist-led CDTM as well as perceived benefits of and barriers to implementation of pharmacist-led CDTM. Interview responses were transcribed. A two-cycle inductive coding process utilizing constant comparison was employed to identify themes that were verified by analyst triangulation, increasing the rigor of the analytical approach.

RESULTS: Inconsistent understanding of pharmacist knowledge, skills, and abilities by administrators was identified. Perceived benefits of pharmacist-led CDTM included (1) improved patient care, (2) increased value-based metrics, and (3) enhanced physician-pharmacist collaborations. Perceived barriers to the expansion of pharmacy services included (1) physician acceptance, (2) pharmacist knowledge and comfort, and (3) loss of revenue. Improving administrator and provider awareness of pharmacist abilities and providing evidence of benefit from similar services were identified as effective ways to encourage CDTM participation.

CONCLUSIONS: Identification of lack of understanding of pharmacist knowledge and skills as well as perceived benefits and barriers to implementing CDTM in Georgia will assist in expanding patient care services at this health care system. The results of the study will be presented to administrators to determine next steps for CDTM implementation. Administrators will continue to guide the expansion of pharmacist-led CDTM services into the health system.

9:10am – 9:30am C **PharmD Documentation to Improve GDMT Prescribing** Athena D

Moderators: Elisabeth Webb
Presenters: Emily Overly
Evaluators: Kirby Benson

TITLE: PharmD Documentation to Improve GDMT Prescribing
AUTHORS: Emily Overly
OBJECTIVE: Optimize guideline directed medical therapy for patients with heart failure with reduced ejection fraction.

SELF ASSESSMENT QUESTION: Which medication regimen would be ideal for a 60-year-old 200 lb patient with EF 30% and CrCl 100 mL/min per the 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure if tolerated?

A. Sacubitril 49/valsartan 51 BID, carvedilol 25mg BID, spironolactone 25mg daily, empagliflozin 10mg daily

B. Lisinopril 40mg daily, carvedilol 50mg BID, spironolactone 25mg BID, dapagliflozin 10mg daily

C. Sacubitril 97/valsartan 103 BID, metoprolol succinate 200mg daily, spironolactone 25mg daily, empagliflozin 10mg daily

D. Losartan 160mg BID, metoprolol succinate 100mg daily, spironolactone 12.5mg daily, dapagliflozin 10mg daily

BACKGROUND: The 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure recommends a 4-medication regimen to improve mortality/morbidity and prevent hospitalizations for patients with heart failure with reduced ejection fraction (HFrEF). Patients often require medication changes during HFrEF hospitalizations followed by multiple outpatient visits directed toward continued guideline directed medication therapy (GDMT) titrations. Providers rely on inpatient documentation to assist in therapeutic decision making and successful transitions of care. Updating how inpatient pharmacists document their recommendations may assist in optimizing GDMT prescribing.
METHODOLOGY: This is a quality improvement project performed to improve patient care at the Ralph H. Johnson Veterans Affairs Hospital (VA). All patients hospitalized for any reason >24 hours from July 1, 2022 to February 28, 2023 with heart failure with an ejection fraction (EF) ≤40% were included. Patients hospitalized for 40%, no echocardiogram within the last 12 months, followed by community care cardiology, and non-VA prescriptions for GDMT were excluded. The primary endpoint measures were GDMT prescribing and pharmacist interventions. Active outpatient prescriptions on admission and discharge were compared to assess prescribing. A new HFrEF GDMT optimization note template was developed for use by inpatient pharmacists. Heart failure sections were added to existing medication reconciliation templates and clinical intervention notes. Pharmacist recommendations and interventions were captured using health factors attached to each note. The secondary endpoint measure was number of safety events within 30 days post discharge. Safety events were determined by labs/vitals that flagged if they crossed specified safety thresholds.
RESULTS: In Progress
CONCLUSIONS: In Progress

9:10am – 9:30am R **Evaluation of Alcohol Withdrawal Management in Mechanically Ventilated Patients in the Trauma/Surgical Intensive Care Unit** Athena H

Moderators: Kelly Norris

Presenters: Zachary Smith

Evaluators: Ashley Woodhouse

TITLE: Evaluation of Alcohol Withdrawal Management in Mechanically Ventilated Patients in the Trauma/Surgical Intensive Care Unit

AUTHORS: Zachary Smith, Amanda McKinney, Reagan Bollig, Catherine L. McKnight, Brian J. Daley, A. Shaun Rowe

OBJECTIVE: To evaluate the efficacy of a RASS based protocol for the management of alcohol withdrawal syndrome in mechanically ventilated patients

SELF ASSESSMENT QUESTION: The use of symptom-triggered benzodiazepine therapy for alcohol withdrawal syndrome in mechanically ventilated patients utilizing a RASS scale is associated with:

BACKGROUND: Current guidelines for the management of alcohol withdrawal syndrome (AWS) recommend utilizing benzodiazepine therapy. Although several benzodiazepine treatment modalities exist, a commonly utilized strategy is the use of symptom-triggered benzodiazepine therapy based on a validated measure of alcohol withdrawal severity (AWS). The Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar) is validated and commonly utilized tool for measuring AWS. While validated, the CIWA-Ar score is dependent upon a patient's ability to speak, thus limiting its accuracy in mechanically ventilated patients. The Richmond Agitation Sedation Scale (RASS) is a validated scale used to measure the level of sedation in mechanically ventilated patients. A RASS score can be easily obtained by observing the patient for signs of agitated behavior and requires minimal patient participation. The purpose of this study is to compare symptom-triggered benzodiazepine therapy for AWS in mechanically ventilated patients utilizing a RASS score versus the CIWA-Ar scale.

METHODOLOGY: This is an institutional review board approved retrospective cohort study. Eligible patients for inclusion include mechanically ventilated patients 18 years of age or older admitted to the Trauma and Critical Care Surgery Service from August 1, 2015 to August 1, 2022 who received benzodiazepine therapy for AWS. Patients were excluded if they were not admitted to the Trauma Critical Care Surgery Service, not mechanically ventilated, receiving benzodiazepines prior to admission, left against medical advice within 24 hours of presentation, if the patient expired within 24 hours of presentation, had a traumatic brain injury, or were pregnant. The primary outcome is ICU length of stay. Secondary outcomes include duration of mechanical ventilation, incidence of re-intubation after initial extubation, hospital length of stay, cumulative benzodiazepine use, use of adjunct medications, and in-hospital mortality.

RESULTS: A total of 48 patients were included in this study, with 24 patients in the RASS group and 24 patients in the CIWA-Ar group. The median ICU length of stay was 6 days in the RASS group and 9 days in the CIWA-Ar group (p-value 0.0224). The median duration of intubation was 2.6 days in the RASS group and 5.7 days in the CIWA-Ar group (p-value 0.0336). The median duration of overall hospital length of stay was 16 days in the RASS group and 15 days in the CIWA-Ar group (p-value 0.0328). No statistical difference was found in incidence of re-intubation, cumulative benzodiazepine use, use of adjunct medications, and in-hospital mortality.

CONCLUSIONS: Utilizing symptom-triggered benzodiazepines based on a RASS score to evaluate alcohol withdrawal syndrome in mechanically ventilated patients in comparison to the CIWA-Ar scale was associated with a significantly decreased duration of mechanical intubation and shorter ICU length of stay.

9:10am – 9:30am R **Evaluation of Sodium Zirconium Cyclosilicate and Sodium Polystyrene Sulfonate Use in the Treatment of Acute Hyperkalemia** Athena G

Moderators: Sara Gattis

Presenters: Karsen Smith

Evaluators: Rachel Larry

TITLE: Evaluation of Sodium Zirconium Cyclosilicate and Sodium Polystyrene Sulfonate Use in the Treatment of Acute Hyperkalemia

AUTHORS: Karsen Smith, Jonathon Pouliot

OBJECTIVE: Assess the difference between sodium polystyrene sulfonate (SPS) and sodium zirconium cyclosilicate (SZC) in the treatment of hyperkalemia in the acute treatment setting.

SELF ASSESSMENT QUESTION: Why would sodium zirconium cyclosilicate be advantageous over sodium polystyrene sulfonate in the treatment of hyperkalemia in the acute treatment setting?

BACKGROUND: Hyperkalemia is responsible for life-threatening arrhythmias and neuromuscular symptoms. Oral potassium binders are utilized as a means of potassium removal. SPS, SZC, and patiromer are available oral potassium binders in the United States. The HARMONIZE and ENERGIZE trials previously studied the long term and short-term effects of SZC when compared to placebo; however the efficacy of SZC in comparison to SPS for the emergent treatment of hyperkalemia is still unknown.

METHODOLOGY: This was a retrospective, single-centered, cohort study including patients who received SZC or SPS at a 203 bed community hospital from July 2022 and March 2023. The primary outcome of mean change in serum potassium was compared in the SZC and SPS groups. Patients needed to be at least 18 years of age with a serum potassium > 5.5 mEq/L who had their first dose of SZC or SPS in the inpatient setting. Patients who received dialysis between the first dose of SZC or SPS and the next lab draw or patients we were not able to collect enough data to assess primary endpoints on were excluded.

RESULTS: In Progress.

CONCLUSIONS: In Progress.

9:10am – 9:30am R **Timely antibiotic administration to critically ill septic shock patients in the emergency department** Athena I

Moderators: Kaci Shuman
Presenters: Anna Bowles
Evaluators: Cassidy Moses

TITLE: Timely antibiotic administration to critically ill septic shock patients in the emergency department
AUTHORS: Anna Beth Bowles, Spencer Graczyk, John Patka, Manish Patel
OBJECTIVE: The purpose of this study was to evaluate current processes of SS recognition and subsequent initiation of broad-spectrum antimicrobials in the ED.
SELF ASSESSMENT QUESTION: This study found the largest contributor to time from sepsis recognition to antibiotic administration was:
a. Sepsis recognition to orders
b. Orders to verification
c. Verification to antibiotic administration
d. All steps evenly contributed to delay in antibiotics
BACKGROUND: Early antibiotics in septic shock are vital and are part of the Surviving Sepsis Campaign's "Hour-1 Bundle". Previous studies show prolonged time to antibiotics negatively impact patient outcomes. A retrospective cohort study by Kumar and colleagues among 2,154 patients across four intensive care units (ICUs) observed that in adults with septic shock who received effective antimicrobials, survival decreased as time from sepsis recognition to antibiotic administration increased. Each hour delay was associated with an average decrease in survival of 7.6%. More recently, Ferrer and colleagues conducted a retrospective analysis in 165 ICUs to evaluate the relationship between timing of antibiotic administration and mortality. Of the 17,990 patients included, hospital mortality was found to steadily and significantly increase with antibiotic administration delays beyond the first hour since sepsis recognition. Strategies to optimize timely antibiotics in SS have been implemented in Grady Health System's inpatient units and, more recently, emergency department (ED), including expanding agents available in protocols, pharmacist education on prioritization of orders, and alerts to staff pharmacists when SS orders are placed. The purpose of this study was to evaluate current processes of SS recognition and subsequent initiation of broad-spectrum antimicrobials in the ED.
METHODOLOGY: This is a retrospective chart review of adult SS patients conducted at Grady between January 1, 2021 and February 28, 2022. Patients were included if 18 years or older, diagnosed with SS on encounter, required vasopressors on admission, and initiated on empiric antibiotics in the ED using the ED Sepsis Protocol Order Sets. Patients were excluded if they received antibiotics for a reason other than SS, expired before second-dose, transitioned to do-not-resuscitate, do-not-intubate, or comfort care within 12 hours of admission, were trauma patients, transferred from an outside hospital, or received antibiotics outside of Grady. The primary outcome was time from sepsis recognition to administration of antibiotics. Secondary outcomes included time between sepsis recognition, order, verification, and administration of antibiotics, as well as the number of patients to receive first dose of antibiotics within the 60-minute goal.
RESULTS: Baseline characteristics show the majority of patients were black (95.2%) and male (66.7%), with a median age of 70 years (IQR 61-75). The primary outcome of median time from sepsis recognition to antibiotic administration was 65 minutes (IQR 35 to 168 minutes). Broken down, the median times between sepsis alert to order, order to verification, and verification to administration were 20 minutes, three minutes, and 29 minutes, respectively. Approximately 43% of patients received their first dose of antibiotics within the goal time of 60 minutes after sepsis recognition.
CONCLUSIONS: Historically, the median inpatient time from sepsis recognition to order was 2-4 hours, from order to verification was 5 –19 minutes, and from verification to administration was 1.5-2.5 hours. We observed decreased times from sepsis recognition to orders and orders to verification. We found the largest contributor between sepsis recognition and first dose of antibiotic to be the time from order verification to administration. We suspect outliers contributing to these delays could be due to delays in phlebotomy culture draws, high patient-to-nurse ratios, and movement between and out of the ED. Limitations to this study include lack of direct comparison between time to antibiotic pre- and post- implementation of changes in the ED, as well as small sample size, which may be attributed to strict inclusion of only the most severe patients with septic shock. Future directions may include a direct comparison of pre- and post-implementation times as well as implementation of operational strategies to improve time between antibiotic verification and administration.

9:10am – 9:30am | **Emergency Department Utilization of Long-acting Glycopeptides for Simple Cellulitis at a Community Teaching Hospital** Athena B

Moderators: Brandon Beers
Presenters: Amanda Aiad
Evaluators: Erica Bowles

TITLE: Emergency Department Utilization of Long-acting Glycopeptides for Simple Cellulitis at a Community Teaching Hospital

AUTHORS: Amanda Aiad, Anna Parker, Brielle Reardon

OBJECTIVE: To serve as a quality improvement initiative to evaluate utilization of long-acting glycopeptides in the Emergency Department at Wellstar Kennestone Regional Medical Center.

SELF ASSESSMENT QUESTION: Describe the mechanism of oritavancin.
List the benefits of using oritavancin.

BACKGROUND: Acute bacterial skin and skin structure infections (ABSSSI), such as simple cellulitis, are a common cause for presentation to the emergency department (ED).1 This leads to a significant clinical and economic burden in the United States, especially for those requiring admission for intravenous antibiotic administration. Lipoglycopeptides, such as oritavancin and dalbavancin, shift management of ABSSSI from the inpatient to outpatient setting for patients who are not candidates for oral antibiotics.2 Currently, of the two long-acting glycopeptides, oritavancin is the agent on Wellstar's formulary and therefore, was the primary medication evaluated in the study. This study served as a quality improvement initiative to increase the utilization of oritavancin in the ED at Wellstar Kennestone Regional Medical Center.

METHODOLOGY: This was a cohort study that occurred from 2021 to 2023. Utilization of oritavancin within the ED at Wellstar Kennestone Regional Medical Center was evaluated across two time periods, prior to and after education sessions were conducted. The pre-education chart review was completed for patients seen from December 2021 to January 2022. Education sessions, which reviewed the treatment of simple cellulitis along with an algorithm to guide antimicrobial prescribing for lipoglycopeptides, were held for ED providers from November 2022 to January 2023. Finally, the post-education chart review of oritavancin utilization was completed for patients seen from January to February 2023.

The study population included adult patients who presented to the ED with a Diagnosis Related Group (DRG) code of Simple Cellulitis. The primary endpoint was to determine the percent change in hospital admissions in adult patients presenting to the ED with simple cellulitis between the pre-intervention and post-intervention patients. Secondary endpoints included re-presentation rate and financial impact.

RESULTS: A total of 25 patients were included, n=25 with 10 (40%) and 15 (60%) in the pre- and post-intervention groups, respectively. There was a 25% decrease in hospital admissions adult patients who presented to the ED with simple cellulitis between the pre- and post-intervention time periods. There was no significant difference in the re-presentation within 30 days when oritavancin use and intravenous antibiotics were compared. There was also no significant difference in the budget impact when oritavancin use and intravenous antibiotics were compared. However, the average cost per patient overall decreased in the post-intervention group.

CONCLUSIONS: Treatment with a single dose of oritavancin can prevent a hospital admission in adult patients presenting to the emergency department with acute bacterial skin and skin structure infections, such as simple cellulitis.

9:10am – 9:30am | **Pharmacist-led Implementation of a Protocol for De-Labeling Patients as Penicillin Allergic at an Academic Primary Care Clinic** Athena A

Moderators: Bruce Jones
Presenters: Kathleen White
Evaluators: Lynsey Neighbors

TITLE: Pharmacist-led Implementation of a Protocol for De-Labeling Patients as Penicillin Allergic at an Academic Primary Care Clinic

AUTHORS: Kathleen White, J. Lacie Bradford, David Swadley, Elizabeth Close, April Gunn

OBJECTIVE: Assess and de-label inappropriate or low risk penicillin allergies among patients with penicillin allergy labels in an academic primary care clinic.

SELF ASSESSMENT QUESTION: The majority of penicillin allergy reactions associated with penicillin antibiotics occurred greater than 10 years ago (True/ False).

BACKGROUND: In the United States, it is estimated that 10% of the population report having a penicillin allergy; it has been shown that more than 90% of these patients can tolerate a penicillin antibiotic. Inaccurate penicillin allergies can have harmful consequences for patient outcomes, including longer hospitalization, suboptimal therapy, and increased risk of multidrug resistant microorganisms. Mislabeled penicillin allergies also increase the use of alternative and broad-spectrum antibiotics. Pharmacists represent ideal champions for penicillin allergy assessments. This study implemented a protocol utilizing detailed history and allergy assessment with the goal of de-labeling patients with documented intolerance and low risk allergies.

METHODOLOGY: This combined retrospective chart review, prospective interventional study included ambulatory adult patients (aged greater than or equal to 18 years) from an academic primary care clinic with a penicillin allergy listed on their patient electronic health record. Pregnant, incarcerated, patients under the age of 18, and patients that could not be contacted via telephone were excluded. Patient data related to penicillin allergy, reactions listed, and prior antibiotic use was collected prior to interview. Investigators conducted a telephone-based, comprehensive penicillin allergy assessment and determined potential for de-labeling based on patient interview, severity of penicillin reaction, study-designed penicillin allergy algorithm (which included PEN-FAST clinical decision-making tool), and patient willingness to remove penicillin allergy label. Education was provided to patient pertaining to severity of reported reaction, potential risk of reaction, and recommendation per study outcome. The primary outcome was the number of inaccurate penicillin allergies successfully de-labeled. Secondary outcomes included associations between patient factors and likelihood of reporting penicillin allergy label. Bivariate analyses included Chi Square or Fischer’s Exact test and Student’s t test or Mann Whitney U test, where applicable. Multivariate logistic regression was utilized to analyze association between independent variables and outcome of de-labeling of penicillin allergy.

RESULTS: In Progress

CONCLUSIONS: In Progress

9:10am – 9:30am L **Duration of octreotide infusion and outcomes in variceal hemorrhage** Athena J

Moderators: Michelle Turner
Presenters: Brooke Hendrix
Evaluators: Giannopoulos Figg

TITLE: Duration of octreotide infusion and outcomes in variceal hemorrhage

AUTHORS: Brooke Hendrix, John R. Yates, Nikki Freeman

OBJECTIVE: Evaluate the rate of variceal re-bleeding with octreotide continuous infusion of three days or less compared to greater than three days.

SELF ASSESSMENT QUESTION: True or false: based on this study's conclusion, longer duration of octreotide infusion may be associated with a lower re-bleeding rate of esophageal varices.

BACKGROUND: Variceal hemorrhage is a marker of decompensated cirrhosis with an associated mortality of 10-50%. Octreotide, a vasoactive medication used to decrease early variceal re-bleeding and mortality, is currently guideline-recommended for anywhere from two to five days. Although the clinical evidence supports the use of octreotide, there is lack of a more defined duration of therapy.

METHODOLOGY: A single-center, retrospective cohort pilot study was conducted in compliance with local institutional review board including cirrhotic patients with active esophageal variceal hemorrhage. Included patients received both endoscopic intervention and octreotide continuous infusion during the study period. Those receiving octreotide 50 mcg/hour continuous infusion of three days or less were compared to those receiving octreotide for greater than three days. The primary outcome included rate of re-bleeding occurring after endoscopic intervention but before hospital discharge. Secondary outcomes included inpatient mortality and octreotide cost.

RESULTS: There were 105 patients included in the study analysis. Re-bleeding occurred in 61.8% of patients receiving octreotide continuous infusion for less than or equal to three days versus 45.9% in those that received octreotide continuous infusion for greater than three days (OR 1.91 [95% CI, 0.84 to 4.2], p=0.119). In-hospital mortality was similar between groups (13.2% vs. 18.9%, p=0.439). The largest limitation of this study was a small sample size that may have affected statistical results.

CONCLUSIONS: Although not statistically significant, patients with active esophageal variceal bleeding that received greater than three days of octreotide continuous infusion exhibited less re-bleeding after endoscopic intervention compared to those receiving three days or less. More research is needed to determine statistical significance of this result.

9:10am – 9:30am

O **Evaluating The Rate of Acute Kidney Injury in Patients Receiving Zoledronic Acid for Treatment of Hypercalcemia of Malignancy** Athena C

Moderators: Molly Thompson

Presenters: Catherine Ngombe

Evaluators: Emily Johnson

TITLE: Evaluating The Rate of Acute Kidney Injury in Patients Receiving Zoledronic Acid for Treatment of Hypercalcemia of Malignancy

AUTHORS: Catherine Ngombe, Sajia Kotwal

OBJECTIVE: To evaluate the rate of kidney injury in patients receiving intravenous zoledronic acid for the treatment of hypercalcemia of malignancy

SELF ASSESSMENT QUESTION: When assessing the primary endpoint of all grade serum creatinine elevation, most patients fell under which category ?

BACKGROUND: Hypercalcemia of malignancy (HCM) is a common complication seen in many malignancies. HCM is defined as a corrected serum calcium (CSC) level above 13 mg/dL. Severe HCM has been associated with neurological dysfunction and renal failure. Intravenous (IV) bisphosphonates are first line medications for the management of HCM, however studies examining their use in patients with renal dysfunction are limited. The purpose of this study is to determine the rate of acute kidney injury (AKI) in patients receiving IV zoledronic acid for the treatment of HCM.

METHODOLOGY: This is a single-center, retrospective chart review study. Inclusion criteria include adult patients who were admitted from January 2021 to August 2022 with HCM and treated with IV zoledronic acid. Exclusion criteria include patients receiving IV zoledronic acid for any other reasons other than HCM or are already on any bisphosphonates. The primary objective is all grade serum creatinine elevation within 3 days of receiving IV zoledronic acid. The secondary objectives are refractory hypercalcemia, hypocalcemia, CSC decrease greater than or equal to 1 mg/dL by day 7 of bisphosphonate administration and the total length of hospital stay. Evaluation of the primary and secondary objectives will utilize a chi-squared test, and continuous data will be analyzed using a two-sided unpaired student’s t-test with a 95 percent confidence interval.

RESULTS: Lung and breast cancers were the most common malignancies in the study. Zoledronic acid 4 mg was received by majority of the patients. Serum creatinine categories of less than 1 mg/dL and 1mg/dL to 2mg/dL were the most represented categories in the study. Hypercalcemia resolved by day 7 after administration of zoledronic acid in almost half of the patients.

CONCLUSIONS: There was no association found between IV zoledronic acid use and all grade serum creatinine elevation. Zoledronic acid administration was not associated with increased rates of AKI. Zoledronic acid was found to be safe and efficacious in majority of HCM patients. Future prospective studies are necessary to elucidate these findings.

9:10am – 9:30am S **TIME TO PROCUREMENT OF NONFORMULARY PSYCHIATRIC MEDICATIONS FOR HOSPITALIZED PATIENTS** Parthenon 2

Moderators: Tabitha Carney
Presenters: Sara Beth Sears
Evaluators: Heather Snyder

TITLE: TIME TO PROCUREMENT OF NONFORMULARY PSYCHIATRIC MEDICATIONS FOR HOSPITALIZED PATIENTS

AUTHORS: Sara Beth Sears and Abigayle R. Campbell

OBJECTIVE: This study aims to determine if implementing updated education to staff regarding the utilization of Self Regional Healthcare's (SRH) home medication policy for procuring psychotropic medications reduces time to procurement.

SELF ASSESSMENT QUESTION: Which non-formulary medication was most commonly ordered inpatient based on pre-implementation data?

BACKGROUND: There are several mental health medications that are newly FDA approved. Due to factors such as cost and niche indications, most of these medications have not been approved for utilization on hospital formularies. A "home medication policy" is commonly utilized for patients to continue inpatient use of a non-formulary medication within an institution.

METHODOLOGY: A single center, prospective, pre-post design study aims to assess if implementing staff education leads to a decrease in time to procurement of home psychotropic medications. This study includes patients at Self Regional Healthcare who received orders for nonformulary psychotropic medications. Both verbal and written education was provided to nursing staff, pharmacy medication reconciliation technicians, and pharmacists in December 2022 – January 2023 regarding use of the home medication policy. Patients will be included for review if they are at least 18 years old and received at least one order for the following medications: Vraylar, Rexulti, Ingrezza, Caplyta, Pimozide, Saphris or Nuplazid. The following data will be collected via chart review using the electronic medical record for both the pre time frame (September 1, 2021 to September 30, 2022) and the post time frame (December 1, 2022 to March 15, 2023): patient age, gender, location of treatment, ordering provider, provider specialty, medication ordered, medication strength, time order placed, time order was verified, time to procurement of home medication, time pharmacist identified home medication, time medication administered, and date medication administered. Patient's charts will also be reviewed for additional information including documentation of medication reconciliations, I-vent documentation, and notes regarding procurement of home medication.

RESULTS: In the post-time frame, there were 15 orders placed for non-formulary psychiatric medications. Of these, only 4 medications were brought in from home. Average time ti procuremet for the post-implementation time frame was 72.9 hours. The results of this study show that time to procurement of home psychiatric medications was not decreased following implementation of education to staff. No results were statistically significant. The most commonly ordered medications were Ingrezza and Vraylar. There were several limitations to this study including small sample size/shortened timeframe of analysis, reliance on accurate documentation in nursing charting, documentation in the EHR, and pharmacist documentation, and dependence of external source to bring in medication.

Pre-time frame: At Self Regional Healthcare, between September 2021 to September 30, 2022, there were 85 orders for non-formulary mental health medication of Vraylar, Rexulti, Ingrezza, Caplyta, Pimozide, Saphris or Nuplazid. Review of data showed the average length of inpatient stay was 8 days. Of these 85 orders, only 35 medications were brought in for administration in the hospital. The average time to procurement of these home psychotropic medications was 69 hours after admission.

CONCLUSIONS: While there were no statistically significant differences noted for any endpoint, many factors were at play that impact these measures. Non-formulary use of psychiatric home medications are used all throughout the hospital, not just in the Behavioral Health Center. This study would benefit from a larger sample size to accurately assess implementation of education on time to procurement. This study also showed that there may need to be further education implemented to patients and staff on non-formulary medications and home medication use inpatient.

9:10am – 9:30am

1 **Comparing outcomes and toxicities with standard and reduced dose melphalan in autologous stem cell rescue patients with multiple myeloma** Parthenon 1

Moderators: Emily Harman
Presenters: Ryan Archer
Evaluators: Sarah Blackwell

TITLE: Comparing outcomes and toxicities with standard and reduced dose melphalan in autologous stem cell rescue patients with multiple myeloma
AUTHORS: Ryan Archer, Katherine Rogers, Kendall Shultes, David Eplin
OBJECTIVE: To compare efficacy and outcomes of MEL140 in patients > 65 to MEL200 in patients < 65
SELF ASSESSMENT QUESTION: (T/F) MEL140 and MEL200 were associated with similar rates of one-year progression free survival in patients with multiple myeloma.
BACKGROUND: Multiple myeloma is an incurable plasma cell malignancy with an average age of diagnosis >65 years old. For transplant-eligible patients, high-dose melphalan 200mg/m2 (MEL200), followed by autologous stem cell rescue (ASCR) is the standard of care. When a patient turns 66 years of age, they no longer qualify for MEL200 and will receive reduced dose melphalan 140mg/m2 (MEL140) due to the risk of possible toxicities, even if a patient has a low comorbidity index. One study by Kumar and colleagues compared MEL200 in patients >70 and patients 18 years of age who were diagnosed with multiple myeloma and received melphalan followed by ASCR from January 2018 to December 2021. Patients who received MEL140 for any reason other than age were excluded. Included patients were split into two arms: age 65 receiving MEL140. The primary endpoint was one-year PFS, defined as time from bone marrow transplant to disease progression or death from any cause. The secondary endpoint was one-year (OS), defined as the time to death from any cause. Assuming a two-sided alpha of 0.05, a sample size of 384 was needed to yield a power of 90%. The primary and secondary endpoints were evaluated using a Chi square test for dichotomous categorical data. A Kaplan Meier curve and analysis was conducted for both endpoints between the two groups
RESULTS: A total of 222 patients were included in the study. 114 patients were included in the 65 arm. The primary endpoint of one-year PFS was not statistically significantly different between the two arms, 103 (90.4%) patients in the MEL200 group compared to 99 (91.7%) patients in the MEL140 group (p=0.732). Similarly, the secondary endpoint for one-year OS was not statistically significantly different between the two arms, 112 (98.3%) patients in the MEL200 group compared to 106 (98.2%) in the MEL140 group (p=0.956)
CONCLUSIONS: There was no difference in one-year PFS or one-year OS in patients when comparing MEL140 to MEL200 for multiple myeloma. Although the study was not powered to detect meaningful statistical significance, the results suggests that dose reducing to MEL140 when a patient is >65 years of age does not impact one-year PFS or one-year OS when compared to patients

9:30am – 9:50am

Empty Parthenon 2

Moderators: Tabitha Carney
Evaluators: Heather Snyder

9:30am – 9:50am A **Utilization of Automated Dispensing Machines for Controlled Substances in Operating Rooms** Athena I

Moderators: Kaci Shuman

Presenters: Amber Patt

Evaluators: Cassidy Moses

TITLE: Utilization of Automated Dispensing Machines for Controlled Substances in Operating Rooms

AUTHORS: Amber Patt, Rachele Hollis, Sarah Boyko, Eddie Cheung, Suzanne Walton, Laurie Cavendish

OBJECTIVE: To assess controlled substance medication dispensing and administration records in the operating room with the use of automated dispensing machines (ADMs) compared to a controlled drug administration record (CDAR).

SELF ASSESSMENT QUESTION:

BACKGROUND: The aim of this study was to assess controlled substance medication dispensing and administration records in the operating room with the use of automated dispensing machines (ADMs) compared to a controlled drug administration record (CDAR).

METHODOLOGY: Single center, retrospective chart review of 100 patient records; 50 from “Pre-ADM” January-August 2020 and 50 from “Post-ADM” January-August 2022. Patients were included if they had an operating room encounter within either time frame and were administered at least one controlled substance through utilization of either the ADM or CDAR. The primary outcome was the number of controlled substance discrepancies created by the anesthesia team during an operating room procedure using the CDAR compared to the ADM. Secondary outcomes included the total number and cost of IV controlled substance wasted.

RESULTS: A total of 100 records met the inclusion criteria and were analyzed; 50 pre-ADM written CDAR records and 50 post-ADM records. Of the 50 pre-ADM records, a total of 4 documentation discrepancies were observed, two of which were a mismatch between the medication taken from the dispensing area compared to the medication administered and two that were a mismatch between medication administration and waste. Of the 50 post-ADM records, a total of 16 documentation discrepancies were observed that involved mismatches between the medication taken from the ADM compared to the medication administered (n=5), between the amount of medication administered to the amount of medication wasted (n=9), and between the amount of medication taken from ADM and the amount of medication transferred to another provider during the procedure (n=2). The cost of waste between the two groups was also evaluated.

CONCLUSIONS: The use of ADMs for controlled substances improved access to medications by being available in operating rooms during patient procedures. However, additional collaboration between pharmacy and operating room staff is needed to continually improve access to medications while reducing waste and cost to the organization.

9:30am – 9:50am B **Evaluation of a Gender-Affirming Care Didactic Session On Pharmacy Student Knowledge and Attitudes** Olympia 1

Moderators: Devin Lavender

Presenters: Julia Calandra

Evaluators: Drew Cates

TITLE: Evaluation of a Gender-Affirming Care Didactic Session On Pharmacy Student Knowledge and Attitudes

AUTHORS: Julia Calandra, Irene Ulrich, Mollie Scott

OBJECTIVE: Describe the potential benefits of incorporating gender-affirming care into pharmacy curriculum.

SELF ASSESSMENT QUESTION: What are potential benefits of increasing education on gender-affirming care for pharmacy students?

BACKGROUND: There is a paucity of learning opportunities for pharmacy students to develop competency in caring for transgender and gender diverse individuals. The objective of this study is to describe the impact of a single 2-hour didactic learning session on gender-affirming care on pharmacy student knowledge and attitudes towards caring for transgender and gender diverse individuals, with the goal of expanding educational opportunities.

METHODOLOGY: The session was taught to six third-year pharmacy students as part of the Ambulatory Care Scholars certificate program in the pharmacy curriculum at UNC Eshelman School of Pharmacy on the Asheville campus. The students were taught for 2 hours on gender-affirming care by a PGY2 Pharmacy Resident in Ambulatory Care and Academia from Mountain Area Health Education Center (MAHEC). The session included didactic and active learning components on the topics of language and hormone therapy considerations for transgender and gender diverse individuals.

After the didactic session, the students were tasked with writing a reflection to the prompt "What? So what? Now what?" to assess how the session impacted their knowledge and future behaviors in caring for this patient population. The investigators will perform a thematic analysis of de-identified reflections to evaluate learning patterns, intentions for behavior change, and opportunities for session improvement.

RESULTS: Pharmacy students who attended the session highlighted 5 key themes: 1. Limited baseline knowledge and exposure in curriculum; 2. Clinical knowledge was gained; 3. Enhanced understanding of the importance of social-emotional inclusivity; 4. Session fostered a desire for continued education of self and others; 5. Appreciated impact of session on ability to provide holistic care.

CONCLUSIONS: Through the learning session, students developed a better understanding of patients and their needs.

9:30am – 9:50am B **Implementation of VIONE, a Polypharmacy medication review tool, in Patient Aligned Care Team** Olympia 2

Moderators: Kristen Kilby

Presenters: Courtney Baldridge Ellis

Evaluators: Brandi Dahl

TITLE: Implementation of VIONE, a Polypharmacy medication review tool, in Patient Aligned Care Team

AUTHORS: Courtney Baldridge Ellis, PharmD, BCPS; Carli Smith, PharmD, BCPS, BCACP

OBJECTIVE: To determine the type and quantity of medication interventions made by a clinical pharmacy specialist after implementing VIONE (a Polypharmacy medication review dashboard) within a primary care clinic.

SELF ASSESSMENT QUESTION: Which of the following are risk factors for polypharmacy? Select all that apply

A.Age

B.Multiple disease states

C.Multiple providers

D.Sex

BACKGROUND: VIONE (Vital, Important, Optional, Not indicated, Every medication has a reason) is a simple medication management methodology created to decrease polypharmacy and potentially inappropriate medication use. This tool ultimately formed the basis for comprehensive medication regimen reviews allowing for open discussion with Veteran and provider while documenting adherence and specific medication regimens. This study aims to determine the type and quantity of medication interventions made by a clinical pharmacy specialist after implementing VIONE within a primary care clinic.

METHODOLOGY: This was a multi–site, prospective observational cohort review. Patients were included if they were identified by VIONE Primary Care dashboard at Veterans Affairs Tennessee Valley Healthcare System at the Chattanooga Community-Based Outpatient Clinic. The dashboard consists of but is not limited to the VIONE risk score, age, number of prescribed medications, sex, and number of potentially inappropriate medications. Patients were excluded if they had all non-VA medications and no prescriptions filled within the VA. A clinical pharmacy resident contacted patients for a medication regimen review based on information gathered from VIONE Dashboard. Patients were prioritized with the highest risk score contacted first. Based on the information collected in the appointment, the pharmacist can deprescribe for one of the following reasons in CPRS: VIONE-discontinue and alternate medication prescribed, VIONE-dose decrease, VIONE- no diagnosis, VIONE- not indicated or treatment complete, VIONE- optional, or VIONE- patient reported no longer taking. If a Veteran could not be contacted for an appointment, a chart review was conducted with recommendations to their respective primary care provider. The reason for discontinuation data will be collected through the Discontinuation Dashboard. This dashboard was de-identified, and all data was housed in the dashboard.

RESULTS: In progress

CONCLUSIONS: In progress

9:30am – 9:50am Y **Evaluation of a Specialty Pharmacy Mail-Order Service** Athena D

Moderators: Elisabeth Webb
Presenters: Sally Hancock
Evaluators: Kirby Benson

TITLE: Evaluation of a Specialty Pharmacy Mail-Order Service
AUTHORS: Sally Hancock, Lauren Hayes, Benjamin Gatlin
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Implementation of integrated specialty pharmacies allows for significant opportunities in rural healthcare systems. The specialty market is projected to continue growing by 8% per year driven by specialty markets. Growth is projected in endocrinology, neurology, cardiology, and oncology drug markets due to pipeline products. Combining specialty pharmacy with mail order may help expand patient capture rate, improve continuity of care, and generate revenue. However, incorporating specialty pharmacies within health systems is a costly endeavor and the cost-benefit analysis needs to be assessed for rural hospitals. The objective of this study is to assess the financial impact of endocrinology-based mail order prescriptions for a hospital-based outpatient pharmacy.
METHODOLOGY: Retrospective observational study analyzing expenses, revenue, insurance coverage, and specialty medications with financial outcomes for mail order was conducted. Evaluation included prescriptions of patients serviced by a rural endocrinology clinic. Prescriptions of patients not enrolled in the pharmacy mail order program were excluded. Data was compiled for each mail order prescription during the study window. Comparisons of target medications and insurance coverage were assessed to identify strengths and limitations of the program.
RESULTS: A total of 1,142 mails orders and 2,036 prescriptions were included in the study. The study estimated a mail order revenue of approximately $8.3k per month. Specifically, it calculated an average revenue of $46.34 per prescription and a total revenue of $23.5k per month, excluding labor costs. We identified Medicare insurance was billed for 22% of mail orders, but was responsible for 65% of total revenue. GLP1’s, SGLT2’s, Kerendia® (finerenone), insulin, and PCK9 inhibitors provided the greatest profit. Due to low reimbursement, the pharmacy was taking a loss on devices (Libre, Dexcom, Omnipod) and Vascepa® (icosapent ethyl). In addition, monitoring specific medications for enrollment increased monthly revenue during the 4-month study period.
CONCLUSIONS: Enrolling patients in the endocrine-based mail order program produced monthly revenue for Baptist Health Deaconess Madisonville. Implementation of specialty pharmacy generated financial benefit, job opportunities, and patient satisfaction for a rural hospital in Western Kentucky.

9:30am – 9:50am R **EVALUATING CONTINUATION RATES OF ICU-INITIATED MIDODRINE AND QUETIAPINE POST-ICU AND AT HOSPITAL DISCHARGE** Athena H

Moderators: Kelly Norris

Presenters: McKenzie Hodges

Evaluators: Ashley Woodhouse

TITLE: EVALUATING CONTINUATION RATES OF ICU-INITIATED MIDODRINE AND QUETIAPINE POST-ICU AND AT HOSPITAL DISCHARGE

AUTHORS: McKenzie J. Hodges, Corinne Murphy, Aayush Patel, John Ethan Young

OBJECTIVE: Identify the continuation rates of ICU-initiated midodrine and quetiapine post-ICU and at hospital discharge at a community teaching hospital.

SELF ASSESSMENT QUESTION: What is one of the adverse effects of continuing quetiapine post-ICU discharge?

BACKGROUND: Midodrine and quetiapine are used in the critically ill patient population to expedite transfer out of the Intensive Care Unit (ICU) in patients who are otherwise stable. Midodrine is used to aid in weaning continuous intravenous vasoactive agents and maintain blood pressure, while quetiapine is used to decrease the symptoms and duration of ICU delirium. Both medications provide benefits while in the ICU, however there are risks of unintended continuation of midodrine or quetiapine once the patient leaves the ICU and hospital. The purpose of this study is to assess the prevalence of continuation of midodrine and quetiapine after ICU and hospital discharge.

METHODOLOGY: A retrospective chart review was conducted of adult patients who received scheduled ICU-initiated midodrine or quetiapine at Piedmont Columbus Regional Midtown between January 1, 2020 – August 31, 2022. Patients were identified by a report generated for midodrine or quetiapine use via the institution’s electronic medical record. Patients on midodrine were excluded if they were not receiving a concomitant continuous IV vasoactive agent or if it was used for dialysis-associated hypotension. Patients on quetiapine were excluded if they had a past medical history of schizophrenia, bipolar disorder, or dementia. The primary objective of this study was to evaluate the rates of continuation of midodrine and quetiapine upon transfer from the ICU to non-ICU levels of care and at discharge from the hospital.

RESULTS: In Progress

CONCLUSIONS: In Progress

9:30am – 9:50am R **Evaluating the Impact of the Addition of Atypical Antipsychotics to Continuous Infusion Propofol Therapy** Athena G

Moderators: Sara Gattis
Presenters: Jake Crocker
Evaluators: Rachel Larry

TITLE: Evaluating the Impact of the Addition of Atypical Antipsychotics to Continuous Infusion Propofol Therapy
AUTHORS: R. Jake Crocker, Cortney Dodson, Layne Reihart
OBJECTIVE: To be included in slides.
SELF ASSESSMENT QUESTION: To be included in slides.
BACKGROUND: The administration of sedatives to critically ill patients is a common practice in intensive care units (ICU), particularly as a continuous infusion for ease of administration. The long-term use of continuous infusion sedation has been associated with negative outcomes such as prolonged mechanical ventilation, increased hospital length of stay, increased mortality, increased cost, coma, delirium, delusional memories and posttraumatic stress disorder, and impaired cognitive function. To mitigate these negative outcomes, atypical antipsychotics are utilized as adjunctive therapy in an effort to reduce overall amounts of continuous infusion sedatives administered, improve sedation when existing therapies are at maximum doses, or treat ICU associated delirium. However, data is lacking to support the efficacy and safety of atypical antipsychotics when used as adjunctive therapy. This study aims to review and quantify overall effectiveness of the atypical antipsychotics quetiapine, risperidone, and olanzapine on reduction in the amount of continuous infusion propofol utilized in the ICU.
METHODOLOGY: This was an observational study that took place from February 27, 2021 to December 31, 2022. Patients were included if they were at least 18 years of age admitted to the MICU or CPICU at Prisma Health Richland, ICU at Prisma Health Baptist, or ICU at Prisma Health Baptist Parkridge, received continuous infusion propofol for > 48 hours prior to antipsychotic initiation, and received continuous infusion propofol plus one of the following atypical antipsychotics: quetiapine initiated at 100 mg/day or less, risperidone initiated at 1 mg/day or less, or olanzapine initiated at 10 mg/day or less. Exclusion criteria were receipt of any 1st or 2nd generation antipsychotic prior to admission for a psychiatric diagnosis, admission to the trauma service, receipt of dexmedetomidine, or palliative extubation. The primary outcome of this study was the percentage change in average propofol infusion rate (mcg/kg/min) 48 hours after atypical antipsychotic initiation. Secondary outcomes included ICU length of stay, duration of mechanical ventilation, QTc interval monitoring, and continuation of the antipsychotic without a valid indication. Descriptive statistics were utilized for the statistical analysis.
RESULTS: The average baseline propofol rate was 31 mcg/kg/min, which reduced 8.6% to 28.35 mcg/kg/min over the 0-24 hr period, was reduced by 19.4% compared to baseline to a rate of 25 mcg/kg/min during the 24-48 hr period, and finally a percent reduction of 54.2% seen during the 48-72 hour period to a rate of 14 mcg/kg/min.
CONCLUSIONS: Patients who received an adjunctive antipsychotic saw resulting propofol rate reductions of 8.6% at 24 hrs,19.4% at 48 hours and 54.2% at 72 hours. However, research on this topic should not end here, as further investigation with higher-level study design is needed to determine the true impact of these agents for this indication and to identify which patient populations would benefit most.

9:30am – 9:50am | **Implementation and Real-World Experience of a Clinical Pharmacist-Driven Cabotegravir/Rilpivirine Clinic** Athena B

Moderators: Brandon Beers
Presenters: Sydney Markley
Evaluators: Erica Bowles

TITLE: Implementation and Real-World Experience of a Clinical Pharmacist-Driven Cabotegravir/Rilpivirine Clinic
AUTHORS: Sydney Markley, Jim Beardsley, John Williamson, Aimee Wilkin, Caryn Morse, Alex D. Taylor
OBJECTIVE: To describe the real-world efficacy and safety of injectable cabotegravir/rilpivirine (CAB/RPV) for the treatment of HIV in a clinical pharmacist-driven antiretroviral clinic
SELF ASSESSMENT QUESTION: Were at least 80% of individuals able to stay on CAB/RPV for the duration of the treatment period?
BACKGROUND: In people living with human immunodeficiency virus (HIV), antiretroviral therapy (ART) achieves viral suppression, immune reconstitution, and life expectancies similar to people without HIV. Cabotegravir/rilpivirine (CAB/RPV) is a long-acting injectable regimen that is an alternative to daily oral regimens with the potential to decrease pill burden, reduce psychosocial barriers, and improve adherence. However, there are many operational components that must be addressed prior to switching a patient to injectable CAB/RPV. The purpose of this study is to describe the real-world efficacy, safety, and operational processes of injectable CAB/RPV for the treatment of HIV in a clinical pharmacist-led clinic.
METHODOLOGY: This was a single-center, retrospective, observational study evaluating patients age 18 years and older who received a CAB/RPV injection between July 1, 2021 and November 30, 2022. Patients with chronic hepatitis B (HBV) on oral antiretroviral therapy with activity against HIV and HBV were excluded. The primary outcome was the proportion of patients with treatment success during the treatment period. Treatment success was defined as patients who received injectable CAB/RPV for the duration of the treatment period, maintained virologic suppression (HIV viral load 500 copies/mL) during the treatment period. A single viral blip, defined as a viral load of 50-500 copies/mL followed by a viral load load <50 copies/mL on subsequent assessment in patients who were previously virologically suppressed, did not exclude patients from meeting the definition of treatment success. Key secondary outcomes included the proportion of patients with the individual components of treatment success, treatment emergent genotypic and/or phenotypic resistance, ART switch from CAB/RPV injections to an oral regimen, and adverse events. Descriptive statistics were used to evaluate the results of the study. A Kaplan Meier curve was used to describe time to treatment failure.
RESULTS: The primary outcome of treatment success was met by 43 (81%) of the 53 patients included in the study. Key secondary outcomes included the number of individuals able to stay on CAB/RPV throughout the treatment period which was met by 48 (91%) patients, virologic suppression throughout the treatment period met by 30 (81%) patients, and development of treatment emergent genotypic and/or phenotypic resistance which no individuals developed. CAB/RPV was discontinued in a total of 5 patients due to adverse events (1 patient), missed injection appointments (2 patients), a consistently elevated viral load (1 patient), and moving to a new state (1 patient).
CONCLUSION: Cabotegravir/rilpivirine appears to be a safe and generally well-tolerated regimen to be used as a therapeutic alternative to daily oral antiretroviral regimens in individuals living with HIV. While operational factors can be one of the biggest hurdles to starting an injectable antiretroviral clinic, pharmacists can play a key role in the implementation and success.

9:30am – 9:50am | **Procalcitonin level as a marker of bacterial etiology in patients with pneumonia** | Athena A

Moderators: Bruce Jones
Presenters: Zoanne Harlas
Evaluators: Lynsey Neighbors

TITLE: Procalcitonin level as a marker of bacterial etiology in patients with pneumonia
AUTHORS: Zoanne Harlas, Sara Anne Meyer, Taja Scott, Susan Smith, John Carr, Bruce M. Jones
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Elevated procalcitonin (PCT) is a well-established marker of bacterial infection in sepsis and pneumonia. The Hospital-acquired/Ventilator-associated Pneumonia and Community-acquired Pneumonia guidelines recommend using PCT, in addition to clinical judgement, for de-escalation of antibiotics. Recent studies have shown that elevated PCT levels that are higher may be associated with gram-negative infections and lower elevated levels with gram-positive infections in bacteremia and sepsis. No studies to date have evaluated this association in pneumonia. The objective of this study was to determine if there is an association between an elevated PCT level and isolation of gram-negative versus gram-positive organisms in pneumonia.
METHODOLOGY: This study was a retrospective, observational, cohort study that investigated elevated PCT levels in patients with pneumonia to assess if there was a correlation between gram-positive and gram-negative bacteria. A report was generated of patients who had an elevated PCT level (greater than 0.25 ng/mL) and positive respiratory cultures from August 1, 2017 to August 1, 2022. The first endotracheal, bronchial, or sputum culture with bacterial growth of patients 18 years or older with a diagnosis of pneumonia confirmed by radiology and at least 2 of 4 cardinal symptoms were included. Patients were excluded if they had active cancer, received renal replacement therapy, had surgery within 3 days of PCT level, tested positive or received active treatment for COVID-19 within 3 days of PCT level, or had cultures with polymicrobial growth or growth of Staphylococcus epidermidis or Corynebacterium species. Baseline demographic data was collected on each patient (gender, age, weight), as well as PCT level and microbiology. The primary outcome was median procalcitonin level in patients with gram-negative or gram-positive bacterial pneumonia. This was evaluated using the Mann-Whitney U test. The secondary outcome was procalcitonin level associated with specific bacterial organisms which was compared using an independent sample Kruskal-Wallis test. Categorical variables were compared using chi-square analysis. A p-value of less than 0.05 was used to determine statistical significance.
RESULTS: There were 454 patients that had PCT levels and bacterial isolates from respiratory cultures from August 1, 2017 to August 1, 2022. Of those, 379 were excluded; 85 for polymicrobial growth, 60 for not having an infiltrate noted on radiology, 57 for PCT level not being within 24 hours of pneumonia diagnosis, 52 for testing positive or receiving active treatment for COVID-19 within 3 days of PCT level, 40 for having active cancer, 39 for receiving renal replacement therapy, and 23 for having surgery within 3 days of PCT level. Seventy-five patients were included in the analysis, 40 gram-positive isolates and 35 gram-negative isolates. Baseline demographics were similar among patients with the isolates. All isolates in the gram-positive group were Staphylococcus aureus. The majority of isolates in the gram-negative group consisted of Pseudomonas aeruginosa and Klebsiella pneumoniae. For the primary outcome, the median PCT level for gram-positive isolates and gram-negative isolates was 0.61 ng/mL (IQR 0.37 - 2.89) and 1.46 ng/mL (IQR 0.45 – 5.91) (p-value 0.090), respectively. Median PCT levels between different bacterial organisms was 0.61 ng/mL for Staphylococcus aureus, 1.95 ng/mL for Pseudomonas aeruginosa, and 0.91 ng/mL for Klebsiella pneumoniae (p-value 0.117).
CONCLUSIONS: There was no statistically significant difference between median PCT level in gram-positive or gram-negative respiratory cultures in patients with pneumonia. While not significant, there was a trend toward gram-negative isolates association with higher procalcitonin levels similar to the literature in bacteremia and sepsis. The median PCT level in the Pseudomonas aeruginosa group also trended higher than other isolates. Limitations of the study included small sample size and the retrospective nature of the study. More data in a larger, prospective, population is needed to determine if this association is in pneumonia.

9:30am – 9:50am L **Impact of a Pharmacist-Driven Discharge Medication Order Review** Athena J

Moderators: Michelle Turner
Presenters: Shelby Wise
Evaluators: Giannopoulos Figg

TITLE: Impact of a Pharmacist-Driven Discharge Medication Order Review
AUTHORS: Shelby Wise, Mary-Ashlyn Tucker, Nathan Batchelder, Michelle Turner
OBJECTIVE: This study aims to evaluate the impact of pharmacist discharge medication order review.
SELF ASSESSMENT QUESTION: Does pharmacist involvement in discharge medication order review has been shown to increase the quality of patient care?

BACKGROUND:Prior studies have indicated that approximately half of patients experience a medication error at hospital discharge, which increases the risk for adverse drug events or ineffective treatment. Pharmacist involvement has improved transitions of care and reduced discharge order medication errors. The barriers to the discharge process in our health system include lack of pharmacist involvement and inpatient workload. This study aimed to optimize pharmacist-driven discharge medication review by developing a discharge order review process and evaluating pharmacist interventions.
METHODOLOGY: This study is a single-center, Institutional Review Board reviewed and determined exempt, pre-post study evaluating adult patients discharged from the Family Medicine Teaching Service between 1/1/22 and 12/31/22. A pharmacist completed discharge medication reviews and captured interventions made through documentation in the electronic medical record system. The primary objective of this study is to capture the percentage of patients who had a pharmacist review their discharge medication orders. Secondary objectives include evaluating the percentage of discharge order reviews requiring pharmacist intervention, the number of interventions made, 30-day hospital readmission rates and 30-day emergency department visit rates. The primary outcome was evaluated using chi-square analysis. Descriptive statistics were used for secondary outcomes.
RESULTS: A total of 837 patients were reviewed in this retrospective study including a pre-intervention group from January to May of 2022 (n=401) and post-intervention group from June to December of 2022 (n=384). There was a significant increase in discharge order reviews by pharmacists (10.7%, p= 0.003) in the post-intervention group with 51.8% (n=199) of patient’s reviewed compared to 41.5% (n=165) in the pre-intervention group. Of the pre-intervention group, 41.2% (n=68) required pharmacist action compared to the post-intervention group, required pharmacist action in 45.2% (n=90) of participants. While 30-day hospitalization rates decreased by 9.1%, the emergency department visit rates increased by 1.2%. When comparing the pre-intervention and post-intervention groups, there was an observed 9.1% decrease in 30-day hospitalization rates and a 1.2% increase in 30-day emergency visits.
CONCLUSIONS:The percentage of patients receiving a pharmacist review of discharge medications significantly increased as well as the number of interventions. Pharmacist interventions at hospital discharge positively impacts transition of care through prevention of medication errors, discrepancies, and adverse drug events.

9:30am – 9:50am O **Retrospective Study of Opioid Tapering in Cancer Pain** Athena C

Moderators: Molly Thompson
Presenters: Brooke Lochridge
Evaluators: Emily Johnson

TITLE: Retrospective Study of Opioid Tapering in Cancer Pain

AUTHORS: Brooke Lochridge, Taylor Butler, Lauren Poe, Thomas Reese, Karen Hande, Amanda Cass, Lindsay Mundy

OBJECTIVE: The objective of this study is to initiate tapering of opioids among cancer patients and analyze its effectiveness in decreasing cancer pain

SELF ASSESSMENT QUESTION: True or False: The majority of patient's initial MME's were between 100-1000 prior to starting the opioid taper.

BACKGROUND: Patients with cancer, or a history of cancer, may have pain related to cancer and its treatments. Opioids are used chronically to manage various cancer pain syndromes, which may lead to tolerance and physical dependence. The National Comprehensive Cancer Network (NCCN) Adult Cancer Pain guideline includes considerations for opioid dose reductions, or opioid tapering, which is based on evidence in non-cancer pain. Opioid tapering may be warranted among cancer patients or cancer survivors to optimize patient safety and outcomes. The purpose of this study was to successfully implement opioid tapering among cancer patients.

METHODOLOGY: The study was retrospective, single-center, cohort study of cancer patients cared for at Vanderbilt-Ingram Cancer Center (VICC) pain clinic between July 2021 and February 2023 was performed. The clinic staff, comprised of anesthesiologists, nurse practitioners, nurses, and an oncology clinical pharmacist, initiated reduction in morphine milligram equivalents (MMEs) among patients with cancer or a history of cancer who were on chronic therapy. Successful reduction in MMEs was defined as having a 30% decrease in total MME from the start of the taper to one year follow up. The primary outcome of the study was successful reduction in patient total MME. Secondary outcomes included disease status, pain, and functional assessments at initial visit and after at least 6 months of tapering, use of non-opioid adjuvant analgesics, and tapering rate.

RESULTS: Of 110 eligible patients, 63 (57.3%) patients successfully reduced total MMEs by 30% in a one-year period. The median baseline morphine equivalent daily dose (MEDD) was 307.5, versus 165 at one-year follow up. Patient's median baseline Functional Assessment of Cancer Therapy-General (FACT-G) scores were 71.5 and 73 at one-year follow up. The median baseline Pain, Enjoyment, of Life and General Activity Scale (PEG-3) was 5.2 and 4.9 at one-year follow up. There were 6 patients that were able to successfully stop all opioids.

CONCLUSIONS: Even though there is no evidence-based guidance regarding opioid tapering, this study demonstrated that chronic cancer pain patients can successfully reduce total MEDDs.

9:30am – 9:50am

1 **Hepatitis C donor positive to recipient negative solid organ transplants: Early direct acting antiviral insurance approval rates with and without documented viremia** Parthenon 1

Moderators: Emily Harman
Presenters: Amy Duong
Evaluators: Sarah Blackwell

TITLE: Hepatitis C donor positive to recipient negative solid organ transplants: Early direct acting antiviral insurance approval rates with and without documented viremia

AUTHORS: Amy Duong; Heather Snyder; Alyssa Billmeyer; Angela Cox; Nicole Cheng; Ryan Ford; Katherine Fuller

OBJECTIVE: To describe DAA insurance approval rate and medication access with or without viremia in HCV D+/R- solid organ transplants prior to discharge

SELF ASSESSMENT QUESTION: TRUE OR FALSE: DAA access remain a definitive barrier to early initiation of DAA therapy in all HCV D+/R- SOT patients

BACKGROUND: Current guidelines support early initiation of direct acting antiviral (DAA) therapy in hepatitis C virus (HCV) donor positive and recipient negative (D+/R-) solid organ transplants (SOTs). According to experts, access to DAA therapy is a key barrier to early initiation in this population.

METHODOLOGY: This single-center, retrospective study assessed rate of DAA prescription insurance approval with or without confirmed HCV viremia, time to approval, reasons for denial, and copay assistance use in HCV D+/R- SOTs.

RESULTS: All 51 patients received insurance approval for DAA therapy following transplantation regardless of confirmed HCV viremia at time of prior authorization (PA) submission. Of the DAA prescriptions approved with PA, 51% received same day approval from PA submission. Appeals received approval within a median of 2 days from appeal submission.

CONCLUSION: Our findings suggest confirmed HCV viremia may not be as significant of a barrier to DAA access and may encourage other health systems to consider early initiation of DAA therapy in their HCV D+/R- transplant protocols.

9:50am – 10:10am

Empty Parthenon 2

Moderators: Tabitha Carney
Evaluators: Heather Snyder

9:50am – 10:10am A **Optimization of Allergy Information Workflow at a Large Community Hospital** Athena I

Moderators: Kaci Shuman
Presenters: John Parker
Evaluators: Cassidy Moses

TITLE: Optimization of Allergy Information Workflow at a Large Community Hospital
AUTHORS: John Parker, PharmD, Michele Durda, PharmD
OBJECTIVE: Overview developments in allergy documentation and utilization following the implementation of a pharmacist-led allergy clarification pilot program.
SELF ASSESSMENT QUESTION: What transcription mistake in the setting of allergy histories may prevent proper “coding” of an allergy alert?
BACKGROUND: Navigating allergy information is often a perilous task for any clinician involved in the medication use process due to numerous factors. The performance of an allergy history is often undertaken during a particularly busy time in patient care responsibilities, and electronic medical record software can be difficult to utilize and interpret. As such, the following errors are commonplace in the electronic medical record: allergy documentation without description of reaction, inappropriate severity assignment to allergies, inappropriate assignment of allergy to a reaction that was likely an intolerance of vice versa, otherwise incomplete allergy history, etc. Additionally, medication allergies and their nuances often warrant expertise in their interpretation and categorization, and experienced pharmacists can play a significant role to this end. A pharmacist-led allergy clarification service will be performed on inpatients in the general medicine floor of Huntsville Hospital.
METHODOLOGY: Data regarding medication safety events since 2010 were reviewed to determine problems in allergy history performance and utilization to determine an appropriate course of action. The provision of a pharmacist-led allergy clarification service will be utilized to perform allergy histories on the family medicine floor of Huntsville Hospital in order to supplement the allergy history that was performed at intake. An institutional allergy questionnaire will be utilized to provide guidance on the most important aspects of performance of the allergy history. It should be noted that the clarification service is permitted to deviate from the questionnaire to ask more specific questions where appropriate. Errors in allergy history documentation will be categorized by the criteria listed above. Patients may be included in the service if they or a family member can provide allergy history.
RESULTS: In progress
CONCLUSIONS: In progress

9:50am – 10:10am B **Impact of pharmacist-led “Every Try Counts” smoking cessation appointments on quit attempts in a primary care clinic** Olympia 1

Moderators: Devin Lavender

Presenters: Danielle McGlynn

Evaluators: Drew Cates

TITLE: Impact of pharmacist-led “Every Try Counts” smoking cessation appointments on quit attempts in a primary care clinic

AUTHORS: Danielle McGlynn, Erika McClain, Elizabeth Hudson

OBJECTIVE: The purpose of this research is to describe the impact of Clinical Pharmacist Practitioner (CPP) utilization of “Every Try Counts” smoking cessation in a primary care clinic on quit attempts.

SELF ASSESSMENT QUESTION: Which of the following are potential barriers to implementing smoking cessation services at a primar care clinic?

BACKGROUND: In 2018 the FDA launched a campaign titled “Every Try Counts”, that utilizes the idea that smoking cessation is a process that often takes several attempts to achieve. This campaign was motivated by research published in the British Medical Journal in 2016, estimating that an average of 29.6 attempts are made before successfully quitting smoking. Smoking cessation interventions provided by community pharmacists have shown to reduce smoking, however our research revealed that none have utilized the “Every Try Counts” method. Our research will focus on the integration of “Every Try Counts” in the primary care setting. Since current data has been gathered from smoking cessation interventions in community pharmacies, this research is looking to expand upon the data collected about pharmacist impact on smoking cessation interventions in the primary care setting in a collaborative practice model. The purpose of this project is to describe the impact of Clinical Pharmacist Practitioner (CPP) utilization of “Every Try Counts” smoking cessation in a primary care clinic on quit attempts.

METHODOLOGY: This was a single center, quality improvement study including patients seen by the Clinical Pharmacist Practitioner at a family medicine clinic for “Every Try Counts” smoking cessation appointments after service implementation. Once the CPP utilized “Every Try Counts” within the scheduled 30-minute visit, patients were then contacted for a 1-month follow-up phone call survey to assess their quit attempts. The primary objective was to describe the impact of “Every Try Counts” in a primary care clinic on patients’ ability to have at least one successful quit attempt, defined as abstaining from smoking for at least 24 hours in a 30-day period. Secondary objectives were to describe the mean number of successful quit attempts per patient in a 30-day period, the impact of implementing “Every Try Counts” on patients’ ability to abstain from smoking for 3 and 5 days, patient perceptions of “Every Try Counts” evaluated during 1-month follow-up survey, and the rate of pharmacologic therapies utilized in combination with “Every Try Counts” to assist patients in smoking cessation.

RESULTS: Of the 18 patients attending their initial smoking cessation appointment, 6 scheduled follow-up visits, 2 attended follow-up visits, and 7 completed the 1-month follow-up survey. At least one successful quit attempt in a 30-day period was had by 5 of 7 patients (71.4%). The mean number of quit attempts per patient over a 30-day period was 2. Although only 57.1% of patients were able to abstain from smoking for 3 days and 42.8% of patients were able to abstain from smoking for 5 days, all 7 patients felt “Every Try Counts” was helpful, rating it at least a 3, on a scale from 1 to 5. Majority of the patients utilized pharmacotherapy, with 5 out of 7 patients using some form of nicotine replacement therapy.

CONCLUSION: Patient perceptions of “Every Try Counts” method of smoking cessation was positive, however barriers to implementing smoking cessation services exist.

9:50am – 10:10am Y **Impact of Pharmacist-led COVID-19 Vaccination Efforts in a Transplant Patient Population** Athena D

Moderators: Elisabeth Webb

Presenters: Nancy Oniovosa

Evaluators: Kirby Benson

TITLE: Impact of Pharmacist-led COVID-19 Vaccination Efforts in a Transplant Patient Population

AUTHORS: Nancy Oniovosa, PharmD; Mariam Saba, PharmD; Hilary Ozden, PharmD; Victoria Phan, PharmD; Maria Miller Thurston, PharmD, BCPS, FGSHP, FCCP

OBJECTIVE: The purpose of this study is to evaluate the impact of pharmacist-led intervention and education on the uptake of COVID-19 vaccination for primary and booster doses in immunocompromised, transplant patients who fill prescriptions at a community-based specialty pharmacy.

SELF ASSESSMENT QUESTION: Can pharmacist-led intervention increase COVID-19 vaccination rates in transplant patient population

BACKGROUND: The purpose of this study is to evaluate the impact of pharmacist-led intervention and education on the uptake of COVID-19 vaccination for primary and booster doses in transplant patients who fill prescriptions at a community-based specialty pharmacy. Transplant patients are more prone to COVID-19 infection and at higher risk for complications related to COVID-19 infection due to their weakened immune system. Numerous studies have shown a reduced antibody response to the COVID-19 vaccine in transplant patients after primary vaccine series which emphasizes the importance of ensuring this population is fully vaccinated based on current CDC guidelines.

METHODOLOGY: This would be a single-center, prospective study involving transplant patients who fill immunosuppressant therapies at a community-based specialty pharmacy. Patient eligibility will be determined during initial counseling or refill calls encounters. Once eligibility is determined for the primary or booster doses based on the current CDC guidelines, the pharmacist will proceed with providing education and assist the patient in scheduling their vaccine appointment at a community pharmacy location of their choice. The Georgia Registry of Immunization Transaction and Services (GRITS) will be used as a follow-up tool to ensure patients went to their scheduled appointments and received their doses. Additional follow-up will be done using the patient's unique identifier with the pharmacies specialty patient care management system to assess for hospital admissions due to COVID-19 infection during their monthly scheduled refill calls. Data collected will include patient demographics, COVID-19 vaccination status before and after pharmacist intervention and COVID-19 infection rate. Inclusion criteria for the study include patients ≥18 years old, recipients of a heart, liver, or kidney transplant who currently fill their immunosuppressant therapy at a community-based specialty pharmacy and received any of the available COVID-19 vaccines. Exclusion criteria includes patients with contraindications to the COVID-19 vaccine or any of its components or had a serious adverse effect to a dose of the COVID-19 vaccine. The primary outcome of the study is COVID-19 vaccination status after pharmacist intervention (includes primary and booster doses) while the secondary outcome is the rate of patient-reported hospitalizations or illness due to COVID-19 infection after getting vaccinated based on current CDC guidelines.

RESULTS: Research still in progress. The primary and secondary outcomes will be collected on a rolling basis until an adequate number of patients have been enrolled for statistical significance. Data will be analyzed using qualitative/descriptive data. The study outcomes will be analyzed by calculating percentage change in vaccine uptake before and after pharmacist intervention. This will include how many patients received a dose of the COVID-19 vaccine after pharmacist intervention. Impact will be assessed by the percentage of patients who were not up-to-date on the vaccine recommendations at initial encounter and the number of patients who received at least one additional vaccine after pharmacist-led intervention and education.

CONCLUSIONS: Research still in progress. We hope to see an increase in the number of solid organ transplant patients who are fully vaccinated with the COVID-19 vaccine. For patients who are hesitant to receive the vaccine, the involvement of a pharmacist will allow patients to address their concerns and increase vaccine uptake

9:50am – 10:10am R **Comparison of Hospital Length of Stay in Patients Receiving Crotalidae Immune F(ab')2 (equine) versus Crotalidae Polyvalent Immune Fab (ovine) for Pit Viper Envenomation** Athena G

Moderators: Sara Gattis

Presenters: Meredith Burns

Evaluators: Rachel Larry

TITLE: Comparison of Hospital Length of Stay in Patients Receiving Crotalidae Immune F(ab')2 (equine) versus Crotalidae Polyvalent Immune Fab (ovine) for Pit Viper Envenomation

AUTHORS: Meredith M. Burns, Matthew McAllister, Aayush Patel

OBJECTIVE: Describe the difference in hospital length of stay between patients treated with crotalidae immune F(ab')2 (equine) and crotalidae polyvalent immune fab (ovine) in the Piedmont Healthcare System.

SELF ASSESSMENT QUESTION: Which antivenom is associated with shorter hospital length of stay?

A.crotalidae immune F(ab')2 (equine)

B.crotalidae polyvalent immune fab (ovine)

BACKGROUND: Antivenom remains the mainstay of treatment for moderate to severe pit viper envenomation. There are currently two FDA approved antivenoms on the market: crotalidae immune F(ab')2 (equine) and crotalidae polyvalent immune fab (ovine). Due to the difference in pharmacokinetic profile, we hypothesized that management of envenomation utilizing crotalidae immune F(ab')2 (equine) would result in a shorter length of hospital stay. The purpose of this study was to assess the difference in hospital length of stay between patients treated with crotalidae immune F(ab')2 (equine) and crotalidae polyvalent immune fab (ovine) in the Piedmont Healthcare System.

METHODOLOGY: This study was a multi-center retrospective chart review conducted at 18 hospitals throughout the Piedmont Healthcare System to compare length of hospital stay in patients treated with pit viper antivenoms between January 1, 2018, and December 31, 2022. Patients were identified from an existing patient registry in the electronic medical record (EPIC). Inclusion criteria consisted of all patients presenting to a Piedmont Healthcare Emergency Department with a snakebite that received a pit viper antivenom. Patients were excluded if they were transferred out of Piedmont Healthcare System before completion of therapy. The primary objective was the difference in length of hospital stay in patients treated with crotalidae immune F(ab')2 (equine) versus crotalidae polyvalent immune fab (ovine) following pit viper envenomation.

RESULTS: In Progress

CONCLUSIONS: In Progress

9:50am – 10:10am R **Comparison of Low Intensity Heparin Protocol versus Standard Intensity Heparin Protocol in Adult Patients Maintained on ECMO** Athena H

Moderators: Kelly Norris

Presenters: Rachel Robinson

Evaluators: Ashley Woodhouse

TITLE: Comparison of Low Intensity Heparin Protocol versus Standard Intensity Heparin Protocol in Adult Patients Maintained on ECMO

AUTHORS: Rachel Robinson, Ashley Taylor, Amy Cato, Vijay Patel, Nathan Wayne

OBJECTIVE: To determine whether a low intensity heparin protocol, compared with a standard intensity protocol, would decrease bleeding events in patients maintained on ECMO.

SELF ASSESSMENT QUESTION: True or false: There was a higher incidence of bleeding events with the standard intensity protocol compared to the low intensity protocol.

BACKGROUND: Extracorporeal membrane oxygenation (ECMO) provides mechanical circulatory support for patients with respiratory and/or cardiovascular failure. The Extracorporeal Life Support Organization (ELSO) guidelines recommend anticoagulation to prevent systemic thrombotic complications and circuit clotting. However, these guidelines do not recommend an optimal intensity of anticoagulation. Conversely, bleeding is also one of the most common complications of ECMO, requiring clinicians to carefully weigh the risk of bleeding and thrombosis when selecting anticoagulation regimens. Retrospective studies have evaluated the use of a low intensity heparin protocol versus a standard intensity protocol for patients maintained on ECMO; however, these studies use activated partial thromboplastin time (aPTT) and activated clotting time (ACT) anticoagulation monitoring, and frequently employed the absence of anticoagulation in their low intensity heparin protocol groups. Our institutional heparin protocols utilize anti-Xa for monitoring. The objective of this study is to determine whether a low intensity heparin protocol, compared with a standard intensity protocol, would decrease bleeding events in patients maintained on ECMO.

METHODOLOGY: Data were collected for all adult patients maintained on ECMO between January 1, 2019 and October 23, 2022 who were anticoagulated with either with our institution’s low intensity heparin protocol or standard intensity heparin protocol. The primary outcome was major bleeding events, defined as bleeding academic research consortium (BARC) criteria type 3b-5 bleeding. Secondary outcomes were minor bleeding events (defined as BARC criteria type 1-3a bleeding), thrombotic complications, heparin-induced thrombocytopenia (HIT), in-hospital death, time in therapeutic range, intensive care unit (ICU) and hospital lengths of stay, frequency of oxygenator exchanges, rates of protocol switching, anti-Xa correlation with aPTT. Outcomes were also stratified by COVID-19 status.

RESULTS: Twenty-seven patients were included in the study, with 14 in the low intensity group and 13 in the standard intensity group. The median age was approximately 55 years, and the most common indication for EMCO was respiratory failure due to COVID-19. The groups were well-balanced. There was no significant difference in major or minor bleeding events in the low vs. standard intensity groups [6 vs. 4 major bleeds (p=0.69); 4 vs. 5 minor bleeds (p=0.69)]. The median percent of subtherapeutic anti-Xa level was significantly higher in the low intensity group vs. the standard intensity group [47% vs. 10% (p=0.019)]. There was no difference between groups with respect to anti-Xa correlation with aPTT; however, correlation was less than 50% in both groups. Seven patients (54%) in the standard intensity group were switched to the low intensity protocol, compared with zero patients in the low intensity group being switched to the standard intensity protocol (p=0.002). There were no differences in thrombotic complications, HIT, in-hospital death, ICU or hospital lengths of stay, or number of oxygenator exchanges.

CONCLUSIONS: There was no difference in the incidence of bleeding events when using a low intensity vs. standard intensity heparin protocol. There was a higher percentage of subtherapeutic anti-Xa levels in the low intensity group; however, the incidence of thrombotic complications was similar. A significant number of patients in the standard intensity group were switched to the low intensity protocol, suggesting potential perceived bleeding risks in these patients.

9:50am – 10:10am | **Clinical Outcomes in Patients Who Receive a One-Time Aminoglycoside Dose for ESBL Enterobacterales or Pseudomonas aeruginosa Cystitis** Athena B

Moderators: Brandon Beers

Presenters: Kelsey Bouwman

Evaluators: Erica Bowles

TITLE: Clinical Outcomes in Patients Who Receive a One-Time Aminoglycoside Dose for ESBL Enterobacterales or Pseudomonas aeruginosa Cystitis

AUTHORS: Kelsey Bouwman, Melissa George

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: ESBL Enterobacterales and Pseudomonas aeruginosa can be highly resistant organisms making them difficult to treat with often no oral options available. As a result patients can experience prolonged hospitalizations or require outpatient parenteral antibiotics, even for indications such as cystitis. Aminoglycosides are an appealing treatment option since they are excreted in high concentrations in the urine with concentrations after a single dose remaining above therapeutic levels for longer than 72 hours for most uropathogens. Additionally, a single dose of an aminoglycoside has reported lower rates of nephrotoxicity and ototoxicity compared to a conventional 7-day course. In their new guidance for multi-drug resistant (MDR) gram-negative infections, the IDSA recommends single dose aminoglycosides as an alternative option for uncomplicated cystitis caused by ESBL Enterobacterales and as a first line option for uncomplicated cystitis due to difficult to treat Pseudomonas aeruginosa. However, there is very little recent clinical evidence to support this recommendation, and the majority of prior studies were done in children and not adults. At our institution, we extrapolate the limited data for uncomplicated cystitis to complicated cystitis and recommend a one-time dose of aminoglycoside to complete treatment following about 3 days of appropriate therapy if there are no oral options available. The objective of this study was to evaluate the safety and clinical efficacy of single-dose aminoglycosides for cystitis caused by ESBL producing Enterobacterales or Pseudomonas aeruginosa in adult patients.

METHODOLOGY: This was a multicenter, retrospective, cohort study. Patients treated for cystitis with ESBL-producing Enterobacterales or Pseudomonas aeruginosa from January 1, 2020 to December 31, 2022 were identified for analysis, and data was obtained from electronic health records. Patients who received the standard course of ≥ 3 days of standard of care were compared to patients who received a one-time dose of an aminoglycoside with or without a short course of effective therapy before. The primary outcome of this study was rate of relapse, and secondary outcomes included readmission rates, length of stay, development of aminoglycoside resistance, average aminoglycoside dose used, and safety.

RESULTS: The study populations were comparable except there were more males and patients with complicated cystitis in the standard of care group compared to the aminoglycoside group. There was no difference found between the groups in the rate of relapse. The length of stay was significantly different between the two groups being an average of 4.545 ± 4.445 days in the aminoglycoside group and 14.091 ± 10.067 days in the standard of care group. No difference was found between the groups for readmission, development of aminoglycoside resistance, or safety.

CONCLUSIONS: A one-time dose aminoglycoside did not increase risk of relapse and was associated with shorter length of stay when used to treat cystitis caused by ESBL producing Enterobacterales or Pseudomonas aeruginosa in adult patients.

9:50am – 10:10am | **Incidence of Extended-Spectrum Beta-Lactamase Infections among Admitted Patients in a Community Hospital System** Athena A

Moderators: Bruce Jones
Presenters: Kelsey Weber
Evaluators: Lynsey Neighbors

TITLE: Incidence of Extended-Spectrum Beta-Lactamase Infections among Admitted Patients in a Community Hospital System

AUTHORS: Kelsey Weber, Heather Gibson, Allison Cid, Drew Kessell, Gretchen Arnoczy

OBJECTIVE: *Will be included in presentation*

SELF ASSESSMENT QUESTION: *Will be included in presentation*

BACKGROUND: The rising incidence of multi-drug resistant bacteria, such as those producing extended-spectrum beta-lactamase (ESBL), continue to cause substantial health crises in hospitals throughout the country. The prevalence of ESBLs in individual healthcare facilities is unknown. Further research and education about ESBLs is critically important to combat bacterial resistance. The purpose of this study is to obtain information regarding the frequency and potential risk factors of ESBLs within a rural health-system to inform public health action and clinical decision making.

METHODOLOGY: A retrospective chart review of admitted patients ages 18 years and older was conducted in four community hospitals who are part of the FirstHealth of the Carolinas Health System. Inclusion criteria comprised patients with positive culture(s) that grew ESBL-producing Escherichia coli, Klebsiella pneumoniae, or Klebsiella oxytoca. Patients were excluded if they grew other multi-drug resistant gram-negative bacteria, such as carbapenem-resistant Enterobacterales or multi-drug resistant Pseudomonas and/or patients who had received any antibiotics in the outpatient setting. The chart review was completed for inpatients meeting inclusion criteria from June to August 2022. Infection source and recent history of positive ESBL cultures within the past year were reviewed. Patient's antibiotic treatment and duration were assessed, specifically patients receiving carbapenems. Patient demographics including pertinent comorbidities such as chronic kidney disease/dialysis dependence and diabetes were also reviewed, as well as patient disposition prior to admission. The primary outcome was incidence of positive ESBL growth in four rural community hospitals. Gathered patient demographics and infection characteristics during admission were used to generate potential risk factors for acquiring ESBL-producing infections.

RESULTS: Seventy-nine patient charts with positive ESBL cultures were reviewed throughout all four community hospitals during the allotted time frame (mean age 65.2 years; 54 females [68.4%]; 48 white [60.8%]; mean BMI 31.3). Most positive cultures were found in the urine (67; 84.8%), with the second most prevalent in aerobic wound cultures (8; 10.1%). Sixty-three cultures isolated were due to Escherichia coli while 15 were from Klebsiella pneumoniae. Forty-three patients were found to have had at least one previous ESBL-positive culture prior to current admission (54.4%). The most common indications for admission included urinary tract infection-related symptoms (22; 27.8%) and altered mental status (17; 21.5%). Patient comorbidities were analyzed with the most prevalent being diabetes mellitus (33; 41.8%), history of recurrent urinary tract infections (26; 32.9%)), chronic catheterization (19; 24.1%) and chronic kidney disease (16; 20.3%). Other similar comorbidities included chronic heart failure (14; 17.7%), coronary artery disease (12; 15.2%), and history of cancer (10; 12.7%).

CONCLUSIONS: Among patients with ESBL-positive cultures throughout the small community hospital system, a majority were isolated from Escherichia coli throughout the three-month review period. The most common comorbidities associated with ESBL-positive cultures on admission included prior history of ESBL-positive cultures, history of recurrent urinary tract infections, diabetes, and chronic catheterization. One strength of the study is that specific patients were reviewed, rather than number of positive cultures. This allowed for more specific risk factors to be obtained based on patient background. One limitation is the lack of data that could be obtained from other healthcare systems including previous cultures. Further research will continue to look closely at the ESBL-positive cultures to determine the prevalence of bacterial resistance to current antimicrobial therapy, as well as the most appropriate antibiotic regimens based on these resistance patterns.

9:50am – 10:10am L **Evaluating the use of sodium zirconium cyclosilicate compared to sodium polystyrene sulfonate for the treatment of acute hyperkalemia** Athena J

Moderators: Michelle Turner

Presenters: Joe Corbino

Evaluators: Giannopoulos Figg

TITLE: Evaluating the use of sodium zirconium cyclosilicate compared to sodium polystyrene sulfonate for the treatment of acute hyperkalemia

AUTHORS: Joseph Corbino, Jay Adams, Katherine Tauson, Sara Miller, Ted Walton, Marina Rabinovich

OBJECTIVE: To evaluate the use of sodium polystyrene sulfonate compared to sodium zirconium cyclosilicate for the treatment of acute hyperkalemia.

SELF ASSESSMENT QUESTION: If adding one of the agents to formulary for treatment of acute hyperkalemia, which agent would you choose and how would you support this decision?

BACKGROUND: Acute hyperkalemia is a common electrolyte disorder in hospitalized patients. It is often associated with comorbidities such as chronic kidney disease, heart failure, and diabetes mellitus. ECG changes with peaked T-waves can be an early sign of hyperkalemia, but up to half of patients, including some with severe hyperkalemia, can be asymptomatic. The risk of cardiac toxicity from hyperkalemia is most severe when potassium is > 6.5 mEq/L. The mainstay of acute symptomatic hyperkalemia management includes the following: stabilizing the cardiac membrane with intravenous calcium; shifting potassium to the intracellular compartment with insulin, beta1-adrenergic agonists, and sodium bicarbonate in certain circumstances; and eliminating potassium with dialysis, loop diuretics, or potassium-binding agents. There is limited evidence on the use of novel potassium-binding agents for the management of acute hyperkalemia. Until recently, sodium polystyrene sulfate (SPS), which has a variable onset of action, was the only potassium binding resin for the treatment of acute hyperkalemia. A newer potassium binder, sodium zirconium cyclosilicate (SZC), is approved for the treatment of hyperkalemia alongside standard of care, although its efficacy in an acute setting has not been extensively studied. SZC is a non-absorbed potassium binder that preferentially exchanges hydrogen and sodium for potassium and ammonium ions throughout the entire gastrointestinal tract.

METHODOLOGY: This was a retrospective chart review of adult inpatients ≥ 18 years old prescribed at least one dose of either sodium zirconium cyclosilicate or sodium polystyrene sulfonate within the Grady Health System between July 1, 2019 and June 30, 2022. Patient were excluded if they had end-stage renal disease on maintenance hemodialysis, were admitted for diabetic ketoacidosis, suffered from chronic hyperkalemia, had a lab-confirmed hemolyzed sample, received hemodialysis within a four-hour period surrounding potassium-binder administration, or received a dose of either potassium-binder within the previous 24 hours. The primary outcome of this study was the change in serum potassium 12 to 24 hours following administration of either medication in addition to standard of care treatment. Secondary outcomes included the number of individuals administered additional interventions outside the hyperkalemia order set within 24 hours, change in serum potassium in individuals receiving additional therapies outside the hyperkalemia order set, and median time-to-administration of either potassium-binder.

RESULTS: A total of 51 patients were included in the study (SPS 21, SZC 31). There was no statistical difference in the mean change in serum potassium between the two treatment groups (0.95 mEq/L vs 0.9 mEq/L, p=0.64). The majority of individuals (70% SPS and 80.6% SZC) received appropriate pharmacotherapy as dictated by the institution-specific hyperkalemia order sets. However, individuals prescribed SPS were more likely to receive the recommended total dose compared to those prescribed SZC (85% vs 42%). Additionally, individuals prescribed SZC were statistically more likely to receive additional doses of insulin and dextrose compared to SPS (45% vs. 15%, p

9:50am – 10:10am M **Interventions to Improve Facility Smart Pump Guardrail Utilization and Achieve Institute for Safe Medication Practices Targeted Goals: A Medication Safety Initiative** Olympia 2

Moderators: Kristen Kilby

Presenters: Caitlin Kenney

Evaluators: Brandi Dahl

TITLE: Interventions to Improve Facility Smart Pump Guardrail Utilization and Achieve Institute for Safe Medication Practices Targeted Goals: A Medication Safety Initiative

AUTHORS: Caitlin Kenney, Michael Saavedra

OBJECTIVE: Pinpoint barriers that reduce Guardrail utilization and implement strategies to achieve 95% or greater compliance rates to improve patient safety

SELF ASSESSMENT QUESTION: What is the ISMP's goal compliance rate for the utilization of hospital smart pump systems?

BACKGROUND: In targeting best practices for hospital safety, the Institute for Safe Medication Practices (ISMP) introduced Best Practice 8 which aims to implement and optimize the use of smart infusion pumps. In 2021, the ISMP revised the goal to include maintaining a 95% or greater compliance rate for the use of dose error-reduction systems. Our organization utilizes BD Alaris infusion pumps and recently adopted this goal but has found difficulty in achieving it. The objective of this project is to pinpoint barriers that reduce Guardrail utilization and to implement strategies to achieve 95% or greater compliance rates and improve patient safety.

METHODOLOGY: The Medication Safety Committee pharmacist chair currently reports weekly and monthly Alaris Guardrail compliance rates to hospital nurse leaders and committee members. Reports are categorized by the pump profile used and often correlate broadly with the unit where an infusion is run. Difficulty in identifying specific areas and nurse users with high basic infusion rates has led to a number of interventions aimed at improving overall Guardrail utilization. A proposed policy update requiring that a patient ID be assigned to each pump at the time of programming will aid in tracking where basic infusions are being utilized. A daily report of basic infusions will be run to detect use in real time in an effort to target areas and users in need of additional training or education and to discuss dataset issues which may hinder the use of Guardrails. Compliance rounding checklists will be provided to unit managers to encourage routine spot checks and to resolve issues as they are found. Pre- and post-intervention Guardrail utilization rate averages over an equal review period will be compared for evaluation of the effectiveness of the intervention.

RESULTS: This safety initiative was piloted at our Parkridge East Hospital (PEH) campus prior to expanding to Parkridge Medical Center (PMC), the largest hospital in our health system. PEH began widespread education and incorporated the patient ID mandate in October 2022 and reached 95% Guardrail compliance for the first-time in January 2023. Compliance dropped slightly below 95% in February but has exceeded 95% since then. Our PMC campus has not yet reached 95% Guardrail compliance however, initiatives have not been implemented hospital wide at this time.

CONCLUSIONS: At PEH, 95% Guardrail compliance was achieved three months after implementing our initiative and the ability to maintain this goal has proven the usefulness of patient ID in addition to the other educational aspects of the intervention. Although the initiative is not hospital wide at PMC, the areas that now utilize patient ID have shown improvement from baseline and are at nearly 100% compliance. These areas are no longer target areas. We are still investigating where our problem areas lie and are confident that the use of patient ID will help us to narrow the field and determine where further nursing education is needed. Overall, this initiative has helped us improve upon our commitment to patient care and safety. At PEH from October 2022 to April 2023, 913 infusions were reprogrammed due to guardrail alerts, severe harm was averted 56 times, and there were 29 "Good Catches" due to Guardrail use. At PMC from December 2022- April 2023, 1,442 infusions were reprogrammed due to Guardrail alerts, severe harm was averted 36 times and there were 89 "Good Catches". The importance of running IV preparations via Guardrails is evident and establishes the meaningfulness of achieving and maintaining high percent utilization.

9:50am – 10:10am O **Assessing the Value of Pharmacist-led Education of Chemotherapy Regimens Using Surveys to Measure Patient Satisfaction and Understanding** Athena C

Moderators: Molly Thompson
Presenters: Catherine Ankersen
Evaluators: Emily Johnson

TITLE: Assessing the Value of Pharmacist-led Education of Chemotherapy Regimens Using Surveys to Measure Patient Satisfaction and Understanding
AUTHORS: Catherine Ankersen, Kathleen Hatcher, Charles Durant, Rachel Rossi, Krystal Lawton
OBJECTIVE: Define the role of pharmacists in medication management within the oncology patient population.
SELF ASSESSMENT QUESTION: Pharmacists assume what role(s) as part of the oncology team?
BACKGROUND: Within the next twenty years, the incidence of cancer is projected to increase by more than 50% and will result in an increased demand on the associated medical services required for treatment. While organizations like Hematology/Oncology Pharmacy Association, National Comprehensive Cancer Network and others, provide extensive guidance on oncologic treatment, there is little data and currently no established standards set forth for counseling and education in this patient population. A recent study polling oncology patients that assessed counseling needs discovered that the majority of patients identified the need for additional medication-related education. Given the complex, high-risk, and often novel nature of treatment regimens, pharmacists who specialize in oncology can be uniquely positioned to provide comprehensive medication management services to patients. Their role can extend beyond medication management, including coordination of care, supportive care management, procedure and guideline development, and chemotherapy counseling. The goal of this study was to assess and compare current oncology patient education practices within the health system.
METHODOLOGY: This IRB approved, prospective, and stratified study was based out of a community-based hospital system across five outpatient infusion centers. A standardized survey was administered to all patients 18 years of age or older and receiving an initial chemotherapy treatment. Patients received education from either a pharmacist or nurse and grouped accordingly for comparison. The survey sought to assess patient satisfaction of education and understanding of their treatment regimen. Data analysis was performed utilizing descriptive statistics. This study needed 40 patients per group to meet an estimated power of 90%.
RESULTS: Surveys were obtained from 34 patients (pharmacist-led sites = 31, nurse-led sites = 3). Ninety-seven percent of patients in the pharmacist-led group reported confident or very confident with perceived understanding of their medications. In contrast, sixty-seven percent of patients in the nurse-led group felt confident with perceived understanding of medications. All patients in both pharmacist-led and nurse-led groups reported feeling confident or very confident with respect to anticipated side effects, their next follow-up appointment time, and when to seek emergent medical attention. All patients in both groups reported the educator was always available to answer questions. All patient's in the nurse-led group reported the education was delivered clearly, while only 93% reported clear education delivery. Patients in both groups also expressed desire for pharmacist availability.
CONCLUSIONS: The cumulative response from both treatment groups and across all sites suggests satisfaction with current education practices. Due to inadequate sample size, this study did not reach power. An opportunity for improvement was identified for delivery of pharmacist-led education through standardization of educational materials. Modifications to data collection procedures are needed to ensure collection of data from nurse-led education sites.

9:50am – 10:10am P **Empty** Parthenon 1

Moderators: Emily Harman
Presenters: Ogechuwu Erinne
Evaluators: Sarah Blackwell

TITLE:
AUTHORS:
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND:
METHODOLOGY:
RESULTS:
CONCLUSIONS:

10:20am – 10:40am **Empty** Parthenon 2

10:20am – 10:40am B **Evaluation of metformin prescribing patterns in patients with Type 2 Diabetes Mellitus in a rural healthcare setting: Phase B** Olympia 2

Moderators: Aayush patel
Presenters: Falak Lalani, PharmD
Evaluators: Brittany NeSmith

TITLE: Evaluation of metformin prescribing patterns in patients with Type 2 Diabetes Mellitus in a rural healthcare setting: Phase B
AUTHORS: Falak Lalani and Sharmon Osae
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: Although numerous studies have shown the clinical benefits of metformin, there are only a few studies assessing the prescribing patterns of metformin in an outpatient rural healthcare system post-prescriber education. In phase A of this study, investigators identified that 6.9% of eligible patients were not prescribed metformin. The primary objective of the phase B study is to evaluate the difference in the percentage of patients qualifying for metformin treatment who were not prescribed this agent prior to prescriber education (6.9%) versus the percentage of patients qualifying for metformin treatment who were not prescribed this agent post-prescriber education.
METHODOLOGY: This was a single-center, IRB-exempted, retrospective cohort study conducted from August 1st, 2022 – December 1st, 2022 at a rural healthcare clinic. Patients with a diagnosis for type 2 diabetes mellitus (T2DM) who were greater than 18 years of age were included in the study. Patients were excluded if they had a diagnosis of type 1 diabetes mellitus, expired, or were pregnant. Data were captured via electronic chart review and analyzed using RedCap. Data collection included baseline characteristics, documentation of prior lactic acidosis, whether or not metformin was prescribed, documented reasons as to why metformin was discontinued or withheld, as well as what other T2DM treatments were prescribed.

Patients were divided into two groups: patients with an active prescription for metformin on their profile and those with a historical prescription for metformin versus patients with a diagnosis of T2DM without an active or historical prescription for metformin. If metformin was never initiated in these patients, the documented reasoning for this was investigated. Possible reasons for not prescribing included severe renal impairment (eGFR

10:20am – 10:40am B **Implementation of The Choosing Wisely Hypoglycemia Safety Initiative within Patient-Aligned Care Teams in a Veterans Affairs Health Care System** Olympia 1

Moderators: Lindsey Pearsall

Presenters: Sara Tyler

Evaluators: Naomi Yates

TITLE: Implementation of The Choosing Wisely Hypoglycemia Safety Initiative within Patient-Aligned Care Teams in a Veterans Affairs Health Care System

AUTHORS: Sara Tyler, Shannon Cash, Autumn Gordon, Pamela Stamm

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: The Choosing Wisely Hypoglycemia Safety Initiative (CW-HSI) is a national Veteran Affairs (VA) initiative that aims to promote shared-decision making regarding diabetes medication regimens in patients identified as high risk for hypoglycemia. This project aims to assess the impact and feasibility of implementing the CW-HSI among clinical pharmacist practitioners (CPPs) working within patient-aligned care teams (PACT) in a specific VA facility.

METHODOLOGY: This Quality Improvement project sought to implement the CW-HSI among eight PACT CPPs within a specific VA facility from September 1, 2022, through November 30, 2022. Patient lists were obtained from the national dashboard and provided to each PACT CPP prior to implementation. Patients eligible for hypoglycemia screening were those with an A1c less than 7% and an active order for insulin and/or sulfonylurea within 90 days. Patients were also required to have at least of the following additional risk factors: 75 years of age or older, cognitive impairment, or impaired renal function. The primary outcome of the study was the number of patients for which at least one medication intervention was made by a PACT CPP. Secondary outcomes included the total number of patients screened, the type of intervention made by a PACT CPP, and the utility of the hypoglycemia screen clinical reminder versus the HSI dashboard for identifying patients. To determine the type of intervention made, interventions were categorized into the following categories: no change, dose reduction, medication discontinuation, change medication, or other. Additionally, the PACT CPPs completed pre- and post-implementation surveys to evaluate perceptions regarding ease of implementation and likelihood of continuing to use the screening tool after completion of the project. Descriptive statistical analysis methods were utilized to analyze outcomes.

RESULTS: A total of 289 patients were included on the patient lists provided to the PACT CPPs at the beginning of the study. A total of 133 patients were screened for hypoglycemia over the 3-month study period. Of those 133 patients screened, 43 patients had an intervention in which a change was made to the patient’s antidiabetic medications and/or glucose tablets were prescribed. An additional 7 patients, who had no medication change during the first visit, had a medication intervention at a subsequent follow-up visit with a PACT CPP. The majority of patients had no medication changes, but were counseled on how to recognize and treat hypoglycemia. The most common medication interventions included relaxing or discontinuing a patient’s current medication and/or prescribing glucose tablets. A total of 121 patients were identified for screening using the dashboard, which was the origin of the patient lists. On average, the clinical reminder was rated as easier to implement within the PACT CPP workflow than the dashboard. Of the seven PACT CPPs that responded to the post-implementation survey, six rated the likelihood of continuing to complete the hypoglycemia screen as “extremely likely”.

CONCLUSIONS: While many of the screenings resulted in no medication changes, it provided opportunities for PACT CPPs to provide invaluable counseling regarding hypoglycemia. In those Veterans in which interventions were made, therapy was often de-escalated or switched to agents with a lower risk for hypoglycemia. Implementing the CW-HSI among PACT CPPs resulted in interventions to improve the safety outcomes of Veterans most at risk for hypoglycemia.While many of the screenings resulted in no medication changes, it provided opportunities for PACT CPPs to provide invaluable counseling regarding hypoglycemia. In those Veterans in which interventions were made, therapy was often de-escalated or switched to agents with a lower risk for hypoglycemia. Implementing the CW-HSI among PACT CPPs resulted in interventions to improve the safety outcomes of Veterans most at risk for hypoglycemia.

10:20am – 10:40am C **Impact of Renin-Angiotensin-Aldosterone System Inhibitor Continuation versus Discontinuation on Outcomes of Patients Hospitalized with Heart Failure and Reduced Ejection Fraction** Athena D

Moderators: Dawnna Metcalfe

Presenters: Anna Grace Weiland

Evaluators: Christopher Whitman

TITLE: Impact of Renin-Angiotensin-Aldosterone System Inhibitor Continuation versus Discontinuation on Outcomes of Patients Hospitalized with Heart Failure and Reduced Ejection Fraction

AUTHORS: Anna Grace Weiland and Lindsey Arthur

OBJECTIVE: The purpose of this study is to determine the impact of either continuation or discontinuation of angiotensin-converting enzyme inhibitors (ACEis), angiotensin receptor blockers (ARBs), and angiotensin II receptor blocker/neprilysin inhibitors (ARNIs) on outcomes of patients hospitalized with acute exacerbations of HFrEF.

SELF ASSESSMENT QUESTION: True or False: RAAS inhibitors should be initiated/reinitiated prior to discharge as part of GDMT.

BACKGROUND: Landmark trials have provided evidence that angiotensin-converting enzyme inhibitors (ACEis), angiotensin receptor blockers (ARBs), and angiotensin II receptor blocker/neprilysin inhibitors (ARNIs) are an integral part of guideline directed medical therapy for patients with heart failure with reduced ejection fraction (HFrEF), as they reduce morbidity and mortality. Continuing or discontinuing these renin-angiotensin-aldosterone system (RAAS) inhibitors in patients hospitalized with acute heart failure has not been well studied.

METHODOLOGY: This is a retrospective, single-center, cohort study. Data will be collected through chart reviews to compare outcomes in patients that were continued on ACEis/ARBs/ARNIs during hospitalization for HFrEF versus those that were discontinued. Patients included in this study are 18 years and older, admitted to the hospital with HFrEF between October 1st, 2021 and October 31st, 2022, and had an ACEi/ARB/ARNI on the admission medication reconciliation. Documentation from providers will be assessed to determine the reason of RAAS inhibitor discontinuation. The primary endpoint is 30-day hospital readmission rates. Secondary endpoints include length of hospitalization, all-cause 30-day mortality, hypotension, and hyperkalemia.

RESULTS: Over the outlined timeframe of one year, the primary outcome of 30-day readmission occurred in 17.9% of patients with RAASi administered during admission and 22.2% of patients with RAASi held during admission. After stratification based on ejection fraction the results were not statistically significant. The secondary outcome of 30-day mortality occurred in 6.7% of RAASi administered group and 0% of RAASi held group for EF <20% ($p=0.596$). For EF 20-30%, 0 patients had mortality in RAASI administered group compared to 28.6% patients in RAASi held group ($p=0.005$). For EF 30-40%, 11.5% RAASi administered versus 14.3% RAASi held had mortality ($p=0.843$). Length of stay was analyzed among three subgroups: Group 1 with RAASi started at admission and continued, Group 2 with RAASi not started at admission but restarted while inpatient, and Group 3 with RAASi started at admission but discontinue while inpatient. The mean LOS for Group 1 was 3.5 days, Group 2 was 7.1 days, and Group 3 was 5.5 days. One group was found to be statistically different from the others ($p=0.029$), but the statistical analysis performed does not indicate which group is significantly different. Hyperkalemia was observed in 7.5% patients with a RAASi administered versus 16.7% of RAASi held ($p=0.357$). Hypotension was observed in 23.9% of RAASi administered compared to 66.7% of RAASi held group ($p<0.001$).

CONCLUSIONS: Patients with their RAAS inhibitors held and an EF 20-30% had higher mortality, but there was no significant difference seen in readmission rates. Length of stay was significantly different in one of the subgroups analyzed. Hypotension proved to be a common cause of holding RAASi while inpatient. 25.8% of patients had no RAASi prescribed at discharge. Future directions include standardizing our hospital's GDMT discharge prescribing patterns and evaluating our titration of GMDT medications prior to discharge, as many patients are lost to follow up.

10:20am – 10:40am R **Adenosine versus diltiazem for the treatment of stable supraventricular tachycardia in the emergency department** Athena I

Moderators: Matthew McAllister
Presenters: Beck Hogewood
Evaluators: Deborah Hobbs

TITLE: Adenosine versus diltiazem for the treatment of stable supraventricular tachycardia in the emergency department

AUTHORS: Beck Hogewood, Wes Arrison, Devon Burhoe

OBJECTIVE: The primary purpose of this study is to evaluate the efficacy of bolus-dose adenosine compared to bolus-dose diltiazem in converting emergency department patients with supraventricular tachycardia (SVT) to sinus rhythm.

SELF ASSESSMENT QUESTION: Not required

BACKGROUND: Supraventricular tachycardia (SVT) is an arrhythmia that originates at or above the atrioventricular node in the cardiac tissue. SVT is generally defined as a heart rate > 100 beats per minute at rest. SVT can further be classified as narrow-complex (QTC 120 ms). Acute treatment options for SVT primarily include both nonpharmacologic and pharmacologic therapies. Non-pharmacologic options include vagal maneuvers, while acute pharmacologic therapies include adenosine and nondihydropyridine calcium channel blockers and beta blockers. This study will focus on the administration of both adenosine or diltiazem for the treatment of supraventricular tachycardia in the emergency department setting.

METHODOLOGY: This retrospective, observational, cohort study was conducted in two emergency departments within a two-hospital health system. Patients 18 years and older presenting to the emergency department from January 1st, 2021 to December 31st, 2022 with hemodynamically stable, narrow-complex SVT who received treatment with either bolus-dose adenosine or bolus-dose diltiazem. Patients were excluded if they were less than 18 years old, determined to be in atrial fibrillation, received either study agent prior to arrival, received electrical cardioversion prior to arrival, or were hemodynamically unstable upon arrival. Subjects were screened and identified through a SQL® report with filters for ICD10 code I47.1 and receipt of either bolus-dose adenosine or diltiazem via emergency department physician order. Subjects were matched in a 1:1 fashion based on medication received. Patients receiving adenosine were randomized by medical record number and included if they met selection criteria. Baseline characteristics included race, height, weight, body mass index, and pertinent past medical history such as SVT, atrial fibrillation, and heart failure. The primary outcome was rate of conversion to sinus rhythm after administration of one dose of either study agent. Secondary safety outcomes included rates of hypotension, symptomatic bradycardia, cardiac failure, and cardiac arrest. Additional secondary outcomes included administration of additional doses of any agent for conversion to sinus rhythm and utilization of weight-based versus fixed diltiazem doses.

RESULTS: Mean weight and body mass index were similar for both the adenosine and diltiazem groups (95.7 ± 34.7 kg vs. 95.1 ± 34.4 kg; p = 0.95 and 33.2 ± 12.0 kg/m2 vs. 31.9 ± 10.8 kg/m2; p = 0.69, respectively). Mean age (56.7 ± 14.1 years vs. 63.5 ± 18.3 years, p = 0.17) and percentage of patients with a history of atrial fibrillation (0% vs. 8.7%; p = 0.15) were not significantly different between groups, while history of SVT was significantly higher (26.1% vs. 8.7%; p = 0.001) in the adenosine group. After one dose, 18 of 23 patients converted to sinus rhythm in the adenosine group, while 19 of 23 patients converted to sinus rhythm in the diltiazem group (78.3% vs. 82.6%, p = 0.71). No patients in either group experienced adverse safety outcomes. Only four of 23 patients receiving diltiazem boluses received a dose within +/- 10% of 0.25 mg/kg weight-based dose, while the rest received fixed doses between 10 and 25 mg. Five adenosine patients and three diltiazem patients (21.7% vs. 13.0%, p = 0.44) required an additional dose for conversion. One patient received a single dose of diltiazem without conversion.

CONCLUSIONS: This retrospective study suggests that bolus-dose diltiazem is as effective as bolus-dose adenosine in converting patients with SVT to sinus rhythm. Given the small patient population and retrospective nature of this study, it is difficult to extrapolate these results to the general population. Therefore, larger scale, randomized, controlled, prospective trials are needed to determine the superiority of diltiazem in converting SVT patients to sinus rhythm as compared to adenosine.

10:20am – 10:40am R **Efficacy of Parenteral Haloperidol for Nausea in the Emergency Department** Athena H

Moderators: April Quidley

Presenters: Gabrielle Mendoza

Evaluators: Vince Buttrick

TITLE: Efficacy of Parenteral Haloperidol for Nausea in the Emergency Department

AUTHORS: Gabrielle Mendoza, Dora Hall, Sarah Cullen

OBJECTIVE: To assess the efficacy of parenteral haloperidol for nausea in the emergency department by determining the rate of rescue antiemetics needed after utilizing haloperidol

SELF ASSESSMENT QUESTION: True or false: The majority of patients in this study required a single IV dose of 2.5 mg haloperidol to treat their nausea in the ED.

BACKGROUND: Haloperidol is a butyrophenone that acts as a potent dopamine antagonist, treating nausea and vomiting by blocking dopamine in the chemoreceptor trigger zone of the brain. Because of its dopamine antagonism, haloperidol has been used to prevent or treat post-operative nausea and vomiting and to treat cannabinoid hyperemesis syndrome. These indications have led to its recent use as a treatment for nausea in the emergency department, but its efficacy has yet to be determined. The purpose of this study was to assess the efficacy of parenteral haloperidol for nausea in the emergency department by determining the rate of rescue antiemetics needed after utilizing haloperidol.

METHODOLOGY: Eligible patients were patients ≥18 years of age who had received parenteral haloperidol in the Emory Decatur Hospital emergency department between 01/01/2022 through 6/20/2022 with the ICD-10 codes for any of the following: nausea and vomiting, gastroparesis, cannabis use without complication, cyclic vomiting syndrome, cannabis use with other disorder, or cannabis use with unspecified cannabis-induced disorder. This study was a retrospective chart review study with patient charts reviewed for the dose and route of haloperidol given in addition to the number of antiemetics administered after using haloperidol.

RESULTS: A total of 93 patients were included in the IRB-approved study with 99 instances of parenteral haloperidol administration. There were 63 female patients (67.7%) and 30 male patients (32.3%) in the study. Approximately half of the patients (54.8%) received a dose of 2.5 mg of haloperidol with 6 of those patients receiving an additional 2.5 mg of haloperidol after their initial dose. There were 10 administrations (10.1%) of intramuscular haloperidol with the rest of the administrations being intravenous (89.9%). Eleven patients (11.8%) received one additional antiemetic and six patients (6.5%) received two or more additional antiemetics (other than haloperidol) after receiving haloperidol. The majority of patients (81.7%) did not receive any additional antiemetics after receiving haloperidol. Only one patient (1.1%) received a single non-haloperidol antiemetic after receiving a second haloperidol dose. Out of the 10 patients that had EKGs done after receiving haloperidol, one patient had a prolonged QTc interval with no adverse effects documented for that patient.

CONCLUSIONS: The majority of patients did not receive any additional antiemetics after receiving parenteral haloperidol. Parenteral haloperidol appears to be an effective treatment for nausea in the emergency department. This finding is consistent with the results of similar previous trials, but a randomized controlled trial should be conducted to provide additional evidence to support this conclusion.

10:20am – 10:40am R **Evaluation of albumin and loop diuretic combination therapy for deresuscitation in critically ill patients with hypoalbuminemia** Athena G

Moderators: Tracey Bastian

Presenters: Gregory Taylor

Evaluators: Erik Turgeon

TITLE: Evaluation of albumin and loop diuretic combination therapy for deresuscitation in critically ill patients with hypoalbuminemia

AUTHORS: Gregory Taylor

OBJECTIVE: Define the role of hyperoncotic albumin for deresuscitation in volume-overloaded, critically-ill patients with hypoalbuminemia

SELF ASSESSMENT QUESTION: Should albumin be a part of first-line diuretic strategies for critically-ill patient with hypoalbuminemia for diuresis?

BACKGROUND: Critically ill patients commonly develop volume overload after receiving large amounts of intravenous (IV) fluids to achieve hemodynamic stability. Volume overload is associated with increased intensive care unit (ICU) length of stay (LOS) and mortality. Strategies to deresuscitate patients once they are no longer requiring fluids have been shown to decrease these poor outcomes. Hyperoncotic albumin could theoretically increase the effectiveness of loop diuretics in hypoalbuminemic patients. The goal of this study is to determine if hyperoncotic albumin combined with loop diuretics enhances urine output when compared to loop diuretic monotherapy in patients with hypoalbuminemia.

METHODOLOGY: This study is a single center retrospective cohort from September 1, 2020 through August 31, 2022. Included patients are 19 years of age or older, admitted to an ICU, receive an IV loop diuretic, and have hypoalbuminemia (albumin less than 3.5 g/dL). Patients who receive hyperoncotic albumin for an alternative indication (large volume paracentesis, hepatorenal syndrome, spontaneous bacterial peritonitis, cardiac surgery, or nephrotic syndrome) or patients who inappropriately receive it for resuscitation are excluded. Additionally, patients are excluded if they receive IV loop diuretic therapy for an indication other than deresuscitation as determined by chart review. Patients who are pregnant, receive any form of renal replacement therapy concurrently with loop diuretic or albumin, or do not receive an initial dose of an IV loop diuretic within 1 hour before or 4 hours after receipt of albumin in the combination group are also excluded. Patients will be analyzed based on receipt of albumin and loop diuretic combination therapy versus loop diuretic monotherapy. The primary outcome is urine output (mL/kg/hr) over 24 hours. Secondary outcomes include net fluid balance 24 hours following administration of therapy, mortality, ICU LOS, and hospital LOS. A subgroup analysis of urine output in patients with albumin levels less than 2.5 g/dL versus 2.5-3.4 g/dL will also be conducted. Nominal data will be analyzed using the chi-squared test. Continuous data that is parametric or nonparametric will be analyzed using an unpaired t-test or Wilcoxon rank sum, respectively.

RESULTS: In Progress

CONCLUSIONS: In Progress

10:20am – 10:40am | **COMPARISON OF AUC/MIC VANCOMYCIN DOSING VERSUS TROUGH-BASED DOSING IN PATIENTS WITH EXTREMES OF BODY WEIGHT** Athena A

Moderators: Erika McClain

Presenters: Taylor Felton

Evaluators: Katie Coffee

TITLE: COMPARISON OF AUC/MIC VANCOMYCIN DOSING VERSUS TROUGH-BASED DOSING IN PATIENTS WITH EXTREMES OF BODY WEIGHT

AUTHORS: Taylor Felton, Brock Dorsett, Riley Bowers, Emily Johnson

OBJECTIVE: Assess the attainment of initial therapeutic concentration in patients with extremes of body weight receiving AUC/MIC-based vancomycin dosing versus trough-based vancomycin dosing.

BACKGROUND: The 2020 guidelines from the American Society of Health-System Pharmacists (ASHP) with the Infectious Diseases Society of America (IDSA) for vancomycin dosing state that trough-only monitoring is no longer recommended. They instead recommend an individualized target AUC/MIC ratio be attained to achieve clinical efficacy and minimize adverse events compared to trough-based dosing. However, vancomycin dosing in obese and underweight patients can be challenging due to the physiological changes that alter pharmacokinetics. Although there are limited data regarding AUC/MIC-based vancomycin in obese patients, data and studies pertaining to dosing in the underweight population are lacking. The purpose of this study was to assess the attainment of initial therapeutic concentration in patients with extremes of body weight receiving AUC/MIC-based dosing versus trough-based vancomycin dosing.

METHODOLOGY: Adult patients hospitalized at Cape Fear Valley Medical Center, who were considered obese or underweight, that received vancomycin therapy with at least one documented vancomycin concentration were retrospectively reviewed in this single-center cohort study. Obese was defined as weighing at least 100 kilograms or with a BMI of at least 30 kg/m2, and underweight was described as weighing 50 kilograms or less or with a BMI of 18.5 kg/m2 or less. The primary endpoint was the percentage of obese and underweight patients achieving initial therapeutic concentration for AUC/MIC-based vancomycin versus trough-based vancomycin dosing.

RESULTS: 220 patients met inclusion criteria with 114 patients in the trough-based dosing group and 106 patients in the AUC/MIC-based dosing group. AUC/MIC-based dosing yielded a higher rate of initial therapeutic concentrations than trough-based dosing, 50.0% vs 17.5% respectively ($p<0.0001$). This difference was primarily driven by the underweight population with 62.5% of the AUC/MIC-based dosing group achieving initial therapeutic concentrations versus only 9.3% in the trough-based dosing.

CONCLUSION: AUC/MIC vancomycin dosing is superior to trough-based vancomycin dosing in patients with extremes of body weight.

10:20am – 10:40am | **CSF Lactate as a Surrogate Marker for Infection in Patients with External Ventricular Drains and Ventriculoperitoneal Shunts** Athena C

Moderators: Holly Clark

Presenters: Abbie Blunier

Evaluators: Robin Fischer

TITLE: CSF Lactate as a Surrogate Marker for Infection in Patients with External Ventricular Drains and Ventriculoperitoneal Shunts

AUTHORS: Abbie L. Blunier, Erin D. Creech, Chengwen Teng, Julie Ann Justo

OBJECTIVE: Will include in slide deck

SELF ASSESSMENT QUESTION: Will include in slide deck

BACKGROUND: External ventricular drains (EVD) are used in the neurocritical care setting with various uses such as monitoring intracranial pressure (ICP) or managing acute hydrocephalus. Ventriculoperitoneal (VP) shunts may be used for patients with dysregulated homeostatic mechanisms for turning over cerebrospinal fluid (CSF). These devices and the procedures to place them create an increased risk of central nervous system infection. The placement of EVDs may be a common neurosurgical procedure, but the management of complications that accompany the devices, such as infection or hemorrhage along the catheter tract, is variable between sites and has not been well studied. EVDs and VP shunts create an environment in which infections are difficult to characterize due to changes in CSF composition including protein, glucose and varying degrees of pleocytosis (ratio of red to white blood cells in the setting of increased blood within CSF samples). CSF lactate has been identified as a potential surrogate marker that can help identify the presence of infection in patients with EVDs. The purpose of this study is to evaluate CSF lactate levels in patients with EVDs and VP shunts who have suspected and/or confirmed infections to identify a cutoff value for CSF lactate levels that indicates a true infection within this patient population.

METHODOLOGY: This is a retrospective, observational, cohort study of patients admitted to Prisma Health Richland Hospital – Neuroscience Intensive Care Unit (NSICU). The primary outcome of this study is to analyze the cerebrospinal fluid lactate levels in patients admitted to the NSICU who have an EVD or VP shunt. Secondary outcomes include rate of culture-positive ventriculitis and appropriateness of empiric antibiotic therapy in patients with a positive CSF culture. Patients with an EVD or VP shunt who were ≥ 18 years of age with one or more CSF lactate values drawn during their admission were included. The trend of CSF lactate levels in patients with an EVD or VP shunt placed between March 1, 2021 and September 11, 2022 will be evaluated. Infection, defined as clinical suspicion (i.e. fever, altered mentation, or new onset seizures) and CSF pleocytosis, will be identified via chart review and those patients will be considered the “case” population.

RESULTS: The difference in CSF lactate values was not statistically significant for the first lactate drawn during the infectious episode. However, there was a statistically significant difference between the positive and negative culture groups for the second CSF lactate drawn. The positive culture group had lower glucose and higher white blood cell count within the CSF when compared with the negative culture group. Of note, 25% of patients in the negative culture group did receive antibiotics before cultures were drawn. One bug-drug mismatch was identified in the positive culture group for an ESBL Klebsiella pneumoniae isolate. The empiric antibiotic regimen for all patients was vancomycin and cefepime.

CONCLUSIONS: CSF lactate may be a non-specific marker for ventriculitis in patients who have EVDs or VP shunts; however, it is not the only marker that should be considered when evaluating this patient population for infection. All patients found to have a positive culture did exhibit CSF pleocytosis, but the difference from the negative culture group was not significant. It is possible that pleocytosis could be a marker of infectious processes as well, when evaluated with other standard CSF panel values.

10:20am – 10:40am | **Impact of an Outpatient Fluoroquinolone Order Set on Prescribing Rates and Usage** | Athena B

Moderators: Michael Maccia
Presenters: Lauren Blumenfeld
Evaluators: Kelly Gamble

TITLE: Impact of an Outpatient Fluoroquinolone Order Set on Prescribing Rates and Usage
AUTHORS: Lauren Blumenfeld, Rebekah Wooten, Parmida Parvaz, Milner Staub, Hannah Fetsch, Jessica Wallace, Ashleigh Powers
OBJECTIVE: To evaluate the impact of an outpatient order set as a stewardship intervention on the prescribing of fluoroquinolones
SELF ASSESSMENT QUESTION: Will be included in presentation
BACKGROUND: Fluoroquinolones are frequently used in healthcare due to their favorable administration frequency, high oral bioavailability, and broad spectrum of activity. However, fluoroquinolones are associated with numerous serious adverse events including increased risk of tendinitis and tendon rupture, blood glucose alterations, aortic dissection and aortic aneurysm rupture, and Clostridioides difficile infection. Fluoroquinolone prescribing rates are highest in the southeastern United States, where our Veterans Affairs facility resides. To optimize fluoroquinolone prescribing, our facility implemented an outpatient order set along with provider education. This study aimed to evaluate the impact of such stewardship interventions on the frequency and appropriateness of fluoroquinolone prescribing.
METHODOLOGY: We conducted a single-center, retrospective, interventional analysis of patients prescribed oral fluoroquinolones three months before and three months after implementation of an outpatient fluoroquinolone order set on August 15th, 2022. Patients were excluded if their fluoroquinolone prescription was started inpatient and continued in the outpatient setting, was not a Veterans Affairs prescription, was prescribed for one-time use for surgical prophylaxis, or was prescribed by a bone marrow transplant provider. Outpatient fluoroquinolone ordering was restricted to the quick order set, which follows evidence-based guidelines and literature. The primary outcome of this study is frequency of fluoroquinolone prescribing. The secondary efficacy outcomes are average day supply of fluoroquinolones and rate of inappropriate fluoroquinolone prescribing. The safety endpoints analyzed include recurrence of infection indicated by use of antibiotics within thirty days for same indication and fluoroquinolone-related adverse events. Kappa inter-rater reliability rate between three chart reviewers for inappropriateness for prescribed indication was 86.67% with a kappa inter-rater reliability score of 0.73.
RESULTS: There were 255 prescriptions in the pre-intervention cohort and 185 prescriptions in the post-intervention cohort. Baseline characteristics were similar between groups. Most fluoroquinolone prescriptions were ordered by Urgent Care/Emergency Department providers.

Frequency of fluoroquinolone prescribing decreased by 27.45% after order set implementation. Inappropriate fluoroquinolone prescribing decreased by 38.52%, with 58.04% of pre-intervention prescriptions and 35.68% of post-intervention prescriptions deemed inappropriate using the study protocol. Average day supply remained unchanged, at 13.4 days in the pre-intervention cohort and 13.7 days in the post-intervention cohort.
CONCLUSIONS: Frequency and inappropriateness of prescribing of this antibiotic class decreased at our Veterans Affairs healthcare system following implementation of the outpatient fluoroquinolone order set. A high kappa inter-rater reliability amongst chart reviewers supports consistency of determining the secondary outcome of inappropriate prescribing.

10:20am – 10:40am P **Characteristics Associated with Inpatient Opioid-Related Adverse Drug Events at an Academic Medical Center** Parthenon 1

Moderators: Jere May

Presenters: Sahand Golpayegany

Evaluators: John Carr

TITLE: Characteristics Associated with Inpatient Opioid-Related Adverse Drug Events at an Academic Medical Center

AUTHORS: Sahand Golpayegany, Phillip Mohorn, Christele Francois, Heidi Berman

OBJECTIVE: Note: presentation objective and self-assessment question no longer required for abstract submission, but must be included in your slides presented. Slides should be uploaded to SCHED before the start of the conference.

SELF ASSESSMENT QUESTION: Note: presentation objective and self-assessment question no longer required for abstract submission, but must be included in your slides presented. Slides should be uploaded to SCHED before the start of the conference.

BACKGROUND: Opioids are reliable methods for analgesia but are associated with significant side effects, known as opioid-related adverse drug events (ORADE). Current literature surrounding ORADE focuses on community settings, with an emphasis on elderly patients or those with opioid use disorders. Although inpatient studies are scarce, the Joint Commission outlines requirements for safe opioid prescribing, monitoring, and metrics. Inpatient ORADE are associated with increased mortality, costs, and length of stay. We aim to determine risk factors for our institution’s patient population, correlate our risk factors to previous studies, and gain insight on populations requiring further evaluation.

METHODOLOGY: This study is a single-center, retrospective analysis of adult patients who received a dose of naloxone administered within 24 hours of inpatient opioid administration. The primary objective of the study is to identify factors associated with inpatient ORADE requiring naloxone use at our institution. Secondary objectives include comparing risk factors at our institution with risk factors identified in previously published literature and to identify patient populations which will require further evaluation. Summary statistics will be estimated for all variables collected. Continuous variables will be presented as means, standard deviations, and range. Categorical variables will be summarized as frequencies and percentages.

RESULTS: One-hundred patients met inclusion criteria. Kidney disease was present in 41% of patients liver disease in 21%. Naloxone use was required in 35% of patients in the ICU. The most frequently utilized dose of naloxone was 0.4mg, with the most frequently used opioid being hydromorphone, followed by oxycodone, and morphine. Gabapentanoids, anticholinergics, and muscle relaxants were the most frequently utilized concomitant sedating medications. The overall mortality rate in our population was 18%.

CONCLUSIONS: ORADE occurred more commonly in older adults, in higher proportions of patients with kidney disease, and those with concomitant sedating medications.

10:20am – 10:40am D **Impact of Pediatric Population Health Pharmacists in the Ambulatory Care Setting** Athena J

Moderators: Niki Pitts
Presenters: Maria Palmer
Evaluators: Kim Bowers

TITLE: Impact of Pediatric Population Health Pharmacists in the Ambulatory Care Setting
AUTHORS: Maria Palmer, Molly Hinely, Taylor McGhee, Abigail Benfield
OBJECTIVE: To determine the role of a pediatric pharmacist in a value-based care model
SELF ASSESSMENT QUESTION: will be updated for slides - not required for abstract submission
BACKGROUND: In July of 2021, most of North Carolina Medicaid beneficiaries transitioned to a value-based healthcare model known more commonly as Managed Medicaid. This new healthcare model consists of a state contract with insurance companies to provide all services at a pre-determined cost and rate per enrolled person. North Carolina is divided into six regions, which further defines which health plans are available for beneficiaries. As of 2022, the pediatric population comprised eighty percent of the Managed Medicaid population at Atrium Health Wake Forest Baptist (AHWFB). The purpose of this study is to determine the role of a pediatric pharmacist in a value-based care model.

Currently, AHWFB has two full-time pharmacists and one full time pharmacy technician who are solely funded to support the adult Managed Medicaid population. The Post-Graduate Year 2 (PGY2) Pediatric Pharmacy Resident provides support for the pediatric Managed Medicaid population for a total of eight hours per month. Therefore, the health system is without full-time pharmacy support in pediatric primary care clinics.
METHODOLOGY: This was a retrospective, single-center, descriptive study that evaluated pediatric patients scheduled at the Downtown Health Plaza (DHP) in Winston-Salem, NC between March 30, 2022 and December 31, 2022. Patients were identified using Managed Medicaid payer report data via EPIC and by referral from providers at the DHP Pediatric Clinic. In order to evaluate outcomes, researchers measured value by assessing preset quality measures from the Centers for Medicare and Medicaid Services: Adolescent well-care visit, childhood immunization status, immunization for adolescents, well-child visits in the first 15 months of life and plan all cause readmission-observed to expected ratio. Data collection included types of interventions, care gaps, patterns of interventions and their respective impact(s) on patient care.
RESULTS: Results were analyzed via descriptive statistics with 31 patients included for analysis. Eighteen (58.1%) patients self-identified as male and 22 (71.0%) patients self-identified as Hispanic or Latinx. In total, 49 interventions were documented by the pediatric pharmacist, with the most common intervention being a vaccine recommendation (74.2%) with 20 (64.5%) patients eligible for vaccine interventions. Of the CMS pediatric quality measures reviewed, there were a total of 73 documented reviews. Twenty-four (77.4%) of the quality measures reviewed evaluated all cause readmission-observed to expected ratio, and 19 (61.3%) evaluated childhood immunization status.
CONCLUSIONS: The value of a pediatric pharmacist in a value-based care model was shown by the ability to provide vaccine recommendations and review CMS quality measures. Further studies are warranted to truly understand the impact of a pediatric pharmacist by looking at interventions accepted.

10:40am – 11:00am **Empty** Parthenon 2

10:40am – 11:00am B **Evaluating Diabetes-Associated Hospitalizations and Emergency Room Visits for Patients with Diabetes Utilizing Continuous Glucose Monitoring Devices at a VA Healthcare System** Olympia 1

Moderators: Lindsey Pearsall
Presenters: Vincent Way
Evaluators: Naomi Yates

TITLE: Evaluating Diabetes-Associated Hospitalizations and Emergency Room Visits for Patients with Diabetes Utilizing Continuous Glucose Monitoring Devices at a VA Healthcare System

AUTHORS: Vincent Way, Taylor Childress, Eva Wong, Christopher Gore

OBJECTIVE: Evaluate the impact of continuous glucose monitoring (CGM) use on diabetes-associated hospitalizations and emergency room (ER) visits among veterans with diabetes mellitus at Charlie Norwood VA medical center (CNVAMC).

SELF ASSESSMENT QUESTION: What is a potential benefit of utilizing continuous glucose monitoring devices in the veteran population?

BACKGROUND: Diabetes mellitus is a chronic disease that affects millions of people worldwide and can result in various complications, including hospitalization and emergency room (ER) visits. Continuous glucose monitoring (CGM) devices have been clinically demonstrated in various studies to reduce the risk of hypoglycemia, improve glycemic variability, improve hemoglobin A1c control, as well as decrease hospitalizations for acute diabetes complications such as diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic syndrome (HHS), hypoglycemia, and hyperglycemia. At Charlie Norwood VA Medical Center (CNVAMC), CGM devices require a prior authorization drug request (PADR) consult. VA pharmacy benefit management (PBM) eligibility criteria for CGM devices include but not limited to patients on at least 3 injections of insulin per day or on an insulin pump, check blood glucose at least 4 times per day, and have either frequent hypoglycemia events or inability to meet desired glycemic control despite adherence to prescribed treatment regimen. The purpose of this study is to evaluate the impact of CGM use on diabetes-associated hospitalizations and ER visits among veterans with diabetes at CNVAMC.

METHODOLOGY: Retrospective chart reviews were conducted on qualified patients from August 1st, 2021 to August 1st, 2022 within CNVAMC. Patients were divided into two groups with the experimental group consisting of patients with diabetes who had active prescriptions of either a Dexcom or Freestyle Libre CGM during the study period and the control group consisting of patients with diabetes who were not using a CGM during the study period. Patients who had active prescriptions of insulin glargine 100 units/mL and insulin aspart 100 units/mL, on at least 3 insulin injections per day, and were being followed by either a VA endocrinologist or patient-aligned care team (PACT) primary care clinical pharmacy specialist at CNVAMC were included. Patients who received diabetes supplies from outside the VA, followed at community-based outpatient clinics (CBOCs) outside the main hospital campus, and using any CGM other than Dexcom or Freestyle Libre were excluded. The primary outcome was hospitalizations or ER visits due to diabetes-associated complication including DKA, HHS, hyperglycemia, and hypoglycemia at CNVAMC. The secondary outcomes included subsequent hospitalizations and ER visits due to diabetes-associated complications and the change in hemoglobin A1c levels from the beginning of the study to the end of the study period.

RESULTS: 42 patient charts were reviewed in which 21 of the patients utilized a CGM device and 21 patients did not use a CGM device. In the CGM group, compared to the non-CGM group, the number of hospitalizations or ER visits was 5 vs 8 visits (Incidence rate of 30.77 vs 46.15 cases per 100 person-year). Subsequent hospitalizations or ER visits for the CGM group vs the non-CGM group resulted in 2 vs 3 visits (40% vs 37.5% of patients who had an initial hospitalization or ER visit). Change in HgbA1c for the CGM group compared to the non-CGM group was 0.10 ± 2.20 vs -0.39 ± 2.67 (P = 0.534).

CONCLUSIONS: Veterans with diabetes who did not utilize CGM devices (Dexcom or Freestyle Libre devices) had a higher rate of hospitalization and ER visits for diabetes-associated complications as compared to those utilizing CGM devices.

10:40am – 11:00am B **Pharmacist Interventions in Multiple Sclerosis: Outcomes and Cost Avoidance** Olympia 2

Moderators: Aayush patel
Presenters: Darina Georgieva
Evaluators: Brittany NeSmith

TITLE: Pharmacist Interventions in Multiple Sclerosis: Outcomes and Cost Avoidance
AUTHORS: Darina Georgieva, Brandon Markley, Josh DeClercq, Leena Choi, Autumn Zuckerman
OBJECTIVE: To determine the cost avoidance associated with pharmacist interventions in multiple sclerosis clinic in a 6-month time period.
SELF ASSESSMENT QUESTION: When calculating indirect costs avoided due to pharmacist interventions, which of the following is NOT accounted for?
a) Level of healthcare utilization for the potential consequences
b) Range of probabilities of the possible consequences occurring
c) Cost of the intervention medication
d) Range of costs associated with the possible consequences
BACKGROUND: Specialty pharmacists frequently monitor patients taking multiple sclerosis (MS) disease modifying therapies (DMTs) to evaluate their response to therapy and intervene on adverse effects. These interventions have the potential to avoid healthcare costs by discontinuing ineffective therapies and avoiding downstream healthcare utilization. Further research is needed to tie pharmacists' active role in MS medication management to cost savings.
METHODOLOGY: We conducted a retrospective observational cohort study including patients at the Vanderbilt Multiple Sclerosis Clinic who received a clinical pharmacist intervention between February 1, 2022 and July 31, 2022. A panel of three investigators reviewed each intervention to determine potential cost avoidance. Interventions determined to have the potential for cost avoidance were divided into direct and indirect opportunities. A single intervention may have resulted in one or both cost avoidance types. Direct costs avoided included the cost of the potential service or medication that was avoided due to the intervention. The value of medications was calculated using both the average wholesale price (AWP) and AWP minus 20%. For indirect costs avoided, we evaluated the potential consequences (level of healthcare utilization, self-care, ambulatory visit, emergency room visit, hospitalization, or death) if the intervention had not occurred and assigned a range of probabilities for the consequence occurring (from zero [0] to very likely [0.5]) and a range of costs associated with the consequence (based on AHRQ data). The self-care category of indirect cost savings equated to $0 and entailed giving patients side effect management advice. Descriptive statistics were used to summarize types and frequency of the pharmacist interventions, as well as their outcomes and costs avoided. Sensitivity analysis was performed to conservatively estimate the range of indirect costs avoided. For the interventions resulting in cost savings, chart review was performed to collect patient demographics, disease history, and MS-related healthcare usage during the 12 months prior to the pharmacist intervention.
RESULTS: We included 468 pharmacist interventions in 343 individual patients. Out of those, 49 interventions in 38 individual patients (76.3% female patients, median age of 50.5 years, 68% white) resulted in avoided costs. Twelve interventions resulted in direct costs avoided and 37 resulted in indirect costs avoided. Self-care was the most common type of indirect cost avoided (n=27).

For direct costs avoided (n=12), 67% of the interventions were related to medication safety monitoring, followed by 25% for common side effects or toxicity management, and 8% for condition related concerns or exacerbation. Indirect costs avoided resulted primarily from interventions due to common side effects or toxicity management (56.8%) and safety monitoring (21.6%). The total estimated costs avoided ranged from $123,733 to $156,264. In total, $138,409 were in direct costs avoided and $1,890 were indirect costs avoided. The drugs associated with the most direct cost savings were cladribine ($70,209 to $87,762) and ofatumumab (14,649 to $18,311). Dimethyl fumarate (n=11), teriflunomide (n=4), and cladribine (n=4) resulted in the most self-care interventions.

Interventions resulting in costs avoided were commonly seen in patients with relapsing-remitting MS (81.6%), who were on average 14 years into their MS diagnosis (range 1 to 30 years) and had previously trialed 1 other MS DMT (42.1%).
CONCLUSIONS: Pharmacists perform many interventions, but few were deemed to be potentially cost avoiding. Of those that did avoid costs, there was a potential for significant healthcare savings. Preventing the dispensing of inappropriate therapies resulted in the highest costs avoided, but the most common indirect cost savings were for self-care.

10:40am – 11:00am C **A retrospective comparison of warfarin versus direct oral anticoagulants for treatment of left ventricular and left atrial appendage thrombus in hospitalized patients** Athena D

Moderators: Dawnna Metcalfe

Presenters: Madeline Shepherd

Evaluators: Christopher Whitman

TITLE: A retrospective comparison of warfarin versus direct oral anticoagulants for treatment of left ventricular and left atrial appendage thrombus in hospitalized patients

AUTHORS: Shepherd M, Morgan N, Badger-Plange N, Patel R, Fernandez K, Najafisales N

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Formation of an intracardiac thrombus is a known complication in patients with cardiac impairment, atrial fibrillation, and after myocardial infarction. If left untreated, intracardiac thrombi, including left ventricular (LV) and left atrial appendage (LAA) thrombi, can lead to stroke and systemic embolic events. The standard of care for intracardiac thrombus is treatment with warfarin for the prevention of embolic events. However, direct oral anticoagulants (DOACs), despite not having a Food and Drug Administration (FDA)-approved indication for use in treating intracardiac thrombi, are now widely used in practice due to their many favorable attributes compared to warfarin and growing evidence supporting their efficacy. The purpose of this study is to compare the efficacy of warfarin versus DOACs for the treatment of LV and LAA thrombus and to characterize the safety profiles of the two regimens.

METHODOLOGY: This investigation was conducted via retrospective chart review of adult patients with intracardiac thrombus, confirmed by imaging, treated with either warfarin or apixaban, dabigatran, rivaroxaban, or edoxaban initiated at Piedmont Atlanta Hospital between January 2019-December 2022. Patients were excluded if they did not have repeat imaging within six months, switched or discontinued anticoagulants, underwent surgical thrombectomy, or had left ventricular assist device (LVAD), mechanical valve(s), or moderate to severe mitral stenosis. The primary outcome was resolution of LV or LAA thrombus confirmed by repeat imaging at six months. Secondary endpoints include incidence of embolic events, bleeding, and all-cause mortality. Statistical analysis was completed using the Chi Squared test or Fisher’s exact test as appropriate. A P-value of < 0.05 was considered statistically significant.

RESULTS: In progress

CONCLUSIONS: In progress

10:40am – 11:00am R **Analysis of Antidote Management Across a Large Multihospital Organization** Athena G

Moderators: Tracey Bastian

Presenters: Boomer Preston

Evaluators: Erik Turgeon

Title: Analysis of Antidote Management Across a Large Multihospital Organization

Presenters: Boomer Preston, PharmD.

Authors: Boomer Preston, Pharm.D; Megan Freeman, Pharm.D; Omeka Sanders, Pharm.D

Objective: Identify antidote, reversal agent and rescue agent management trends and evaluate for compliance with ISMP Targeted Medication Safety Best Practices for Hospitals, Best Practice 9.

Self-Assessment Question: Are current prescribing practices for toxicological emergencies optimized to ensure appropriate emergency administration of all antidotes, reversal agents, and rescue agents in the facility?

Background: Antidotes are a critical tool for the treatment of poisoned patients in the healthcare setting. Poisoning is a toxicological emergency that frequently occurs from either accidental or intentional overexposure to a drug or substance. Many antidotes, though vital for life-saving care, are used infrequently. Extensive research has been conducted on the effectiveness of antidotes, but there is still a high volume of inappropriate use and lack of antidote availability. The Institute for Safe Medication Practice (ISMP) states that facilities should have the following: all appropriate antidotes, reversal agents, and rescue agents readily available; standardized protocols and/or coupled order sets in place that permit emergency administration of appropriate antidotes, reversal agents, and rescue agents; and directions for use/administration readily available in clinical areas where antidotes, reversal agents, and rescue agents are used. The purpose of this study will be to assess current practices at Northside Hospital related to management of antidotes and review current toxicology and antidote order sets to determine compliance related to ISMP best practices.

Methods: This study is a retrospective chart review and analysis of adult patients across the Northside Hospital system who received an antidote or reversal agent between 01/01/2019 and 12/31/2022. The electronic medical record system was utilized to determine appropriate antidote for indication, dose and timing of administration, antidote availability, and patient outcome. Each instance of antidote administration was compared to current best practice recommendations to determine if the antidote was utilized and managed appropriately.

Results: 222 patients were included in the retrospective portion of this study. 69 instances of suboptimal timing and 48 instances of suboptimal dosing were identified. Of these instances, the majority were related to medications ordered without a standardized policy or order set. Separately there were several areas of improvement of antidote inventroy identified.

Conclusions: The most common reason for suboptimal antidote administration across the Northside Hospital system was due to a lack of policies or order sets to guide optimal dosing, timing of administration, and supplemental care in the poisoned patient. Access to pre-approved policies and order sets provides appropriate dosing and supplemental care. This also gives the provider and pharmacy more confidence in the ordering and verification process leading to faster times from order to administration.

10:40am – 11:00am R **Impact of Pharmacist's Prospective Review via CPOE in the Emergency Department** Athena I

Moderators: Matthew McAllister
Presenters: Rebekah White
Evaluators: Deborah Hobbs

TITLE: Impact of Pharmacist's Prospective Review via CPOE in the Emergency Department
AUTHORS: Rebekah White
OBJECTIVE: At the conclusion of my presentation, the participant will be able to describe the impact of pharmacist prospective review of emergency department (ED) orders on error rates, errors involving controlled substance, and missed charges and waste.
SELF ASSESSMENT QUESTION: Which errors demonstrated significant improvement after implementation of pharmacist prospective review of ED orders?
BACKGROUND: Blount Memorial Hospital is a community hospital that serves Blount county and surrounding counties in Tennessee. It is licensed for 304 beds and utilizes Allscripts Paragon® as electronic health record (EHR). The emergency department (ED) has 37 beds with a patient volume of 131 patients per day on average. The ED utilizes two automated dispensing machines (ADM) and performs about 1,500 transactions per week. Prior to August 16th, 2022, nurses in the ED were responsible for receiving electronic medication orders, then transcribing, verifying, dispensing, and administering the medication all without pharmacist prospective review, Previous internal evaluations have identified average medication error rates 2.5% from the ADM.

METHODOLOGY: This is an IRB-approved, retrospective, cohort analysis evaluating error, discrepancies, waste, and missed charges pre and post implementation of pharmacist's prospective review of CPOE in the emergency department. A review of transactions from the ED automatic dispensing machine (ADM) was performed by generating a transaction history report from July 16th to August 15th and November 1st to 31st, 2022. Patients who presented to the ED during the study period and received medication(s) or had medication orders were included in the study. Patients who had medications that were ordered or administered during downtime were excluded. Transactions were categorized by pre or post implementation of the studied intervention to compare results with and without pharmacist review of medication orders. This transaction history report was reconciled with paragon pharmacy to evaluate waste, missed charges and errors.
RESULTS: In progress
CONCLUSIONS: In progress

10:40am – 11:00am | **Evaluation of Partial Oral versus Intravenous Antibiotic Treatment of Enterococcus faecalis Bloodstream Infections** Athena B

Moderators: Michael Maccia

Presenters: Carly Loudermilk

Evaluators: Kelly Gamble

TITLE: Evaluation of Partial Oral versus Intravenous Antibiotic Treatment of Enterococcus faecalis Bloodstream Infections

AUTHORS: Carly Loudermilk, Daniel T. Anderson, Joshua Eudy, Stephanie Albrecht, Andrea Sikora

OBJECTIVE: To determine if oral antibiotic step-down therapy is significantly different to definitive intravenous therapy in patients with E. faecalis BSI.

SELF ASSESSMENT QUESTION: NA

BACKGROUND: Intravenous (IV) antibiotics have historically been considered standard-of-care for treatment of bloodstream infections (BSI). However, IV antibiotics have been associated with longer hospitalizations and increased risk of line-associated infections and other complications. Recent literature has shown the use of oral (PO) step-down therapy to be non-inferior to IV antibiotics in select patients. However, a gap exists in this literature for bacteremia caused by certain gram-positive pathogens. To our knowledge, there has not been a study that specifically compares PO step-down therapy to IV therapy in E. faecalis BSI. The purpose of this study is to determine if oral antibiotic step-down therapy is significantly different to definitive intravenous therapy in patients with E. faecalis BSI.

METHODOLOGY: A data inquiry was performed for all adult patients hospitalized at AU Medical Center between January 1, 2017 and November 30, 2022 with at least one blood culture positive for E. faecalis. Patients with a polymicrobial bacteremia, concomitant infections requiring IV antibiotic therapy, and those who did not receive antibiotic therapy for their infection were excluded from the study. Pediatric, pregnant, and incarcerated patients were also excluded from the study. This single center, retrospective, matched study assesses the difference in all-cause mortality and/or treatment failure between the treatment modalities. Subjects were matched based on source of infection in a 2:1 ratio of IV:PO. Secondary outcomes include differences in hospital length of stay, antibiotic duration, and 30-day readmission rate.

RESULTS: In progress

CONCLUSIONS: In progress

10:40am – 11:00am | **Implementation of AUC/MIC Based Dosing for Vancomycin at CAVHCS** | Athena A

Moderators: Erika McClain
Presenters: Abigail Switzer
Evaluators: Katie Coffee

TITLE: Implementation of AUC/MIC Based Dosing for Vancomycin at CAVHCS

AUTHORS: Abigail Switzer, Hope Allen, Cassidy Moses, Ashley Wynn, Spencer Durham

OBJECTIVE: Evaluate the safety of vancomycin use and identify need for transition to AUC/MIC based dosing.

SELF ASSESSMENT QUESTION: What monitoring parameters can inpatient pharmacists use to ensure safe use of vancomycin?

BACKGROUND: Vancomycin is an essential medication used mostly for methicillin resistant staphylococcus aureus (MRSA) infections; however, appropriate monitoring is warranted to ensure safety and efficacy. Central Alabama Veterans Health Care System (CAVHCS) is currently following a trough-based dosing protocol which is no longer recommend as first-line per the updated 2020 Infectious Diseases Society of America (IDSA) guidelines. Transitioning to an AUC/MIC based dosing would help provide optimal care to our Veterans and ensure their safety.

METHODOLOGY: This retrospective, observational study was divided into Phase I and Phase II. Phase I consisted of data collection between July 2021 – July 2022 for Veterans receiving vancomycin dosed by pharmacy utilizing the trough-based dosing protocol. Phase II consisted of the current PGY-1 pharmacy residents calculating predicted AUC/MIC levels and recommended doses for Veterans receiving vancomycin between October 2022 – December 2022. An online calculator adapted by other VA systems, VancoPK, was used to compare the recommended doses utilizing AUC/MIC dosing to the trough-based dosing protocol. The primary outcome focuses on the safety of vancomycin and the incidence of acute kidney injury (AKI).

RESULTS: A total of 90 and 22 patients were identified for Phase I and Phase II, respectively. The primary outcome showed a 6.25% incidence of AKI related to the use of vancomycin. Phase II secondary outcomes assessed the rate of predicted AUC/MIC levels not within recommended goal range of 400-600 mg*hr/L while utilizing trough-based dosing. Phase II showed 45.5% of Veterans were given a different dose with the trough-based protocol than recommended with the AUC/MIC predicted dose. Of these Veterans, 73.3% (63.3% above goal and 10% below goal) were not within AUC/MIC level goal range with their trough-based vancomycin dose given.

CONCLUSIONS: The overall incidence of AKI related to vancomycin is low at CAVHCS. After comparing the predicted AUC/MIC levels to the trough-based doses given, CAVHCS may benefit from transitioning to an AUC/MIC dosing protocol to help prevent toxicity. Future directions include creating an updated vancomycin protocol and policy at CAVHCS utilizing AUC/MIC based dosing.

10:40am – 11:00am N **Analysis of sodium-glucose cotransporter-2 inhibitor prescribing, before and after education dissemination, in stroke patients with diabetes** Parthenon 1

Moderators: Jere May

Presenters: Cynthia DuVall

Evaluators: John Carr

TITLE: Analysis of sodium-glucose cotransporter-2 inhibitor prescribing, before and after education dissemination, in stroke patients with diabetes

AUTHORS: Cynthia DuVall, Keith Johnson

OBJECTIVE: The aim of this study is to analyze any difference in prescribing of sodium glucose cotransporter-2 inhibitors (SGLT2) inhibitors in stroke patients with diabetes after education dissemination.

SELF ASSESSMENT QUESTION: What antihyperglycemic medication, with proven cardiovascular benefit, may help prevent strokes in Type II diabetic patients?

BACKGROUND: Recent meta-analysis of cardiovascular outcome trials (CVOT) along with the Canagliflozin and Renal Events in Diabetes with Established Nephropathy (CREDENCE) trial have shown benefit in reduction of hemorrhagic stroke and total number of strokes in patients with type II diabetes. Due to these trial outcomes, it is now recommended by the American Heart Association (AHA), American Stroke Association (ASA), American Diabetes Association ADA) and the American College of Cardiology (ACC), that patients receive an antihyperglycemic medication with proven cardiovascular disease benefit (SGLT2), for stroke prevention.

METHODOLOGY: This is a retrospective pre/post comparison study of SGLT2 inhibitor prescribing between the time period of August 1, 2022 and February 12, 2023 occurring at a 230 bed community teaching hospital, that is certified as a stroke center. Patients reviewed are those admitted for stroke with diabetes. Comparison of patients prescribed an SGLT2 inhibitor by time of discharge, before and after education on guideline updates to providers (hospitalists, neurologist, medical residents, and pharmacists), will be analyzed. Adult patients with type II diabetes, admitted for suspected stroke, were eligible for this study. Patients were excluded if they were already on an SGLT2 inhibitor on admit, in end stage renal disease, or a known hypersensitivity. The primary outcome is difference in SGLT2 inhibitor prescriptions upon discharge for stroke patients with diabetes before and after intervention. Secondary outcomes include any adverse events after in-hospital SGLT2 inhibitor administration.

RESULTS: Primary Outcome: 2/38 patients were prescribed an SGLT2i in the pre-intervention group and 0/60 patients were prescribed an SGLT2i in the post-intervention group (p=0.5). Secondary Outcome: 0 adverse events were observed in either group

CONCLUSIONS: There was no statistically significant difference in the prescribing of SGLT2i before or after education on updated guideline recommendations on SGLT2i use in stroke patients with diabetes.

10:40am – 11:00am D **Evaluation of Initial Gentamicin Dosing Across Three Neonatal Age Groups in a Level III Neonatal Intensive Care Unit** Athena J

Moderators: Niki Pitts
Presenters: Sabah Hassan
Evaluators: Kim Bowers

TITLE: Evaluation of Initial Gentamicin Dosing Across Three Neonatal Age Groups in a Level III Neonatal Intensive Care Unit

AUTHORS: Sabah Hassan, PharmD and Alessia Jankowski, PharmD

OBJECTIVE: At the conclusion of this presentation, the participants will be able to: define early onset neonatal sepsis and risk factors, outline gentamicin dosing regimens, identify clinical gaps with institution-specific dosing, and describe the findings and recommendations as a result of this study.

SELF ASSESSMENT QUESTION: Which neonatal age group had an average gentamicin trough level that was supratherapeutic?

BACKGROUND: Neonates admitted to the neonatal intensive care unit are susceptible to numerous pathogens, leading to the early exposure of medications. Gentamicin is routinely used as prophylaxis and treatment of gram-negative infections most importantly, neonatal sepsis. Early-onset sepsis occurs within the first 72 hours of life and is the leading cause of morbidity and mortality in newborns. A lack of substantial published guidance has led to inconsistent antibiotic dosing regimens. The purpose of this study was to evaluate the initial gentamicin dosing regimen across three neonate age groups and identify opportunities for therapy optimization to improve overall safety and cost.

METHODOLOGY: The study design was a single center retrospective chart review. A drug utilization report was used to identify up to 100 neonates who received gentamicin therapy for at least 48 hours from January 1, 2018, to December 31, 2021. Neonates initiated on gentamicin therapy for indications of meningitis, endocarditis, and early-onset sepsis for at least 48 hours with at least one gentamicin trough level were included in the study. Neonates older than 7 days postnatal age, neonates older than 40 weeks corrected gestational age (cGA), and neonates on gentamicin with no levels drawn prior to the discontinuation of gentamicin were excluded from the study. Also, neonates with concurrent therapeutic hypothermia, or documented renal dysfunction before initiation of gentamicin were also excluded. The three age-directed dosing groups included: cGA ≤29 weeks and 6 days, cGA 30 weeks and 0 days to 34 weeks and 6 days, and cGA 35 weeks and 0 days to 39 weeks and 6 days. Within each gestational age group, gentamicin trough levels were evaluated to assess the percentage of steady-state trough levels ≤2 mg/L and the number of repeat trough levels. All data was recorded without patient identifiers and maintained confidentially.

RESULTS:
A total of 100 patients were included in the study. Baseline demographics included an average cGA of 34w3d and similar baseline lab values between each group. The most commonly used initial gentamicin dose was 3.5 mg/kg (97%) and the most commonly used initial gentamicin dosing interval was 24 hours (95%). Majority of the blood culture results were negative (95%). The positive blood cultures (5%) had organisms that consisted of *Escherichia Coli*, Group B *Streptococcus*, *Staphylococcus aureus* (MSSA), *Streptococcus viridans*, and *Staphylococcus hominis.* The primary outcome demonstrated that the average trough level was supratherapeutic within the cGA ≤29 weeks and 6 days neonatal age group (average trough level = 2.2). The difference between the average trough levels in each group were statistically significant (P-value = 0.0037). The secondary outcomes demonstrated that the neonatal age group, cGA ≤29 weeks and 6 days, had the most repeat trough levels (61.1%).

CONCLUSIONS: Based on the findings of this study, the initial gentamicin dosing regimen at Wellstar resulted in supratherapeutic and subsequent repeat trough levels within the cGA ≤29 weeks and 6 days group. Modifications to the current NICU admission order set to include gestational age-directed dosing groups would be beneficial.

10:40am – 11:00am T **Identify and coordinate with community resources available to indigent patients at point of discharge** Athena C

Moderators: Holly Clark
Presenters: Colby Goldstein
Evaluators: Robin Fischer

TITLE: Impact of Medication Access Pharmacist on Indigent Patient Discharges within a Transitions of Care Team

AUTHORS: Colby Goldstein; Amber Sawyer

OBJECTIVE:To streamline TOC discharge planning within the indigent patient population through the use of a designated Medication Access Pharmacist for self pay patients

SELF ASSESSMENT QUESTION: What steps can a pharmacist take to ensure appropriate resources and education are provided to indigent patients at the time of discharge?

BACKGROUND: As a not-for profit hospital in the largest city in Alabama, Huntsville Hospital serves a significant indigent patient population. Preparing a discharge plan for this patient population is often time consuming and met with many limitations due to poorly defined resources. The purpose of this study is to evaluate the impact of a designated pharmacist to coordinate the discharge of indigent patients treated at Huntsville Hospital.

METHODOLOGY: Literature was reviewed to identify opportunities for the improvement of current discharge practices within the indigent patient population. Workflow was adjusted to account for the addition of a Medication Access Pharmacist. After implementation, a hospital-specific retrospective chart review was conducted. Patient demographics, insurance status, readmission rate, and Transitions of Care involvement in discharge planning were collected from electronic medical records and analyzed using descriptive statistics. Hospital-specific data was reviewed to assess the benefit of having a designated Medication Access Pharmacist.

RESULTS: With the adjusted work flow the Medication access pharmacist was able to review an increased number of patient profiles

CONCLUSIONS: The addition of the Medication Access Pharmacist within the TOC department resulted in: increased number of uninsured TOC discharges performed, streamlined communication between departments, and impacted patient care post-discharge

11:00am – 11:20am **Empty** Parthenon 2

11:00am – 11:20am B **Impact of Pharmacist-Led Transitional Care Management (TCM) Program on Hospital Readmission Rate in an Outpatient Geriatric Primary Care Practice.** Olympia 2

Moderators: Aayush patel
Presenters: Ali Alqallaf
Evaluators: Brittany NeSmith

TITLE: Impact of Pharmacist-Led Transitional Care Management (TCM) Program on Hospital Readmission Rate in an Outpatient Geriatric Primary Care Practice.
AUTHORS: Ali Alqallaf, Drew Cates, Kandon Render, Lorenzo Villa Zapata

Background/Purpose: To assess the impact of pharmacist-led transitional care management (TCM) program on reducing rate of hospital readmission in an outpatient geriatric primary care practice.

Methodology: Eligible participants are those ≥ 65 years old receiving primary care at a large, rural geriatric family medicine practice and were admitted to the hospital between March and September of 2022. Patients were excluded if hospitalizations lasted less than 24 hours or were for elective procedure.. Patients completed a TCM office visit with their PCP and were subsequently followed by, monitored and counseled by a pharmacist-led team for 30-days from their index hospital admission date. Patient's readmission rate was compared to available national readmission rate, as well as a matched set of patients who were hospitalized between March and September 2021 and completed only a TCM office visit without PharmD follow-up or interventions.

Results: There were 101 hospital admissions for the intervention group that met inclusion criteria and were compared to 108 hospital admissions as control group.There were no statistically significant differences between the two groups. 8.91% of patients receiving pharmacist TCM had 30-day hospital readmissions compared to 5.55% of patients who had readmissions in the control group (Chi-Square p-value 0.347).

Conclusion: We observed no statistically significant difference between the two groups with regards to readmission rate. There was a small increase in readmissions during pharmacist TCM period that can be attributed to changes in TCM procedures in addition to many other confounding factors. Stronger powered studies needed to assess this further.

11:00am – 11:20am B **Implementation of Empagliflozin in Patients with Pre-existing Heart Failure and Type-II Diabetes Mellitus** Olympia 1

Moderators: Lindsey Pearsall
Presenters: Leah Winchester
Evaluators: Naomi Yates

TITLE: Implementation of Empagliflozin in Patients with Heart Failure and Type 2 Diabetes Mellitus
AUTHORS: Leah Winchester, Cassidy Moses, Lauren Rass
OBJECTIVE: To increase the utilization of empagliflozin for Veterans who have pre-existing diabetes and heart failure and monitor therapeutic benefit and safety outcomes.
SELF ASSESSMENT QUESTION: What are the advantages of using an SGLT2 inhibitor in a patient with diabetes and heart failure?

Background
Sodium Glucose Co-transporter 2 (SGLT2) inhibitors have demonstrated a reduction in all-cause mortality and cardiovascular death and have been established in the 2022 ACC/AHA/HFSA guidelines as standard of care for heart failure. The use of SGLT2 inhibitors can lead to decreases in weight, hyperinsulinemia, and albuminuria. Several mechanisms have been proposed to explain how this drug class benefits cardiovascular outcomes; one includes the associated osmotic diuresis and natriuresis which reduces arterial stiffness and blood pressure. Notably, this is the first class of glucose-lowering agents to receive approval from the FDA for the treatment of heart failure (HF) with reduced ejection fraction (LVEF ≤ 40 %). This recommendation followed the DAPA-HF and EMPEROR-Reduced trials which concluded that SGLT2 inhibitors reduced the composite of cardiovascular death or HF hospitalization by approximately 25% when compared to placebo. The American Diabetes Association guidelines have also endorsed SGLT2 inhibitors as a first-line agent for the treatment of hyperglycemia in patients with type 2 diabetes mellitus with heart failure or at high risk of heart failure.
Methods:
Patients with heart failure and type 2 diabetes mellitus were identified using VA patient dashboards. The dashboards capture patients who are not on guideline-directed medical treatment (GDMT) for their respective disease states and include laboratory data, concurrent disease states, allergies to GDMT, high-risk medications, prescriber, etc. Once patients were identified by the patient dashboards, they were filtered by pre-specified inclusion and exclusion to determine who were appropriate candidates for empagliflozin initiation. The resulting 107 patients were divided among the resident and clinical pharmacy practitioners (CPP) to implement and monitor therapy. The primary outcomes assessed the number of patients started on empagliflozin, changes in weight and blood pressure, and number of adverse safety incidences. The secondary outcomes included change in heart failure symptoms at baseline compared to follow-up, change in glycated hemoglobin, and number of secondary pharmacy interventions (i.e. optimization of GDMT or discontinuation of high-risk medications).
Results:
There were twenty patients who were initiated on empagliflozin, and one patient who discontinued due to headaches. There were two other adverse safety incidences which included orthostasis and dizziness and acute kidney injury (AKI); however, these did not lead to discontinuation of therapy. Of note, the patient who experienced dizziness and acute kidney injury had a baseline clinic blood pressure of 102/56 mmHg and the patient who experienced AKI was recently prescribed naproxen. For the primary outcome of change in blood pressure and weight, only four patients' data is available at present. The change in systolic blood pressure was -12.75 ± 13.7 mmHg, diastolic blood pressure was -8 ± 4.2 mmHg, and weight was -6 ± 4.1 lbs., noting the large variability based on the small sample size. For the secondary outcomes of heart failure symptoms and glycated hemoglobin, there were only four patients whose follow-up data is available. The heart failure questionnaire scored heart failure symptoms and physical functioning at baseline then post initiation, and a decrease of 0.67 ± 1% was reported by patients. Glycated hemoglobin decreased by the expected percent of 0.9 ± 0.17%. Up to present, there have been a total of twelve secondary interventions which included: four discontinuations or reduced doses of high-risk medications (insulin, alogliptin, and naproxen), four cardiology consults placed, two counseled on proper glipizide administration, one counseled on glucometer use, and one scale ordered for weight monitoring.
Conclusions:
Though the project is not yet completed and follow-up data is not available for all patients, there are some preliminary conclusions which can be made. The decrease in weight and blood pressure exemplifies SGLT2 inhibitor additional benefits which can reduce the risk for complications. Two of the three adverse safety outcomes could be linked to alternative causes; the incidence of headaches which led to discontinuation of empagliflozin included only a two-week trial of this medication, but an alternative cause of headaches could not be identified. The heart failure questionnaire score decreased suggesting reduction in symptoms and

improvement in physical functioning; however, more follow-up data is needed to truly assess this. There were a significant number of secondary pharmacy interventions as these comprehensive patient visits allowed CPPs the opportunity to coordinate and improve care for both disease states. Pharmacists will continue to implement empagliflozin in the remaining patients and follow-up data will be collected to assess safety and efficacy.

11:00am – 11:20am C **Safety and Efficacy of Apixaban for Nonvalvular Atrial Fibrillation in End-Stage Renal Disease on Hemodialysis** Athena D

Moderators: Dawnna Metcalfe
Presenters: Mariah Moore
Evaluators: Christopher Whitman

TITLE: Safety and Efficacy of Apixaban for Nonvalvular Atrial Fibrillation in End-Stage Renal Disease on Hemodialysis
AUTHORS: Kristina Vizcaino and Mariah Moore
OBJECTIVE:
SELF ASSESSMENT QUESTION:
BACKGROUND: The purpose of this study was to compare the efficacy and safety of apixaban and warfarin in patients with nonvalvular atrial fibrillation (NVAF) and end-stage renal disease on hemodialysis. Apixaban decreased incidence of stroke and bleeding compared to warfarin in major clinical trials. These clinical studies excluded patients with severe renal dysfunction. Apixaban is no longer contraindicated in patients with end-stage renal disease on hemodialysis (ESRD on HD) with NVAF based on pharmacokinetic studies. Limited clinical data exists for patients with ESRD on HD.
METHODOLOGY: A retrospective chart review was performed on eligible patients. Included patients had a diagnosis of NVAF and ESRD on HD and were prescribed apixaban or warfarin for stroke prevention in the year 2019. Patients were followed for 2 years. Patients on renal replacement therapy other than HD, those using anticoagulation for reasons other than NVAF, patients with Child-Pugh Class C cirrhosis, and those with severe mitral stenosis were excluded. The primary outcome was emergency department visit or hospital admission for ischemic stroke or TIA. Secondary outcomes included major or minor bleeding per ISTH criteria, adverse effects including thrombocytopenia, elevated liver function tests, and reasons for discontinuation excluding cost. Statistical analysis was determined by a statistician according to an intention-to-treat analysis.
RESULTS: 217 patients were screened; 110 patients met eligibility criteria and were included in the analysis. Four patients (7.5%) in the apixaban group and six patients (10.5%) in the warfarin group met the primary outcome of hospitalization or emergency department visit for stroke (p=0.742). Symptomatic bleeding occurred in 39.6% of patients in the apixaban group and 36.8% in the warfarin group (p=0.918). A trend in major bleeding occurred more often in the warfarin group, 52.4% vs. 49.2% (p=0.758).
CONCLUSIONS: There were no statistically significant differences in efficacy and safety outcomes between apixaban and warfarin in patients with NVAF and ESRD on HD in the intention-to-treat analysis of our study. While there appears to be no difference in safety and efficacy between agents, additional analysis of our study is in progress and larger studies are needed to further compare these agents in this patient population.

11:00am – 11:20am R **Analysis of Oral vs. Intravenous Acetazolamide for Treatment of Metabolic Alkalosis in ICU Patients** Athena H

Moderators: April Quidley

Presenters: Matthew Zakhari

Evaluators: Vince Buttrick

TITLE: Analysis of Oral vs. Intravenous Acetazolamide for Treatment of Metabolic Alkalosis in ICU Patients

AUTHORS: Matthew Zakhari, Matt Bibb, Chris Larkin

OBJECTIVE: Identify if oral acetazolamide is as effective in treating metabolic alkalosis compared to intravenous acetazolamide.

SELF ASSESSMENT QUESTION: Is there a difference between the oral and IV formulation of acetazolamide in regards to effectively treating metabolic alkalosis?

BACKGROUND: Metabolic alkalosis is a common result from a loss of volume due to a variety of causes such as severe hypokalemia, alkali ingestion in the setting of kidney dysfunction, primary aldosteronism, or disorders that mimic primary aldosteronism. Acetazolamide can be used due to its mechanism of action that results in the excretion of bicarbonate. Acetazolamide acts on carbonic anhydrase which is located in the proximal convoluted tubule, causing bicarbonate, chloride, and sodium to not be reabsorbed into the serum which ultimately decreases serum pH. Shortages in the drug itself and in the sterile water vials required for reconstitution, have created the need to explore the option of using oral acetazolamide instead.

METHODOLOGY: This study is a retrospective chart review of adult patients in the ICU setting who were treated with either oral or intravenous acetazolamide between August 1, 2020 and August 1, 2022. This study occurred at a single center (Saint Thomas Hospital West in Nashville, TN) and included 71 patients. Patients were separated into two groups: those treated with oral acetazolamide (n= 23) and those treated with intravenous acetazolamide (n= 48). Data was analyzed to determine if there was a difference in median change of serum bicarbonate between patients treated with oral acetazolamide compared to those treated with intravenous acetazolamide in the setting of metabolic alkalosis. Secondary outcomes include comparing median total length of acetazolamide therapy in days, change in serum bicarbonate in those with contraction alkalosis (defined in this study as having metabolic alkalosis with a urine output greater than or equal to 1 mL/kg/hr), total number doses per treatment, total dosage amount per treatment, and cost of treatment between the two groups.

RESULTS: Median change in bicarbonate was 3.95 mmol/L in the oral group vs. 3.43 mmol/L in the IV group (p= 0.818). Median change in bicarbonate for patients with contraction alkalosis was 4.03 mmol/L in the oral group vs. 3.43 in the IV group (p= 0.889). Median total length of acetazolamide therapy in days was 2 in the oral group vs. 1 in the IV group (p= 0.02). Total doses per treatment was 6.0 doses in the oral group and 3.5 doses in the IV group (p= 0.01). Total dose per treatment in milligrams was 1750 in the oral group vs. 1500 in the IV group (p= 0.101). Total price of treatment in dollars was 17.28 vs. 166.79 (p-value < 0.001).

CONCLUSIONS: In this study, we observed no difference regarding change in serum bicarbonate and total dose per treatment between patients treated with oral vs. IV acetazolamide therapy. A drastic difference in total price was observed which suggests use of the oral form may be more cost effective.

11:00am – 11:20am R **Comparison of Low versus High Dose 4F-PCC for Management of Factor-Xa Inhibitor-Related Intracranial Hemorrhage in the Emergency Department** Athena G

Moderators: Tracey Bastian

Presenters: Nicholas DeFilippo

Evaluators: Erik Turgeon

TITLE: Comparison of Low versus High Dose 4F-PCC for Management of Factor-Xa Inhibitor-Related Intracranial Hemorrhage in the Emergency Department

AUTHORS: Nicholas A. DeFilippo, Elaina Etter, Chelsea D. Wamsley, John Patka, Katleen Chester

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: Four-factor prothrombin complex concentrate (4F-PCC) is labeled for use as a reversal agent for vitamin K antagonists (VKAs) in the setting of major bleeding or need for urgent surgery or procedure. This product is also used off-label to manage major bleeding related to a factor Xa inhibitor (FXai). While labeled dosing is based on weight and international normalized ratio, the optimal dosing strategy for FXai-related bleeding remains unknown. This study aimed to evaluate the hemostatic efficacy of low versus high dose 4F-PCC when used for management of FXai-related intracranial hemorrhage (ICH) in the emergency department (ED). We hypothesized that lower doses per kilogram (kg) of actual body weight will not result in lower overall hemostatic efficacy.

METHODOLOGY: This retrospective cohort study includes patients ≥ 18 years old who received 4F-PCC in the ED as a hemostatic agent for apixaban or rivaroxaban in the setting of spontaneous or traumatic ICH from May 2018 through July 2022. Patients were excluded if they received 4F-PCC for either VKA reversal or non-ICH indications, no follow up imaging was collected and the patient either died or was transitioned to hospice, or initial hematoma volume was ≥ 60 mL. Excellent/good hemostatic efficacy (defined as ≤ 35% expansion in intracranial hematoma volume using the ABC/2 method) was determined from follow-up imaging within 12 and 24 hours of initial imaging. Patients were categorized as having poor hemostatic efficacy on follow-up imaging if there was > 35% expansion in ICH or hemorrhage was present in new compartments. The primary outcome was the difference in excellent/good and poor hemostatic efficacy between patients who received low (≤ 25 units/kg) versus high doses (> 25 units/kg) of 4F-PCC.

RESULTS: Seventy three patients were eligible and thirty eight were included with twenty one patients in the high dose cohort and seventeen in the low dose cohort. There were numerically less patients with intraparenchymal hemorrhage as well as neurosurgery within 24 hours in the low dose cohort. 86% (n = 18) of patients in the high dose cohort experienced excellent/good hemostasis compared to 71% (n = 12) of patients in the low dose cohort (OR 2.50 95% CI 0.501-12.469, p = 0.127).

CONCLUSIONS: Patients who received high dose 4F-PCC for FXai-related ICH saw no significantly better hemostatic efficacy compared to patients who received low dose 4F-PCC.

11:00am – 11:20am R **Impact of weight- or BSA-based hydrocortisone dosing on outcomes in patients with septic shock** Athena I

Moderators: Matthew McAllister

Presenters: Logan Boone

Evaluators: Deborah Hobbs

TITLE: Impact of weight- or BSA-based hydrocortisone dosing on outcomes in patients with septic shock

AUTHORS: Logan Boone, Cortney Dodson, Deborah Hurley, William Owens, David Schrift, Jenna F. Cox

OBJECTIVE: Determine if varying hydrocortisone dosing strategies influence time to shock reversal.

SELF ASSESSMENT QUESTION: True or false, there was a correlation between BSA and weight-based hydrocortisone dosing and time to shock reversal.

BACKGROUND: Current sepsis guidelines recommend addition of corticosteroids when a patient with septic shock requires doses of norepinephrine or epinephrine ≥ 0.25 mcg/kg/min for at least 4 hours after initiation. While the 2021 Surviving Sepsis Campaign recommends a dose of 200 mg per day, the 2017 Society of Critical Care Medicine Guidelines for the Diagnosis and Management of Critical Illness-Related Corticosteroid Insufficiency (CIRCI) in Critically Ill Patients recommends hydrocortisone at a dose < 400 mg per day. Literature suggests steroids are associated with a decreased time to shock resolution. Pediatric hydrocortisone stress dosing is based upon BSA, however there are no current weight- or BSA-based dosing guidance for adult patients. Given rising rates of obesity, whether there is an impact on weight- or BSA-based dosing strategies is of importance. This retrospective cohort study aims to further elucidate the impact of frequently utilized hydrocortisone dosing regimens by determining the impact of weight- and BSA-based dosing thresholds in adult patients with septic shock.

METHODOLOGY: A retrospective chart review was performed including adult patients admitted to an intensive care unit at Prisma Health Richland, Prisma Health Baptist, or Prisma Health Greenville Hospitals from May 1, 2017 through April 30, 2022 with clinically suspected or proven infection who received at least two doses of scheduled hydrocortisone (>200mg/day) and a continuous infusion vasopressor (norepinephrine, vasopressin, epinephrine, phenylephrine). Patients were excluded if they had a diagnosis of COVID-19, had vasopressors or hydrocortisone continued upon transfer from outside facility, used oral glucocorticoids within 30 days prior to ICU admission, were admitted to the cardiovascular intensive care unit, or received fludrocortisone or other systemic steroids during hydrocortisone use. The primary endpoint is time to shock reversal between varying doses of hydrocortisone correlated to weight or BSA based dose. Secondary endpoints include rates of shock recurrence, rates of new shock, in-hospital mortality, ICU length of stay, and hospital length of stay. Safety endpoints include rates of hyperglycemia, rates of initiation of insulin infusion, rates of initiation of midodrine during hydrocortisone administration, and rates of new onset infection. Correlation coefficients will be examined to explore if higher or lower weight or BSA based dosing has an effect on time to shock reversal.

RESULTS: 193 patients were included, the average patient was around 61 years old with an average BSA of 2.0, an average weight of 86.9kg, baseline blood glucose of 156, lactic acid level of 5.4, and sofa score of 11.8. Regarding the primary endpoint of time to shock reversal, the correlation coefficient for BSA-based dosing was -0.007, and the correlation coefficient for weight based dosing was 0.030. Regarding secondary outcomes, the correlation coefficients for shock recurrence, ICU length of stay, and hospital length of stay were 0.015, -0.011, and -0.022 respectively.

CONCLUSIONS: There was no correlation between varying weight and BSA based dosing strategies and time to shock reversal.

11:00am – 11:20am | **Evaluate the Antimicrobial Discharge Patterns for the Treatment of Urinary Tract Infections in a Community Hospital** Athena A

Moderators: Erika McClain

Presenters: Yaredis Emmanuelli Aquino

Evaluators: Katie Coffee

TITLE: Evaluate the Antimicrobial Discharge Patterns for the Treatment of Urinary Tract Infections in a Community Hospital

AUTHORS: Yaredis Emmanuelli-Aquino and Kady Stoyanov

OBJECTIVE: This study aimed to evaluate if there is a significant difference in discharge antimicrobial prescription patterns for treating UTIs when there is pharmacist intervention versus without pharmacist intervention, considering the recommendations of the current IDSA treatment guidelines.

SELF ASSESSMENT QUESTION: Which aspect of an antimicrobial prescription at discharge was positively impacted by the intervention of a pharmacist?

BACKGROUND: In 2011, urinary tract infections (UTIs) caused more than 400,000 hospitalizations in the US and about 50% of women will have at least one UTI in their lifetime. Therefore, hospitalized patients with UTIs typically receive antimicrobial treatment. Many patients continue their treatment after hospital discharge. However, doses, frequencies, and duration for antimicrobials are often inappropriate. Utilizing inappropriate antibiotics for the type of infection and organism identified can increase antibiotic resistance and unwanted adverse effects. Different studies have shown that pharmacists' interventions contribute to reducing the inappropriate use of antibiotics at discharge.

METHODOLOGY: This was a pre-and post-intervention quasi-experimental study. The patients included were all 18 years old or older with a diagnosis of urinary tract infections that received antimicrobial treatment during their hospitalization. Patients were excluded if pregnant, expired during hospitalization, or were transferred to another institution. The pre-intervention group consisted of hospitalized patients from June 1st, 2022, to July 31st, 2022, without pharmacist intervention for the antimicrobials prescribed at discharge. The second group consisted of hospitalized patients from January 3rd, 2023, to January 30th, 2023, with pharmacist intervention for the antimicrobials prescribed at discharge documented as an I-vent within EPIC. Data was collected using chart review in EPIC, which included the following: demographic information and characteristics such as age, race, sex, allergies, vitals, laboratory values, urinalysis, microbiology results (cultures and susceptibilities), and imaging. Medication-related data such as the indication, dose, frequency, and duration of therapy (inpatient and outpatient) of the antimicrobials administered and discharged prescriptions for antimicrobials were collected.

RESULTS: The intervention of a pharmacist resulted in 45.7% of patients prescribed agents recommended by clinical treatment guidelines. Meanwhile, 65.7% were prescribed the recommended frequency, and 62.9% the recommended duration of therapy. This was a positive numerical change. However, the difference was not statistically significant, except for the duration of treatment. On the other hand, only 57.1% of patients were prescribed the appropriate dose, which was a negative numerical change; nevertheless, this was not statistically significant..

CONCLUSIONS: There are opportunities for improvement in the antimicrobial prescription process at discharge. Selection of first-line agents when appropriate can be a challenge at discharge. Intervention of a clinical pharmacist may help improve transition of care for UTI. Nevertheless, this was not observed in our study.

11:00am – 11:20am | **Identification of Risk Factors for Methicillin-Resistant Staphylococcus aureus Community-Acquired Pneumonia at an Academic Medical Center** Athena B

Moderators: Michael Maccia
Presenters: Linda Tran
Evaluators: Kelly Gamble

AUTHORS: Linda Tran, Rachel Larry, Courtney Haiflich

BACKGROUND: The most recent clinical practice guidelines from the American Thoracic Society and Infectious Diseases Society of America for the diagnosis and treatment of community-acquired pneumonia (CAP) recommend empiric coverage of methicillin-resistant Staphylococcus aureus (MRSA) in the inpatient setting if locally validated risk factors for this pathogen are present. An effort to identify facility-specific risk factors at this academic medical center has not been conducted; thus, the local risk factors for MRSA are unknown. The objective of this study was to identify facility-specific local epidemiologic risk factors associated with an increased risk of MRSA CAP in patients admitted to this institution.

METHODOLOGY: This was a single center, retrospective case control study of patients hospitalized with CAP from October 1, 2017 to November 30, 2022. Cases were defined as patients with MRSA isolated from a respiratory culture, and controls were defined as patients who did not grow MRSA on a respiratory culture. The primary endpoint of this study was identification of facility-specific risk factors for MRSA CAP. Secondary endpoints included microbiologic etiologies of CAP, receipt of empiric antibiotic coverage of MRSA within the first 48 hours of hospitalization, in-hospital mortality, total duration of antibiotic therapy, and length of stay (LOS). Admitted patients who were at least 18 years old, met a clinical diagnosis of CAP within the first 48 hours of hospitalization, and had a respiratory culture collected within 72 hours were included. Patients who were diagnosed with pneumonia at least 48 hours after admission or intubation were excluded. Statistical analysis included descriptive statistics, Chi-square test or Fisher’s exact test for categorical variables, Mann-Whitney U or independent t-test for continuous data, and a multivariate logistic regression to assess independent risk factors for MRSA CAP as appropriate.

RESULTS: Sixty-two patients were included in this IRB-approved study. Admission from a residence of close living (e.g., long-term care facility, nursing home, or prison; p=0.02), chronic tube feeds (p=0.04), history of stroke or transient ischemic attack (p=0.02), non-ambulatory status at admission (p=0.049), SARS-CoV-2 positivity within 48 hours of admission (p=0.04), higher Pneumonia Severity Index (PSI) score (mean 143 ± 48 vs mean 111 ± 38; p=0.01), and MRSA bacteremia during hospitalization (p<0.001) were more common in patients with MRSA CAP. Patients with MRSA CAP were more likely to receive empiric coverage of MRSA (86.4% vs 60%; p=0.04) and longer antibiotic treatment durations [median 10.3 days (IQR 13.8 days) vs median 4.1 days (IQR 6.0 days); p=0.01] compared to non-MRSA CAP patients. In-hospital mortality (22.7% vs 2.5%; p=0.02) and 30-day mortality (22.7% vs 2.5%; p=0.02) occurred more frequently in MRSA CAP patients than non-MRSA CAP patients. No independent risk factors reached statistical significance in the multivariate logistic regression. Among the 40 patients with non-MRSA CAP, 8 patients had a positive respiratory culture. These positive respiratory cultures had etiologies that were consistent with classic CAP pathogens.

CONCLUSIONS: Potential risk factors for MRSA CAP included admission from a residence of close living, chronic tube feeds, history of stroke or transient ischemic attack, non-ambulatory status at admission, SARS-CoV-2 positivity within 48 hours of admission, higher PSI score, and MRSA bacteremia during hospitalization. The minority of patients in the control group had culture-positive CAP; however, the etiologies were consistent with classic CAP pathogens. Patients with MRSA CAP were more likely to receive empiric therapy with anti-MRSA antibiotics, have a longer duration of treatment, and experience higher in-hospital and 30-day mortality.

11:00am – 11:20am L **Evaluation of Vitamin D Goal Level Achievement in Brain Injury Patients at an Inpatient Rehabilitation Center** Athena J

Moderators: Niki Pitts
Presenters: India Dillard
Evaluators: Kim Bowers

TITLE: Evaluation of Vitamin D Goal Level Achievement in Brain Injury Patients at an Inpatient Rehabilitation Center

AUTHORS: India Dillard, Elisabeth Webb, Raeda Anderson, Carly Warner

OBJECTIVE: At the conclusion of my presentation, the participant will be able to understand the significance of treating subtherapeutic vitamin D levels in traumatic brain injury (TBI) and stroke patients.

SELF ASSESSMENT QUESTION: In what ways are therapeutic vitamin D levels found beneficial for TBI and stroke patients?

BACKGROUND: Subtherapeutic vitamin D levels have an increased prevalence in traumatic brain injury and stroke patients due to extensive time spent indoors during acute recovery. Achievement of therapeutic vitamin D levels (>/= 30 ng/mL) after such neurological events are linked to improved outcomes and prevention of secondary neurologic injury through inflammatory mediator suppression. The purpose of this study is to evaluate vitamin D goal level achievement in various subtherapeutic categories within 12 weeks of initial vitamin D treatment at an inpatient rehabilitation center.

METHODOLOGY: This study is a single-center, retrospective analysis of 64 patients with subtherapeutic vitamin D levels from July 1, 2019 through July 31, 2022 who received subsequent vitamin D therapy. Exclusion criteria include vitamin D therapy prior to baseline vitamin D level, dual diagnosis (spinal cord and brain injury), eGFR 88 pg/mL, baseline serum calcium >10.2 mg/dL, pregnancy or lactation. The primary outcome is achievement of vitamin D goal level within 12 weeks of vitamin D therapy initiation. Secondary outcomes include time from baseline to follow-up vitamin D level and description of vitamin D medication regimens used in relation to the primary outcome.

RESULTS: A total of 64 patients were included in this study. 81% of traumatic brain injury (TBI) and stroke patients achieved target vitamin D level of >/=30 ng/mL after receiving vitamin D replacement therapy during their inpatient admission. Achievement of goal level was observed amongst all baseline inadequacy classifications (<12 ng/mL, 12-19.9 ng/mL, 20-29.9 ng/mL). Vitamin D3 was the most prescribed initial supplement, represented in 78% of participants, with the most common dosage of 5000 units daily. Of all patients who started with Vitamin D3 5000 units daily, 93% achieved target goal levels. 83% of patients who achieved goal vitamin D levels obtained follow-up levels within 4 to 7 weeks of their baseline level.

CONCLUSIONS: The findings of this study revealed that among brain injury patients with subtherapeutic vitamin D levels 81% of patients achieved target Vitamin D level. The replacement regimen of vitamin D3 5000 units daily and measurement of follow-up level obtained within 4 to 7 weeks emerged as promising markers for standardization of vitamin D replacement regimens in the inpatient rehabilitation population.

11:00am – 11:20am N **Evaluation of patient outcomes related to the receipt of alteplase versus tenecteplase for acute ischemic stroke in a community hospital** Parthenon 1

Moderators: Jere May

Presenters: Gustav Benson

Evaluators: John Carr

TITLE: Evaluation of patient outcomes related to the receipt of alteplase versus tenecteplase for acute ischemic stroke in a community hospital

AUTHORS: Gustav Benson, Claire Johns

OBJECTIVE: Identify differences in safety and efficacy outcomes between alteplase and tenecteplase for acute ischemic stroke in a community hospital.

SELF ASSESSMENT QUESTION: What considerations were used to justify the switch from alteplase to tenecteplase?

BACKGROUND: In February 2022, Baptist Health Lexington adopted tenecteplase (TNK) as the fibrinolytic of choice in patients presenting with acute ischemic stroke (AIS). This change was made following updated guidelines from the American Stroke Association which lists TNK as a reasonable alternative to alteplase (tPA) in patients without contraindications for IV fibrinolysis. TNK provides favorable kinetics and is easily administered as an IV bolus, which our facility noted as advantages of using TNK over tPA as well. This research project aims to evaluate patient safety and efficacy outcomes following the hospital-wide switch from tPA to TNK for AIS.

METHODOLOGY: Data was obtained through a retrospective electronic medical records review. Patients who received either tPA or TNK at Baptist Health Lexington between February 1, 2021 and January 31, 2023 were considered for study evaluation. Medical records of the study population were reviewed to obtain pertinent information regarding the study's outcomes. Pertinent information collection included the National Institutes of Health Stroke Scale (NIHSS) scores, imaging interpretations, length of stay, time from arrival at the hospital to receipt of treatment, and survival at discharge. For the primary efficacy endpoint of change in NIHSS score at baseline versus 24-hours, the tPA and TNK cohorts were compared. For the safety endpoint of symptomatic intracranial hemorrhage (SICH), protocol driven 24-hour follow-up CT along with a ≥ 4-point increase in NIHSS score was used to identify an event. Lastly, the average number of days per admission, average time from arrival at the hospital until treatment, and number of fatal events in the two cohorts were compared.

RESULTS: 253 patients were identified, through charge data, for evaluation. After exclusion, a total of 188 patients (94 in both the tPA and TNK groups) were enrolled in this IRB-approved study. There was no statistically significant difference in the demographic data, or stroke associated comorbidities, of the two cohorts. The primary efficacy endpoint of change in NIHSS score at baseline versus 24-hours found no statistically significant difference in tPA and TNK (3.37 vs. 4.21, p=0.746). There was also no statistically significant difference identified in length of stay (4.17 vs. 4.04 days, p=0.91), door-to-needle time (37:59 vs 36:24 mm:ss, p=0.461), or mortality (6.4% vs 4.3%, p=0.747). There were two occurrences of SICH, the primary safety endpoint, in both cohorts.

CONCLUSIONS: We observed that the primary safety and efficacy endpoints were similar for tPA and TNK in the treatment of acute ischemic stroke at Baptist Health Lexington. Length of stay, door-to-needle time, and mortality were also similar in the two cohorts. These findings were sufficient to justify our switch from tPA to TNK as the thrombolytic of choice for this indication.

11:00am – 11:20am T **Meds to Beds: The Impact of Bedside Medication Delivery on 30-Day Heart Failure Readmissions at Archbold Medical Center** Athena C

Moderators: Holly Clark
Presenters: Cy Sims
Evaluators: Robin Fischer

TITLE: Meds to Beds: The Impact of Bedside Medication Delivery on 30-Day Heart Failure Readmissions at Archbold Medical Center

AUTHORS: Cy Sims, Maggie Braxton Green, Jameisha Shavers, Geren Thomas

OBJECTIVE: Presentation Objective: Identify if the 30-day hospital readmission rate of heart failure patients at Archbold Medical Center has decreased with the addition of the med to bed program.

SELF ASSESSMENT QUESTION: Self-Assessment: What are the roles of a pharmacist in reducing hospital readmissions?

BACKGROUND: Since the establishment of the Hospital Readmission Reduction Program by the Centers for Medicare and Medicaid Services (CMS), reducing readmission rates has become a priority for health care institutions. Providing patients with medications at discharge, as well as necessary education, has been shown to reduce hospital readmissions. While core measures of acute myocardial infarction (AMI), chronic obstructive pulmonary disease (COPD), pneumonia, coronary artery bypass graft (CAPB), and total hip and knee surgery all showed significant decreases in readmission rates, heart failure is one that continued to be elevated at a 19-25%. Archbold Medical Center implemented their Meds to Beds program in 2018. The purpose of this review is to see what effect the Meds to Beds program has had on the 30-day readmission rates in our patients diagnosed with heart failure.

METHODOLOGY: A retrospective cohort study was conducted at Archbold Medical Center to review patients diagnosed with heart failure between June 2021 and June 2022. When a patient agrees to the discharge service, an order is placed. A pharmacist reviews discharge medications and provides discounts when available to make prescriptions as affordable as possible. This service is not limited to patients with insurance only. Archbold has options with 340B pricing as well as using manufacturer coupons when available. The pharmacist then delivers the medications to the bedside, where instructions are given on how to take the medication, what side effects to look out for, and answer any questions the patient may have.

Data was collected through a retrospective chart review of the 1-year period. The primary objective was to look at the difference in unplanned 30-day readmission rates between heart failure patients who used the meds to beds program and those who did not.

RESULTS: The cohort included 200 patients (55 patients in the intervention group and 145 in the control group). The distribution of patients was 110 (55%) female and 105 (52.7%) White, 92 (46.2%) Black, and 2 (1.1%) Hispanic. The proportion of patients who were readmitted within 30 days was 16.4% (9 of 55) in the intervention group and 17.9% (26 of 145) in the control group. In this cohort study, meds to beds reducing heart failure readmissions in 30 days was not found to be statistically significant ([OR] = 0.90; 95% confidence interval [CI]: 0.39-2.06, P = 0.11).

CONCLUSIONS: Although there was a reduction in heart failure 30-day readmissions, it was not found to be statistically significant. A further look into how this program can be improved would be warranted. Any reduction in readmissions would be beneficial for the patient as well as reduce hospital costs. Further research is needed to best demonstrate how pharmacists can help reduce readmissions and improve patient outcomes.

11:20am – 11:40am **Empty** Parthenon 2

11:20am – 11:40am A **EVALUATING OUTPATIENT TITRATION ORDER ADHERENCE AND PATIENT UNDERSTANDING AT RHJVAMC** Athena I

Moderators: Matthew McAllister

Presenters: Ryan Dushak

Evaluators: Deborah Hobbs

TITLE: EVALUATING OUTPATIENT TITRATION ORDER ADHERENCE AND PATIENT UNDERSTANDING AT RHJVAMC

AUTHORS: Ryan Dushak, Kevin Brittan, Eric Schumann

OBJECTIVE: N/A

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: Titrating medication regimens is an important component of medicine that can sometimes be confusing for the patient. Following the proper regimen is crucial to getting the patient to the target dose in a safe and effective manner. Through staffing pharmacist's observation, it is believed that a significant percentage of outpatient titration regimens are not being taken correctly.

METHODOLOGY: This was a quality assurance project at a Veterans Affairs Medical Center, consisting of identifying patients who recently received a titrated medication order and then contacting these patients to assess their understanding and adherence to the regimen. A list was populated each week for those that received an outpatient titration order between 10/1/2022 and 1/31/2022. Patients were then randomly contacted each week for a goal of 50 total assessments. Patients were contacted after they had started the medication but before they had finished the titration. The primary outcome was the percentage of patients who were adherent to their prescribed titrated regimen. The secondary outcome was identifying the cause of non-adherence. Patients who were inappropriately identified as having a titration order and those that could not be contacted were excluded.

RESULTS: Preliminary – Out of 50 veterans contacted 13, or 26%, were deemed non-adherent.

CONCLUSIONS: Preliminary – A significant percentage of patients who are prescribed a medication to be self-titrated are non-adherent.

11:20am – 11:40am B **Impact of a pharmacist-driven antithrombotic stewardship clinic in a Veteran population** Olympia 1

Moderators: Lindsey Pearsall
Presenters: Laura Cherry
Evaluators: Naomi Yates

TITLE: Impact of a pharmacist-driven antithrombotic stewardship clinic in a Veteran population
AUTHORS: Laura Cherry, Jakob Fann, Bishoy Ragheb
OBJECTIVE: At the end of this presentation the audience should be able to evaluate the benefit of an antithrombotic stewardship clinic in a Veteran population
SELF ASSESSMENT QUESTION: T/F: Pharmacist involvement in antithrombotic stewardship in this population resulted in increased discontinuation of inappropriately co-prescribed antiplatelet therapy?
BACKGROUND: The diagnosis of multiple comorbid disease states each with an indication for oral anticoagulation (OAC) or oral antiplatelet therapy (OAPT) is a common clinical scenario. Use of antiplatelet agents in combination with oral anticoagulation results in an increased risk of bleeding, and this risk is often not associated with decreased risk of neurologic and cardiovascular events. The prescribing and monitoring of OAC therapy has been a pharmacist-driven practice for many years in the Veterans Affairs Tennessee Valley Healthcare System (VA TVHS). However, the management of OAPT agents has largely been completed by primary care and specialty services. Prior to establishing this antithrombotic stewardship clinic, approximately 23.5% of patients receiving a direct OAC medication at TVHS were co-prescribed an OAPT agent. However, other VA programs with successful implementation of an antithrombotic stewardship clinic had successfully reduced co-prescribing of these agents to 9.7-12.8%.
METHODOLOGY: This prospective, single-center study was conducted across VA TVHS. It evaluates the impact of a pharmacist driven antithrombotic stewardship clinic. Veterans included for analysis were those with an active VA or non-VA prescription for an oral antiplatelet agent in addition to at least one oral anticoagulant therapy. Baseline demographics and medical history were collected via review of the electronic medical record. Assessed patient outcomes include appropriate continuation or discontinuation of antiplatelet therapy and successful initiation of an agent for protection against gastrointestinal bleeding as indicated.
RESULTS: Antiplatelet therapy was discontinued in 27.7% (n=40) of patients assessed. In 2.7% (n=4) of patients, antiplatelet therapy was continued by the patient's provider against the pharmacist recommendation, with no rationale provided. A decision on antiplatelet therapy is pending from the patients' provider in 19.4% (n=28) of patients. In 47.2% (n=68) of patients, antiplatelet therapy was continued by the pharmacist, most commonly due to a history of complex stenting. De-escalation from clopidogrel to aspirin was recommended in 3 patients. One patient elected to continue antiplatelet therapy without a clear indication. A gastrointestinal (GI) protective agent was initiated or recommended to the patient's provider in 31.2% of patients assessed.
CONCLUSIONS: Pharmacist involvement in antithrombotic stewardship may reduce inappropriate co-prescribing of oral anticoagulant and antiplatelet therapy, and promote prescribing of GI protection in those who continue dual antithrombotic therapy.

11:20am – 11:40am C **A Retrospective Comparison of the Efficacy of Sotalol Versus Dofetilide for Maintenance of Normal Sinus Rhythm at Six Months in a Metropolitan Hospital** Athena D

Moderators: Dawnna Metcalfe

Presenters: Dustin Bivins

Evaluators: Christopher Whitman

TITLE: A Retrospective Comparison of the Efficacy of Sotalol Versus Dofetilide for Maintenance of Normal Sinus Rhythm at Six Months in a Metropolitan Hospital

AUTHORS: Dustin Bivins, Chelsea Moran, Natalie Morgan, Kendal Unrue, Namita Patel, Laura Hallman, NaaDede Badger-Plange

OBJECTIVE: Compare the outcomes associated with dofetilide and sotalol in the management of atrial fibrillation.

SELF ASSESSMENT QUESTION: What is the difference between the rates of maintenance of normal sinus rhythm between dofetilide and sotalol in patients with atrial fibrillation at six months?

BACKGROUND: Sotalol (Betapace®) and dofetilide (Tikosyn®) are class III antiarrhythmic agents commonly used for pharmacological cardioversion and maintenance of normal sinus rhythm (NSR) in patients with atrial fibrillation (AF). Trials by Benditt et al (1999) and the SAFIRE-D trial by Singh et al (2000) demonstrated efficacy for sotalol and dofetilide, respectively, for maintaining NSR post hospitalization; however, there is limited data comparing the duration of NSR maintenance with dofetilide versus sotalol. The EMERALD trial (1999) directly compared patients with AF who received sotalol, dofetilide, or placebo and evaluated the maintenance of NSR at six months. This trial found that 71% of patients who received dofetilide remained in NSR at six months compared to 26% of placebo recipients and 59% of sotalol recipients. No further analysis comparing the efficacy between the two agents have been performed since the EMERALD trial. The purpose of this study is to compare dofetilide versus sotalol for maintenance of NSR at six months post-medication initiation in a metropolitan hospital patient population to provide the most effective method of maintaining NSR after either pharmacological cardioversion or direct current cardioversion (DCCV).

METHODOLOGY: This was a retrospective chart review of adult patients who were admitted to Piedmont Atlanta Hospital who received either dofetilide or sotalol for atrial fibrillation from January 2020-January 2022. Patients were excluded if dofetilide or sotalol were continued from home, had ventricular arrhythmias, received amiodarone in the past 3 months, were unable to achieve NSR during treatment or after DCCV, were taking any other antiarrhythmic medication during admission, documented non-adherence to dofetilide or sotalol, or did not have an EKG six months after initial cardioversion. The primary endpoint was maintenance of NSR six months post-cardioversion after loading with dofetilide or sotalol. Secondary endpoints included number of patients who underwent DCCV prior to discharge during that admission, median time to recurrence of arrythmia, incidence of Torsades de Pointes (TdP) during the study period, and length of hospital stay (hours). Categorical data will be analyzed using the Chi squared test. Continuous data will be analyzed via the independent sample t-test. P-values of < 0.05 will be considered statistically significant.

RESULTS: During the study period, 432 patients who received sotalol and 454 patients who received dofetilide were evaluated. Of the evaluated population, 50 patients from each group were included for analysis. There was no statistical difference found between the maintenance of NSR at six months when comparing dofetilide and sotalol (80% vs 78%, $p=0.811$). No difference was found between the rates of DCCV prior to discharge between the two agents ($n= 15$ for both groups, $p=1.0$). Median time to recurrence of arrhythmia (if occurred) was 121 days for dofetilide vs 47 days for sotalol ($p= 0.021$). No instances of TdP occurred in either group. There was no difference in hospital length of stay between dofetilide and sotalol (71.2 hours vs 89.3 hours, $p = 0.159$).

CONCLUSIONS: Based on the results of this study, there was no statistically significant difference between dofetilide and sotalol in regards to maintaining NSR at six months; however, a longer time to recurrence of arrhythmia was demonstrated by dofetilide compared to sotalol. There was no difference in hospital length of stay or rates of DCCV between the two agents. Based on the results of this study, selection of agent for pharmacological cardioversion for patients with AF should be based upon patient-specific factors.

11:20am – 11:40am R **EVALUATING 28-DAY MORTALITY WITH FIXED-DOSE 4F-PCC IN CONFIRMED INTRACRANIAL HEMORRHAGE PATIENTS ON ANTICOAGULATION AGENTS** Athena H

Moderators: April Quidley

Presenters: Ted Sukhdeo

Evaluators: Vince Buttrick

TITLE: Evaluating 28-Day Mortality with Fixed-Dose 4F-PCC in Confirmed Intracranial Hemorrhage Patients on Anticoagulation Agents

AUTHORS: Ted Sukhdeo, DeWayne Cross, Shawn Boland

OBJECTIVE: Assess the 28-day in-hospital mortality of patients on anticoagulation agents with confirmed intracranial hemorrhage reversed with 4F-PCC.

SELF ASSESSMENT QUESTION: As seen from this study, what was the 28-day in-hospital mortality rate among patients diagnosed with ICH on either warfarin, apixaban, or rivaroxaban and reversed with 4F-PCC?

BACKGROUND: This study aimed to determine the in-hospital 28-day mortality of fixed-dosing 4F-PCC in patients on anticoagulation agents with confirmed intracranial hemorrhage within two community hospitals. Secondary outcomes included expansion of bleeding on computed tomography (CT) imaging four hours post-administration of 4F-PCC and the frequency of thrombotic events.

METHODOLOGY: A retrospective chart review was performed on patients who received fixed dose 4F-PCC for confirmed intracranial hemorrhage and who were on anticoagulation therapy. Patients were included if they were 18 years of age or older and either were on warfarin, rivaroxaban, or apixaban at the time of acute intracranial hemorrhage. The date range included the months of July 2022 through October 2022.

RESULTS: There were 10 reported deaths in patients reversed with 4F-PCC due to ICH. Of those 10 patients, three patients were on warfarin, two on rivaroxaban, and five on apixaban. Six out of these 10 patients had an expansion of blood on repeat CT scans.Two patients were on warfarin, one on rivaroxaban, and three on apixaban. Two patients had no change, and two patients did not get a repeated CT scan. The two no changes included one patient on apixaban and one patient on rivaroxaban. The two not repeated included one patient on apixaban and one patient on warfarin. No change upon repeat CT was noted in 22 of the patients. Thirteen of those patients were on apixaban. Six of those patients were on rivaroxaban. Three of those patients were on warfarin.16 patients experienced an expansion of blood on repeat CT. Ten of those patients were on apixaban. One of those patients was on rivaroxaban. Five of those patients were on warfarin. Two patients that did not get repeat CT due to death. The two not repeated included one patient on apixaban and one patient on warfarin.

CONCLUSIONS: We estimated a 25% mortality rate for patients acutely diagnosed with ICH and who were on either warfarin, apixaban, or rivaroxaban and reversed with 4F-PCC. Seen from this trial of fixed-dose 4F-PCC there is approximately a 75% chance of survival. There is only one case of the thromboembolic event observed. The use of fixed-dose 4F-PCC has been supported by case reports and observational data. The available clinical data on mortality benefits for fixed-dose 4F-PCC and oral Factor Xa inhibitors is limited. Further studies within larger institutions to assess the mortality benefit of 4F-PCC are warranted. Clinical trials comparing fixed-dose 4F-PCC to variable-dose 4F-PCC may provide more support for the fixed-dose regimen and assess mortality benefits.

11:20am – 11:40am R **The Development of Standardized Antidote and Reversal Agent Protocols and Order Sets** Athena G

Moderators: Tracey Bastian

Presenters: Mariah McKinney

Evaluators: Erik Turgeon

TITLE: The Development of Standardized Antidote and Reversal Agent Protocols and Order Sets

AUTHORS: Mariah McKinney PharmD, Whitney Elliott PharmD, BCPS, BCGP, Hunter Perrin PharmD, BCPS, BCCCP

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: One of the 2022-2023 Institute for Safe Medication Practices Targeted Best Practices is to ensure availability, standardized protocols, order sets, and instructions for use as appropriate for facility antidotes and reversal agents. Antidotes and reversal agents are time sensitive medications that are often used infrequently. The aim of this project is to assess the current state of antidote and reversal agent management within the James H. Quillen VA Medical Center. This includes identifying and closing gaps in existing policies, par levels, stock locations, order sets, and protocols.

METHODOLOGY: This is a retrospective, quality improvement project that will collect current state data between August 15, 2022-September 15, 2022 as well as retrospective usage data between August 30, 2021-August 30, 2022. Data will be collected from the electronic health record, inventory sources, and Omnicell reports. Once gaps are identified, the antidotes and reversal agents will be prioritized through a risk assessment strategy to determine which protocols and order sets to develop first. The primary endpoint of this project is the percentage of facility antidotes and reversal agents that have existing order sets. The secondary endpoints for this project include the percentage of facility antidotes and reversal agents that are currently stocked in the pharmacy at appropriate PAR levels, the percentage of existing protocols for facility antidotes and reversal agent use, and the percentage of currently available instructions for use for facility antidotes and reversal agents.

RESULTS: In progress

CONCLUSIONS: In progress

11:20am – 11:40am | **Impact of a Revised Order Set on the Use of Trimethoprim/Sulfamethoxazole in Adult Patients With Uncomplicated Urinary Tract Infections in the Emergency Department** Athena B

Moderators: Michael Maccia

Presenters: Jasmine Roberts

Evaluators: Kelly Gamble

TITLE: Impact of a Revised Order Set on the Use of Trimethoprim/Sulfamethoxazole in Adult Patients With Uncomplicated Urinary Tract Infections in the Emergency Department

AUTHORS: Jasmine Roberts, Kristen Keen, Justin Hodges, Ruthanne Baird Veenaben Patel, Dustin Wilson, Spencer Livengood, Catherine Wente, & Arilyn Maier

OBJECTIVE: To determine the number of prescritptions for trimethoprim/sulfamethoxazole prior to and after the revision of genitourinary order sets in the emergency department.

SELF ASSESSMENT QUESTION: Did the revision of the genitourinary order set lead to fewer patients receiving trimethoprim/sulfamethoxazole for genitourinary tract infections?

BACKGROUND: Order sets are commonly used to guide providers' pharmacotherapy selections for certain infections and procedures. As a process improvement, the hospital system implemented a revised antibiotic order set for genitourinary infections for patients treated in the emergency department to improve appropriate antibiotic prescribing. The revised order set was intended to better reflect the hospitals' antibiograms and to address increasing resistance to trimethoprim/sulfamethoxazole. The purpose of this research project is to evaluate the changes on prescribing of trimethoprim/sulfamethoxazole before and after the implementation of the revised order set.

METHODOLOGY: This is an IRB-exempt, retrospective analysis that includes patients who were treated in the ED from March 2021 through July 2021 and March 2022 through June 2022. Patients were eligible for inclusion if they were > 18 years old, diagnosed with cystitis or uncomplicated pyelonephritis, treated in the emergency department, and discharged with an antibiotic. Patients were excluded if they were admitted or transferred to another hospital, had a secondary infection, had a history of a genitourinary infection in the Meditech electronic medical record in the last 12 months, or if antibiotics were given prior to the emergency department visit. The primary objective is to determine the percentage of prescriptions for trimethoprim/sulfamethoxazole before and after the implementation of the revised order set. The secondary objective is to evaluate the number of pharmacists interventions on final cultures for patients receiving antibiotics for genitourinary infections before and after the revision of the order set. Descriptive statistics will be used for all analyses.

RESULTS: Prior to the revision there were 62 (14.9%) prescriptions for trimethoprim/sulfamethoxazole and after the revision there were 46 (9.4%) presecriptions for trimethoprim/sulfamethoxazole. Also, there was a decrease in the number of pharmacists' interventions after the revision of the order set, 33 (12.7%) prior to the revision and 24 (4.9%) after the revision.

CONCLUSIONS: There were fewer prescriptions for trimethoprim/sulfamethoxazole after revising the order set for patients treated in the emergency department for genitourinary infections. Reviewing order sets and making revisions according to updated antibiogram data and guidelines can impact antibiotic selection

11:20am – 11:40am | **Piperacillin/tazobactam versus meropenem for treatment of extended-spectrum beta-lactamase-producing E. coli or K. pneumoniae bloodstream infections** Athena A

Moderators: Erika McClain

Presenters: Alexandra Cox

Evaluators: Katie Coffee

TITLE: Piperacillin/tazobactam versus meropenem for treatment of extended-spectrum beta-lactamase-producing *E. coli* or *K. pneumoniae* bloodstream infections

AUTHORS: Alexandra Cox, Jim Beardsley, John Williamson, Tyler Stone, Vera Luther, Elizabeth Palavecino, Michael DeWitt, Alex D. Taylor

OBJECTIVE: The purpose of this study is to evaluate clinical outcomes in patients treated with piperacillin/tazobactam versus meropenem for bloodstream infections caused by ESBL-producing *E. coli* or *K. pneumoniae.*

SELF ASSESSMENT QUESTION: Describe the difference in 30-day mortality between patients with bloodstream infections caused by ESBL-producing *E. coli* and *K. pneumoniae* treated with piperacillin/tazobactam compared with those treated with meropenem

BACKGROUND: The presence of extended-spectrum beta-lactamase (ESBL) production is increasing among Enterobacterales, including E. coli and K. pneumoniae. ESBLs are associated with resistance to multiple antibiotic classes and are capable of hydrolyzing third generation cephalosporins and aztreonam. A recent study of meropenem versus piperacillin/tazobactam for the treatment of bloodstream infections caused by ceftriaxone-resistant Enterobacterales, including ESBL-producing organisms, revealed discouraging outcomes for piperacillin/tazobactam. Currently, guidance from the Infectious Diseases Society of America for treatment of ESBL-producing organisms suggests piperacillin/tazobactam is an appropriate therapy for uncomplicated cystitis only. However, data exist supporting extended infusion piperacillin/tazobactam dosing strategies which optimize the pharmacokinetics to obtain high probability of target attainment in organisms with an MIC ≤ 16 mg/L. Additionally, clinical improvement has been observed in patients with uncomplicated bloodstream infections caused by ESBL-producing organisms while on empiric piperacillin/tazobactam. The purpose of this study is to evaluate clinical outcomes in patients treated with piperacillin/tazobactam versus meropenem for bloodstream infections caused by ESBL-producing *E. coli* or *K. pneumoniae.*

METHODOLOGY: This retrospective observational study was conducted within a large academic health system. Adult inpatients with blood cultures positive for ESBL-producing *E. coli* or *K. pneumoniae* during calendar years 2016-2020 were identified by a query of our microbiological database. Patients with an ESBL-producing *E. coli* or *K. pneumoniae* isolate (susceptible to both piperacillin/tazobactam and meropenem) who received either piperacillin/tazobactam or meropenem within 24 hours of culture collection and for a duration of least 48 hours were included. Patients were excluded if they had neutropenia, expired or transitioned to comfort care within 48 hours of first dose of study antibiotic, did not have source control by day 5, had a suspected or confirmed polymicrobial infection, or had a concurrent infection caused by another gram-negative organism. Qualifying patients were then randomly selected for inclusion in each of the therapy groups, piperacillin/tazobactam and meropenem, until 20 patients were in each group. The primary outcome was all-cause mortality at 30 days. Secondary outcomes included length of hospital stay, time to clinical and microbiological resolution, and clinical and microbiological success at day 5. Data were analyzed using descriptive statistics. Student t-test and Mann-Whitney U test were used for continuous data and Chi-square or Fisher's exact tests for categorical data.

RESULTS: There were no statistically significant differences in baseline characteristics between patients in the piperacillin/tazobactam group and meropenem group. The majority of patients in both groups were female, with median ages of 65 and 68, and median Charleson Comorbidity Index scores of 1.5 and 2.0 in the piperacillin/tazobactam group and meropenem groups, respectively. Patients in the meropenem group received a longer course of meropenem compared to the courses of piperacillin/tazobactam in the piperacillin/tazobactam group (6.4 vs 4.0 days; p =0.03). No difference in 30-day mortality was observed with three all-cause deaths in the meropenem group and two all-cause deaths in the piperacillin/tazobactam (15% vs 10% mortality; p>0.99). Length of stay was an average of 11.3 days in the meropenem group and 9.2 days in the piperacillin/tazobactam group (p=0.2). In the meropenem group (n=20), 60% of patients reached clinical resolution by day 5 compared with 74% of patients in the piperacillin/tazobactam group (n=19) (p=0.4). All patients with repeat blood cultures in both groups reached microbiological resolution by day 5. Time to clinical resolution (5.0 vs 4.4 days; p=0.68) and time to microbiological resolution (2.1 vs 1.6 days; p=0.1) did not differ between the groups.

CONCLUSIONS: In this study, patients treated with piperacillin/tazobactam had similar outcomes to patients treated with meropenem for ESBL-producing bloodstream infections. These results demonstrate the need for randomized, controlled trials to further assess outcomes in this patient population.

11:20am – 11:40am L **Implementation of a HFpEF/HFmrEF medication order set to improve evidence-based therapies at hospital discharge** Athena J

Moderators: Niki Pitts
Presenters: Jacklyn Rispin
Evaluators: Kim Bowers

TITLE: Implementation of a HFpEF/HFmrEF medication order set to improve evidence-based therapies at hospital discharge

AUTHORS: Jacklyn Rispin, Carrie Baker, Riley Bowers

OBJECTIVE: To compare the percentage of patients fully optimized on GDMT at discharge before and after implementation of a HF order set based on the 2022 AHA/ACC HF guidelines.

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: The 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure defines heart failure with preserved ejection fraction (HFpEF) as an ejection fraction > 50%, and heart failure with mildly reduced ejection fraction (HFmrEF) as an ejection fraction of 41-49%. Due to recent primary literature, new therapies have been designated as guideline directed medical therapy (GDMT) for both HFmrEF and HFpEF. These therapies include diuretics as needed, sodium glucose cotransporter 2 inhibitors (SGLT2i), renin angiotensin aldosterone system inhibitors (ARNi/ARB/ACEi), mineralocorticoid antagonists (MRA), and beta-blockers (BB). The purpose of this study was to determine the impact of a standardized order set on GDMT optimization in patients with heart failure and an ejection fraction > 41%.

METHODOLOGY: This retrospective cohort study examined adult patients hospitalized with a heart failure diagnosis with an ejection fraction (EF) ≥ 41% and NYHA class II-IV receiving medical treatment pre and post orderset implementation following publication of the 2022 heart failure guidelines. The primary objective was to compare the percentage of patients fully optimized on GDMT before and after orderset implementation. Full optimization is defined as patients who were started on all clinically appropriate agents for HFmrEF/HFpEF prior to discharge.

RESULTS: There were 372 patients included in the pre-orderset group. A total of 41 patients had a diagnosis of HFmrEF and 330 had HFpEF. At admission, 43.3% were receiving an ACEi/ARB/ARNI, 63.4% a beta blocker (BB), 9.9% a mineralocorticoid receptor antagonist (MRA), and 7.5% were on a sodium glucose co-transporter-2 inhibitor (SGLT2i). Overall, 32 patients (8.6%) received appropriate therapy at discharge with 25 patients in the HFmrEF group, and 235 patients in the HFpEF group qualifying for additional therapy. There were 244 patients included in the post-orderset group. A total of 32 patients had a diagnosis of HFmrEF and 212 had HFpEF. At admission, 43.9% were receiving an ACEi/ARB/ARNI, 60.2% a BB, 7.4% a MRA, and 7.4% were on a SGLT2i. There were 23 patients (9.4%) receiving appropriate therapy at discharge with opportunity for further optimization in 26 patients with HFmrEF, and 136 patients with HFpEF. The orderset was utilized by providers on 20 patients (8.2%).

CONCLUSION: Appropriate GDMT at discharge increased by 0.8% after implementation of an orderset, however, opportunities for further optimization of therapy remain.

11:20am – 11:40am M **IMPACT OF OPTIMIZATION OF AUTOMATED DISPENSING CABINETS IN A REGIONAL LEVEL II TRAUMA CENTER** Olympia 2

Moderators: Aayush patel
Presenters: Linda Lee
Evaluators: Brittany NeSmith

TITLE: IMPACT OF OPTIMIZATION OF AUTOMATED DISPENSING CABINETS IN A REGIONAL LEVEL II TRAUMA CENTER

AUTHORS: Linda Lee, T.J Henderson, Tori Hunt, Allyson Ritter, Jan Parrish

OBJECTIVE: The purpose of this study is to evaluate the effectiveness of various optimization methods to improve KPIs for automated dispensing cabinets using KPI reports as guidance.

SELF ASSESSMENT QUESTION: Which of the following are the benefits of optimizing an automated dispensing cabinet system?

BACKGROUND: Despite the broad utilization of automated dispensing cabinets (ADCs), many institutions fail to appropriately implement and optimize ADCs during the initial transition period in a timely manner. Several studies have been done to evaluate which strategies are the most impactful to optimize key performance indicators (KPIs) like vend-to-fill ratios and stock out percentages. However, the results of these studies have been conflicting and are not consistent, providing emphasis on the importance of testing multiple optimization approaches to determine what is the best practice for each institution.

METHODOLOGY: 53 ADCs were evaluated using four periods: a retrospective period, a one-month washout period, and two separate three-month post-optimization periods. The vend-to-fill ratios and stock-out percentages were optimized by adjusting periodic automatic replacement (PAR) levels to ensure that the usage of the medication was appropriate to the stock provided. The number of medications without vend for more than 90 days was evaluated by checking if the medication can be removed from the machine by determining if the medication is time-critical or on the override list. Other optimization methods include monitoring for expiring medications and checking for active orders in cart-fill for medications that can be loaded in the ADCs based on the increasing use of that medication. These optimization methods were utilized daily, monthly, or quarterly, which were predetermined by the KPI reports, and were adjusted based on the efficacy of each method. The primary outcome was to assess the differences in pre- and post-optimization vend-to-fill ratios. The secondary outcomes were to assess the differences in pre- and post-optimization stock-out percentages, the number of medications without vend for more than 90 days, financial implications, and technician satisfaction. The financial implications were calculated by quantifying the cost of expired medications. Technician satisfaction was evaluated using a pre- and post-survey.

RESULTS: In progress.
CONCLUSIONS: In progress.

11:20am – 11:40am O **Comparing Two-Hour, Twice-Daily Bolus to Continuous Infusion Intravenous Tacrolimus for Graft-Versus-Host Disease Prophylaxis in Allogeneic Hematopoietic Stem Cell Transplant**

Moderators: Holly Clark Athena C

Presenters: Sean Wilson

Evaluators: Robin Fischer

TITLE: Comparing Two-Hour, Twice-Daily Bolus to Continuous Infusion Intravenous Tacrolimus for Graft-Versus-Host Disease Prophylaxis in Allogeneic Hematopoietic Stem Cell Transplant

AUTHORS: Sean Wilson, Karin Abernathy, Rachel Matthews, Darby Siler, Laura Beth Parsons

OBJECTIVE: List important considerations for intravenous tacrolimus in graft-versus-host disease prophylaxis

SELF ASSESSMENT QUESTION: Which of the following constitute considerations when administering IV tacrolimus?

BACKGROUND: Intravenous tacrolimus is routinely used in combination with other immunosuppressive agents to prevent graft-versus-host disease (GVHD) following allogenic hematopoietic stem cell transplant (HSCT). Continuous intravenous infusion (CIV) tacrolimus presents logistical challenges including infusion pump settings, line incompatibilities, and reduced lumen access. Limited studies demonstrate twice-daily bolus IV tacrolimus to be an acceptable alternative. Therefore, Tristar Centennial Medical Center transitioned from CIV tacrolimus for adult HSCT recipients to two-hour, twice daily (BID) bolus dosing in 2021. This study compares the efficacy and safety of BID bolus to CIV tacrolimus in adult allogeneic HSCT recipients.

RESULTS: IV tacrolimus was utilized when patients were unable to tolerate oral tacrolimus (ex: mucositis or absorption issues). A total of 77 patients with IV tacrolimus orders were identified, after exclusion, there were 35 patients in the CIV cohort and 25 patients in the BID cohort. No significant difference in incidence of aGVHD by D +100 was found between CIV and BID infusions (51.4% vs 52%, respectively; p=1). Grade II-IV aGVHD were similar between CIV and BID cohorts (31.4% vs 44%, respectively; p = 0.42). Additionally, 75.2% of the BID cohort's IV tacrolimus were within 5-15 ng/mL compared to 84.5% that received CIV (p=0.41). Grade $\geq$3 nephrotoxicity occurred in 12% of BID patients (p=0.08) and 16% developed hypertension (p=1). There was also no difference in incidence of cGVHD diagnosis between the two cohorts (60%, CIV vs 48%, BID; p= 0.43).

CONCLUSION: The efficacy and safety evaluation of CIV and BID administration of IV tacrolimus compares to historical findings. Patients in the BID cohort that developed grade $\geq$3 nephrotoxicity, either had renal impairment at baseline or were on concomitant nephrotoxic medications. In addition to a comparable efficacy and safety profiles, BID implementation is also associated with improved operational feasibility (e.g. clear dose and instructions on electronic medical record) and potentially fewer medication errors. These results determine that BID administration strategy is a reasonable alternative to CIV in prevention of GVHD in allogeneic HSCT recipients.

11:20am – 11:40am 1 **Impact of Sulfamethoxazole/Trimethoprim for Pneumocystis jirovecii Pneumonia Prophylaxis on Bacteriuria Incidence in Kidney Transplant Recipients** Parthenon 1

Moderators: Jere May
Presenters: Gabrielle Bachner
Evaluators: John Carr

TITLE: Impact of Sulfamethoxazole/Trimethoprim for Pneumocystis jirovecii Pneumonia Prophylaxis on Bacteriuria Incidence in Kidney Transplant Recipients

AUTHORS: Gabrielle Bachner, Rachel Stephens-Utne, Pam Ku, Melissa Laub, Jennifer Waller

OBJECTIVE: N/A

SELF ASSESSMENT QUESTION: N/A

BACKGROUND: *Pneumocystis jirovecii* pneumonia (PCP) prophylaxis is recommended after kidney transplant. The preferred agent for prophylaxis is sulfamethoxazole/trimethoprim (SMX/TMP), which also provides coverage against uropathogens. Bacteriuria is more likely to progress to a urinary tract infection (UTI) in kidney transplant recipients and the American Society of Transplant (AST) guidelines recommend considering treatment of asymptomatic bacteriuria in the first two months post-transplant. UTI prevalence in kidney transplant recipients ranges from 23% to 75% and could potentially progress to sepsis and bacteremia. It is unclear in the AST Guidelines if patients not receiving SMX/TMP should receive additional UTI prophylaxis. At Augusta University Medical Center Transplant Clinic, single strength (400mg/80mg) SMX/TMP is the preferred agent for PCP prophylaxis for the first three months post-transplant. Patients who are prescribed alternate therapy for PCP prophylaxis do not receive additional UTI prophylaxis. The purpose of this study is to determine the incidence of bacteriuria in kidney transplant recipients who received SMX/TMP prophylaxis compared to recipients who did not receive SMX/TMP.

METHODS: This was a single-center, retrospective chart review of adult patients who received a kidney or kidney-pancreas transplant between January 1, 2017 and September 30, 2021 with three months of follow-up. Patients with graft loss or death in the first three months post-transplant, discharged with a foley catheter, on urinary tract infection prophylaxis prior to transplant, became pregnant or were lost to follow up were excluded. Secondary outcomes of this study included causative organisms of bacteriuria, organism sensitivity to SMX/TMP, and rates of UTI-related hospitalizations within the first three months. The proportion having bacteriuria in the not receiving SMX/TMP group was assumed to be 0.45 and in the SMX/TMP group it was assumed to be 0.20, which required a total sample size of 224 patients to meet power.

RESULTS: A total of 267 patients were included. Briefly, average age was 50.2 years, 57% were male, and 67% were African American. The most common induction agent used was thymoglobulin and the most common indications for transplant were hypertension and diabetes mellitus. 61 patients (27.2%) in the SMX/TMP group developed bacteriuria and 16 patients (38.1%) in the not receiving SMX/TMP group developed bacteriuria (p=0.15). The most common causative organism of bacteriuria was klebsiella species, which made up 29 (18.6%) of the total cultures (N=156). In the SMX/TMP group, 54 (47.8%) of the total organisms identified were resistant to SMX/TMP whereas in the not receiving SMX/TMP group, only 7 (16.3%) of the total organisms identified were resistant to SMX/TMP. UTI related hospitalizations occurred in 5 patients (2.2%) in the SMX/TMP group and occurred in 6 patients (14.3%) in the not receiving SMX/TMP group (p = <0.001).

CONCLUSION: There was no difference in the incidence of bacteriuria in kidney transplant recipients who were receiving SMX/TMP and who were not receiving SMX/TMP. There was a higher rate of UTI related hospitalizations in the no SMX/TMP group that was statistically significant. The proportion having bacteriuria in the non-SMX/TMP group was assumed to be 0.45 and in the SMX/TMP group it was assumed to be 0.20, which required a total sample size of 224 patients to meet power.

11:40am – 12:00pm **Empty** Parthenon 2

11:40am – 12:00pm **Empty** Olympia 2
Moderators: Aayush patel
Evaluators: Brittany NeSmith

11:40am – 12:00pm **Empty** Olympia 1
Moderators: Lindsey Pearsall
Evaluators: Naomi Yates

11:40am – 12:00pm A **Title: Evaluation of Longitudinal Advanced Pharmacy Practice Experience Block Programs on Student and Program Outcomes** Athena I

Moderators: Matthew McAllister

Presenters: Cassidy Kemp

Evaluators: Deborah Hobbs

TITLE: Title: Evaluation of Longitudinal Advanced Pharmacy Practice Experience Block Programs on Student and Program Outcomes

AUTHORS: Cassidy Kemp, Brandon Bookstaver, Morgan Deal, Johny Nguyen, Abigail Bouknight

OBJECTIVE:

SELF ASSESSMENT QUESTION:

BACKGROUND: A longitudinal model for completion of more than one advanced pharmacy practice experience (APPE) within a single health-system or community practice setting was first described in 2011. Longitudinal models, also called “block” placements, are typically sequential APPEs, can include core acute care, health-system, and ambulatory care, completed at a single health care system. While several studies have reviewed the general student and program benefits of a longitudinal APPE program, there is limited literature on the analysis of all existing programs as well as additional program impact on program match rate or preceptor development.

METHODOLOGY: A retrospective cohort review of longitudinal APPE (LAPPE) block programs from May 2020-May 2022 was conducted. Public directories and research forums were accessed for contact list of experiential offices and existing longitudinal APPE programs. Experiential offices of colleges/schools of pharmacy were contacted via email to obtain information on existing programs and existing student outcomes such as residency match rate and careers after graduation. A two- week follow-up email and four-week follow-up phone call was also issued if no response was obtained. Institutions (e.g. health systems) with longitudinal APPE block programs will be contacted via email to complete a RedCap® survey requesting student and program specific outcomes. This included residency match rate of interns, careers following APPE program completion, and program internal retainment of interns as residents and other roles following graduation. Data from email and RedCap® survey responses will be assessed through descriptive analysis.

RESULTS: As of March 1, 2023, 118 longitudinal APPE programs were identified. The following results are based on responses from experiential offices and LAPPE programs. Rotations for the programs included acute care (59/71, 83%), advanced health-system (58/71, 81.7%), and ambulatory care (49/71, 69%). 25/30 programs offered acute care elective rotations, and 18/18 (100%) programs offered a research experience. 25/28 (89.3%) programs had a pharmacy residency program at their institution. In 2020-2021 and 2021-2022 respectively, the proportion of programs who had internal retention from at least one LAPPE student to PGY1 Pharmacy Resident was 12/25 (48%) and 17/28 (60.7%). The proportion of programs who had internal retention from at least one LAPPE student to pharmacist in non-resident position was 4/25 (16%) and 4/28 (14.3%). Approximately, 3 out of every 4 LAPPE students went on to complete a PGY1 pharmacy resident post-graduation, 1 out of every PGY1 resident positions were filled by that institutions LAPPE students, and 1.5 out of every 4 PGY1 resident positions were filled by students who completed any IPPE/APPEs at that institution.

CONCLUSIONS: LAPPE programs across the country varied based on duration, experiences, and requirements. Most students who completed a LAPPE program went on to complete PGY1 residency. Approximately 1 in 4 PGY1 resident positions were filled by internal LAPPE students, while less students remained internally in a non-resident positions.

11:40am – 12:00pm C **Impact of Population Management Utilization on Heart Failure Outcomes in a High-Risk Veteran Population** Athena D

Moderators: Dawnna Metcalfe

Presenters: Victoria Donaldson

Evaluators: Christopher Whitman

TITLE: Impact of Population Management Utilization on Heart Failure Outcomes in a High-Risk Veteran Population

AUTHORS: Victoria Donaldson; Mary Martin McGill

BACKGROUND: Despite implementation of strategies to reduce heart failure (HF) admissions at Birmingham VA Health Care System (BVAHCS) including follow up with a Clinical Pharmacist Practitioner (CPP), readmission rates remain high. As of the most recent quarter of 2022 (Q4), BVAHCS had a HF readmission rate of 16%, a higher percentage compared to other similar VA facilities within the same region (VISN-7). The purpose of this project is to evaluate the impact of early intervention and close follow-up on admission and readmission rates in a high-risk HF population identified through a nationally published dashboard.

METHODOLOGY: VA heart failure dashboards will be used to identify BVAHCS veterans with a documented diagnosis of heart failure (regardless of ejection fraction) who have a calculated hospital risk of 20% or higher or 3 or more hospital admissions for HF within the past 12 months. For the purpose of this project, patients that are already followed by the Clinical Pharmacist Practitioner in BVAHCS Cardiology Clinic or those that are followed by a non-VA cardiologist will be excluded, as well as patients that are on hospice/palliative care or those that are residents of a long-term care or skilled nursing facility. Patients that meet inclusion criteria will be contacted by phone for HF education, assessment of symptoms and compliance, and for arrangement of follow-up with the CPP in BVAHCS Cardiology Clinic. After a three-month period, admissions, calculated risk of hospitalization for patients, and overall BVAHCS HF readmission rates will be compared to values prior to intervention.

RESULTS: Utilizing the VA heart failure dashboard, 89 patients were found to meet inclusion criteria with a calculated hospital risk of 20% or higher and/or 3 or more hospital admissions within the past year. Forty-eight patients were excluded, and an attempt was made to contact the remaining 41. Twenty-five patients were successfully contacted by the pharmacy resident, assessed for symptom burden and adherence, and provided HF education. Eight patients accepted continued follow-up with the cardiology CPP at BVAHCS.

In the 3-month period post-education, 4% of patients were hospitalized for HF in the educated high-risk group compared to 25% of the patients that were not successfully reached for education despite meeting inclusion criteria. BVAHCS HF readmission rates before and after the project were 21.7% and 21.3%, respectively.

CONCLUSIONS: Among high-risk heart failure patients identified from a nationally published dashboard, less heart failure admissions within a 3-month period were found in patients educated by a pharmacist compared to a similar high-risk population. Overall readmission rates for the facility were similar between the fiscal year quarters before and after this project.

11:40am – 12:00pm R **EFFECTS OF THE ADDITION OF TRANEXAMIC ACID TO THE MASSIVE TRANSFUSION PROTOCOL** Athena G

Moderators: Tracey Bastian
Presenters: Ashlee Milam
Evaluators: Erik Turgeon

TITLE: EFFECTS OF THE ADDITION OF TRANEXAMIC ACID TO THE MASSIVE TRANSFUSION PROTOCOL

AUTHORS: Ashlee Milam, Jacob Kaufman, Lauren Wright, Blair Nist, John Mark Vermillion

OBJECTIVE: To evaluate the impact tranexamic acid has on outcomes during massive transfusions in trauma patients.

SELF ASSESSMENT QUESTION: T/F: Both tranexamic acid and calcium use improved post-protocol revision.

BACKGROUND: Tranexamic acid has been shown to reduce mortality in trauma patients in several large trials. Because of these results and the conditional recommendation for its use in the 2017 update of the Eastern Association for the Surgery of Trauma guidelines, TXA, along with calcium, was incorporated into the massive transfusion protocol for trauma patients at this Level II trauma center and regional referral center located in central Alabama.

METHODS: This single-center, IRB-approved retrospective study from May 1, 2021 to January 31, 2023 was conducted via chart review on adult patients (aged 19 or older) who presented to the 75-bed emergency department of a Level 2 trauma center secondary to trauma requiring activation of the institution’s massive transfusion protocol. The primary outcome was the number of eligible patients who received tranexamic acid prior to protocol revision compared to post-protocol revision. Secondary outcomes included appropriate blood product to calcium ratio prior to and following protocol revision; all-cause mortality, thromboembolic events within 72 hours, blood products transfused (during protocol, at 24 hours, and at 72 hours), ICU and hospital lengths of stay in the TXA group versus the no-TXA group.

RESULTS: The primary outcome of the percentage of adult trauma patients who were eligible for and received TXA prior to the protocol revision compared with post-protocol improved from 59.5% (22 of 37 patients) to 75% (33 of 44 patients), p=0.158. The patients who received the appropriate blood product to calcium ratio also improved from 21.6% pre-revision to 43.2% post-revision, p=0.058. All-cause mortality was 18.3% (22 of the 59 patients) in the TXA group and 20.8% (25 of the 61 patients) in the no-TXA group, p=0.712. For the secondary analysis of patient factors on mortality, TXA had a favorable impact on mortality in patients with penetrating trauma (RR 0.769, 95% CI 0.38-1.557; p=0.466), mild (13-15) and severe (3-8) Glasgow coma scale scores (RR 0.426, 95% CI 0.097-1.865; p=0.257) (RR 0.841, 95% CI 0.561-1.261; p=0.402), respectively, and patients presenting with an SBP of 89 mmHg or less (RR 0.206, 95% CI 0.03-1.401; p=0.106 for SBP ≤75 mmHg) (RR 0.833, 95% CI 0.318-2.184; p=0.711 for SBP 75-89 mmHg). TXA was associated with worse outcomes for patients who presented with an SBP of 90 mmHg (RR 1.203, 95% CI 0.685-2.113; p=0.52) and for patients with blunt trauma (RR 1.003, 95% CI 0.551-1.826; p=0.993).

CONCLUSIONS: Both the number of eligible patients receiving TXA and the number of patients receiving appropriate blood product to calcium ratios improved following the revision to the massive transfusion protocol. Additionally, TXA was associated with a reduction in overall mortality and for patients with penetrating trauma and for patients presenting with a systolic blood pressure less than 90 mmHg in secondary analysis. There was no difference in the rate of adverse events between the patients who received TXA and those who did not. Finally, the use of TXA did not reduce the number of blood products transfused or the lengths of stay. Future considerations to assess in this project include to compare outcomes for different dosing strategies of TXA (bolus with infusion versus full dose bolus), to evaluate for differences in outcomes in patients who receive appropriate blood product to calcium ratios versus those who do not, and to assess impact of blood component product ratios on outcomes.

11:40am – 12:00pm R **Vecuronium Continuous Infusion Versus Intermittent Push in the Management of Adults with Acute Respiratory Distress Syndrome** Athena H

Moderators: April Quidley

Presenters: Tyler Mitchell

Evaluators: Vince Buttrick

TITLE: Vecuronium Continuous Infusion Versus Intermittent Push in the Management of Adults with Acute Respiratory Distress Syndrome

AUTHORS: Tyler Mitchell, Anna-Kathryn Priest, J. Luke Britton, Adam R. Harnden

OBJECTIVE: Identify the difference between time on mechanical ventilation when vecuronium is administered as a continuous infusion or an intermittent push in patients with acute respiratory distress syndrome (ARDS).

SELF ASSESSMENT QUESTION: When comparing time on mechanical ventilation, vecuronium intermittent pushes were found to be _____ to vecuronium continuous infusion.

BACKGROUND: Acute respiratory distress syndrome (ARDS) is a life-threatening condition with a mortality rate as high as 60%. Early use of continuous neuromuscular blocking agents may reduce patient-ventilator dyssynchrony and work of breathing. The purpose of this study was to compare time on mechanical ventilation when vecuronium is administered as a continuous infusion or an intermittent push in patients with ARDS.

METHODOLOGY: This study was a retrospective chart review of patients admitted to Jackson Hospital, a 344-bed level 3 trauma center in Montgomery, Alabama, from January 1st 2020 to December 31st 2021. Patients were included if aged 19 years or older requiring endotracheal mechanical ventilation for ARDS receiving vecuronium as a continuous infusion or intermittent push. Key exclusion criteria of the study were pregnancy, history of or active lung cancer, long-term oxygen therapy or mechanical ventilation at home, vecuronium administered during rapid sequence intubation only, or receiving vecuronium for a surgical procedure only. Patients were assigned to a group based on receipt of at least 2 hours of vecuronium continuous infusion or at least one intermittent vecuronium push.

This was a non-inferiority study with the primary outcome being time on mechanical ventilation. The primary outcome was presented as continuous data assessed via t-test. Delta for noninferiority was set at 12 hours above the mean of the vecuronium continuous infusion group. A post-hoc analysis of the data was assessed via Mann Whitney U test to reduce the impact of outliers on the data analysis.

RESULTS: The vecuronium continuous infusion group included 133 patients, while the vecuronium intermittent push group included 89 patients. The vecuronium intermittent push group mean time on mechanical ventilation was 385.1 ± 306.4 hours versus 389.1 ± 328.7 hours for the vecuronium continuous infusion group (95% confidence interval 320.5-449.6). Delta was set at 401.1 hours. The vecuronium intermittent push group had a lower mean time on mechanical ventilation than the vecuronium continuous infusion group, however the 95% confidence interval included the delta value in its range, so the vecuronium intermittent push group failed to meet noninferiority.

A post-hoc analysis of the data using the Mann Whitney U test was performed to evaluate for a statistically significant difference between the two groups. This analysis produced a z-score of -0.035, a U statistic of 5902, and a p-value of 0.972, which would indicate no difference between the groups.

CONCLUSIONS: Vecuronium intermittent pushes failed to meet noninferiority to vecuronium continuous infusion when comparing time on mechanical ventilation in patients with ARDS. Follow-up Mann Whitney U test demonstrated no significant difference between treatment groups.

11:40am – 12:00pm G **Survey of Pharmacy Students to Assess Attitudes towards a Career in Older Adult Care**
Parthenon 1

Moderators: Jere May
Presenters: Angela Tang
Evaluators: John Carr

TITLE: Survey of Pharmacy Students to Assess Attitudes towards a Career in Older Adult Care

AUTHORS: Angela Tang, Emma Williams, Shannon Rice, Tasha Woodall, Scott Davis, Mollie Ashe Scott

OBJECTIVE: List the top factors that either encourage or discourage student pharmacists to pursue a career in geriatrics.

SELF ASSESSMENT QUESTION: Which of the following are major factors that discourage students from a career in older adult care?
A. Inadequate exposure to geriatrics in school curricula
B. Past positive experiences with older adults
C. Emotional impact of death and end-of-life care
D. Perceived need for geriatrics-trained providers

BACKGROUND: The older adult population in the United States is growing at a faster rate than the geriatrics-trained healthcare workforce. Understanding what drives interest or lack of interest in geriatrics among health profession trainees is a critical first step in developing a strategy to bolster the geriatric workforce. The primary objective of this study was to determine the top factors that increase or decrease pharmacy student interest in pursuing a career in geriatrics.

METHODOLOGY: A 23-item survey was administered to 611 first- through fourth-year pharmacy students. Participants were recruited from two public schools of pharmacy in the United States from February through September 2022. The first institution distributed the survey across two campuses (main and satellite), and the second institution distributed the survey on a single campus. Surveys were administered during class or distributed via email and websites for required courses. Participation was voluntary and responses were anonymous. Descriptive statistics, Fisher's exact test, independent-samples t-tests, and ANOVA were used to analyze results.

RESULTS: A total of 210 responses were received. Baseline interest in geriatrics varied, with respondents nearly evenly split between somewhat or extremely interested and somewhat or extremely disinterested. Among students with interest in geriatrics, the top three factors driving interest were past positive experiences with older adults (with 50% of students indicating this resonated most with their interest), interest in deprescribing (47%), and perceived need for geriatrics-trained providers (43%). Among students who were not interested in geriatrics, the top three factors discouraging interest were emotional impact of death and end-of-life care (49%), disinterest in geriatric syndromes (45%), and perception of inadequate exposure to geriatrics within the curriculum (25%). One of the most notable factors encouraging interest was having a past positive experience with an older adult. Sixty-seven percent of students who reported a past positive interaction were interested in geriatrics, compared to 21% of those not reporting one ($p<0.001$). One top factor that students ranked as discouraging in a question comparing multiple factors was the perception of having inadequate exposure to geriatrics within the didactic and experiential curricula. However, when statistical analysis was conducted on questions specific to curricular exposure in the interested and uninterested groups, it was not found to be a significant factor affecting interest ($p=0.49$ for experiential and $p=0.42$ for didactic curriculum).
Interestingly, there were several similarities among all students, regardless of their baseline interest. For example, 97% percent of interested students and 99% percent of uninterested students agreed that there will be an increased need for health care professionals trained in geriatric care. Both groups also generally agreed with the statement that older adults are frail, fragile, and/or dependent. However, those who were not interested were more likely to strongly agree with this statement ($p = 0.011$). Lastly, students of all interest levels agreed that caring for older adults was emotionally challenging. There was no significant difference in overall level of agreement with the statement that "caring for older adults can be challenging as the patient gets closer to the end of their life." However, interested students were more likely to indicate that their comfort level with end-of-life discussions encouraged them to work with older adults, compared to uninterested students who classified their discomfort with this topic as a discouraging factor ($p<0.001$).
Conclusions: In order to ensure an adequately-trained geriatrics workforce for the aging population, it is crucial to intensify efforts to encourage health professions students to pursue careers in geriatric care. Creating

opportunities to increase interest and addressing factors that discourage interest may augment the pipeline of students wishing to pursue a career in older adult care.

11:40am – 12:00pm | **Assessment Of Preoperative Antibiotic Use in Colorectal Surgery Patients and Interventions to Improve Adherence** Athena A

Moderators: Erika McClain
Presenters: Raymond Patterson
Evaluators: Katie Coffee

TITLE: Assessment Of Preoperative Antibiotic Use in Colorectal Surgery Patients and Interventions to Improve Adherence

AUTHORS: Raymond Patterson, Joy Peterson, Anna Parker

OBJECTIVE: . This study aimed to decrease the number of colorectal surgical site infections by evaluating the use of antibiotics with enough advance time to intervene and ensure antibiotic orders align with current national and institutional guidelines.

SELF ASSESSMENT QUESTION: What are the common organisms that require antibiotic coverage in colorectal surgery prophylaxis and what are the main antibiotics recommended for treatment?

BACKGROUND: Preoperative antibiotics are routinely used to prevent infectious complications of surgical procedures, and as part of routine care, pharmacists review and verify antibiotic medication orders before administration. While this does occur, several confounding factors preclude proper antibiotic coverage in this patient population. Barriers preventing proper antibiotic use include providers ordering antibiotics directly before incision, lack of any antibiotic orders before incision, or an incomplete review of antibiotics by the verifying pharmacist. The in-house infection prevention team highlighted colorectal surgery infection rates and proper antibiotic ordering as a quality improvement project. This study aimed to decrease the number of colorectal surgical site infections by evaluating the use of antibiotics with enough advance time to intervene and ensure antibiotic orders align with current national and institutional guidelines.

METHODOLOGY: This study was a quasi-experimental design with both pre-and-concurrent controls. Eligible participants are those > 18 years old who had a colorectal surgery performed at Wellstar Kennestone Hospital scheduled at least 24 hours in advance and stratified by International Classification of Diseases (ICD) code in our electronic medical record. The study included a retrospective chart review followed by a prospective active intervention period where pharmacists evaluated scheduled colorectal surgeries in the hospital's main operating room (OR) daily and provided intervention if needed. This prospective review occurred bi-weekly for a total of eight weeks. The primary endpoint evaluated the percent change in proper preoperative antibiotic use after implementing pharmacist surveillance and active intervention. Secondary endpoints were a comparison of surgical site infection in patients without active infection at the time of surgery and an evaluation of safety measures, including in-hospital mortality rate, length of hospital stay, and 30-day readmission rate.

RESULTS: Not surprisingly, when pharmacists were dedicated to actively reviewing and intervening on antibiotic orders before surgery, the risk of incorrect antibiotic use decreased. Fifty percent of patients reviewed by pharmacy required intervention, the most common being the addition of antibiotics to preoperative orders. Incorrect antibiotic use was largely influenced by the administration of antibiotics too early. Specifically, the incorrect timing of metronidazole before surgery accounted for 60% of incorrect timings in the prospective pharmacist review (PPR) group and 52% in the retrospective group. While pharmacists do not have the ability to guarantee proper administration, education on correct timing was provided to employees with pharmacy assistance. No patients in the retrospective or PPR groups experienced in-hospital mortality. The average duration of hospitalization was 7 days in the retrospective group and 5 days in the PPR and prospective control group. In the PPR group, 2 patients required readmittance compared to 4 patients in the retrospective portion

CONCLUSIONS: While this review may not have shown statistically significant differences in our study, pharmacist review of preoperative antibiotics led to a trend in improved antibiotic prescribing, which may result in a reduction of SSI. From the results of this study, education on the correct timing of preoperative antibiotics would have the largest impact on improving preoperative antibiotic use in our colorectal surgery patients.

11:40am – 12:00pm | **Days of Intravenous Vancomycin Therapy in Patients with Pneumonia after Negative Methicillin-Resistant Staphylococcus Aureus Nasal Screen During Inpatient Rehabilitation** Athena B

Moderators: Michael Maccia

Presenters: Karishma Patel

Evaluators: Kelly Gamble

TITLE: Days of Intravenous Vancomycin Therapy in Patients with Pneumonia after Negative Methicillin-Resistant Staphylococcus Aureus Nasal Screen During Inpatient Rehabilitation

AUTHORS: Karishma Patel, Lauren Wilcox, Virginia Montgomery, Raeda Anderson, Carly Warner

OBJECTIVE: At the conclusion of my presentation, the participant will be able to identify the unnecessary days of vancomycin therapy following a negative MRSA nasal screen to evaluate the benefits of a pharmacist-led protocol in rehabilitation hospitals.

SELF ASSESSMENT QUESTION: What outcomes have pharmacist-driven nasal screen protocols shown?

BACKGROUND: Antimicrobial stewardship tools such as Methicillin-resistant Staphylococcus aureus (MRSA) nasal screening have been utilized to avoid empiric MRSA therapy. Although the impact of pharmacist-driven MRSA nasal protocols on antibiotic duration reduction and adverse outcomes in pneumonia patients have been assessed, the impact of such protocols in the rehabilitation setting are not established. The aim of this study is to assess vancomycin days of therapy for pneumonia after a negative MRSA nasal screen.

METHODOLOGY: This study is a retrospective, single-center, chart review of 73 inpatient rehabilitation patients treated for suspected pneumonia between July 1st, 2019 through July 31st, 2022. Patients were excluded if they were on anti-MRSA therapy at the time of MRSA nasal screen collection, had co-infections during the time of their pneumonia infection, or were pregnant. The primary objective is to assess the days of intravenous (IV) vancomycin therapy after negative MRSA nasal screens. Secondary objectives include evaluating the length of time between MRSA nasal screens to initiation of vancomycin therapy and assessing the incidence of negative MRSA nasal screens and subsequent positive respiratory cultures for MRSA.

RESULTS: A total of 73 patients received a grand total of 361 days of potentially avoidable empiric vancomycin therapy, with of the most common duration being 3 days of therapy (range 1-20). While all patients were initiated on vancomycin therapy after MRSA nasal specimen collection, 73% of patients received therapy after the results of MRSA nasal screens were finalized. The average duration from MRSA nasal screen result to initiation of vancomycin was 18 days. Of the 43 patients who had a respiratory sputum culture following the initial MRSA nasal screen, a single patient resulted as positive for MRSA after 35 days. There was a total of 110 pharmacist-ordered labs in our study with most patients ordered 1 trough level while on vancomycin. Vancomycin infusion reaction and anaphylaxis were not observed in any cases, but acute kidney injury was noted in 23% of participants.

CONCLUSIONS: The findings of this study revealed a total of 361 days of potentially avoidable empiric vancomycin therapy following a negative MRSA nasal screen. MRSA nasal screens have the potential to reduce days of vancomycin therapy and result in decreased lab orders, adverse effects, and vancomycin administration time in the rehabilitation hospital setting with pharmacists leading these efforts

11:40am – 12:00pm L **Dose Reduction of Long-acting Insulin on Hospital Admission and Effect on Early Hospital Glycemic Outcomes** Athena J

Moderators: Niki Pitts

Presenters: Robin Tumlinson

Evaluators: Kim Bowers

TITLE: Dose Reduction of Long-acting Insulin on Hospital Admission and Effect on Early Hospital Glycemic Outcomes

AUTHORS: Robin Tumlinson, Skyler Brown, Sarah Hardeman, J.R. Yates

OBJECTIVE: Identify patient specific factors which may impact the decision to adjust home long-acting insulin doses.

SELF ASSESSMENT QUESTION: Which of the following patient specific factors may impact the decision to adjust home long-acting insulin doses on hospital admission?

BACKGROUND: Insulin remains the backbone of antihyperglycemic management in the inpatient setting. However, there is little specific guidance for optimal initial dosing regimens on hospital admission, particularly for patients who are on long-acting insulin at home. Upon admission, there are fewer blood glucose (BG) values available to guide therapy and a multitude of rapidly changing factors that may impact BG. This retrospective chart review of patients admitted to an acute care (non-intensive care unit) floor at an academic medical center was designed to assess the effect of initial dose reduction of home long-acting insulin on glycemic outcomes in patients recently admitted to the hospital.

METHODOLOGY: Patients on home long-acting insulin (glargine, detemir, or degludec) were included, and blood glucose readings were followed for the first 24 hours after receipt of long-acting insulin or for 36 hours after admission in those without an initial dose. The primary endpoint was the percent of patients with optimal glycemic control (defined as mean BG 71-179 mg/dL) without hypoglycemia (defined as BG< 70 mg/dL) in patients with a dose reduction compared to those receiving their home dose of long-acting insulin. Secondary endpoints were number of hypoglycemic events and mean BG 71-179 mg/dL within the study period. The primary endpoint was assessed by chi-square testing and secondary endpoints were assessed by chi-square or Mann-Whitney U-test using SPSS software. A binomial logistic regression was run to determine if any prespecified data points such as chronic kidney disease, NPO status, or steroid use were confounders or potential predictors.

RESULTS: The primary outcome of target BG without hypoglycemia occurred in 37 out of 76 patients in the dose reduction group and 20 out of 65 patients in the group receiving their full home dose with a P-value of 0.031. The number of hypoglycemic episodes (P=0.744) and mean BG within goal 71-179mg/dL (P=0.091) were not statistically significant. A binomial logistic regression was performed on prespecified criteria to determine if any confounders could be determined, but none were statistically significant.

CONCLUSIONS: Reducing the dose of home long-acting insulin on hospital admission minimized hypoglycemia while maintaining glycemic targets. Secondary outcomes were not statistically significant, but this study was not powered to evaluate these outcomes. Additional studies of a larger scope and scale are needed to determine the ideal percent reduction and predictive characteristics which could be used to create a guide for long-acting insulin dose adjustment based on patient specific factors.

11:40am – 12:00pm O **Real-world outcomes of olaparib plus abiraterone in prostate cancer independent of homologous recombination repair status** Athena C

Moderators: Holly Clark

Presenters: David Emaikwu

Evaluators: Robin Fischer

TITLE: Real-world outcomes of olaparib plus abiraterone in prostate cancer independent of homologous recombination repair status

AUTHORS: David Emaikwu, Christine Davis, Emily Tiao, Kristian Casem, Yuan Liu, Jacqueline Brown, Aaron Weiss, Stephen Szabo

OBJECTIVE: To report real-world, institutional experience with olaparib and abiraterone in patients with and without homologous recombination repair mutations.

SELF ASSESSMENT QUESTION: Which of the follow is/are the NCCN recommended first line therapy options for individuals who have newly established mCRPC? A.Docetaxel B. Abiraterone plus prednisone C.Abiraterone plus olaparib D.Both A and B E.Both A and C

BACKGROUND: Metastatic castration resistant prostate cancer (mCRPC) is associated with a 40-50% increase in annual mortality rate compared to other stages of prostate cancer. Per the National Comprehensive Cancer Network (NCCN) guidelines, androgen deprivation therapy (ADT) is to be continued in addition to abiraterone plus prednisone, enzalutamide, or docetaxel as first line options in mCRPC. As of May 2020, two poly-ADP ribose polymerase (PARP) inhibitors, olaparib and rucaparib received FDA approval for use in mCRPC patients with confirmed or suspected germline and/or somatic homologous recombination repair (HRR) mutations who were previously treated with androgen receptor directed therapy. Olaparib has also been studied in combination with antiandrogens (i.e. abiraterone, enzalutamide). Both the PROPel and Clark et al trials compared combination olaparib and abiraterone to abiraterone alone in mCRPC patients regardless of HRR mutation status. They concluded that the combination treatment significantly increased patients' radiographic progression-free survival (rPFS) regardless of HRR status. The combination of olaparib and abiraterone has been utilized within the Emory Healthcare system in mCRPC patients regardless of HRR mutations based on these publications. The aim of this study is to assess the efficacy and safety of combination olaparib and abiraterone in a real-world setting.

METHODOLOGY: This study is a single-center, retrospective chart review of patients with mCRPC being treated with combination olaparib and abiraterone from January 1, 2017-Novemeber 30, 2022, at the Winship Cancer Institute of Emory University. All patients at least 18 years old who have received combination therapy with olaparib and abiraterone and are not receiving the combination therapy as part of a clinical trial will be included in the study. Patient demographics, sites of metastases, prostate specific antigen (PSA), testosterone, bone marrow suppression, prior treatment courses, combination start and end dates, radiographic response, gastrointestinal adverse events, edema, dose reductions, and data for any mutations either HRR related or not from next generation sequencing will be collected. The primary endpoint is patients' progression-free survival (PFS) on the combination therapy. Secondary endpoints are safety, overall survival (OS), and length of response. An exploratory endpoint includes analyzing other predictors of response other than HRR status to the combination of olaparib and abiraterone.

RESULTS: Of the 44 patients screened for the study, 13 were included. 8 patients responded to treatment; 4 with full responses (PSA decline > 50% from baseline), and 4 with clinician-assessed response (PSA decline from baseline). Median PFS was 7.6 (3,11.8) months. 3 out of 13 patients continued on combination therapy beyond the study period. Median OS was 15.1 (6.8, 23.3) months, average length of response was 467 and 335 days for idividuals with full response and clincian-assessed response, respectively. 3 patients experiences nausea, vomiting, and diarrhea, 2 experienced constipation, 11 experienced grade 1 thrombocytopenia, 2 patients experienced leukopenia grade 2 or 3, all patients experienced anemia with two patients requiring olaparib dose reduction. 4 patients had HRR mutations and 3 of them responsed to therapy. 5 patients did not have HRR mutations and responded to therapy.

CONCLUSIONS: Combination olaparib and abiraterone extends PFS in individuals with mCRPC with prior treatment, regardless of HRRm status. Given the small sample size, a lack of a comparator group, and the retrospective nature of this study, there is limited generalizability of the study findings. Despite these limitations, this combination may be a viable option in patients who wish to avoid cytotoxic chemotherapy.