Category: Student – Research In Progress

Content List

Student Research In Progress 1

Title: An evaluation of direct oral anticoagulant (DOAC) drug-drug interactions alerts and near miss-actual adverse events.

Submitting Author: Ammarah Nadeem, PharmD Candidate

Abstract:
Purpose: According to the Joint Commission, anticoagulants are ranked number two in the top 10 medications involved in errors leading to serious harm or death. Additionally, a five-year retrospective study reported medication errors as the most common cause of anticoagulation-associated adverse drug events. Potential and unresolved drug interactions may lead to an increased risk of bleeding. In fact, a recent study published in JAMA showed an increased risk of major bleeding in patients prescribed a DOAC with concurrent use of amiodarone, fluconazole, rifampin, and phenytoin compared to DOAC use alone. Alert fatigue occurs when clinicians overlook or ignore safety alerts presented by computerized provider order entry systems (CPOE). A study of over 200,000 alerts produced by CPOE revealed providers rejected the majority of alerts, including alerts of "high-severity" drug interactions. This study aims to evaluate near miss and actual adverse events as a result of bypassing DOAC drug interaction alerts on EPIC ©.

Methods: This is a retrospective, single center descriptive study performed at a large academic medical center in Chicago, Illinois. A report will be obtained from EPIC © EHR of Drug-Drug Interaction (DDI) warning alerts over the time period of September 1st, 2018 to November 30th, 2018. Report will be filtered for any DDI associated with a DOAC limited to patients over the age of 65. The following data points will be collected from report review of drug interaction alerts: indication of selected DOAC, number of DOAC drug-drug interaction alerts, number of bypassed DOAC drug-drug interaction alerts by pharmacist, and reason for bypassing DOAC drug-drug interaction alert, if documented. Patient charts will be reviewed for any near miss and/or actual adverse events documented when a DOAC drug-drug interaction alert is bypassed. Data collection will exclude pregnant women and patient identifiers. Data will be analyzed using descriptive statistics.

Results: Research in Progress

Conclusions: Research in Progress

Organization: UIC, University of Chicago Medicine

Authors: Ammarah Nadeem, BS, UIC PharmD Candidate 2021, University of Chicago Medicine; Charlene A. Hope, PharmD, MS, CPPS, University of Chicago Medicine

Student Research In Progress 2

Title: Analysis of DOAC Effects on Heparin Infusion Anti-Xa Levels

Submitting Author: Connor McClain, PharmD Candidate

Abstract:
Purpose: An anti-factor Xa assay is one way to monitor the anticoagulant effects of heparin infusions. However, recent literature and clinical findings suggest that patients who are admitted to the hospital previously on a direct oral anticoagulants (DOACs) who then require further anticoagulant therapy with parenteral heparin are more prone to variations in their anti-factor Xa levels. At this time, a better understanding of the effects of DOACs and patient-specific factors on differing anti-factor Xa levels is needed to evaluate the impact on patient safety.

Methods: This retrospective chart review will obtain local institutional review boards for approval. The charts of patients over the age of 18 years old who were on either apixaban, betrixaban, dabigatran, edoxaban, or rivaroxaban prior to receiving parenteral heparin from September 1, 2019 to December 31, 2019 will be reviewed. Specifically, height, weight, BMI, gender, age, heparin dose, anti-factor Xa levels, and current DOAC agent, dose, and last administration will be collected from patients' charts for evaluation. The primary outcome will be the impact of DOAC use on the baseline anti-factor Xa level. Secondary outcomes will include time to therapeutic goal while on a heparin infusion, percent of patients with elevated anti-factor Xa levels with prior DOAC use, and both bleeding and clotting events.

Results: Research in progress

Conclusions: Research in Progress

Organization: SIUE School of Pharmacy

Authors: Conner Charles McClain, Third Year Pharmacy Student at SIUE School of Pharmacy 2. Jared Paul Sheley, PharmD., BCPS, Clinical Assistant Professor, Southern Illinois University Edwardsville School of Pharmacy and Clinical Pharmacy Specialist- Internal Medicine, HSHS St. Elizabeth's Hospital, O'Fallon, IL

Student Research In Progress 3

Title: Rocuronium vs succinylcholine for traumatic brain injury patients undergoing rapid sequence intubation

Submitting Author: Amber Hudson, PharmD Candidate

Abstract:
Purpose: In 2014, nearly 2.9 million people were admitted to the emergency department due to traumatic brain injury (TBI) related events. TBI can cause patients to become altered or unresponsive and eventually lead to disability and even death. Therefore, patients who present with a TBI often require rapid sequence intubation (RSI) for airway protection. Common neuromuscular blocking agents used are succinylcholine and rocuronium due to their relatively rapid onset. An increase in intracranial pressure is linked to the use of succinylcholine leading to brain herniation and death. A retrospective study concluded that succinylcholine was associated with an increased risk of mortality compared to rocuronium, with the suspected mechanism being an increase of intracranial pressure caused by succinylcholine use. Despite suspicion that succinylcholine may increase mortality in this patient population, there is no preferred RSI agent according to Brain Trauma Foundation guidelines. The purpose of this study is to assess the safety of rocuronium and succinylcholine in TBI patients undergoing RSI in the emergency department.

Methods: A single-center, prospective, observational study was conducted from March 1, 2017 through December 31, 2019 including patients presenting to the emergency department with TBI undergoing RSI. Inclusion criteria were patients who presented to the emergency department with a TBI and were administered either succinylcholine or rocuronium as a paralytic agent. Patients were excluded if younger than 18 years old, use of more than one paralytic in first 24 hours after presentation, pregnant patients, cardiac arrest prior to intubation, intubation prior to arrival to the emergency department, or if a surgical airway was placed. The Glasgow Coma Scale, patient demographics, type of intracranial injury, cause of TBI, initial vitals, and paralytic and sedative agents were recorded. The primary outcome is in-hospital mortality comparing the use of succinylcholine vs rocuronium. The secondary outcomes include in-hospital and intensive care length of stay.

Results: Research in Progress

Conclusions: Research in Progress

Organization: Rosalind Franklin University, Advocate Christ Medical Center

Authors: Monica Czuma, PharmD Candidate 2022, Amber Hudson, PharmD Candidate 2020, Lauren Stambolic, PharmD, Marc McDowell, PharmD, BCPS

Student Research In Progress 4

Title: Use of MRSA PCR Assay for Early De-escalation of Vancomycin in Patients with Suspected Pneumonia in the Emergency Department

Submitting Author: Katarzyna Szaflarska, PharmD Candidate

Abstract:
Purpose: Sputum and blood cultures are definitive methods of diagnosing methicillin-resistant Staphylococcus aureus (MRSA) pneumonia in patients; however, empiric antibiotics are given to patients with MRSA risk factors and suspected pneumonia. MRSA PCR assay can be used as a screening tool for patients to avoid antibiotics to treat MRSA, such as vancomycin given its high negative predictive value for MRSA pneumonia. The goal of this study is to utilize MRSA PCR assay in the Emergency Department (ED) for early de-escalation or avoidance of vancomycin in patients with suspected pneumonia and MRSA risk factors.

Methods: This was a single-center, prospective study of ED patients with MRSA PCR orders between September 2019 and January 2020. Number of empiric doses of vancomycin prior to MRSA PCR results (if any), baseline serum creatinine (Scr), Scr at 48 hours, and additional empiric antibiotics data were collected for each patient. The number of doses of vancomycin administered post negative MRSA PCR results were collected Finally, sputum and blood culture data were collected to determine discrepancy between MRSA PCR results and culture results.

Results: Research in progress

Conclusions: Research in Progress

Organization: University of Illinois; Advocate Christ Medical Center

Authors: Katarzyna Szaflarska, PharmD Candidate 2022, UIC College of Pharmacy; Emilio De La Rosa Gonzalez, PharmD Candidate 2023, UIC College of Pharmacy; Dharati Desai, PharmD, BCCCP, Advocate Christ Medical Center; Marc McDowell, PharmD, BCPS, Advocate Christ Medical Center; Stephany Nunez-Cruz, PharmD, BCPS, Advocate Christ Medical Center; Nadine Lomotan, PharmD, Advocate Christ Medical Center