Category: Student – Research Complete

Content List

Student Research Complete 1

Title: Acute Pain Management for Patients with an Opioid Dependence Disorder Receiving Buprenorphine or Methadone Compared to Patients After Orthopedic Surgery

Submitting Author: Stephen Arnold, PharmD Candidate

Abstract:

Purpose: Medications used for substance use disorder can complicate how well a patient's acute pain is controlled. This study will evaluate acute pain scores and medications used in patients being treated for substance use disorder and compare that to pain management after orthopedic surgery in patients without substance use disorder.

Methods: This institutional review board approved the single center retrospective study that assessed pain management between patients being treated for substance use disorder and compared them to a control group of patients without substance use disorder that underwent orthopedic surgery. Patients included had to be admitted for at least 48 hours and receive at least one opioid medication. Patients with substance use disorder could be admitted for any reason, while the orthopedic surgeries used for the control arm consisted of total knee arthroplasty or hip arthroplasty. Hospice patients receiving opioid medication for end of life care were excluded from the study. Primary endpoints were average pains scores and morphine milligram equivalents over the first 48 hours. Secondary endpoint was the average morphine milligram equivalents prescribed upon discharge.

Results: Total of the 60 patients were enrolled, 30 patients had history of substance use disorder and 30 patients had orthopedic surgery with no history of substance use disorder. Average morphine milligram equivalents between the groups was not significantly different (139.9 vs 96.6, $p=0.889$). Average pain scores between the groups were significantly different (7.96 vs 5.94, $p=0.002$).

Conclusions: Patients with substance use disorder are not given a statistically different amount of morphine milligram equivalents for acute pain and have higher pain scores than patients without substance use disorder. This study had a small population size, and further studies are needed to confirm this result.

Organization: Southern Illinois University of Edwardsville School of Pharmacy

Authors: Stephen James Arnold, PharmD Candidate Southern Illinois University of Illinois, Pharmacy Intern at Wal-Mart; Carrie N Vogler, PharmD Midwestern University Chicago College of Pharmacy, Pharmacist at Memorial Medical Center; Erin Marie Lindstrom, PharmD Southern Illinois University of Edwardsville, Pharmacy resident at St. Johns Hospital; Katelyn L Conklen, PharmD St. Louis College of Pharmacy, ICU Pharmacist at Memorial Medical Center.

Student Research Complete 2

Title: Impact of Maternal Beta Blocker Use on Hypoglycemia in Neonates

Submitting Author: Eric Gray, PharmD Candidate

Abstract:
Purpose: The use of β blockers for the treatment of hypertension is common during pregnancy. β blockers are known to cross the placenta, and prior studies have suggested that maternal exposure to β blockers is associated with an increased risk of neonatal hypoglycemia. Our aims are to determine the association between maternal β blocker use and the incidence of neonatal hypoglycemia, as well as to determine which specific medication variables may have the greatest influence on the prevalence of neonatal hypoglycemia.

Methods: This study was a retrospective review of medical record data. A list of maternal and neonatal pairs was identified by maternal use of β blockers prior to delivery at Barnes Jewish Hospital between January 1, 2017 and June 1, 2018. Neonates could be admitted to St. Louis Children's Hospital or Barnes Jewish Hospital. Maternal data collected included age, race, medical/obstetrical conditions, the specific β blocker and route used prior to delivery, the indication for the β blocker, and chronic or acute use of the β blocker. Neonatal data collected included gestational age (weeks), birth weight (grams), and blood glucose levels for 72 hours after delivery. Descriptive statistics were used to summarize the maternal and neonatal baseline characteristics. Chi square test was used to determine the medication variables and association with neonatal hypoglycemia.

Results: 48 maternal and neonatal pairs were identified with 34 of 48 (70.8%) neonatal patients experiencing hypoglycemia. Forty maternal patients (83.3%) received labetalol immediately prior to delivery. Of these, 26 of 40 (65%) neonates experienced hypoglycemia, and 100% of patients on each of the other β blockers had hypoglycemia. Forty maternal patients were receiving β blockers for chronic therapy with 29 (72.5%) neonates experiencing hypoglycemia compared to 5 of 8 (62.5%) neonates experiencing hypoglycemia when maternal β blocker use was acute. Finally, 17 of 23 (73.9%) and 17 of 25 (68%) neonates experienced hypoglycemia when β blocker use was intravenous and oral, respectively. The specific β blocker, route, duration of treatment, or timing of the dose prior to delivery were not significantly associated with neonatal hypoglycemia.

Conclusion: Overall, our cohort had a high incidence of neonatal hypoglycemia. However, no specific medication variables were identified as having an effect on the prevalence of neonatal hypoglycemia. Limitations of this study included a retrospective design, a small sample size with low diversity among β blockers, and lack of control for premature infants with additional risk factors for hypoglycemia. Going forward, future studies that address each of these limitations are warranted.

Organization: SIUE, Walgreens

Authors: Eric Matthew Gray, PharmD Candidate (Southern Illinois University Edwardsville (SIUE) School of Pharmacy), Walgreens Pharmacy Intern

Student Research Complete 3

Title: Use of Proton Pump Inhibitors vs Histamine Type-2 Receptor Antagonists on Hospital Readmission Rates in Combination with Blood Thinning Agents

Submitting Author: Michael McGee, PharmD Candidate

Abstract:

Purpose: Proton pump inhibitors (PPIs) and histamine receptor-2 antagonists (H2RAs) are widely used by patients in both the institutional setting and in the community for many indications. One such indication is reducing the risk of ulcers in high risk patients, such as those on blood thinning agents (antiplatelet/warfarin therapy). Several studies have determined PPIs to be inappropriately prescribed in many patients, however, there is limited data on readmission rates for patients who are prescribed these medications. The purpose of this study is to offer additional data on readmission rates for patients on these medications.

Methods: This study was an IRB approved retrospective chart review of a 500-bed teaching hospital, Memorial Medical Center in Springfield, Illinois. Inclusion criteria included any patient 18 years old or older discharged on a PPI or H2RA in combination with blood thinning agents as well as patients only discharged with blood thinning agents to serve as a placebo arm. The data collected included patient demographics, comorbid conditions (Prior MI, CHF, etc.), medications at discharge, hospital admissions within last year, and emergency department visits within last 6 months. Data analysis included descriptive statistics and multivariate logistic regression

Results: 1685 people were included in this study. Of these, 1248 were not readmitted within 30 days and 436 people were readmitted within 30 days. Odds ratios were evaluated for several risk factors for readmission. Hospital admissions in the last year (OR 1.32; 95% CI 1.15-1.50), ED visits within the last 6 months (OR 1.25; 95% CI 1.13-1.39), HOSPITAL score (OR 1.462; 95% CI 1.31-1.63), chronic heart failure (CHF) (OR 1.51 ; 95% CI 1.12-1.2.04), and renal disease (OR 1.40; 95% CI 1.03-1.90) were all found to have odds ratios higher than 1 that were statistically significant. LACE index (OR 0.87; 95% CI 0.80-0.94) and H2RA use (OR 0.59; 95% CI 0.36-0.93) were found to have odds ratios less than 1 that were statistically significant. PPI plus warfarin and H2RA plus warfarin were found to not be statistically significant.

Conclusions: H2RA use and a low LACE score appear to have a protective effect on patients and their 30-day readmission rates through having an OR less than one. Hospital admissions in the last year, ED visits within the last 6 months, HOSPITAL score, chronic heart failure (CHF), and renal disease all had OR's higher than 1 indicating that there is an increased risk of readmission in 30 days with these factors. However, it is difficult to tell whether there are other confounding variables that could have affected the results.

Organization: SIUe School of Pharmacy

Authors: Michael James McGee, PharmD. Candidate 2020, SIUe; Dr. Carrie Vogler, PharmD., SIUe School of Pharmacy, Memorial Medical Center; Dr. Robert Robinson, MD, SIU School of Medicine, Memorial Medical Center

Student Research Complete 4

Title: Use of Proton Pump Inhibitors vs Histamine Type-2 Receptor Antagonists on Hospital Readmission Rates in Combination with Oral Corticosteroids

Submitting Author: Hunter Ragan, PharmD Candidate

Abstract:
Purpose: Background Proton pump inhibitors (PPIs) and histamine receptor-2 antagonists (H2RAs) are widely used by patients in both the institutional setting and in the community for many indications. One such indication is reducing the risk of ulcers in high risk patients, such as those taking oral corticosteroids. Several studies have determined PPIs to be inappropriately prescribed in a large number of patients. There is limited data on readmission rates for patients who are prescribed these medications.

Methods: This study is a retrospective chart review that has been approved by the Institutional Review Board at Memorial Medical Center, a 500 bed teaching hospital located in Springfield, Illinois. This study population includes adults 18 years old or older who were discharged on a PPI or H2RA in combination with a corticosteroid as well as patients discharged with a corticosteroid alone. Data analysis includes descriptive statistics for baseline characteristics and multivariate logistic regression for the results.

Results: There were 436 patients readmitted within 30 days and 1248 were not. Odds ratios were evaluated for several risk factors for readmission. There were 208 (16%) patients on corticosteroids that did not get readmitted within 30 days and 76 (17%) that were readmitted within 30 days. Hospital admissions in the last year (OR 1.32; 95% CI 1.15-1.50), ED visit within the last 6 months (OR 1.25; 95% CI 1.13-1.39), HOSPITAL score (OR 1.462; 95% CI 1.31-1.63), chronic heart failure (OR 1.51; 95% CI 1.12-2.04) and renal disease (OR 1.40; 95% CI 1.03-1.90) were all found to have odds ratios higher than 1 that were statistically significant. LACE index (OR 0.87; 95% CI 0.8-0.94) and H2RA use (OR 0.59; 95% CI 0.36-0.93) were found to have odds ratios less than 1 that were statistically significant. Discussion Corticosteroids in combination with PPIs or H2RAs were not associated with higher 30-day readmission rates. PPI use alone was not associated with increased 30-day readmission risk. Limitations include lack of standard dosing protocol and differences in baseline disease states.

Conclusion: This data shows no correlation between the use of PPIs or H2RAs alone or with concurrent oral corticosteroid use and 30-day readmission rates. Further investigation is warranted before any clinical significance can be determined

Organization: SIUe School of Pharmacy

Authors: Hunter Ragan, PharmD Candidate; Carrie Vogler, PharmD; Robert Robinson, MD