Residency Conference of the Rockies
2024 Abstracts
June 12, 2024
Glenwood Springs, CO
Hotel Colorado

Platelet Reaction Unit Testing and the Incident of Recurrent Stroke

Chad Davis; Craig Furnish

University of Colorado Hospital, Aurora, Colorado

Current literature for Platelet Reaction Unit (PRU)-Guided modification of antiplatelet therapy and the relation to rates of recurrent stroke have shown some amount of significant evidence that monitoring and adapting therapy can help prevent further events. Zhang et. al. and Fukuma et al. both have real-world prospective studies showing significant improvement and/or prevention of recurrent stroke with monitoring. Theoretically, PRU monitoring would better assess the efficacy of antiplatelet therapy and further predict the ability of said therapy to prevent further clotting. Since variability exists in drug metabolism, specifically clopidogrel being a pro-drug, regular PRU testing would eliminate the unknown efficacy of the medication in patients simply based on outcomes alone. This retrospective observational cohort study evaluated patients who presented for stroke, TIA, or neurosurgical intervention between August 2019 and August 20023 and had at least one PRU value assessed. The primary outcome was incidence of recurrent stroke or TIA. Therapeutic PRU was defined as 75 - 190. Demographics, cause of event, known prior events, antiplatelet therapy, PRU values, recurrent events, supra and subtherapeutic values, genomic analysis, and comorbidities were collected for each patient. Univariate comparison of recurrent event or lack thereof was analyzed using a Chi-square test and paired t-test. Additional analysis of secondary outcomes and patient demographic data was performed. Results and conclusions will be presented. IRB approved.

Comparative analysis of alteplase and tenecteplase in acute ischemic stroke treatment: an observational study

Nguyen Nguyen, Monique Gonzales, Tay Kitzke, Nicholas Tranchida, Kathleen Yohannes, Magdelyn Cole, Emily Kersting

Intermountain Health Lutheran Medical Center, Wheat Ridge, Colorado

Although an off-label indication, current literature suggests tenecteplase (TNK) has similar efficacy and safety to alteplase (ALT) for acute ischemic stroke (AIS). The purpose of this study is to evaluate the efficacy and safety of TNK compared to ALT at a community hospital. This study aims to provide insights into the clinical impact of transitioning from ALT to TNK at Intermountain Health - Lutheran Medical Center (LMC), a comprehensive stroke center. This retrospective observational study will analyze patients with AIS who received ALT or TNK at LMC or transferred to LMC from another Intermountain Health institution within Colorado. The electronic medical record was used to identify adult patients who received ALT from September 11, 2022 through September 11, 2023, and those getting TNK since the institution roll-out date of September 12, 2023, until March 11, 2024. The primary outcome evaluates the degree of disability at hospital discharge using the Modified Rankin Score (mRS). The primary safety outcome includes all-cause bleeding events within the first 24 hours of thrombolytic administration. These events include, but are not limited to, symptomatic intracranial hemorrhage (sICH), provider documentation of any bleeding events, events requiring blood transfusion, or the administration of reversal agents such as tranexamic acid (TXA) or cryoprecipitate. Secondary outcomes include door-to-needle time, hospital length of stay, survival to discharge and at 90 days, recanalization rates assessed through the modified Thrombolysis in Cerebral Infarction (mTICI) score in patients who underwent thrombectomy procedures, the level of disability in patients weighing over 100 kg who received the maximum thrombolytic dose, and cost-savings associated with the transition to TNK. Preliminary results are in progress and to be presented. IRB approved.

Impact of pharmacist-led medication education in heart failure patients on 30-day readmission rate, medication knowledge, and patient satisfaction

Steven Sanders; Sandra Blake; Jason Tschan CommonSpirit Health Penrose Hospital, Colorado Springs, Colorado

Heart failure (HF) is a significant public health concern, with high rates of hospital readmissions contributing to the burden on healthcare systems. It is estimated that each year heart failure costs the United States health care system $30.7 billion. Medication non-adherence is a recognized risk factor for heart failure readmissions. This prospective quality improvement initiative investigated the potential impact of pharmacist-led medication education prior to discharge on 30-day hospital readmission rates for 27 acutely decompensated HF patients between December 2023 and March 2024. Patients were included in the project if they were 18 years or older and were admitted due to HF or experienced acute decompensation while in-patient. Patients were excluded from the study if they had severe cognitive impairment, were pregnant or breastfeeding, currently resided in a long-term care or assisted living facility, had a heart transplant or ventricular assist device, or were planned to be discharged to a long-term care facility. Eligible patients received one-on-one medication education from a pharmacy resident before discharge. Medication education included personalized medication plans, dosing instructions, potential side effects, and strategies to address adherence barriers. Patients completed a brief survey after the education service to assess the patient's medication knowledge and satisfaction with the service provided. The following data was collected: patient age, gender, race, ethnicity, HF medication treatment regimen upon admission, left ventricular ejection fraction, admission date, admission diagnosis, heart failure medication regimen upon admission, discharge date, number of medications at discharge, HF medication regimen upon discharge, comorbidities, length of counseling session, readmission date, and readmission diagnosis. A baseline 30-day readmission rate attributed to HF for Penrose Hospital will be determined by Epic® generated report for heart failure admissions between August 2023 and October 2023. Results and conclusions will be presented. IRB approved.

Presentation Categories: Acute Internal Medicine and Cardiology

Assessing the effectiveness of opioid tapering strategies in inpatient spinal cord injury and rehabilitation patients

Michelle Gantt; Sarah Clay

Veterans Affairs Eastern Colorado Healthcare System, Aurora, Colorado

Presentation Category: Pain / Opioids

Chronic pain management in spinal cord injury (SCI) and rehabilitation patients often relies on opioid therapy, raising concerns about long-term efficacy and safety. This study aimed to evaluate the effectiveness of opioid tapering in transitioning inpatient SCI/Rehab patients to reduced opioid dosages post-admission (6-months) in individuals receiving chronic opioid therapy. This quality improvement project is a retrospective observational cohort study that evaluated 12 SCI and rehab inpatients prescribed chronic opioid therapy prior to admission, who underwent opioid tapering while inpatient, between January 2021 and December 2023. Opioid doses (converted to Morphine Milligram Equivalents) prior to admission, at discharge, and 6-months post discharge were collected to evaluate whether doses were maintained, lowered, or increased. Alongside dosage metrics, patient demographics, specifics of tapering strategies employed, inpatient pain scores, occurrence of adverse effects, and utilization of non-opioid pain medications were collected for each patient. This data will be summarized using descriptive statistics. Results and conclusions will be presented. This project is intended solely for operational purposes, with the primary aim being refinement of existing processes and identifying potential avenues for enhancing veteran care. Given this operational focus, IRB approval was deemed unnecessary.

Assessing the interaction of concomitant CYP3A4/P-gp inducers and direct oral anticoagulants

Madalyn Kuhlenberg; Thomas Delate; Lucia Basilio; Sean McNary; Rita Hui; Nathan Clark

Kaiser Permanente Colorado, Aurora, Colorado

Direct oral anticoagulants (DOAC) are widely utilized for the management of non-valvular atrial fibrillation and venous thromboembolism (VTE) due to their effectiveness, lower risk of bleeding, fewer drug-drug interactions (DDI), and reduced therapeutic monitoring compared to warfarin. As DOACs are substrates of CYP3A4 and/or Pg-p enzymes, the absence of therapeutic drug monitoring presents a challenge with concomitant use of CYP3A4 or P-gp inducers due to the potential for increased DOAC metabolic clearance. This DDI may result in sub-therapeutic DOAC levels and an increased risk of thromboembolic events. Unfortunately, the magnitude of this DDI is not well established. The purpose of this real-world, retrospective, longitudinal cohort study was to assess for an association between concomitant use of DOAC and CYP3A4/Pg-p inducers and risk of treatment failure, defined as the composite of ischemic stroke, systemic thromboembolic (S/SE) and VTE events. Patients who were concomitantly receiving a DOAC (apixaban, dabigatran, or rivaroxaban) and a CYP3A4/Pg-p inducer (carbamazepine, phenytoin, phenobarbital, primidone, or possible inducers valproic acid and levetiracetam) were compared to patients who were receiving a DOAC and non-CYP3A4/Pg-p inducer (gabapentin) concomitantly. Adult patients from the Kaiser Permanente Northern California, Southern California, and Colorado regions who had received these medications concomitantly between November 1, 2010 and December 31, 2021 were included. The index date was the date that the potentially interacting/non-interacting medication was initiated. Patients were followed from the index date until the occurrence of an outcome, membership termination, anticoagulation switch/discontinuation, interacting/non-interacting medication discontinuation, or September 30, 2022 – whichever came first. The primary outcome was a composite of S/SE and VTE events. Secondary outcomes included clinically relevant bleeding events and all-cause mortality. Primary outcomes were validated through manual chart review of the electronic health record. All outcomes are reported as events per 100 patient-years and analyzed with non-adjusted log-rank tests and multivariable Cox proportional hazards modeling with adjustment for potential confounders. Results will be presented. IRB approved.

Presenter name: **Marcus Hayner**
Co-investigator names: **Kerri Kraft; Brooke Wobeter; Lynn Flach; Leticia Smith**
Institution name, city and state: **Denver Health, Denver, Colorado**
Abstract Title: **Hepatitis C Virus Management by Clinical Pharmacy Specialist Compared to Provider Driven Care**

Abstract Body:
Hepatitis C Virus (HCV) affects 58 million people worldwide. In the US, there were an estimated 66,700 acute infections with 107,300 newly identified chronic HCV cases reported in 2020. In patients with acute infection, 80-85% do not clear and progress to chronic status. A 2019 multicenter retrospective cohort study analyzed a clinical pharmacist driven model for HCV treatment. Cure rates were comparable to real-world studies with specialists, demonstrating success in pharmacist lead management. The purpose of this retrospective observational cohort study was to assess sustained virologic response rates in patients treated by CPS as compared to provider driven care. We evaluated 126 patients receiving HCV treatment over a six-month period between January 1stthrough July 30th, 2023. Patients were grouped into two cohorts, those managed by the CPS or those managed by provider driven care. Patients were included in the study if they were 18 years or older, had a positive HCV antibody level, and had treatment medication filled during the 6-month window. Data collected included serologic testing for HCV RNA prior to initiation and test of cure, genotype, medication regimen information, follow-up appointments and outreach attempts, and drug-drug interactions (DDI) and adverse events (ADE). Patient population assessed was 26.8% female, with an average age of 52, 67% Caucasian and 70% had Medicaid coverage. The primary outcome of assessing sustained virologic response rates were analyzed using a Chi-square test. There was no statistically significant difference (p= 0.132) between arms. Power was assessed via post-hoc analysis, which was initially met at 75% or 0.75. However, due to patient attrition at 37% of patients failing to test of cure at time of chart review completion, power ultimately was not met. Secondary outcomes included number of outreaches, medication adherence, DDIs and ADEs documented between cohorts. This study reinforces prior clinical findings that pharmacist led HCV management is similar and equally effective to curing HCV as provider-driven care. Final data to be presented. Study IRB approved.

Presentation Category: **Ambulatory Care and Infectious Diseases**

Outcomes of a Neonatal Gentamicin Pharmacy to Dose Program in a Level III NICU

Lauren Steil; Steve Small; Paul Paratore; Mauricio Palau; Megan Turner Denver

Health, Denver, CO

Sepsis and prematurity are the most common causes of neonatal mortality. Timely administration of antibiotics to patients at risk of early onset sepsis can improve outcomes. In 2022, the Denver Health pediatric pharmacy department implemented a neonatal aminoglycoside pharmacy-to-dose program to standardize dosing and monitoring, decrease time to administration, and decrease waste. There is limited data published comparing outcomes of pharmacy led dosing protocols compared to provider led protocols in the neonatal population. This retrospective observational cohort study evaluated 581 neonates up to 60 days old in the Neonatal Intensive Care Unit (NICU) who received intravenous (IV) or intramuscular (IM) gentamicin between January 2020 and December 2023. Two patient cohorts, provider-to-dose (n=361) and pharmacy-to-dose (n=261) gentamicin, were compared. The primary outcome assessed was frequency of acceptable order-to-administration interval, for initial doses. Acceptable time from order to administration was defined as gentamicin being administered to patients within one hour of the medication order being placed. Secondary outcomes include frequency of therapeutic troughs, frequency of initial gentamicin orders with any stop time, and time interval between provider order and final pharmacist verification. Comparison of rates of acceptable time to administration were analyzed using a Chi-square test. Continuous variables were assessed using the Mann Whitney U test. Results and conclusions will be presented. IRB approved.

Presentation categories: Critical care, infectious diseases, pediatrics

Adrenal suppression with single-dose etomidate for rapid sequence intubation in a pediatric population

Liv Swonger; Paul Paratore; Stephen Small; Regis Lucia; Sonia Peterson; Kathryn Walsh; Spencer Laehn; Kali Turrin

Denver Health, Denver, CO

Etomidate is an imidazole derivative used for sedation during rapid sequence intubation in pediatrics. It is known for causing adrenal suppression by blockage of 11-beta-hydroxylation within the adrenal cortex, thus inhibiting steroidogenesis. In severe cases of adrenal insufficiency post etomidate, exogenous cortisol replacement should be considered. There is a paucity of evidence surrounding adrenal suppression with use of etomidate in pediatrics although it is known to occur. This retrospective cohort analysis of pediatric patients at a level I trauma center, spanning June 2016 to July 2023, compared etomidate to other sedative agents used for rapid sequence intubation. The primary outcome assessed the rate of association using odds ratios of various surrogate outcomes related to adrenal suppression including hyponatremia, hypoglycemia, serum cortisol levels, vasopressor use, and administration of corticosteroids. Results are not yet available as this study is currently in the data analysis phase; they will be presented along with study conclusion. IRB approved.

Presentation Category: critical care, pediatrics

Presenter name:
Shania Lee

Co-investigator names:
Emily Sartain; S. Elise Lawrence

Institution name, city, and state:
UCHealth University of Colorado Hospital, Aurora, Colorado

Abstract title:
Impact of sodium-glucose cotransporter-2 inhibitors and glucagon-like peptide-1 receptor agonists on renal outcomes in heart transplant recipients

Abstract body:
Renal dysfunction is one of the most common long-term complications among heart transplant recipients (HTRs). Sodium-glucose cotransporter-2 inhibitors (SGLT2i) and glucagon-like peptide-1 receptor agonists (GLP-1RA) are recognized to have nephroprotective effects in patients at risk for chronic kidney disease progression, but little is known about their efficacy and safety in HTRs for this indication. HTRs prescribed SGLT2i and/or GLP-1RA for at least 3 months on or before 11/30/2022 had baseline and 12 month outcomes compared in this retrospective analysis. Primary outcome was change in eGFR at 12 months. Secondary outcomes at 12 months included change in protein urine; microalbumin/creatinine ratio; number of hyperglycemic, antihypertensive, and antihyperlipidemic agents; A1c; blood pressure; low-density lipoprotein levels; triglyceride levels; and BMI. A subanalysis was conducted on renal outcomes for patients on mammalian target of rapamycin inhibitors (mTORi). Sixty-nine instances (54 unique HTRs) were analyzed (42 SGLT2i, 27 GLP-1RA). Agent was initiated at a median of 5.6 years after transplant, although agents were initiated as early as 23 days. eGFR did not significantly change from baseline at any time point or differ between the mTORi vs non-mTORi use cohorts. Patients on mTORis were found to have significantly higher rates of clinical albuminuria at 12 months and higher microalbumin/creatinine ratio at 3, 6, and 12 months than those not on mTORis. However, albuminuria did not change significantly compared to baseline for patients on mTORi at each time point. Secondary outcomes were similar except for a reduction in BMI by 12 months. No instances of urosepsis or diabetic ketoacidosis were documented. SGLT2is and/or GLP-1RAs appear to be safe in HTRs but did not show a significant change in eGFR within 12 months. Stability of albuminuria over time within the mTORi group may exemplify a protective effect of SGLT2is and GLP-1RAs in mTORi-associated albuminuria. Prospective studies are needed to understand the impact on renal function, hypertension, and hyperlipidemia with these agents. IRB approved.

Presentation category: transplant

Inpatient management of opioid use disorder: Patient-directed discharges and readmissions before/after buprenorphine clinical pathway implementation

Rhiannon Montgomery; Jacob Peterson; Alexandra Carusone; Leslie Devlin; Nicole Keenan
University of Colorado Health Memorial Hospital, Colorado Springs, Colorado

In 2020, the CDC estimated that approximately 2.7 million people ages 12 years and older were living with opioid use disorder (OUD) in America. Opioid use disorder remains a significant public health concern, and effective management of opioid withdrawal symptoms during hospitalization is crucial for improving patient outcomes and reducing the burden on healthcare resources. This retrospective cohort study evaluated 67 patients ages 18 years and older with opioid use disorder who were admitted between 3/1/2022 and 8/31/2022 (before implementation of buprenorphine clinical pathway) and from 3/1/2023 to 8/31/2023 (after implementation) to assess appropriate management of opioid withdrawal symptoms and how this may impact outcomes, such as patient-directed discharges and hospital readmission rates. This was not an IRB-approved study, as it was largely a quality-focused project. This study evaluated the impact of implementing an electronic health record (EHR)-based clinical pathway to aid clinicians in the initiation of therapy to treat/prevent symptoms of opioid withdrawal. Demographics and information on prescribing of buprenorphine (with or without naloxone), opioids, symptomatic therapies, the use of Clinical Opiate Withdrawal Scale (COWS) scoring, consults to social work or case management, discharge disposition, and readmissions were collected for each patient. Continuous data were analyzed using Shapiro-Wilk, Wilcoxon Rank-Sum, and one-way analysis of variation tests. There were no statistically significant differences (defined as $p<0.05$) observed between the two cohorts for rates of patient-directed discharge (pre: 4 [16.7%], post: 4 [9.3%]; p=0.44), readmission within 30 days for any cause (pre: 8 [33.3%], post: 17 [39.5%]; p=0.61), appropriate initiation of buprenorphine with or without naloxone (pre: 20 [83.3%], post: 33 [76.7%]; p=0.76), consults to social work or case management (pre: 17 [73.9%], post: 40 [93.0%]; p=0.06), the use of medications assisted treatment (MAT) prior to admission (pre: 22 [91.7%], post: 32 [74.4%]; p=0.11), or the prescribing of symptomatic therapies or intravenous opioids (pre: 7 [29.2%], post: 21 [48.8%]; p=0.12). There was only 1 patient (4.2%) with COWS scoring in the pre-cohort compared to 8 patients (20.9%) in the post-cohort. Patients in the post-cohort were more likely to have orders for oral opioid therapies (pre: 2 [8.3%], post: 25 [58.1%]); $p<0.0001$). These results ultimately suggest that there are opportunities for improvement in the management of hospitalized patients with opioid use disorder within our institution, as implementation of the buprenorphine clinical pathway did not result in a significant increase in buprenorphine being initiated appropriately.

Category: Pain/Opioids

Intravenous insulin versus subcutaneous insulin in the emergency department for non-emergent hyperglycemia and impact on time to discharge

Kailee Severt; Kyle Coronato; Joseph Oropeza

University of Colorado Health Memorial Hospital; Colorado Springs, CO

Presentation Category: Medication Safety / Policy, Acute Internal Medicine

Non-emergent hyperglycemia is a common occurrence in the emergency department (ED) and rarely warrants a hospital admission on its own. There is a paucity of guidance by consensus guidelines for the treatment of uncomplicated hyperglycemia in the ED. Previous literature has evaluated the use of intravenous insulin as an option to reduce blood glucose levels and mitigate escalation in care. This retrospective chart review included patients presenting with non-emergent hyperglycemia from June 1, 2020 to November 30, 2023 and aimed to evaluate subcutaneous insulin lispro, subcutaneous insulin regular and intravenous insulin regular regimens in this population. Patients were excluded if they were admitted to the hospital or received insulin therapy for hyperkalemia, diabetic ketoacidosis or hyperosmolar hyperglycemic state. The primary outcome was time to emergency department discharge. Secondary outcomes included dose of insulin therapy, need of a repeat dose, and glucose lowering potential between the routes. The primary endpoint was evaluated using a Kruskal-Wallis test due to the non-parametric nature of the data. Secondary outcomes were evaluated using ANOVA, Kruskal-Wallis test, or Pearson's chi-square test as appropriate. A pairwise exploratory analysis was conducted on significant findings to further determine the significance between the three cohorts. All reported p-values are 2-sided and values < 0.05 was regarded as statistically significant. Results and conclusions will be presented. IRB approved.

Effect of increased daptomycin and linezolid use on resistance in *Staphylococcus* and *Enterococcus* isolates

Blake A. Jennewein; Karrine D. Brade; Meghan N. Jeffres; Douglas N. Fish
University of Colorado Hospital, Aurora, CO

Recent data suggests that daptomycin (DAP) and linezolid (LZD) have a more favorable safety and efficacy profile than vancomycin (VAN). However, little is known regarding the impact of first line DAP and LZD use on resistance in clinically relevant organisms. The University of Colorado Hospital preferentially utilizes DAP and LZD over VAN for definitive management of invasive Gram-positive infections. 17,084 staphylococcal and enterococcal clinical isolates were collected retrospectively across a 7.5-year period. DAP and LZD use was collected as duration of therapy per 1,000 patient days (DOT). An interrupted time series analysis was performed to determine the association between increased DOT and the minimum inhibitory concentration (MIC) changes. A consistent decrease in geometric mean MIC was observed in both staphylococcal and enterococcal isolates over time. Full results and analysis to be presented. The liberation of DAP and LZD had no apparent impact on increasing resistance rates in *Staphylococcus* or *Enterococcus* species within 3 years following local practice change. These findings suggest that DAP and LZD are unlikely to select for resistance in clinically relevant organisms when used up front for gram-positive infections. This study was approved by the Colorado Multiple Institutional Review Board.

Presentation Category: Infectious Diseases

Impact of medications on the incidence of urinary tract infections (UTIs) in patients with type 2 diabetes

Alexis Simons, Kelly Anderson, Ben Hill,

University of Colorado Skaggs School of Pharmacy, Aurora, Colorado

Patients with type 2 diabetes are at a higher risk of developing urinary tract infections (UTIs) and it is known that certain medications can increase this risk. A commonly prescribed medication class associated with UTI incidence in this patient population are sodium-glucose cotransporter-2 inhibitors (SGLT2i). However, a recent retrospective study found that opioids were the most commonly filled medication class 6 months prior to UTI incidence in patients with diabetes, heart failure, or both diabetes and heart failure. This observational case-control study aims to further explore the correlation between incidence of UTIs in patients with type 2 diabetes and new prescription medication fills which was classified as any medication that was not used in the year prior to the diagnosis code for type 2 diabetes. Data was retrieved from a national prescription and medical claims database IQVIA PharMetrics™ Plus for Academics between 2018 to 2021. The exposed cohort consisted of patients with type 2 diabetes and an encounter for UTI. The comparator cohort was developed using propensity score matching and consisted of patients with type 2 diabetes and no encounter for UTI. Results and conclusions will be presented. This project has been determined to be exempt from IRB review.

Presentation categories: ambulatory care and infectious diseases

Controlled substance ordering note: opioid risk mitigation compliance at the Cheyenne VA Health Care System

Madison Styles; Haley McHenry; Tiffany Jastorff-Gillies; Joshua Hickox Cheyenne VA Health Care System, Cheyenne, Wyoming

Due to significant nationwide increases in fatal overdoses including the Veteran population throughout the years, providers have grown cautious with controlled substance prescribing. Many resources have helped reduce risks including co-prescribing of naloxone, urine drug screens (UDS), the Prescription Drug Monitoring Program (PDMP), and the Stratification Tool for Opioid Risk Mitigation (STORM). Currently these components are located in different sections of the electronic health record, which has created a great time burden inhibiting provider completion. Implementation of a newer, more user-friendly controlled substance ordering note embedded with all required risk mitigation components in one place could increase provider compliance and improve patient safety. This project was a single center, non-controlled quality improvement project comparing risk mitigation compliance when prescribing opioids from the current, inefficient orders utilized by the CVAHCS to compliance after provider education and implementation of this new ordering pathway. Risk mitigation compliance includes PDMP, STORM review, UDS orders, and naloxone orders. Education was delivered to providers via means of a PowerPoint presentation to determine who would opt into piloting this project. One on one education and training was also provided to participating providers. Participating providers writing prescriptions for controlled substances from the date of implementation to 90 days after were included. Exclusion criteria included any prescribed non-opioid controlled prescriptions, opioids prescribed for hospice patients, as well prescriptions written by all ER & surgical prescribers. Facility results showed a STORM completion rate increase from 20.8% to 72.8%, PDMP completion rate from 96.5% to 95.6%, timely UDS completion rate of 86% to 85.3%, and "Has Naloxone" - all at risk Veterans rate 47.6% to 58.6%. The post survey results showed 100% of respondents preferred the new ordering note compared to the current process. Notably, anonymous feedback from the post-survey stated "We need to implement the new form asap!" After thorough education & implementation of the new controlled substance ordering note with participating providers, significant improvement in STORM completion & naloxone distribution were seen. Providers unanimously agreed with liking this new process better than the current process. Moving forward, with further thorough education, this process could be a great tool to improve patient safety and prescriber risk mitigation compliance. IRB status was not required for this quality improvement project.

Category: Pain/Opioids

Safety and effectiveness of switching from reference product adalimumab to biosimilar adalimumab-atto in patients with rheumatoid arthritis

Abbey Londa; Catherine Pham; Fang Niu; Thomas Delate; Samantha Teshima; Antony Lin; Rita Hui

Kaiser Permanente Colorado, Aurora, Colorado

Adalimumab-atto (Amjevita™) was the first biosimilar of reference product (RP) adalimumab (Humira™) to launch in the US, starting in late January 2023. Both adalimumab products are tumor necrosis factor inhibitors (TNFi), approved by the FDA for multiple disease states including rheumatoid arthritis (RA). RA is a chronic autoimmune disease characteristic of synovial inflammation that causes damage to a patient's joints. TNFi are commonly used biological disease-modifying antirheumatic drugs (bDMARD) to treat RA. There is a lack of real-world comparative safety and effectiveness data on switching from RP to biosimilar adalimumab in the United States. The objective of this observational, real-world study was to investigate the effectiveness and safety of switching from RP adalimumab to biosimilar adalimumab-atto in patients with RA. This was a matched, non-inferiority (NI), cohort study of adult patients who were switched from RP adalimumab to adalimumab-atto between March 1, 2023, and June 30, 2023, (study group) and patients who were receiving RP and not switched (reference group). Patients were from the Kaiser Permanente Northern California, Southern California, and Colorado regions. The index date was defined as the first dispensing date of adalimumab-atto (study group) and an aligned dispensing date of RP adalimumab between January 1, 2010, and September 30, 2022 (reference group). Patients in the study group were matched to patients in the reference group 1:1 using propensity score matching. Patients were followed from the index date until 14 days after discontinuation of index RP/biosimilar adalimumab, switch to a different bDMARD (including RP adalimumab for the study group), membership termination, death, or 6 months – whichever came first. The effectiveness outcome was a composite of arthritis-related emergency department (ED) visit or hospitalization, glucocorticoid treatment intensification, and switch to a different bDMARD. The effectiveness outcomes were first assessed for NI at a 5% upper margin with the Farrington-Manning test. When NI was met, a conditional logistic regression model was performed to assess the difference. The safety outcome was a composite of infection that required ED visit or hospitalization and incident of heart failure, aplastic anemia, reactivation of hepatitis B virus, or cancer. The rate ratio of the safety outcome was assessed using Mantel-Haenszel method. Results and conclusions will be presented. IRB approved.

Category: Ambulatory care

Pneumocystis jirovecii pneumonia in patients receiving brentuximab-based chemotherapy

Cali Lunowa; Elias Gregoriades; Faviola Alvarez Delgado; Kelsey Marciano; Rebecca Rezac; Jennifer Tobin
University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences/UCHealth University of Colorado Hospital, Aurora, CO

Pneumocystis jirovecii pneumonia (PJP) is a catastrophic infection arising in immunocompromised patients. Brentuximab vedotin (BV) is a drug antibody conjugate targeting CD30 and is used to treat patients with Hodgkin's lymphoma (HL), Non-Hodgkin's Lymphoma (NHL) and T-cell lymphoma (TCL). Co-expression of CD30 on CD4 cells suggests BV may lead to an immunocompromised state. However, prophylaxis for opportunistic infections is not recommended in the package insert and listed only as a consideration by societal guidelines. Recent literature has reported an incidence of PJP exceeding published thresholds for routine prophylaxis. The frequency and clinical significance of PJP following BV administration at our institution remains poorly defined. The aim of this study is to evaluate overall incidence of PJP among patients receiving brentuximab-based chemotherapy regimens and describe patient characteristics associated with increased risk. This retrospective, single-arm analysis included adult patients receiving brentuximab-based chemotherapy for hematologic malignancy through September 2023. Exclusion criteria included PJP prophylaxis while receiving BV and diagnosis of PJP greater than six months from the last BV dose. Patient data was extrapolated from UCHealth Epic Electronic Health Records based in Aurora, Colorado. Variables collected included patient demographics, baseline comorbidities and concomitant medications, diagnosis, number of prior treatments, BV line of therapy and doses, steroid exposure, and PJP treatment setting if applicable. PJP was defined as clinical diagnosis documented in the electronic health record. In total, 191 patients were identified for review and 148 patients were included in the final analysis. HL, TCL, and NHL made up 53%, 45%, and 3% of the population respectively. BV monotherapy was used in 41% of patients. The median line of therapy using BV was 2. One patient developed PJP during brentuximab-based treatment and was treated inpatient. A previously published retrospective review associated HL with a higher incidence of PJP, although available information regarding baseline characteristics of that population remains limited. A higher percentage of patients with TCL were included in this study and no patients had chronic steroid use, which may account for the lower incidence of PJP observed. Notably, the single case of PJP observed was in a patient who did not respond to first-line treatment for HL. Currently, there is not enough evidence to recommend universal PJP prophylaxis at our institution for patients receiving BV. This study is IRB approved.

Category: Infectious Diseases, Oncology

High-risk medication use and hospitalization for delirium among community-dwelling older patients with dementia

Alexandria Smith; Linda Weffald; Eric Anthony Lee; Rita Hui; Thomas Delate; Fang Niu

Kaiser Permanente Colorado, Aurora, CO

Delirium, an acute decline in cognitive functioning, is associated with poor outcomes including increased mortality in adults aged 65 years and older. Precipitating factors for delirium include dementia and high-risk medication (HRM) (e.g., central nervous system and anticholinergic medications) use; however, the association of these factors and delirium has been assessed only in nursing home patients. The purpose of this nested case-control study was to evaluate if an association exists between delirium and HRM use in older, community-dwelling patients with dementia. This was a real-world, matched, cohort study of patients aged ≥ 65 years from the Kaiser Permanente (KP) Southern California, Northern California, and Colorado regions who were diagnosed with dementia (defined as two separate medical encounters with a dementia diagnosis code) between January 1, 2018, and September 30, 2023. Patients were excluded if they lived in a nursing home or were in hospice. Cases and controls were patients who were and were not hospitalized, respectively, for delirium after the second dementia diagnosis during the study period. The index date for cases was the hospital admission date while controls were assigned their index date as their matched case's hospital admission date. HRM were defined by NCQA's HEDIS measure for polypharmacy and were compiled with HRM on the 2023 American Geriatrics Society Beers Criteria to ensure completeness. The HRM in this study included anticholinergic and central nervous system-active medications. Cases were matched to four controls on age (as of index date) and sex without replacement. Patients' exposure to HRM prior to the index date was assessed and defined as either a Nonuser (had not received an HRM), Recent User (had a HRM days supply on hand during the 90 days prior to the index date), or Remote User (any prior HRM exposure within a year but more than 90 days prior to the index date). In addition, the total HRM days supplied during the one year prior to the index date was calculated to provide a cumulative HRM exposure. Secondary analysis categorized the exposure by HRM therapeutic drug classes (e.g., anti-psychotics, anti-depressants). Baseline characteristics between groups were compared. Conditional logistic regression modeling was performed to calculate the odds ratios (with 95% confidence intervals) of having predefined exposures with adjustment for potential confounding factors. The alpha was set at 0.05. All analyses were performed using SAS v9.4 (SAS Institute, Inc, Cary, NC). Results will be presented. IRB approved.

Category: Medication Safety/Policy, Ambulatory Care

Retrospective review of sepsis-related mortality and standardized antimicrobial administration ratio (SAAR) after changes in ED sepsis screening

Kelsie Kracht; Stacy Volk

Intermountain Health Lutheran Medical Center, Wheat Ridge, Colorado

To ensure prompt identification and treatment of sepsis, the Surviving Sepsis Campaign recommends patients presenting with severe sepsis receive a dose of broad-spectrum antibiotics within 3 hours of identification, among other measures. The Infectious Disease Society of America (IDSA) raised concerns about this recommendation's unintended consequences, such as overdiagnosing sepsis and antimicrobial resistance. On May 16th, 2023, our institution transitioned to screening every adult patient presenting to the emergency department for sepsis to align with CMS requirements to report on adherence to the Severe Sepsis and Septic Shock Early Management Bundle (SEP-1). This study aims to determine the impact of universal sepsis screening in the emergency department on inpatient antimicrobial utilization and sepsis-related mortality. Patients will be 18 years of age or older and have an ICD-10-CM principle or other diagnosis code of sepsis, severe sepsis, or septic shock. To assess the observed to expected mortality measure, information associated with each patient's outcome and their clinical course will be collected. Comparison of these data before and after changes in the emergency department screening process will be assessed to determine if there is a relationship between the initiation of universal screening and antibiotic usage in our hospital. Results and conclusions will be presented. IRB approved.

Presentation category: infectious diseases

Evaluation of sleep aid use in geriatric patients after melatonin formulary addition

Presenter: Savannah Bravo

Co-Investigators: Aleksandra Kolodziej; Eric Whittenburg; Christian Noi

Institution: CommonSpirit Health St. Anthony Hospital, Lakewood, Colorado

Nearly 70 million people in the United States suffer from sleep disorders, which are associated with poor health outcomes and often exacerbated by environmental factors in hospitalized patients. Melatonin, a neurohormone released in response to darkness, has been proposed as an alternative to prescription medications such as benzodiazepines or “Z drugs” to help improve sleep quality and reduce risk of medication-related adverse events, such as increased lethargy, confusion, and risk of falls in elderly patients. Oral melatonin was added to the formulary at a community hospital in Colorado in 2019 with the intent to reduce the use of higher-risk medications in elderly patients and improve quality of sleep. This retrospective, pre- and post-interventional study was designed to observe how the addition of melatonin has affected the use of additional sleep aid medications and incidence of adverse events in geriatric patients admitted to acute care units. Patients were included in this study if they were at least 65 years old, admitted to an acute care unit, and administered a sleep aid medication or melatonin within the study time frame. Patients were excluded from the pre-addition group if they were administered melatonin. The primary outcome was the difference in sleep aid use between groups, measured in number of doses of sleep aids per day admitted to the hospital. Secondary outcomes included documented falls, total number of sleep aid medications, and continuation of sleep aid medications at discharge. The Institutional Review Board deemed this project exempt from review. Results and conclusions to follow.

Presentation Category: acute internal medicine, neurology

Impact of virtual pharmacist-led diabetes management in the outpatient setting

Braden Schmidt; Lindi Lewis; Valerie Davis; Patricia Liu

CommonSpirit Health St. Anthony Hospital, Lakewood, Colorado

Diabetes mellitus is a chronic, progressive disease with a high risk of further health complications. Pharmacists can provide vital resources for diabetes education, medication management, and lifestyle adjustment to delay and prevent disease severity and progression. Previous pharmacist-led in-person interventions have shown benefit in decreased hemoglobin A1c (HbA1c) and improved diabetes control. Patients are referred to pharmacy-led diabetes clinics by their primary care provider to receive care under a pre-defined collaborative practice agreement. In this study providers referred their patients to a completely virtual clinic in which all patient interaction and counseling was done virtually. This retrospective, multicenter, pre- post study evaluated the impact of completely virtual pharmacist intervention on Type 2 diabetic patients between June 2022 and July 2023. Patients were included if they had at least two pharmacy encounters and had at least two HbA1c levels drawn within prespecified time frames. Patients were excluded if they were pregnant or younger than 18.

The primary endpoint measured was average HbA1c change from baseline with a minimum of three month follow up. Secondary endpoints included 1) percent of patients with urine microalbumin screen within the previous year 2) percent of patients on a statin medication, and 3) the number of telephone encounters per patient. Preintervention A1c levels were defined as A1c levels up to six months prior to initial interaction or first one after the initial interaction. Postintervention A1c levels were defined as A1c levels immediately prior to final encounter or three months after the final pharmacy encounter. A paired t-test was used to compare pre-post HbA1c result. Results and conclusion will be presented. This study was approved by the Institutional Review Board.

Presentation Category: Ambulatory Care

Pharmacist-led interventions and medication-related adverse events for patients in the aging veteran surgical wellness program

Kaci Johnson; Erin Brady, Stacey Rice, Catherine Scott

VA Rocky Mountain Regional Medical Center, Aurora, Colorado

Inpatient clinical pharmacy specialists (CPS) at the Rocky Mountain Regional VA Medical center currently complete a pharmacotherapy review as part of the Aging Veteran Surgical Wellness program. This review provides an evaluation of inpatient medications for their safety and appropriateness to reduce risk of medication-related complications in the aging veteran population (ages ≥75). This retrospective observational quality improvement project evaluated 129 patients that underwent a total of 133 surgical procedures between January 1, 2022, and January 1, 2023, for appropriate medication use (prior to admission, inpatient, and at discharge), types of inpatient pharmacist-led interventions made, and medication-associated post-operative complications. Patient data collection included demographics, medical comorbidities, use of American Geriatrics Society Beers Criteria medications, admitting hospital service, length of hospital stay, and emergency department visits or hospital readmissions within 30 days post discharge. The majority of patients were men (96.9%) with an average age of 79 years. An inpatient CPS completed at least one note for 88 of the 133 surgery admissions (66.2%) which included 190 interventions (2.16 per patient) to prevent medication related adverse events and to optimize therapy. Interventions that were made most frequently included conversions from intravenous to oral medications, optimization of the pain regimen to limit opioid use, and the addition of a bowel regimen (56%). Each note also included an evaluation of Beers Criteria medication use to address and reduce risk of delirium and falls throughout the patient's admission. There were 45 admissions where a pharmacy note was not completed with the most common reasons being admissions that were less than 24 hours or over a weekend. For a large portion of completed procedures, post operative complications were not observed (64.7%) followed by 1 (21.8%), 2 (9.0%) and 3 complications (4.5%). Of the veterans that experienced complications, hypotension was the most common (40.8%), followed by delirium (12.7%). All other complications had a rate of less than 10% (emesis, infection, constipation, urinary retention, uncontrolled pain, fall, or use of a reversal agent). This review found that inpatient CPS make a significant number of interventions for patients admitted for surgery to limit medication related adverse events; a majority of patients did not experience any complications post operatively, those that did have complications were commonly not associated with medication use. This project is exempt from IRB approval.

Presentation Category: Acute Internal Medicine

Patient portal outreach with pharmacist support to address medication nonadherence in Medicare Advantage enrollees

Natasha Virrueta; Valerie Valdiviez; Trevor Beutel; Oliver Titus; Sydney Peauroi; Sarah J. Billups
University of Colorado Skaggs School of Pharmacy, Aurora, Colorado

Higher medication adherence to chronic medications is associated with better patient outcomes, yet effective strategies to increase adherence are often resource intensive. The population health pharmacist team supporting the University of Colorado Primary Care practices implemented a population-health approach to improve medication adherence metrics for Medicare Advantage enrollees in 2023. The team reviewed insurer-provided lists to identify patients late to refill a medication and sent an electronic message, a mailed letter, or a phone call conveying concern for adherence and inviting patients to respond with questions or concerns. Pharmacists managed patient responses requiring clinical intervention or education. This quality-improvement evaluation aimed to measure the impact of the population-health approach on Medicare Advantage enrollees' medication adherence and to describe patient response to the messages received from the intervention. This mixed methods evaluation assessed Medicare Advantage enrollees receiving at least one of the medications included in the hypertension, diabetes, or hyperlipidemia medication adherence metric in both the 2022 (pre-intervention) and 2023 (postintervention) calendar years. Medication adherence, defined as proportion of days covered value > 0.8, stratified by medication class was compared in the pre- versus post-period using Mcnemar's exact test. Qualitative analysis of all patient responses was performed via a twoauthor review with conflicts resolved by consensus to identify themes and categorize patient responses. There were 2,839 patients included in both groups, with 1,750 included in the hypertension medication adherence metric, 551 for diabetes, and 2,244 for cholesterol medications, which were not mutually exclusive groups. In the hypertension group, 89.2% patients were defined as adherent in the period, versus 87.7% in the post-period (p-value 0.216); while for patients using diabetes medications, per- versus post- adherence rates were 82.8% and 82.6%, respectively, (p-value 1.000), and for patients using statin medications, the pre- versus post- adherence rates were 86.3% and 87.6% (p-value 0.106). Common themes identified from patient responses showed that most patients self-reported adherence and appreciated the message while others reported barriers to adherence, such as medication access issues, or inconsistencies with electronic health record profile, like a change to their medication regimen. The intervention had no measurable impact on pre- versus post-period adherence rates. The intervention employed was largely accepted by patients, although most patients self-identified themselves as adherent. Research was IRB exempt.

Presentation Category: Administration / Operations, Ambulatory Care

Evaluation of a novel, pharmacy and psychology led chronic pain clinic

Kami Johnston; Allison Schroeder; Eleni Romano

VA Eastern Colorado Health Care System, Aurora, Colorado

In 2016, the CDC estimated 50 million U.S. adults were living with chronic pain. Among the veteran population, chronic pain is even more prevalent. Chronic pain can contribute to depression, anxiety, poor sleep, and decreased quality of life. It is also associated with increased health care utilization. The Chronic Pain Care Clinic (CPCC) is a novel, pharmacy and psychology led chronic pain clinic that was established at the VA Eastern Colorado Health Care System in August 2015 to better meet the needs of veterans living with chronic pain. The objective of this program review was to assess engagement in the CPCC and evaluate the impact of pain pharmacists on medication prescribing. This program development consisted of retrospective chart review of veterans referred to the CPCC between January 2016 and August 2017. Veterans were included if they attended at least one CPCC orientation in this time frame. Data including demographic information, pain diagnoses, comorbid psychiatric diagnoses, and number of pain psychology and pain pharmacy appointments attended were collected. Additionally, among veterans who attended pharmacy appointments, data including prescriptions for opioids, benzodiazepines, and non-opioids were collected and morphine equivalent daily dose (MEDD) was calculated. Of the 211 veterans included in this program review, 89% (n=188) were male, 77% (n=162) were white, median age was 58 years, and 86% (n=182) had a history of least one psychiatric disorder. The most common pain diagnosis was back pain (n=144, 68%), followed by shoulder pain (n=43, 20%), knee pain (n=40, 19%), neuropathy (n=40, 19%), and neck pain (n=39, 19%). A median of 3 pharmacy appointments were completed, with 75% (n=158) completing at least one pharmacy appointment and 64% (n=136) completing at least two pharmacy appointments. When comparing pain medication regimens between the first pharmacy appointment and the last pharmacy appointment respectively, 71% (n=112) vs 53% (n=78) were prescribed opioids, median MEDD was 60mg vs 45mg, 13% (n=20) vs 11% (n=15) were prescribed benzodiazepines, and 22% (n=32) vs 45% (n=60) were prescribed naloxone. These results represent a complex population with multiple psychiatric comorbidities and pain diagnoses. Engagement with pharmacy services was fair, with a majority of veterans completing at least two appointments. Pharmacist interventions showed a trend towards lower opioid requirements, less benzodiazepine use, and increased naloxone prescribing. Overall, this program review demonstrates the complexities associated with managing chronic pain in veterans and highlights the role of pain pharmacists among interdisciplinary pain management teams. IRB exempt.

Presentation Category: Pain/Opioids, Medication Safety/Policy

Effect of direct oral anticoagulant use on rotational thromboelastography in trauma patients

Andrea Lielkoks; Christopher Miller; Thomas Howard; Marcie Dille; Brian Blackwood

CommonSpirit Health St. Anthony Hospital, Lakewood, CO

Direct oral anticoagulant (DOAC) use has increased compared to vitamin K antagonist use, and there is increasing need to appropriately treat coagulopathy in hemorrhaging patients taking DOACs and presenting with traumatic injury. Traditional anticoagulation tests may not provide a reliable picture of anticoagulation in these patients. Viscoelastic tests (VET) are routinely collected in trauma patients on presentation. Limited in vitro data suggest DOAC concentrations correlate with prolonged clotting time (CT) on VETs. In vivo data for thromboelastography has not confirmed this correlation with clotting time and DOAC use, but the relationship between DOAC use and clotting time on rotational thromboelastography (ROTEM) has not been thoroughly explored.

This was a retrospective, matched cohort study of trauma patients for whom a ROTEM was obtained. Patients taking a DOAC were included if their ROTEM was collected 1) within 24 hours of the last dose for daily regimens, 2) within 12 hours for twice daily regimens, 3) or if good adherence was reported. Patients were excluded if they transferred from an outside health system, were taking rivaroxaban 2.5 mg twice daily, received anticoagulation reversal prior to ROTEM sample obtainment, or had a blood gas pH <7.3 or temperature <35°C within 60 minutes of ROTEM. Patients in the DOAC group were matched to control patients not on anticoagulation. Matching criteria were injury severity score, isolated traumatic brain injury versus other trauma, and blunt versus penetrating injury.

The primary outcome was mean difference in CT between DOAC and matched controls. Subgroup analyses of the primary outcome included 1) patients with documented last DOAC dose within 3 hours for twice daily regimens or within 6 hours for once daily regimens 2) DOAC patients with a documented PTT above range or anti-Xa above the detectable limit, 3) patients weighing <120 kg, and 4) each DOAC agent and dose. The proportion of patients in each group with an CT above the reference range in the two cohorts was also assessed.

A sample size of convenience was chosen given the lack of prior data to suggest an expected difference among groups. Differences in CT were analyzed with paired t-tests or Wilcoxon signed rank tests. Proportions were analyzed with McNemar or Sign tests.

Results are in progress. This study was IRB approved.

Category: Anticoagulation

Evaluating the usage, safety, and accuracy of vancomycin dosing practices at VA Eastern Colorado Health Care System (VA ECHCS)

Caitlin Hart; Catherine Scott; James Scott Christofferson

VA Eastern Colorado Health Care System, Aurora, Colorado

Vancomycin is a glycopeptide antibiotic used as a mainstay of therapy for gram positive bacterial infections, especially for MRSA (methicillin-resistant staphylococcus aureus) infections. While vancomycin is a widely used antibiotic, it requires pharmacokinetic calculations to determine dosing regimen as well as close therapeutic drug monitoring to achieve goal trough levels between 15-20 mg/L (AUC/MIC goal level between 400-600 mg ▪h/L) and to prevent nephrotoxicity. The purpose of this study is to obtain information about our current vancomycin usage patterns, including empiric dosing accuracy & safety outcomes. This information will be used to help inform a decision surrounding whether a change to our current practice is indicated. This retrospective, observational cohort study evaluated 117 vancomycin trough levels from 63 patients who received at least two doses of vancomycin between August 1, 2022 and July 31, 2023. Patients were excluded if they received hemodialysis or were dosed by random levels in the setting of severe renal dysfunction. Demographics including age, sex, weight, height, BMI, indication for vancomycin, dosing, trough levels, source of infection, MRSA nares screening, presence of medications that may cause or contribute to renal impairment, diagnosis of spinal cord injury, pharmacist interventions made (e.g., vancomycin dosing changes), serum creatinine, and cystatin C were collected for each patient. Estimated AUC was calculated using VancoPK.com based on the reported trough using patient specific pharmacokinetic parameters. A total of 58 trough levels from 49 patients were included in this study. The majority of patients were male (87.7%) with an average age 61±13 years old. Out of the 58 trough levels evaluated 20 (41%) were at goal. Of the levels not a goal 27 (71%) were subtherapeutic, and 11 (29%) were supratherapeutic. The estimated AUC was at goal for 35 (60%) of the 58 total troughs. Of the 27 patients who had a subtherapeutic trough 21 (77%) had an AUC at goal, and 14 of them increased the dose despite having a therapeutic AUC. Only 1 patient (2%) developed possible vancomycin associated AKI (acute kidney injury). A significantly higher number of patients were within therapeutic range when evaluating AUC compared to trough. The low incidence of vancomycin associated AKI was likely due to low frequency of supratherapeutic troughs in this study population. Further analysis of these results will be used to identify potential opportunities for education and improvement of our current vancomycin dosing process. Exempt from IRB approval.

Presentation Category:

· Acute Internal Medicine

· Infectious Diseases

· Medication Safety / Policy

Presenter name: Lupe Mouzakis

Co-investigator names: Whitney Salem; Zenobia Tang; Krista Sanchez; Isain Zapata

UCHealth Parkview Medical Center, Pueblo, Colorado

Title: Retrospective analysis of pharmacist intervention on urine culture callbacks for patients discharged from the emergency department

The Emergency Department (ED) presents a distinct set of challenges for healthcare prescribers due to its high patient volume, frequent interruptions, and a multitude of competing priorities. Among the challenges includes the prescribing of antibiotics for the treatment of bacterial infections. One of the most prevalent reasons for antibiotics prescriptions in the emergency department is for urinary tract infections. In addressing this threat, the involvement of emergency department pharmacists is indispensable. Their interventions play a pivotal role in ensuring the secure and judicious utilization of antibiotics commonly prescribed in the emergency department for the management of urinary tract infections (UTIs). This retrospective cohort study aimed to assess whether an intervention by emergency department pharmacists, as opposed to nurse-initiated callbacks with provider consultation, led to expedited effective treatment of UTIs in adult patients. The study focused on determining whether pharmacist involvement facilitated the administration of optimal antibiotics in terms of time to intervention, drug selection, dosage, and treatment duration. The patients in the post-intervention group were seen at UCHealth Parkview Medical Center (PMC) between July 2023 to December 2023. Patients were included if urine culture was obtained prior to discharge from the emergency department at PMC and there was growth of pathogen. Patients were excluded if they were discharged on antibiotics treating ≥ 1 infection, ≤ 18 years old, admitted for inpatient treatment or the UTI was diagnosed prior to the ED visit. The primary objective was the time elapsed between the release of urine culture results and the initiation of intervention or review of positive urine cultures. The secondary objective was the rate of return visits to the ED within a 30-day period attributable to infections. Demographics, history of UTI w/ resistance (e.g., MDROs), chronic catheter, urine culture pathogen, type of UTI, antibiotic prescribed at discharge (type, dose, duration), time to Intervention (hr), and readmission(s) w/in 30 days, were collected for each patient. The results of this project will serve to provide UCHealth Parkview Medical Center valuable insights into potentially reducing the burden of callback culture among ED providers. This will be achieved by ensuring consistent follow-up on patient care, with the assistance of ED pharmacists. Furthermore, the study seeks to illustrate the value of integrating an ED pharmacist into the system and their impact on antimicrobial stewardship efforts. Results and conclusions of this IRB approved research study will be presented.

Presentation Category: Acute Internal Medicine and Infectious Diseases

Presenter: Sydney House

Co-investigator: Gina Harper

Institution: UCHealth Poudre Valley Hospital, Fort Collins, Colorado

Title: Incidence of hypoglycemia during treatment of hyperkalemia with intravenous regular insulin

Abstract: Utilizing higher doses of insulin for the treatment of hyperkalemia potentially increases the risk of hypoglycemia with unclear advantages of potassium reduction. For end stage renal disease (ESRD), one treatment option is a lower fixed dose of 5 units instead of the historical standard 10 units intravenous (IV) regular insulin for hyperkalemia. The current hyperkalemia order panel in the UCHealth Northern Colorado Region lists a dose range of 5-10 units, with nursing instructions to differentiate “ESRD patients – 5 units of insulin, all other patients – 10 units of insulin”. This quality improvement study aimed to determine the incidence of hypoglycemia with current practice as well as standardize and optimize hyperkalemia management across the UCHealth system. A retrospective, regional chart review of administrations of IV regular insulin from August 1, 2022 to July 31, 2023 was conducted. The primary outcome was to assess the incidence of hypoglycemia (defined as blood glucose < 70 mg/dL) within 24 hours of treatment for hyperkalemia. The secondary outcome was to analyze the compliance of doses of insulin used for treatment of hyperkalemia in relationship to underlying kidney disease. Out of a total 722 administrations of IV regular insulin identified, 131 doses for hyperkalemia were reviewed. Incidence of hypoglycemia within 24 hours of insulin administration for hyperkalemia was 19% (n=25). Of the administrations that led to hypoglycemia, over half (56%; n=14) were 10 unit doses. As defined by the current hyperkalemia order panel, more than 1/3rd (n=48) of the patients did not receive the appropriate dose of insulin to treat hyperkalemia based on presence of ESRD. Of the incorrect dose administrations, 16.6% (n=8) experienced hypoglycemia. Adjustment of the hyperkalemia panel has been recommended to place the clinical decision of 5 units versus 10 units of insulin on the prescriber. Additionally, considerations to extend the lower dose to patients with chronic or acute kidney disease as well as factoring in the current serum glucose value and correlating D50 dose are in progress. Collaborations between the multiple regions of UCHealth are currently taking place to make these systemized adjustments to the hyperkalemia panel.

Category: Acute Internal Medicine

Emergency department pharmacist impact on time to administration of gentamicin in patients with level I, II, or III open long-bone fractures

Presenter: Jordan Brazeel

Co-investigators: Cody Maldonado; Michaela Bruner; April Chapman; Jeffery Jansen

Institution: Intermountain Health St. Vincent Regional Hospital, Billings, Montana

Introduction and background: The initial timing of administration of antibiotics is crucial in patients who present with an open long-bone fracture as a delay of more than three hours has been associated with an increased risk of infection. Open orthopedic fractures have the highest rate of infection for all fractures, with type III long-bone infections being the highest. Therefore, antibiotic prophylaxis for open fractures is essential. Emergency department pharmacists play a key role in ensuring the proper dose and timing of antibiotic administration for patients who present with an open long-bone fracture. Methods: Using the electronic medical record (EPIC), researchers identified all adults admitted to the emergency department between January 1st, 2017 and December 31st, 2023, who received gentamicin for an open long-bone fracture. Patients who received an initial dose of gentamicin outside of the emergency department were excluded. Researchers collected patient demographics, type of long-bone fracture, gentamicin order time, gentamicin administration time, and the type of provider the patient was seen by. The primary outcome evaluated was the time, in minutes, to gentamicin administration from the time a gentamicin order is placed. The secondary outcomes were the appropriateness of gentamicin dose, initial dosing of gentamicin ordered, time to therapeutic gentamicin trough if a trough was ordered, and time to therapeutic gentamicin peak if a peak was ordered. Results and conclusions will be presented. IRB approved.

Presentation Category: Critical Care, Infectious Diseases

Evaluating the effect of pharmacist-led provider education on piperacillin-tazobactam utilization

Lauren Beaumont; Amie Meditz; Jaime Mesenbrink; Katherine Macchi; Christopher Zielenski
Boulder Community Health, Boulder, Colorado

Piperacillin-tazobactam (pip-tazo) is a valuable broad-spectrum antibiotic, for which assuring appropriate use is important to maintain activity in our local community. This quasi-experimental, retrospective study aims to assess if pharmacist-led education effects appropriate use of pip-tazo among hospitalists, infectious diseases (ID) and general surgery providers. Pip-tazo orders placed between December 2022 and February 2023 were identified and evaluated for appropriateness based on predetermined criteria defined in an institution-specific guidebook. Pharmacist-led education sessions were held for hospitalists, general surgery and ID providers. The education included information regarding appropriate indications for use and evidence for the importance of reducing broad-spectrum antibiotic use. After this education, orders were identified between December 2023 and February 2024 and prescribing patterns were again assessed using the same methodology as pre-intervention data collection. Orders were grouped into two cohorts, appropriate or inappropriate, and the percentage of each group was compared to the pre-intervention values. The primary endpoint was percentage of appropriate pip-tazo use before and after education, assessed by chi-squared analysis. A sub-analysis was performed to assess changes in ordering patterns among provider specialties. Pre-education piptazo orders (n=90) were found to be 76% appropriate in the overall cohort, 69% among hospitalists, 50% among general surgery and 100% among ID. Post education data (n=76) showed the proportion of appropriate orders increased 6% overall, 15% among hospitalists, 11% among general surgery, and no change was noted among ID providers. There was a small overall improvement seen in proportion of appropriate pip-tazo prescribing after pharmacist-led intervention. This project was IRB exempt.

Presentation categories: Infectious disease, acute internal medicine

Mia Velarde; Brayden Hamill

CommonSpirit Health Penrose Hospital, Colorado Springs, Colorado

Cost minimization and tolerance of concentrated dexmedetomidine

Dexmedetomidine is a central alpha-2-agonist commonly used for sedation in ventilated and non-ventilated critically ill patients. Dexmedetomidine provides lighter sedation than alternative agents and can be easily titrated due to its short half-life. The purpose of this study is to evaluate cost minimization and tolerance of switching from our standard 4 mcg/mL batch compounded infusions to concentrated 10 mcg/mL addEASE® infusions of dexmedetomidine. The incidence of common side effects will be recorded in each group as a measure of tolerance as this concentration has not been previously evaluated to the best of our knowledge. Dexmedetomidine cost minimization will be calculated from pharmacy acquisition cost, preparation cost, and waste of compounded standard concentration infusions compared to addEASE® concentrated infusions. Tolerance analysis will be done by retrospective chart review of the patient groups that received standard 4 mcg/mL infusions compared to concentrated 10 mcg/mL infusions of dexmedetomidine each over a six-month period. Incidence of the following common side effects as tolerance markers will be recorded: bradycardia, hypotension, and hypertension. We will compare the incidence of these side effects pre-concentration and post-concentration change to assess tolerance. Cost analysis has shown that compounding one bag of 4 mcg/mL dexmedetomidine bag costs $20.32. The addEASE® concentrated infusion bag costs $41.46. Tolerance analysis shows that 40% of patients utilizing 4 mcg/mL dexmedetomidine bags experienced bradycardia and 6% of those patients had the infusion discontinued as a result. Additionally, 4% of patients experienced either hypertension or hypotension that led to the discontinuation. Patients receiving dexmedetomidine 4 mcg/mL used an average of 5 bags during ICU stay. Data analysis is in process for the concentrated 10 mcg/mL infusion group. Our cost analysis shows that standard 4 mcg/mL dexmedetomidine infusion bags cost less per bag compared to the concentrated 10 mcg/mL dexmedetomidine addEASE® bags. A limitation of our cost analysis is that it doesn’t include indirect costs such as reduced stocking time, reduced pyxis space, reduced nursing drug acquisition time, reduced IV supplies, reduced pharmacy technician preparation, and reduced fluid overload. With a marginal cost difference, utilizing concentrated dexmedetomidine is a cost-effective option when considering indirect costs. IRB approved with exempt status.

Category: Critical Care

Effect of substance use on sedatives in procedural sedation in an emergency department population

Kari Tornes; Jordan Jenrette; Andrew Kluemper; John White; Gabrielle Jacknin
University of Colorado Health, Aurora, Colorado

Little data exists for optimal sedative dosing in patients undergoing urgent or emergent procedural sedations who self-report substance use. Dosing in procedural sedations is largely based on anecdotal experience or perceptions of sedation requirements with wide variability in dosing strategy. The study aims to determine if patient-reported substance use alters initial and total dosing requirements of sedative medication during procedural sedations. This single-center retrospective pilot study with a secondary prospective enrollment component included adults who underwent procedural sedation in the emergency department (ED) and had documented or self-reported substance use. Retrospective data was collected from patient encounters meeting inclusion criteria between November 10, 2021 and July 31, 2023 and prospective enrollment was performed between August 1, 2023 and December 31, 2023. The primary outcomes were initial and total weight-based dose requirements for procedural sedation. Safety outcomes included incidence of hypotension, oxygen desaturation, and use of a bag-valve mask during the procedure. Fourteen patients met inclusion criteria for the study. Eight patients reported the use of marijuana. Nine patients (64.3%) underwent procedural sedation with propofol, two (14.3%) patients with ketamine, two (14.3%) patients with a combination of propofol and ketamine, and one (7.1%) patient with etomidate. The median initial propofol dose was 0.96 mg/kg (range 0.35 mg/kg to 1.04 mg/kg). Seven of the 9 propofol patients required subsequent doses. The median total propofol dose of patients requiring subsequent doses was 1.96 mg/kg (range 0.72 mg/kg to 5.08 mg/kg). The median initial ketamine dose was 0.89 mg/kg (range 0.83 mg/kg to 0.96 mg/kg). One of the 2 ketamine patients required subsequent doses. The median total ketamine dosing was 1.3 mg/kg (range 0.96 mg/kg to 1.66 mg/kg). The median initial etomidate dose was 0.16 mg/kg. The etomidate patient did not require subsequent doses. No patients experienced hypotension or hypoxia during the procedure. One patient required the use of a bag-valve mask for apnea. Patients with substance use undergoing procedural sedation in the ED may need higher starting doses compared with recommendations in the literature. More studies are needed to determine dosing requirements in this patient population. IRB approved.

Presentation category: Critical care

Evaluation of rivaroxaban exposure for VTE prophylaxis via anti-Xa levels in hospitalized patients

Kaitlin Blotske; Ty Kiser; Toral Patel; Toby Trujillo

UCHealth University of Colorado Hospital, Aurora, Colorado

Rivaroxaban, a competitive Factor Xa inhibitor, was FDA-approved in 2019 for the indication of venous thromboembolism (VTE) prophylaxis. Studies have shown a linear association between rivaroxaban drug concentrations and anti-Xa assays. However, these prior studies evaluated patients receiving treatment doses of rivaroxaban and not low-dose rivaroxaban used for VTE prophylaxis. It is unknown whether similar outcomes of high correlation between drug concentration and anti-Xa assays will hold true for rivaroxaban 10mg daily. In addition, there is clinical value in characterizing the relationship between anti-Xa levels and rivaroxaban plasma concentrations with the 10mg dose. This study aims to establish a universal assessment of anticoagulant effects with prophylactic doses of rivaroxaban using anti-Xa levels at the University of Colorado Hospital. This prospective cohort study evaluated hospitalized patients at the University of Colorado Hospital taking rivaroxaban 10mg daily for VTE prophylaxis from December 2023 to April 2024. Patients were enrolled if between the ages of 18-89 years old, received prophylactic rivaroxaban, and had active coagulation labs ordered by the provider. Exclusion criteria included those with overlap of other anticoagulants to avoid skewing anti-Xa assays. The primary outcome was the correlation between rivaroxaban concentrations and anti-Xa levels at various time points following administration. A linear regression model and a Pearson correlation coefficient (r2) assessed the primary outcome relationship between rivaroxaban drug concentrations and anti-Xa levels. Results and conclusions will be presented. IRB approved.

Presentation category: anticoagulation

Efficacy and safety of a nurse driven potassium replacement protocol in non-critically ill hospitalized patients

Taylor Sjobakken; Joan Cook

CommonSpirit Penrose-St Francis Hospitals, Colorado Springs, Colorado

Electrolyte disturbances are common among hospitalized patients with hypokalemia being one of the more common abnormalities. Many hospitals have adopted protocols that facilitate the correction of low electrolyte levels by nurses or pharmacists. The objective of this quality improvement study is to assess the safety and efficacy of CommonSpirit Mountain Region's nurse driven potassium replacement protocol including the appropriateness of replacement orders and potential under or over correction of serum potassium. The protocol was submitted to the CommonSpirit Institutional Review Board and was determined not to be human subject research.

An electronic medical record report was used to identify patients from January 2023 through December 2023 who had potassium replacement protocol orders placed by a registered nurse. To be included in the study, patients had to have been admitted to a Penrose-St Francis hospital for greater than 24 hours, be at least 18 years of age, and have an active inpatient order for potassium replacement protocol. Patients were excluded from the study if they were admitted to the ICU, had an admitting diagnosis of diabetic ketoacidosis, or if they were undergoing dialysis or renal replacement therapy. The following data was collected: date and time the protocol was ordered in Epic, which protocol was ordered, the serum potassium level prior to protocol being ordered, the dose of potassium replacement ordered, which form of potassium was ordered, date and times of potassium replacement administration, and the serum potassium level after administration. Efficacy will be determined by evaluating if the resulting serum potassium level is within the range of 4.0-5.1 mmol/L. For serum potassium levels greater than 5.1 mmol/L, the primary investigator will complete chart reviews for up to 30 randomly selected patients to evaluate safety measures such as documentation of adverse effects, and if additional monitoring or medications were administered to either correct the potassium level or treat/prevent any associated adverse effects.

At the time of writing this abstract, all data has been collected, and results are being evaluated. Results of the project will be used to determine if there are opportunities to improve the efficacy and safety of the CommonSpirit Mountain Region's potassium replacement protocol. Areas of potential improvement include simplification of the protocol; implement of electronic tools that could decrease the risk of ordering the incorrect dose, route, or time of the levels; increased efficacy of replacement doses, and identification of patients in whom potassium replacement may be clinically unnecessary.

Presentation Category: Medication Safety/Policy, Acute Internal Medicine

Assessing Pharmacists' Attitudes Towards Substance Use Disorders and Their Dispensing of Medications for Opioid Use Disorder

Sierra Beck; Tonna Farinha; Jeffrey Hamper; Jeff Lalama; Robert Willis

Albertsons Companies, Denver, CO

Presentation categories: community pharmacy, pain/opioids, psychiatry

Substance use disorders and deaths due to overdose are critical issues in the United States. In 2021, an estimated 16.5% of people in the US had a substance use disorder (SUD) within the past year. Healthcare providers, including pharmacists, play a crucial role in combatting this epidemic; however, providers can also potentially serve as a barrier to treatment due to their personal beliefs regarding SUDs. A national study showed that although most primary care providers generally understood that opioid use disorder (OUD) is a treatable condition, a majority had stigmatizing attitudes against it, affecting the care they provided. Like other healthcare providers, community pharmacists are involved in the treatment of SUDs; specifically, community pharmacists often administer and/or dispense medications for opioid use disorder, such as buprenorphine and naltrexone. This prospective survey-based study aimed to assess pharmacists' attitudes towards substance use disorders. The survey was developed using a validated addiction stigma index survey, which assessed addiction stigma using a Likert-type scale. The survey assessed pharmacist stigma in four different areas: public stigma, institutional discrimination, moral failing, and attitudes towards medications for opioid use disorder (MOUD). Additional survey questions were added to identify pharmacist demographics, determine the frequency of pharmacists refusing to dispense MOUD, and discover common reasons for refusing to dispense MOUD. The study included community pharmacists practicing within the state of Colorado. The primary objective was to assess pharmacists' attitudes towards SUDs. Secondary objectives were to determine the association between pharmacists' attitudes towards SUDs and pharmacist demographic factors and to examine the association between pharmacists' attitudes towards SUDs and pharmacist dispensing of MOUD. Results and conclusions will be presented. IRB approved.

Category: Pain/Opioids, Community Pharmacy

Presenter Name: Andrea Segerstrom-Nunez

Co-investigators: Ashley Lindell, Vanessa Patterson, Peter Rice, Whitney Osborn, Kelsey Schwander

Institution name, city, and state: University of Colorado Skaggs School of Pharmacy, Aurora, Colorado and Good Day Pharmacy, Loveland, Colorado

Abstract title: The cost-effectiveness of compounded semaglutide versus commercial GLP1-RAs

Abstract Body:

With the cost of Glucagon-like peptide 1 receptor agonists (GLP1-RAs) coupled with backorders affecting patients nationwide, alternative solutions such as compounded semaglutide have emerged. This project studied patients receiving compounded semaglutide suspension using Rybelsus® tablets. Primary objectives were to describe the clinical effects of compounded semaglutide at six different dosages, estimate its cost-effect relationship for weight loss and observe tolerability. A chart review was performed which included patients aged >18 years, a BMI >27 with at least one high-risk comorbidity, or a BMI >30. The study excluded patients who had recently used commercially available GLP1-RAs in the previous 90 days. Semaglutide at Good Day is compounded using Rybelsus® tablets as an oral suspension containing 0.4 mg, 0.6 mg, 0.9 mg, 1.2 mg, 2.4 mg, or 4.8 mg/mL semaglutide with vitamin B6 (pyridoxine). Patients were given pre-filled oral syringes to self-administer a 1 mL dose every three days. Weight changes and side effects were collected in a 14-day cycle using a PHI-protocol, patient reported survey. Refills, costs, as well as strength of the compound were collected using computer prescription software. Statistical analysis (mean, standard deviation, standard error) was conducted for all variables. Changes in weight were compared over time to determine if there is a significant change in weight loss ($p<0.05$). Several key findings emerged with our results. Firstly, participants who did experience weight loss were on the medication for >100 days, while those who did not experience weight loss had used it for around 60. A notable cost difference was also observed between the groups, with those achieving weight loss incurring an average cost of $345, compared to $183 for those who did not experience weight loss. Additionally, it was noted that a majority of patients on doses >1.2 mg/1mL experienced weight loss, whereas a majority of those on lower doses did not. Tolerability remained consistent across all doses until reaching >1.2 mg/1 mL, with no significant differences in terms of side effects. Finally, some patients reported substantial weight loss, with some losing upwards of 20 pounds. Despite study limitations, based on results, compounded oral semaglutide with vitamin B6 is effective for weight loss and GI tolerability. Given the cost difference and availability, it could help millions of Americans struggling with weight loss. This could potentially reduce their risk of cardiovascular events and have a profound economic impact on the healthcare system. This study was IRB exempt.

Category: Community Pharmacy

Presenter: Megan Schlueter

Co-Investigators: Kelsey Schwander; Michael Hinnenkamp; Vanessa Patterson, Reannon Kaup; Eric Gutierrez

Institution: University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, Colorado; King Soopers, Denver, Colorado

Assessment of Pharmacists' Perception and Knowledge of Emergency Refills in a Community Pharmacy Setting in the State of Colorado

The implementation of Colorado Board of Pharmacy (BOP) rule 3.00.23 in 2020 marked a significant advancement in pharmacy regulation, empowering pharmacists to issue emergency refills for critical medications without prescriptions, ensuring swift access to essential treatments for patients in urgent need. This study aims to evaluate the impact of an educational intervention on pharmacists who are employed within one regional division of a large community chain pharmacy in Colorado. This pre-post-test design includes demographic assessments, perception- and knowledge-based questions related to emergency refills. The preliminary results are represented by 95 participants for the initial survey. The results indicated a moderate overall knowledge score of 61.23%, with 63.16% of participants having never provided an emergency refill in the past year. A rank-ordered assessment of barriers reveals gaps in understanding as the top concern, recordkeeping requirements, liability concerns, and workflow disturbances, highlighting pharmacists' apprehensions about service delivery disruptions. While the study's conclusions are based on a specific subset of pharmacists from one company, the pending distribution of post-intervention surveys aims to provide comprehensive insights, anticipating improvements in knowledge and increased confidence among participating pharmacists. The findings are based on a subset of pharmacists, highlighting the importance of acknowledging the limited scope of these preliminary results, which may not universally apply to all pharmacists in Colorado or beyond. The study's conclusions are pending the distribution of the post-educational intervention survey, which will facilitate a comprehensive analysis to draw definitive insights. Results will be finalized on April 30th, 2024, which will be discussed at the date of presentation. This study is IRB exempt.

Presentation Category: Community Pharmacy

Presenter name: Holly Green

Coinvestigator names: Lance Ray; Spencer Laehn

Institution: Denver Health, Denver, Colorado

Title: Intravenous insulin vs subcutaneous insulin for adults with mild – moderate diabetic ketoacidosis

Abstract Body: Patients who present to the emergency department with diabetic ketoacidosis (DKA) are typically started on intravenous (IV) insulin which requires close monitoring and often admission to an intensive care unit (ICU). Our institution's protocol for patients with mild to moderate DKA was transitioned to subcutaneous (SQ) insulin as preferred treatment beginning in 2020. This retrospective cohort analysis will assess resource utilization and patient outcomes of mild-moderate DKA pre and post SQ insulin protocol implementation. Patients included were hospitalized between January 2017 to September 2023 with mild-moderate DKA, Glucose >250, bicarbonate level between 10-17, pH between 7.10 -7.30 and presence of ketones without another reason for ICU admission. Our pre-implementation phase will include patients from January 2017 – October 2020 and post implementation phase will include patients from Nov 2020 – September 2023. The primary outcome is time to closure of anion gap (<16) from first dose of insulin and normal bicarbonate level (>17) from first dose of insulin. The secondary outcomes are number of ICU admissions prevented, incidence of hypoglycemia (glucose <70 mg/dL), and hospital length of stay. Results and conclusion will be presented. IRB approved.

Presentation category: critical care, emergency medicine, acute internal medicine

Presenter Name: Amanda Dobson

Co-investigator names: Rob MacLaren; Shelby Pons

Institution name, city, and state: University of Colorado Hospital, Aurora, Colorado

Abstract Title: Assessing the Utility of Cystatin C eGFR and Correlation to Vancomycin Kinetics in Critically Ill Patients at an Academic Medical Center

Abstract Body: Glomerular filtration rate (GFR) is dependent on kidney function and is typically estimated using serum creatinine levels to calculate creatinine clearance. Creatinine clearance is commonly used to dose-adjust renally eliminated medications and reduce the risk of drug accumulation and associated toxicities. Creatinine is a function of muscle mass which is inherently low in bedridden critically ill patients. Therefore, GFR estimations based on creatinine clearance typically overestimate GFR in this population. Additionally, about 10% of serum creatinine is secreted in the kidneys and not filtered so creatinine clearance overestimates kidney function as renal function worsens. As a result, the application of creatinine clearance in the critically ill may lead to over exposure of renally cleared medications. The renally cleared antibiotic, vancomycin, has a narrow therapeutic index, therefore serum levels are highly sensitive to changes in renal function. Finding a more accurate way to measure renal function based on already measured vancomycin monitoring may increase patient safety and improve outcomes in this population. This IRB approved study describes the clinical application of cystatin C in critically ill adults at the University of Colorado Hospital. Cystatin C is a relatively small protein produced by cells at a constant rate and filtered from the blood by the kidneys. Prior studies have evaluated the different estimated GFR equations involving serum creatinine and cystatin C, proposing a more accurate estimation of GFR using serum creatinine and cystatin C combined in one equation. This single-center, retrospective, observational cohort study evaluated critically ill adults who received cystatin C levels during their ICU admission. The primary outcome was to identify a correlation of GFR estimations that use creatinine, cystatin C, or both and determine associations between these estimations and vancomycin pharmacokinetics. Secondary outcomes include assessing the utilization and application of cystatin C for GFR estimation at this institution in critically ill adults. To date, 90 patients have been evaluated, about half of which are included in this analysis. Results and conclusions will be presented.

Presentation Category: Critical Care

Presenter Name: Kurt Spitzer

Co-investigator Names: Leah Fitzgerald; Peter Rice; Emily Richter; Josue Morales; Vanessa Patterson; Kelsey Schwander

Institution Name: Denver Indian Health and Family Services; University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences

Abstract Title: Semaglutide in the setting of dietary counseling and personal training: a multidisciplinary approach to weight loss

Abstract Body: Semaglutide is an incretin mimetic used in clinical practice as an adjunct to diet and exercise for weight loss. As the primary mechanism of weight loss from incretin mimetics is dietary restriction, between 20% and 50% of weight lost is attributable to loss of lean body mass, which is undesirable as loss of lean body mass is associated with an increased risk of falls, frailty, hospitalization, and impaired functional capacity. As the most important factors related to gain of lean body mass are strength training and a diet including adequate amounts of protein, we hypothesize that dietary counseling and personal training will mitigate the loss of lean body mass which results from weight loss driven by semaglutide. This pragmatic quasi-experimental study prospectively evaluated 6 ambulatory clinic patients participating in an ongoing weight loss initiative in which they met with a dietician and a personal trainer once per month. Body mass index, body fat percentage, waist circumference, comorbidities, and demographics were collected from program patients, and data from patients concurrently prescribed semaglutide were compared to that of those receiving dietary counseling and personal training alone in order to assess whether patients prescribed semaglutide lost significantly more lean body mass than their peers. Data are not yet adequately robust for statistical analysis. Initial results and conclusions will be presented. IRB approved.

Presentation Category: Ambulatory Care

Category: Infectious Diseases

Implementation of an uncomplicated gram-negative bloodstream infection clinical care guideline at an academic safety net institution

Michael Deaney; Timothy Jenkins; Margaret Cooper; Alexandra Craig; Katherine Shihadeh

Denver Health Medical Center, Denver, Colorado

Gram-negative organisms are implicated in over 40% of bloodstream infections with rising incidence. Recent literature supports the use of 7-day treatment durations, the use of oral-step down therapy, and the limited utility of repeat blood cultures in the management of uncomplicated cases of these infections. Denver Health Medical Center implemented a clinical care guideline for uncomplicated gram-negative bacteremia in September 2022 that emphasized these points to optimize care. This retrospective quasi-experimental study evaluated the effect of the guideline on institutional practice. Adult inpatients with a blood culture growing a gram-negative organism were included. Notable baseline demographics collected include factors allowing for calculation of the Pitt Bacteremia Score and Charlson Comorbidity Index to assess severity of illness and comorbidities, respectively. A group admitted pre-guideline implementation (January 2019 - December 2019) was compared with another group admitted post-guideline implementation (October 2022 - September 2023). Differences were noted between groups in the proportion of patients receiving less than 8 days of therapy, median duration of therapy, number of repeat blood cultures ordered, and median time to transition to oral step-down therapy to examine the adoption of guideline principles. Clinical outcomes such as in-hospital mortality, 90-day mortality, recurrent bacteremia within 90 days, hospital readmission within 90 days, and rates of Clostridium dificile colitis within 90 days were also gathered. Results were reported with descriptive statistics. Comparisons between groups in continuous endpoints were analyzed with the Mann-Whitney U test. Categorial endpoints were analyzed with the chi-square test. Results and conclusions will be presented. IRB exempted.

Lyra Beltran; Jacob Beyer; Megan Pollard

Denver Health, Denver, CO

Title: Reactive versus rescue desmopressin in correction of severe hyponatremia in the intensive care unit

Abstract:

Current recommendations for sodium correction limits in severe hyponatremia to reduce risk of osmotic demyelination syndrome (ODS) range between 6 to 10 mmol/L/day depending on chronicity of hyponatremia and patient-specific risk for ODS. Several strategies of utilizing desmopressin to mitigate sodium overcorrection have been proposed: proactive, reactive, and rescue. There is no current consensus on the optimal strategy. The aim of this study is to characterize the clinical impacts of reactive or rescue desmopressin therapy for sodium overcorrection in severe hyponatremia amongst the critically ill. This COMIRB-approved, single-center, retrospective study included adult intensive care unit patients with severe hyponatremia, defined as serum sodium of ≤ 125 mmol/L, who received desmopressin for sodium overcorrection. Patients were grouped according to reactive strategy, defined as prevention of overcorrection based on serum sodium trends, versus rescue strategy, defined as treatment of overcorrection to stabilize serum sodium. The primary outcome was ICU-free days. Secondary outcomes included hospital-free days, serum sodium change over predefined correction limit by hour 24, and incidence of seizure or ODS following desmopressin administration. Among 96 patients, there was no significant difference in ICU-free days between groups (11.4 vs 11.9 days, p=0.484). There were no significant differences for hospital-free days (6.5 vs 9.0 days, p=0.082) or serum sodium change greater than threshold by hour 24 (0 vs 0 mmol/L, p=0.104). One (1.0%) patient experienced ODS confirmed by magnetic resonance imaging in the rescue strategy group. In critically ill adult patients with severe hyponatremia, desmopressin for rapid serum sodium overcorrection according to a rescue strategy did not result in a change in ICU-free days compared to a reactive strategy. Further larger studies would be needed to confirm risk of ODS with reactive versus rescue strategies.

Presentation Category: Critical Care

Primary Author: Michael Jennison

Co-Authors: Norman Kwong; Jeremy Vandiver

Title: Hypoglycemic Risk in hospitalization patients receiving correctional scale insulin with and without administration at bedtime

Institutional Name: Intermountain Health Saint Joseph Hospital, Denver, CO

Abstract body: At Saint Joseph Hospital, the default correctional scale insulin regimen involves administering lispro three times daily with meals and at bedtime. The purpose of this study is to assess the appropriateness and safety of this regimen. The study aims to investigate whether patients who receive lispro correctional sliding scale insulin three times daily, including with meals and at bedtime, experience more hypoglycemic events compared to patients who receive lispro correctional sliding scale insulin only with meals.

The study will involve a retrospective chart review of patients at Saint Joseph Hospital who received at least one dose of lispro through a correctional scale protocol between January 1, 2023, and December 31, 2023. Inclusion criteria encompass patients aged 18 years or older who received a single dose of lispro correctional scale insulin. Exclusion criteria include patients who received NPH insulin during their hospitalization, those administered intravenous regular insulin, those given oral hypoglycemic medications, individuals who received GLP-1 injections, patients admitted to the ICU at any point during their hospital stay, and pregnant individuals.

The primary endpoint of this study is the occurrence of overnight hypoglycemic events, defined as a blood glucose level of less than 70 mg/dL between 2200 and 0600. The data collection and results are not final. Results and conclusion will be presented. IRB approved.

Presentation categories: acute internal medicine

Comparison of naloxegol and alvimopan in prevention of post operative ileus after colorectal surgery

Minkyung Kim; Ross Varga; Aleksandra Kolodziej; Valerie Davis

CommonSpirit Health St. Anthony Hospital Lakewood, CO

Postoperative ileus (POI) is a transient slowing or absence of gastrointestinal (GI) motility, which is considered a common consequence of GI surgical procedures. Despite alvimopan being the only Food and Drug Administration (FDA) approved treatment for POI, alvimopan poses a large financial burden on hospitals and patients. Naloxegol is another agent with the same mechanism of action as alvimopan that may also have a role in prevention of POI. A community hospital implemented a pilot course of naloxegol in place of alvimopan with a single surgeon to compare efficacy for the prevention of POI. This was a single-center, retrospective cohort study comparing naloxegol versus alvimopan in the prevention of POI after colorectal surgery. Adult patients were included if they underwent colorectal surgery under a single surgeon and received at least one dose of alvimopan or naloxegol prior to colorectal surgery. Patients were excluded if they were switched from one medication to another, were pregnant, had a complete bowel obstruction, or experienced certain post-surgical complications. The primary outcome of the study was time to first post-operative bowel movement after colorectal surgery. Secondary outcomes were hospital length of stay (LOS), time to tolerate solid diet, incidence of POI, morphine milligram equivalents during entire hospital LOS, total days of medication therapy, and total number of doses of post-operative laxatives, prokinetics, and anti-emetics received. Continuous data were analyzed using Wilcoxon Rank Sum test and dichotomous data were analyzed using Fisher’s exact test. Results and conclusions to follow. This study was reviewed and approved by IRB.

Presentation category: medication safety/policy, administration/operations

Abstract title: Real world outcomes of terlipressin in the intensive care unit

Emily Dorgan; Ty Kiser; Rob Maclaren; Brian Murray University of Colorado Health, Aurora, Colorado

Abstract body:

Hepatorenal syndrome (HRS) occurs as a complication of liver cirrhosis, with poor prognosis that often results in hospital and intensive care admissions. In patients with cirrhosis, portal hypertension can lead to dilated splanchnic arterial vessels due to the release of vasodilators (e.g., nitric oxide) from hepatic circulation. This causes low systemic vascular resistance (SVR), low blood pressure, and increased cardiac output. Prior to terlipressin approval in the United States in September of 2022, available therapies for HRS management included norepinephrine, vasopressin, and the combination of midodrine and octreotide.

Terlipressin is a synthetic vasopressin analogue with specificity for the vasopressin 1 (V1) receptor. Terlipressin agonizes the V1 receptor that is expressed on vascular smooth muscle cells in the splanchnic circulation. Agonizing this receptor causes vasoconstriction in these vessels and leads to a reduction in portal pressure, that is a primary problem in HRS. While terlipressin has been approved in other countries for more than 10 years, its safety profile restricted approval in the United States. This retrospective single center observational study evaluated all adult patients who received terlipressin therapy since formulary approval at the University of Colorado from March 2023-March 2024. The purpose of this study is to evaluate adherence to current clinical use criteria, frequency of order history and number of doses received by this population, and the subsequent clinical outcomes and adverse events. Additionally, patient-specific measures that relate to terlipressin use were evaluated, including hospital and ICU length of stay, need for renal replacement therapy, improvement in kidney function, other vasopressors needed, liver transplantation, and incidence of commonly reported adverse events. Results and conclusions will be presented. IRB approved.

Presentation Category: Critical Care, Transplant

Use of Cefazolin Alternatives for Surgical Infection Prophylaxis in Patients with Documented Penicillin Allergies Before and After Implementation of an Institutional Allergy Algorithm

Michael Thomas; Thomas Vondracek

Saint Joseph Hospital, Denver, Colorado

Penicillin allergies are commonly documented in patient charts and can frequently lead to the use of alternatives in place of the preferred antibiotic. In surgical infection prophylaxis, this often means the use of agents such as vancomycin or clindamycin instead of cefazolin. This study aims to compare the use of cefazolin for surgical infection prophylaxis in patients with a documented penicillin allergy before and after implementation of an institutional allergy algorithm and antibiotic cross-sensitivity chart. The electronic medical record will be used to identify surgical patients with a documented penicillin allergy receiving any form of surgical infection prophylaxis for a 1-year period prior to and a 3-month period after the implementation of an institutional policy and provider education on management of penicillin allergies. Excluded patients will include those who undergo procedures for which the preferred antibiotic prophylaxis is not cefazolin or patients who are receiving antibiotics for non-surgical prophylaxis indications. Data collected will include patient age, gender, type of surgery performed, allergy history (antibiotic, reaction, and severity), antibiotics received for surgical prophylaxis, and reported adverse events during surgical admission. All data will be recorded without patient identifiers and maintained confidential. Patients with multiple encounters within one study period will have only the first encounter recorded. Final data will be reviewed to determine the proportion of patients in each group who received cefazolin for surgical infection prophylaxis. Secondary analysis will include which alternative antibiotics were used, any adverse events reported during admission, and subgroup analyses based on the severity of the documented penicillin allergy and the type of surgery performed. This study is IRB approved.

Presentation category: Medication Safety / Policy

Utilization of oritavancin in susceptible gram-positive organisms

Cynthia Sprowl; Kelly Kuk

Intermountain Health – Saint Joseph Hospital, Denver, Colorado

Oritavancin and other long acting lipoglycopeptides have been approved for use in acute bacterial skin and soft tissue infections (ABSSI) caused by susceptible gram-positive organisms. Recent studies have evaluated these agents' use in indications that may require prolonged intravenous antibiotic therapy such as osteomyelitis and infective endocarditis. The purpose of this study was to evaluate the appropriate use of oritavancin based on previously developed criteria for the treatment of gram-positive infections at Saint Joseph Hospital (SJH). We also aimed to update our criteria for use of long acting lipoglycopeptide based on class evaluation of newer data that will be more in line with current clinical practice. This retrospective observational study evaluated 47 patients who received at least one dose between June 2015 and January 2024 for appropriateness of oritavancin utilization. Patients were grouped into two groups, non-complaint, and complaint. Compliance was defined as meeting all the criteria outlined in the previously developed protocol for oritavancin utilization at Saint Joseph Hospital. Demographics, microbiologic culture data, prior antibiotics utilized, infectious diseases physician consultation, infection type, trial of intravenous antibiotics for greater than 12 hours, length of stay, follow up after one week of administration, and current or history of MethicillinResistant Staphylococcus Aureus (MRSA) infection were collected for each patient. Based on this and new data, new criteria for long-acting glycopeptide use at Saint Joseph Hospital will be implemented and post implementation analysis of the new criteria for long-acting glycopeptide use was also reviewed as an exploratory endpoint. Results and conclusions will be presented. IRB approved.

Category: Infectious Diseases

Achievement of low-density lipoprotein cholesterol (LDL-C) thresholds in very high-risk atherosclerotic cardiovascular disease (ASCVD) patients

Elisa Worledge; Sarah J. Billups; Oliver Titus; Joseph J. Saseen

University of Colorado Skaggs School of Pharmacy, Aurora, Colorado

The 2022 American Academy of Cardiology (ACC) Expert Consensus Decision Pathway (ECDP) on the Role of Nonstatin Therapies for LDL-Cholesterol Lowering in the Management of Atherosclerotic Cardiovascular Disease (ASCVD) represents a significant shift in the management of LDL-C in the United States. Now congruent with the 2019 European Society of Cardiology (ESC)/European Atherosclerosis Society (EAS) guidelines, an LDL-C threshold of <55 mg/dL is recommended for patients with very high-risk ASCVD. This retrospective evaluation aims to (1) determine the proportion of primary care patients within the University of Colorado Health system with very high-risk ASCVD achieving an LDL-C threshold of <55 mg/dL and (2) compare those who did versus did not achieve LDL-C threshold. Secondary outcomes include achievement of an LDL-C threshold <70 mg/dL, utilization of a high-intensity lipid-lowering therapy, defined as use of a high-intensity statin or any statin plus a non-statin therapy, and evaluation of medication adherence when available. Included patients were at least 18 years old with very high-risk ASCVD, defined as history of a major ASCVD event plus at least two high-risk conditions documented by ICD 10 or CPT code between January 1st, 2023 and December 31st, 2023. Most recent LDL-C was used to determine achievement of LDL-C threshold and evaluate appropriateness of prescribed lipid-lowering therapy. 12,083 patients were identified with an ASCVD diagnosis, and 9,032 met criteria for very high-risk ASCVD. Approximately 22% of very high-risk ASCVD patients achieved an LDL-C threshold of <55 mg/dL. Of those who achieved an LDL-C of <55 mg/dL, 27% were on high-intensity lipid-lowering therapy (79% prescribed a high-intensity statin). Among those who did not achieve an LDL-C of <55 mg/dL, including 15% of patients without an LDL-C available, 23% were on high-intensity lipid-lowering therapy (67% prescribed high-intensity statin therapy). Approximately 30% of patients achieved an LDL-C of <70 mg/dL. Mean LDL-C of the entire cohort was 76 mg/dL. Comparisons between groups were assessed using the Wilcoxon Rank Sum Test or the Chi-Square Test for continuous and categorical variables, respectively. Real-world implementation of the new LDL-C threshold of <55 mg/dL in very high-risk ASCVD patients is low. This very high-risk ASCVD cohort presents an opportunity for targeted interventions to optimize prescribed lipid-lowering therapy to achieve LDL-C thresholds. This project was deemed exempt from IRB review.

Ambulatory Care; Cardiology

Impact of a Change in Diagnostic Testing Methods for Group A Streptococcal Pharyngitis on Antimicrobial Stewardship and Laboratory Services

Primary Investigator: Sydney Kruse

Co-Investigators: Alexander Novin; Ashley Weiss

UCHealth Memorial Hospital, Colorado Springs, Colorado

Group A Streptococcal (GAS) Pharyngitis is a common infection affecting adults and children. Common testing methods for diagnosis of GAS pharyngitis include rapid antigen diagnostic tests (RADT)and/or culture and Polymerase Chain Reaction (PCR) tests. The aim of this study is to gain a better understanding of the antimicrobial stewardship and financial impacts of a change from RADT to PCR testing in the diagnosis of GAS Pharyngitis. A pre-post intervention retrospective chart review is being performed on emergency room, urgent care, and primary care clinic patients within the UCHealth system who received GAS Pharyngitis testing using a rapid antigen test and/or throat culture for diagnosis from 1/1/2018- 8/31/2019 compared with patients who received a PCR test for diagnosis from 1/1/2022-3/31/2023. Patients were included in the study if they received any of the three testing methods for diagnosis of GAS Pharyngitis in the specified time frames. Excluded patients are those who were admitted to the hospital. The primary endpoint is the percentage of patients who were prescribed antibiotics with a negative test. A random sample of 100 patient in each group that had a negative test and received an antibiotic prescription will be analyzed. Main data points from the subgroup will be demographic data as well as reason for antibiotic prescribing for a negative test. Additionally, a cost analysis of the rapid antigen test +/- throat culture compared with the PCR will be completed. Results and conclusions will be presented. This project was carried out as quality improvement and did not meet the definition of research per DHHS regulation.

Category:

Presenter name: Kaitlyn Haas

Co-investigator names: Elise Lawrence; Victor Lewis; Barrett Crowther

Institution name, city, and state: University of Colorado Health, Aurora, Colorado

Abstract Title: Real life experience with letermovir for cytomegalovirus prophylaxis in solid organ transplant

Category: Transplant

Cytomegalovirus (CMV) disease is a major cause of morbidity and mortality among transplant recipients. Those at highest risk for CMV are recipients who are CMV-seronegative and receive an organ from a CMV-seropositive donor which make up 20% of all kidney transplant recipients. At our institution valganciclovir has been the standard of care for prophylaxis for solid organ transplant recipients at moderate to high risk for CMV disease. In the beginning of 2023, our transplant center experienced significant access issues with obtaining valganciclovir. Alternative strategies used during this time included the use of high dose acyclovir and letermovir. While letermovir was recently FDA approved for CMV prophylaxis in high-risk kidney transplant recipients, this study aims to provide additional data on the efficacy and safety of its use in both kidney and non-kidney transplant recipients who are at high or moderate risk for CMV disease, as well as identify medication access barriers our center experienced during this time. This is a single-center, retrospective chart review of solid organ transplant recipients who received letermovir for at least 1-month post-transplant for primary CMV prophylaxis (comparator) or solid organ transplant recipients who received valganciclovir for at least 1-month without letermovir (control). Patients were stratified into three groups based on the prophylaxis medications they received: letermovir only, valganciclovir only, and a hybrid of letermovir and valganciclovir. The primary outcome is the rate of neutropenia or leukopenia necessitating medication adjustments or administration of filgrastim within 6- and 12-months post-transplant. Medication adjustment is defined as reduction or holding of mycophenolate, sulfamethoxazole/trimethoprim and/or azathioprine not due to causes other than neutropenia. Secondary outcomes include biopsy proven acute rejection within 6- and 12-months post-transplant, CMV viremia based on PCR >1000, hospitalization for CMV, rate of leukopenia, herpes simplex virus/ varicella zoster virus diagnoses, and access barriers associated with letermovir. Results and conclusions will be presented. IRB approved.

Presenter name: Kalya Martinez

Co-Investigators: Krista Sanchez; Leticia Ritz; Matthew Thielbar; Lisa Clodfelter; Isain Zapata

UCHealth Parkview Medical Center, Pueblo, Colorado

Title: Retrospective analysis of postoperative pain management with bupivacaine and meloxicam solution, or periarticular with or without ropivacaine pumps

UCHealth Parkview Health System has a second hospital located in Pueblo West focused on Orthopedics. At this location, patients undergoing an elective total knee arthroplasty surgery are administered one of the three post-operative pain treatment agents: Zynrelef®, periarticular injections with or without On-Q pumps™ Pain Relief System filled with ropivacaine. Zynrelef® is an extended-release formulation of bupivacaine and meloxicam that provides up to 72 hours of analgesia. Whereas a periarticular injection consists of ropivacaine-ketorolac-epinephrine in normal saline that can be commonly injected in and around the knee alone or in combination with an On-Q pump, which is an elastomeric pump that delivers a local anesthetic of ropivacaine 0.2% to the incision site via catheter. In this single center, retrospective chart review study the objective was to evaluate the post-operative pain management amongst the three pain treatment options based on the average reduction of morphine milligram equivalents (MME) used per day during hospitalizations. The subjects in the groups were those individuals who underwent a total knee arthroplasty at UCHealth Parkview Medical Center from November 2022 to October 2023 and were administered one of the three post-operative pain management options. Data was reviewed and collected using the electronic heath record system, EPIC. The primary outcomes were the average reductions of MME used per day during hospitalization. The secondary outcomes are: to evaluate differences in post-operative pain management based on the pain scales identified via nursing assessments while inpatient following the surgery, evaluate safety by reviewing incidence of re-admissions within 30 days following surgery, to determine if differences in pain management existed between patients who are opioid naive versus tolerant and to investigate if additional supportive medications administered preoperatively impact the need for additional opioids. The following were collected for each patient: gender, age, body mass index, provider, length of stay, type of blockade and preoperative supportive care medications administered, and if they were opioid naive or opioid tolerant. Results and conclusions of this IRB approved project will be presented.

Category: Pain/Opioids

Risk factors associated with hypoglycemia within a trauma population during hospital admission in patients who are on basal insulin prior to admission

Jake Turner; Michaela Bruner; April Chapman; Jeff Jansen; Haley Pressley

Intermountain Health St. Vincent Regional Hospital, Billings, Montana

Diabetes is a chronic (long-lasting) health condition that affects how food is converted into energy. In the United States (US), diabetes affects an estimated 37.3 million people or approximately 11.3 % of the US population. Episodes of hypoglycemia are more common in insulin dependent patients, with severe hypoglycemic events occurring between 63 to 320 times per 100 patient years. There are limited clinical studies evaluating the risk factors for hypoglycemic events in patients on basal insulin before admission. This study included adults (>18 years old) with diabetes who experienced a hypoglycemic event from presentation to emergency department (ED) to discharge. Most current literature evaluating episodes of hypoglycemia in admitted patients only assessed diabetic status or type of diabetes. This study focused on risk factors associated with hypoglycemia episodes in admitted insulin dependent patients. Patients were included regardless of admission to hospital between 01/01/2021 and 01/01/2023 but excluded pregnant patients. Descriptive statistics will be used to describe baseline characteristics of the case and control groups. We will use chi-squared or Fisher's exact test for categorical variables and independent t-test or Wilcoxon ranked sum test for continuous variables. For the primary and secondary outcomes, we will use multivariable logistical regression to identify potential predictors of hypoglycemia. We will test for multicollinearity, interactions, and outliers in the data set. The final model will be conducted in the backwards stepwise method with basal insulin use prior to admission forced into the model and with other possible predictors ($p < 0.2$ in bivariate analysis) of hypoglycemia entered into the model. The goodness of fit will be measured via the Hosmer-Lemeshow test and model variance will be described using Nagelkerke's R2. Results: The average time to a hypoglycemia event in the case group was ~64 hours. 29 (64%) of these patients experienced a hypoglycemia event defined as <70 mg/dL, and 16 (36%) of these patients experienced a severe hypoglycemia event defined as <50 mg/dL. The average length of stay for those that did not experience hypoglycemia was ~44 hours, while the average length of stay for those who did experience a hypoglycemia event was ~164 hours. Risk factors most associated with a hypoglycemic event were elevated BMI, hypoalbuminemia, and diagnosis of hypothyroidism. Statistical analysis and conclusion to come. IRB approved.

Category: Academia, Acute Internal Medicine, Medication Safety/Policy

Presenter name: Kristina Ortiz

Co-investigator names: Madelyn Floysand; Sarah Norskog; Katelyn Carson; Cindy L. O'Bryant

Institution name, city, and state: University of Colorado Health, Aurora, Colorado

Abstract Title: Efficacy and safety of dexrazoxane in sarcoma patients

Category: Oncology

Dose-dependent cardiotoxicity remains a major adverse event for cancer patients treated with anthracyclines. This poses a concern for sarcoma patients since anthracyclines are first-line treatment for soft tissue sarcoma. Dexrazoxane is a potent iron-chelating agent that interferes with the doxorubicin-iron complex to prevent oxygen-free radical generation. The mechanism of anthracycline cardiotoxicity remains controversial but may be caused by the generation of free radicals or inhibition of topoisomerase 2β that leads to the inhibition of mitochondrial biogenesis and activation of cell death pathways The use of dexrazoxane as a cardioprotective agent is well defined in breast cancer patients and pediatric patients with acute lymphoblastic leukemia or Hodgkin's lymphoma who have been treated with anthracyclines. This study aims to evaluate the efficacy and safety of dexrazoxane use with anthracycline based regimens in the adult sarcoma population. This is a single center, retrospective chart review of adult sarcoma patients who received doxorubicin within the University of Colorado Health system from September 1, 2016, to November 30, 2023. Patients were stratified into two groups: doxorubicin plus dexrazoxane and doxorubicin only. The primary outcome is the incidence of cardiac events defined as a drop in left ventricular ejection fraction (LVEF) of ≥ 10% from baseline, a drop in LVEF below 50%, or clinical signs and symptoms of heart failure based on NYHA classification. Secondary outcomes include cumulative anthracycline dose, progression-free survival, and overall survival. Results and conclusions will be presented. IRB approved.

Presenter Name: Nicole Kazemini

Co-investigators: Amie Meditz; Jaime Mesenbrink; Katherine Macchi; Christopher Zielenski

Institution Name, City and State: Boulder Community Hospital, Boulder, Colorado

Abstract Title: Evaluating the Effect of a Pharmacist-Led Educational Intervention on Outpatient Azithromycin Prescribing Practices

Abstract Body: In this retrospective quasi-experimental investigation, the focus was on examining the effect of pharmacist-directed educational interventions on enhancing the precision of azithromycin prescriptions in outpatient environments. The analysis leveraged data from Electronic Health Records (EHR) to review prescriptions for azithromycin issued in emergency departments (ED) and outpatient primary care clinics. These prescriptions were evaluated against local prescribing guidelines using ICD-10 codes to assess the appropriateness of azithromycin usage. To encourage more accurate prescribing habits, a 30-minute video educational module was introduced to healthcare providers. This module emphasized up-to-date guidelines, appropriate laboratory testing procedures, and incorporated case studies to highlight correct prescribing methods. Prescribing practices were analyzed over two periods: initially from December 1, 2022, to March 1, 2023, and then in a follow-up phase from February 1, 2024, to April 30, 2024, after the educational intervention was implemented. A chi-squared test was utilized for the analysis of study outcomes, representing a significant eIort toward improving prescribing precision and contributing to better antimicrobial stewardship practices. Before the intervention, 437 azithromycin prescriptions were identified which averaged to 5 azithromycin prescriptions per provider (range, 0 to 30). Among the pre-intervention azithromycin prescriptions 33% were considered appropriate. The top three inappropriate indications identified for azithromycin were bronchitis (26%), sinusitis (12%), and bacterial pharyngitis (12%). Post-intervention analysis pending. This study has been designated as IRB exempt, indicating that it meets the specific criteria for exemption from the formal review process typically required by the Institutional Review Board.

Presentation Categories: Infectious Diseases, Ambulatory Care

Kateryna Parkhomenko; Shelley Glaess; Maria Isaacs; Alexandra Carusone

UCHealth Memorial Hospital Central, Colorado Springs, Colorado

Acute pain management in patients with a history of opioid use disorder (OUD) on medication assisted treatment (MAT)

Opioid use disorder (OUD) is the leading cause of overdose deaths nationwide. Efforts have been made to treat OUD with medication assisted treatment (MAT) such as methadone and buprenorphine. There is limited evidence describing whether continuing or withholding MAT in the hospital setting will provide the best pain control, and overall outcomes, for OUD patients. Given the lack of evidence-based guidance in this area, investigating the relationship between OUD therapy and pain management is vital. A retrospective chart review of trauma and acute care service (TACS) patients with a history of OUD was conducted. This was performed using data from the Colorado Trauma Registry from 01/01/2017 to 10/01/2023. Patients were included if they had a history of OUD managed with buprenorphine or methadone within 90 days prior to admission, were treated at UCHealth Memorial Hospital Central or UCHealth Memorial Hospital North, and were admitted to TACS. Exclusion criteria included age younger than 18 years old, pregnancy, or incarceration. Patients were grouped based on MAT resumption vs non-resumption. Primary outcomes included length of hospital stay, length of intensive care unit (ICU) stay, time to buprenorphine or methadone resumption, and total adjunct opioid requirements in morphine milligram equivalents (MME). Secondary outcomes included adjunct pain medication used during admission and Acute Pain Service (APS) utilization. Continuous variables with a normal distribution were reported as mean and standard deviation and analyzed with the Student's t-test. Continuous variables with a non-normal distribution were reported as median and interquartile range and were analyzed using the Wilcoxon test. Nominal variables were analyzed using Fisher's exact test. After screening for exclusions, 27 patients were included for analysis. Mean time to therapy resumption was 36 hours. Median daily MME did not differ significantly between MAT resumption vs non-resumption (15.4 vs 36.5; p = 0.92) groups, nor did median total MME (165.1 vs 354.2; p = 0.92). Additionally, MAT resumption did not appear to have a statistically significant impact on hospital (7.5 vs 7.0; p=0.68) or ICU (2.0 vs 2.5; p= 0.21) length of stay. Similar rates of adjunct pain medication use was observed between groups. In hospitalized patients with acute pain and history of OUD, resuming MAT had similar outcomes compared to patients who did not resume therapy. IRB approved.

Presentation Category: Pain / Opioids

Determining the impact of EHR modifications and pharmacist-led education on the frequency of medication non-administrations

Bridger Liston; Christopher Zielenski; Katherine Macchi; Jaime Mesenbrink

Boulder Community Health, Boulder, Colorado

Medication non-administrations limit patient's exposure to treatment, potentially causing harm. The prevalence of non-administrations can indicate inappropriate medication ordering, persistent patient refusal, or medication errors that cause additional burden on nursing staff by increasing time spent on documentation and care-team communication. This quasi - experimental, intervention with a retrospective control quality improvement project evaluated all scheduled medication administrations during two separate data collection periods. These were separated into administrations (any MAR documentation of being given to a patient) and non-administrations (any MAR documentation as missed, due, or held by a non-provider). The data collection periods were separated by an implementation phase for interventions involving EHR and order set modifications, data evaluation and presentation to various hospital committees, and education to hospital staff. Interventions were focused on the ten medications with the highest prevalence of non-administrations along with broad systemic changes. Before implementation, 14.4% of all scheduled medication administrations were documented as not being given to patients. Preliminary post intervention data demonstrated a significant decrease of non-administrations to 11.3% for all scheduled medications. Significance was determined by Chi-square analysis. Final results and conclusions will be presented. This project was IRB exempt and approved by an in-house research council.

Category: Medication Safety/Policy

Evaluation of discharge antibiotic durations for community-acquired pneumonia at a community hospital

Grace Cryder; Claire Swartwood; Adrian Schenk

CommonSpirit Health St. Anthony Hospital, Lakewood, CO

Community-acquired pneumonia (CAP) is a respiratory infection responsible for four million cases, 445,000 hospitalizations, and 22,000 deaths annually in the United States. Newer data suggest that excessive treatment durations are a common cause of inappropriate discharge prescriptions for CAP. This single-center, retrospective, single-arm study evaluated the duration of prescribed antibiotic durations at hospital discharge in patients with severe CAP. Inclusion criteria were a diagnosis of severe CAP, admission to a non-ICU floor, and discharge with a prescription for oral antibiotics. Patients were excluded if they were pregnant, immunocompromised, had a complicated pneumonia, had severe renal insufficiency, resided in a skilled nursing facility, or were only seen in the emergency department (ED). Primary outcomes were mean duration (days) of antibiotic therapy prescribed at discharge and total duration of antibiotic therapy. Secondary outcomes were most frequent antibiotics prescribed at discharge, 30-day readmission or ED visit rate, and frequency of guideline-directed therapy. The presence of documented pharmacist interventions related to discharge antibiotic prescriptions was also evaluated. Descriptive statistics were used to analyze study outcomes. A total of 269 encounters were assessed for eligibility and 170 encounters were included in the analysis. The median age was 71 years [interquartile range (IQR), 55 to 80]. Of the 170 encounters, 87 (51%) were female and 83 (48%) were male. Most common baseline characteristics of the study population included hypertension (46%), type 2 diabetes (19%), and chronic obstructive pulmonary disease (15%). Further results and conclusions to follow. This study was exempt from IRB review.

Presentation Category: Infectious diseases, acute internal medicin

Evaluation of Calcium Replacement in Trauma Patients Not Receiving Massive Transfusion

Srishti Singal; Kinsey Kowalski; Paige Clement; Thomas Schroeppel; Alyssa Douville

UCHealth Memorial Hospital, Colorado Springs, CO

Hypocalcemia is a common metabolic electrolyte derangement in critically ill patients, and studies suggest hypocalcemia may be a marker of greater disease severity. Measurement of ionized calcium (iCa) is a preferred measurement for clinical monitoring because it is not influenced by alterations in albumin concentration and acid-base status. Calcium replacement has been shown to be beneficial in trauma patients that require massive transfusion protocol (MTP). However, this treatment benefit has not been proven in trauma patients who do not receive MTP. Among trauma patients not receiving MTP, we aimed to investigate and describe the association between iCa monitoring and the subsequent calcium replacement. This IRB-approved, retrospective, observational cohort study evaluated 300 trauma patients admitted to the ICU who received intravenous calcium between July 2018 and June 2023 for predictors of treatment response. Demographics, iCa measurements during first 24 hours in the ICU, total number of iCa collected along with resulting cost, total IV calcium dose in the first 24 hours of ICU stay, total cost of calcium given during ICU stay, and in-hospital mortality were collected. Descriptive statistics were utilized to describe the study cohort and to summarize all outcomes of interest. Logistic or linear regression multivariate analyses were utilized to assess risk factors associated with hypocalcemia and mortality. The adequate replacement group had a median 24-hour iCa level of 1.22 mmol/L as compared to 1.12 mmol/L in the inadequate replacement group ($p = <0.001$) with an iCa difference of 0.11 mmol/L vs 0.03 mmol/L ($p = <0.001$) from baseline. The adequate replacement group utilized less calcium gluconate (grams) in the first 24 hours (2 vs. 3, $p = 0.049$) and throughout the ICU admission (3 vs 6, $p = 0.56$). This led to a decrease cost of calcium gluconate used throughout the ICU admission ($23.7 vs $47.4, $p = 0.05$). The adequate replacement group had a lower GCS (4 vs. 14, $p = 0.018$) and a higher mortality rate (53% vs. 17%, $p = 0.001$). A repeat 24-hour iCa level was missing in 44% of patients. Overall, our data showed that adequate replacement occurred in patients with severe head injuries who had a higher mortality rate. Calcium was more likely to be adequately replaced with less calcium gluconate with a higher initial iCa level, but this finding is limited by the lack of repeat iCa levels after replacement

Category: Critical Care, Administration/Operations

Presenter: Joelle Edwards

Co-investigators: Emily Miklya; Corinne Weinstein

Institution: Intermountain Health Good Samaritan Hospital, Lafayette, Colorado

Title: Analysis of Infusion Reactions Across Different Intravenous Iron Formulations

Hypersensitivity reactions are a significant consideration regarding IV iron repletion, and the rate of infusion reactions associated with different IV iron preparations varies across different studies. It is also unclear what the best strategy is regarding premedicating patients, and how the approach differs across institutions. This study is a retrospective cohort study looking at rates of infusion reactions to IV iron, determined by administration of emergency medications (including diphenhydramine, methylprednisolone, epinephrine, albuterol, and normal saline) to treat reactions. The primary comparison groups are those who received iron sucrose vs ferumoxytol vs ferric derisomaltose. Other comparison groups are reaction rates across infusion centers, those who received premedications vs those who did not, and those who have previously been exposed to IV iron vs those who have not. Pearson $\chi 2$ tests will be used to determine the statistical significance of infusion reactions based on the iron formulation. Statistical significance for analyses is set at $p < .05$. Results and conclusions will be presented. IRB approval pending.

Category: Oncology

Analysis of Phenobarbital use in Alcohol Withdrawal and the Impact on Patient Outcomes

TJ Patel; John Flanigan

Good Samaritan Hospital, Lafayette, Colorado

Category: Critical Care

Phenobarbital is a long-acting barbiturate that, similarly to benzodiazepines, works by increasing GABAergic activity with the added mechanism of inhibiting glutamate release and reducing the activation of NMDA receptors. This helps to correct the signal imbalance seen in alcohol withdrawal on both ends, and its incorporation to standard therapy has the potential to improve clinical outcomes with less utilization of benzodiazepines. The use of phenobarbital adjunct to benzodiazepines is supported in ASAM guidelines for the inpatient treatment of alcohol withdrawal and is also recommended as first-line therapy in settings of benzodiazepine contraindication. However, this recommendation comes with hesitation due to the narrow therapeutic window and side effect profile of phenobarbital. This retrospective study evaluated select patients seen at Good Samaritan Hospital between January 2023 and December 2023 treated for alcohol withdrawal with either benzodiazepines alone or with benzodiazepines and phenobarbital to assess for differences in clinical improvement and safety. CIWA scores, ICU admission, incidence of mechanical ventilation, days of mechanical ventilation, incidence of aspiration pneumonia, incidence of seizures, patient age, and patient weight were collected for all patients. $\chi 2$ tests and two-tailed paired t-tests will be used to analyze data and determine statistical significance. Results and conclusions will be presented. IRB approval pending.

Category: Critical Care, Acute Internal Medicine

Presenter: Jillian Beaudry

Co-investigator: Gina Harper

Institution: UCHealth Poudre Valley Hospital, Fort Collins, CO

Title: Optimizing albumin utilization within a regional health system

Presentation Category: Acute Internal Medicine

Albumin is frequently utilized outside of evidence-based medicine applications and stewardship has considerable cost-savings potential. A retrospective, regional chart review of administrations of albumin 5% or 25% was performed from April 1st, 2023, to July 31st, 2023 for four Northern Colorado UCHealth Hospitals. The purpose of this medication use evaluation was to identify indications for the use of albumin in comparison with recently approved UCHealth albumin clinical use criteria. At the time of data collection, this criteria had not been implemented in Northern Colorado. The primary endpoint included the percentage of albumin 5% and 25% administrations that were ordered for indications outside of internal recommendations. Secondary endpoints included total grams of albumin 5% and 25% that were ordered outside of internal recommendations, and associated cost. Of the 2,795 albumin administrations identified, every 6th administration was reviewed (n=462), and 81% (n=374) were inconsistent with approved UCHealth criteria. The most common indication identified was for intra-operative hypotension (n=192) which is not an evidence-based indication included in the criteria for use. Of the 19% (n=88) of albumin administrations consistent with criteria, 70% (n=62) were dosed incorrectly. The total amount of albumin administered for 462 patients was ~12,018 grams in the four-month period, which extrapolates to ~$100,000 in annual expenses. The UCHealth albumin clinical use criteria was recently updated and approved by System P&T, containing the most current evidence supporting albumin use. An order panel reflecting this criteria and corresponding doses has been implemented in the Electronic Health Record (EHR), and the indication for albumin use is visible upon pharmacist verification in an effort to improve compliance. Education was provided to providers and pharmacists to encourage utilization of the EHR order panel. A future MUE will be conducted to reassess the order panels impact on prescribing patterns and albumin use, to identify inconsistencies from the use criteria, and associated areas for improvement. The criteria for use, associated order panel, and findings from this MUE will support any future restrictions on albumin in case of shortage, in addition to ensuring the most appropriate use based on indication, dose, and quantity to remain consistent with current evidence for albumin utilization. IRB exempt.

A Retrospective Evaluation of the Impact of Pharmacist Reviews in Dementia Care at VA Eastern Colorado Health Care System (VA ECHCS)

Thao Anh Mai; Elizabeth Ellis

Veterans Affairs Eastern Colorado Health Care System, Aurora, Colorado

Presentation Category: Psychiatry, Neurology

The Veterans Affairs Eastern Colorado Health Care System (VA ECHCS) provides a referral based Dementia Care service for veteran patients with suspected or diagnosed dementia. The Dementia Care team provides multiple services, including diagnostic evaluation of major neurocognitive disorder, education of dementia management to patients and caregivers, assistance with advance care planning, and connection to other VA resources. The Dementia Care team has historically consisted of a geropsychologist and social worker. However, in July 2023, a board-certified geriatric Clinical Pharmacist Practitioner (CPP) was integrated into the Dementia Care team to evaluate for medications that may potentially cause or contribute to cognitive impairment and address any barriers with medication management. The CPP may provide recommendations, which are then sent to the patient's primary care team for consideration. The purpose of this quality improvement project was to evaluate the impact of pharmacist reviews on veterans' care and the usefulness of this review from the Dementia Care team. This project retrospectively evaluates 32 patients who were referred for a Dementia Care consultation and received a pharmacist review from a board-certified geriatric CPP or pharmacy resident between July 1, 2023 and January 12, 2024. To evaluate impact on veteran care, all completed pharmacist reviews during the study period will categorize pharmacists' findings and recommendations; recommendations will subsequently be evaluated to determine whether they were ultimately implemented by the patient's provider. Additionally, opinions voluntarily offered from Dementia Care team regarding the pharmacist reviews will be used to evaluate its usefulness and possible improvements. Demographics, diagnosis of dementia or neurocognitive disorder, reason for Dementia Care consult, presence of medications that may cause/contribute to cognitive impairment, and pharmacist recommendations made and implemented were collected for each patient. Data will be summarized using descriptive statistics. Results and conclusions will be presented. This quality improvement project was used solely for operational purposes, intended purely to understand whether existing processes are contributing to the optimization of patient care, and suggest possible improvements to these processes. Therefore, IRB approval was not required.

Evaluating the impact of an educational intervention on pharmacists' confidence with counseling on continuous glucose monitor use and prescribing

Snigda Thyagaraj; Robert Willis; Tonna Farinha; Jeffrey Hamper; Jeffrey Lalama

Albertsons Companies, Denver, Colorado

Presentation Category: Community pharmacy

Although using a blood glucose monitor (BGM) has been the standard of care to monitor blood glucose levels, the most updated American Diabetes Association guidelines advise patients to use continuous glucose monitors (CGMs) as it's easier to use and have shown clinical benefits such as reducing the incidence of hospitalizations due to hypoglycemia. Therefore, it's important for healthcare professionals like pharmacists to know how they work, how to apply them properly, what benefits they offer and how they differ between brands. This prospective study had community-based pharmacists take a pre-survey to evaluate their baseline knowledge on CGMs, review an educational intervention, then take a post-survey to assess their change in knowledge and confidence levels. Participation was voluntary and surveys were completed anonymously. The educational intervention was a 10-minute PowerPoint video explaining the differences between CGMs and BGMs, how to set up and apply a CGM and explain what benefits they provide to patients with type 1 and type 2 diabetes. Inclusion criteria included community-based pharmacists that are permitted to prescribe a CGM which currently includes pharmacists in Colorado, Idaho, and Oregon. Exclusion criteria included other pharmacy employees such as pharmacy technicians and pharmacy interns. Comparing the pre- and post-survey will be evaluated using a chi-square test. Additionally, comparing the change in quantity of CGMs being prescribed by community-based pharmacists before and after the educational intervention will be evaluated using descriptive analysis. Currently, preliminary results include 13 completed surveys. Overall, preliminary results show that pharmacists feel more confident in counseling patients on CGMs after watching the educational video. IRB approved.

Diabetic Ketoacidosis and Hyperglycemic Hyperosmolar State Treatment: Standardizing a High Risk and Low Volume Condition at the Cheyenne VA Medical Center

Christopher Brayton; Misty Helenbolt; Joshua Hickox; Tiffany Jastorff-Gillies

Cheyenne VA Medical Center, Cheyenne, Wyoming

This is a Quality Improvement project at the Cheyenne VAMC aimed at standardizing the treatment of Diabetic Ketoacidosis (DKA) and Hyperglycemic Hyperosmolar State (HHS). These disease states have well established treatment protocols from society guidelines, which have been mirrored by our local facility's policy. These disease states are highly complex in their treatment and monitoring. In addition, staff reported knowledge of this local policy is historically underwhelming. This project will establish a standard note template that prescribers and nurses will use to document patient care and standardize ordering by creating an order set with necessary treatment and monitoring for patient safety. Standardized Order sets will ensure each patient receives optimal care that is aligned with local procedures and current evidence based guidelines. Implementation of this project is a multi-step process to ensure the final product is comprehensive, safe, and efficient. The initial step was working with front line employees to establish current workflow and identify gaps to overcome in creating a standardized best practice. Next was using current policy and guidelines to establish a suitable process and nomogram set to ensure an efficient and effective processes, building a standardized progress note in our Electronic Health Record (EHR) for documentation. This involved collaboration with Clinical Application Coordinators (CACs) and the Informatics Pharmacist to create and adjust progress notes and order sets as the process is trialed with front-line users. Education to providers and nurses is scheduled. The primary monitoring endpoint will be time to therapeutic BG range and percent time in therapeutic BG range. Therapeutic range for BG will be considered 150-200 mg/dL. BG readings < 150 mg/dL will be considered subtherapeutic and BG readings > 200 mg/dL will be considered supratherapeutic. Patients will be considered in therapeutic BG range with two consecutive readings within range. All monitoring endpoints will be gathered using Structured Query Language (SQL) Query and data will be analyzed through Microsoft Excel and our EHR. Prescriber familiarity with the DKA/HHS facility protocol will also be assessed before and after introduction to the new note template. This is an ongoing project that has not reached its conclusion where data can be gathered and interpreted. Process and status will be presented.

Presentation Category: Acute Internal Medicine

A Retrospective Review of Time to Initiation of Bone-Targeting Treatment for Patients Receiving Primary Multiple Myeloma Therapy

Uyen Tran; Gaity Fair; Jessica Goldsby; Joseph Kalis

UCHealth Memorial Hospital Central, Colorado Springs, Colorado

Multiple myeloma (MM) accounts for 17% of all hematologic malignancies in the United States. Osteolytic disease is a common complication of MM which can lead to skeletal-related events (SREs). SREs are defined as pathological fractures requiring radiation, spinal cord compression or hypercalcemia of malignancy. The NCCN guidelines recommend all MM on active therapy receive bone-targeting therapy for up to 2 years to reduce risk of fracture and bone-related complications. Bone targeting therapies are crucial for preventing morbidity in MM patients. Delays in securing insurance approval, obtaining dental clearance and encountering other setbacks can hinder the start of bone-targeting therapy. Such delays could impact the occurrence of SREs. A retrospective chart review was conducted to assess the initiation of bone targeting treatment in patients with multiple myeloma at our institution. This was performed using data from June 2018 to June2023. Patients were included if they were at least 18 years old, had a diagnosis of MM via ICD-10 in outpatient setting (C90.0), were treated with an IV bisphosphonate (zoledronic acid, pamidronate) or RANKL inhibitor (denosumab) at UCH Memorial Central or UCH North Hospital. Exclusion criteria included pregnancy, deceased, had monoclonal gammopathy of undetermined significance (MGUS) or smoldering MM, or received bone-targeting therapy for indications outside MM. Primary outcomes were categorizing the time to in bone-targeting therapy initiation after MM diagnosis as within 3 months, 3-6 months, or 6-9 months, and incidence of SREs. Secondary outcomes included the incidence of osteonecrosis of the jaw (ONJ), its occurrence between IV bisphosphonates and denosumab, and assess whether patients with MM adhere to the recommended two-year duration of bone targeting therapy. Nominal variables were analyzed using Fisher’s exact test and chi square test. Sixty-seven patients were included in the analysis. Seventy percent of patients began treatment within 3 months of diagnosis, reflecting a proactive approach that aimed to optimize treatment outcomes. Pathological fractures remained the most common SREs. Among the patients receiving bone-targeting therapy, a total of three experienced ONJ. Within this same cohort, 2 cases were associated with zoledronic acid, while 1 case occurred in the denosumab group, respectively. Lastly, 40% of patients overall had completed the recommended two-year treatment duration. IRB exempt.

Category: Oncology

Inequity in Anticoagulation Prescribing for Atrial Fibrillation: A Cross Sectional Analysis

Presenter: Christina Berg

Co-investigators: Leticia Smith; Laura Hayes; Veronica Hernandez Ramos; Stephanie Wienkers

Denver Health Medical Center, Denver, Colorado

Atrial fibrillation (AF) is a common arrhythmia that significantly increases the risk for cardioembolic stroke. Guidelines recommend assessing the risk of stroke in all patients with AF and prescribing oral anticoagulation to reduce the risk of stroke in any patient whose risk is determined to be > 2% annually. Outside of a few specific clinical scenarios (i.e. moderate to severe mitral stenosis or mechanical heart valve), direct oral anticoagulants (DOACs) are recommended first line for oral anticoagulation. Recent studies have shown Black, non-Hispanic patients with atrial fibrillation have lower rates of anticoagulation prescribing than their White counterparts. The aim of this study was to assess rates of anticoagulation prescribing in AF amongst the Black, non-Hispanic and White populations at an urban, safety-net institution and investigate differences in rationale for lack of anticoagulation between these populations.

This single-center, retrospective cohort study identified and evaluated patients with AF within a large safety net institution and compared rates of anticoagulation prescribing, rationale for lack of anticoagulation and anticoagulant agent chosen between Black, non-Hispanic patients and non-Hispanic White patients. All patients were identified via assessment of a pre-established atrial fibrillation registry within the electronic medical record (EMR). Baseline demographic information, anticoagulation status and comorbidities were collected via the registry. For subjects identified from the registry as not being prescribed oral anticoagulation, further chart review was completed to assess for rationale regarding lack of anticoagulation and to collect additional variables.

686 patients were identified for inclusion from initial registry assessment. 252 patients within the full registry cohort were identified as not prescribed an oral anticoagulant and thus underwent chart review. Further analysis of results is underway. Results and conclusions will be presented. IRB approved.

Presentation Category: Ambulatory Care, Anticoagulation, Cardiology