2019 Resident Research Virtual Poster Abstracts

Session-Presentation Number: #1-1

PATIENTS AT INCREASED RISK OF OPIOID OVERDOSE IN A COMMUNITY PHARMACY

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INTRODUCTION: This study seeks to determine the percent of patients at increased risk of opioid overdose in a community pharmacy who meet criteria to be prescribed naloxone.
METHODS: A multi-centered retrospective chart review was conducted at TTUHSC Pharmacy in Lubbock and Amarillo, Texas and United Supermarkets pharmacies in the Lubbock region. The study time frame for TTUHSC was February 2018-February 2019 and October 2018-February 2019 for United Supermarkets. Adult patients with an opioid prescription were identified, and the following was collected: opioid prescribed, amount of morphine milligram equivalents (MME)/day, presence of a concurrent benzodiazepine, and if naloxone was dispensed. Demographic data: age and sex, were also obtained. Patients were determined to be at increased risk of overdose if MMEs/day exceeded 50 or if an opioid and benzodiazepine were prescribed concurrently.
RESULTS: An analysis of 188 patients from the TTUHSC Pharmacy and 604 patients from United Supermarkets was performed. Of the patients, 165 of the 792 (20.8%) were determined to be at increased risk of overdose based on $\geq$ 50 MME/day. Furthermore, 47 out of 792 patients (5.9%) had a concurrent benzodiazepine prescription. Overall, 212 of the 792 (26.7%) of patients were determined to be at an increased risk of opioid overdose. Of these patients, 1 patient (0.12%) had a prescription written for naloxone.
CONCLUSION: The results of the study indicate a significant amount of patients in the community pharmacy setting are at an increased risk of opioid overdose, and therefore, meet criteria to be dispensed naloxone.

Session-Presentation Number: #1-2

SOLVING THE FLU EPIDEMIC: PHARMACIST-ADMINISTERED INFLUENZA VACCINE IN A HEALTH SYSTEMS SETTING.

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INTRODUCTION: The aim of this project was to improve the influenza vaccination rates of TTUHSC associated direct patient care employees in addition to designing and implementing multiple interventions designed to 1- improve and streamline the process, 2- improve communication to employees, and 3- improve program management in regards to the number of vaccines to order and distributing the patients in a timely manner.
METHODS: This project was a retrospective data review utilizing TTUHSC pharmacy records, employee health records and power chart to analyze data regarding direct patient care employees. We compared the vaccination rates from the 2017-2018 flu season utilizing nurse managed immunization clinics to the 2018-2019 flu season utilizing pharmacist managed immunization clinics. The data was compiled to determine areas for improvement for the next immunization year utilizing pharmacist run immunization clinics.
RESULTS: There was a total of 1005 direct patient care employees in the TTUHSC Lubbock system, of the 1005 employees 964 received flu vaccinations. Approximately 67% of the 964 employees received their vaccinations during the pharmacists run clinics. The vaccination rate for both years remained the same at 96%. The institution lost less money during the 2018-2019 year (-$5,785) compared to the previous 2017-2018 year (-$33,663).
CONCLUSION: Although the vaccination rates remained the same for both vaccination seasons, the utilization of pharmacists managed flu clinics is a cost saving technique that can be utilized by other institutions.

Session-Presentation Number: #1-3

RATE CONTROL WITH INTRAVENOUS DILTIAZEM, METOPROLOL AND VERAPAMIL IN ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RATE.

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INTRODUCTION: Diltiazem is one of the preferred agents for rate control in atrial fibrillation due to its quick onset, minimal side effect profile, and low cost. Due to intermittent shortage of intravenous diltiazem since February 2018, there has been an increase in utilization of intravenous metoprolol and verapamil. This study investigates effect of intravenous diltiazem, metoprolol, and verapamil on rate control in patients with atrial fibrillation with rapid ventricular rate.

METHODS: This study is a retrospective, single-center, cohort study conducted in patients receiving intravenous diltiazem, metoprolol, or verapamil for atrial fibrillation. Patients with atrial fibrillation will be identified by International Classification of Diseases diagnosis codes recorded in their electronic medical record. Patients will be assigned to either the control group (diltiazem) or intervention group one (metoprolol) or intervention group two (verapamil) based on the received rate control agent. The primary outcome is incidence of patients who achieved ventricular rate control less than 100 beats per minute within one hour of treatment. Secondary outcomes include time to achieve ventricular rate less than 100 beats per minute, heart rate at 30 minutes and 1 hour after administration, bradycardia and hypotension after administration, requirement of other rate control agent(s), inpatient admission, length of stay, and mortality. Chi-square or Fisher's exact test will be used for nominal data, while one-way ANOVA or Kruskal-Wallis test will be used for continuous data.

RESULTS: Pending statistical analysis.

CONCLUSION: Pending statistical analysis.

Session-Presentation Number: #1-4

THE IMPACT OF A PHARMACIST MANAGED PROTOCOL SUBSTITUTING INTERMITTENT INTRAVENOUS PROTON PUMP INHIBITOR FOR CONTINUOUS INFUSION ADMINISTRATION

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INTRODUCTION: Guidelines for the treatment of upper gastrointestinal bleeding recommend use of continuous infusion proton pump inhibitors. However, recent studies have suggested these patients may be safely managed with IV push proton pump inhibitors.
METHODS: This is a retrospective review of patients who received intravenous pantoprazole for suspected UGIB before and after the implementation of a revised pharmacist managed protocol. This revised protocol allowed pharmacists to interchange pantoprazole 40mg IV every 12 hours for a pantoprazole infusion in hemodynamically stable patients. The original protocol allowed transition to intermittent pantoprazole after receipt of at least one continuous infusion bag. The primary endpoint was the incidence of re-bleeding within 7 days.
RESULTS: A total of 182 patients were included. The re-bleeding rate at day 7 was 8% in the original protocol group compared to 6% in the revised protocol group (p=0.77). Compared to the original protocol, the revised protocol reduced the median number of continuous infusions per patient [2 (IQR 1-5) vs 0 (IQR 0-3); p<0.001], but increased the median number of IV push injections [2 (IQR 0-5) vs 4 (IQR 2.5-6); p=0.002]. This resulted in a 32% lower medication cost per patient. There were no significant differences between groups regarding ICU admission, hospital length of stay, or hospital mortality.
CONCLUSIONS: Restriction of continuous infusion pantoprazole in hemodynamically stable UGIB patients demonstrated no difference in re-bleeding rates within 7 days with a potential to reduce proton pump inhibitor exposure and costs.

Session-Presentation Number: #2-1

EVALUATION OF ALBUMIN IN SPONTANEOUS BACTERIAL PERITONITIS

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INTRODUCTION: Albumin use in the setting of spontaneous bacterial peritonitis (SBP) has shown to reduce mortality when given at appropriate doses.
METHODS: We conducted a retrospective, single-center study comparing patients who received albumin (ALB) against patients who did not receive albumin (No-ALB) when admitted to the hospital with an SBP diagnosis. The primary outcome of the study was in-hospital mortality. Secondary outcomes included the association between albumin use and hospital length of stay (LOS), and between albumin use and the development of acute kidney injury.
RESULTS: A total of 41 patients were included in the study (ALB = 26, No-ALB = 15). The rate of in-hospital mortality was higher in the ALB group than the no albumin group (34.6% vs 6.7%, p=0.045). Predictive mortality markers like SAPSII and MELD scores were higher in ALB than No-ALB (23.2 vs 17.0, p=0.11; 25.3 vs 13.6, p=0.003). ALB had a longer hospital length of stay (19 days vs 12 days, p=0.034). Regarding the ALB group, an appropriate dose of albumin based on patient body weight was administered 31% of the time.
CONCLUSIONS: The results of this study indicate that the receipt of albumin in the setting of SBP is associated with higher mortality rates and longer hospital lengths of stay. They also had higher predicted mortality according to SAPSII and MELD. Also at the institution, albumin was dosed appropriately less than half the time in the setting of SBP.

Session-Presentation Number: #2-2

QUETIAPINE USE AND HOSPITALIZATIONS IN PATIENTS WITH PARKINSON'S DISEASE PSYCHOSIS IN A VETERANS AFFAIRS POPULATION

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INTRODUCTION: Psychosis is a common phenomenon that occurs in Parkinson's Disease (PD) patients. In many institutions, quetiapine is the mainstay treatment option for psychosis in PD due to costs and less frequent laboratory monitoring. The purpose of this study is to evaluate the number of psychosis hospitalizations in patients with PD treated with quetiapine versus non-antipsychotic measures.
METHODS: This is a retrospective cohort study and will compare outcomes in PDP patients treated with quetiapine against PDP patients not treated with any antipsychotics. The primary outcome was the number of hospitalizations due to psychosis. The secondary endpoints include the time to hospitalization due to psychosis and the survival time.
RESULTS: A total of 192 patients were included in the study (Quetiapine = 102, Non-antipsychotic = 90). The quetiapine group had higher cholinesterase inhibitor use (46.1% vs 16.7%, $p<0.001$), memantine use (17.7% vs 7.8%, $p=0.043$), antidepressant use (73.5% vs 54.4%, $p=0.006$), depression diagnosis (39.2% vs 21.1%, $p=0.007$), dementia diagnosis (58.8% vs 22.2%, $p<0.001$) and duration of dementia pharmacologic treatment (16.2 months vs 6.9 months, $p=0.004$). There was no difference in hospitalizations due to psychosis (7.8% quetiapine vs 8.9% non-anti-psychotic , $p=0.794$). There was a significant difference in time to hospitalization (74.3 months vs 16 months, $p=0.047$). There was no difference in survival time (40.7 months vs 56.5 months, $p=0.276$).
CONCLUSION: The results of this study indicate that there are no differences in hospitalizations due to psychosis in PD patients treated with quetiapine compared to patients not treated with any antipsychotics.

Session-Presentation Number: #2-3

RISK OF DEMENTIA ASSOCIATED WITH LITHIUM OR VALPROIC ACID

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INTRODUCTION: There are controversial evidence suggesting lithium may be neuroprotective against dementia and evidence suggesting valproate (VPA) may have a negative effect on cognition.

METHODS: We conducted a retrospective chart review of patients 50 years and older diagnosed with bipolar disorder who received either lithium, VPA, or both medications in the past. Patients will be matched according to age and presence of risk factor. The primary outcome is to compare the prevalence of bipolar patients who develop NCD for those who took lithium, VPA, or both medications throughout their lifetime. Secondary outcomes include comparing (1) the median duration of lithium or VPA in patients with or without dementia and (2) the prevalence NCD in short (< 5 years) versus long-term treatment ($\geq$ 5 years) with either medication.

RESULTS: A total of 174 patients were matched across the groups (n = 58 in each group). There was no statistically significant difference in the prevalence of NCD across the 3 groups (Lithium 6.9%, VPA 6.9%, Combination 5.17%, p = 0.91). There was no significant difference in the duration of medication use in patient with dementia versus patients without dementia in either medication group. Additionally, there were no significant difference in prevalence of dementia when compared between short-term versus long-term use within the medication group.

CONCLUSIONS: Based on the results found in this study, there were no significant differences in the prevalence of dementia in bipolar patients who received at least 12 consecutive months of lithium, valproate, or both medications.

Session-Presentation Number: #2-4

IMPACT OF BODYBUILDING SUPPLEMENTS ON MOOD DISORDERS

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INTRODUCTION: To date, no trials have been published specifically looking at the impact bodybuilding supplements have on mental health.
METHODS: This retrospective chart review included patients if they were at least 18 years of age and reported taking non-VA bodybuilding supplements between January 1st, 2008 and October 1st, 2018 via electronic medical records. Patients were excluded if they were prescribed decongestants, interferon, or long-term steroid therapy. For every unique patient with reported non-VA bodybuilding supplementation use, an individual was randomly selected from a set of matched non-supplement exposed patients. Patients were matched by (1) age; (2) sex; (3) race; (4) psychiatric hospitalizations; (5) Charlson Comorbidity Index. The primary outcome measured psychotropic medication use between groups. Secondary outcomes compared average number of psychotropic medications trialed, psychiatric rating scales, and number of hospital care visits related to mental health.
RESULTS: A total of 300 patients were included in the study, 150 in each arm. There were no significant differences between baseline characteristics. The number of patients prescribed at least one psychotropic agent was 121 in the exposed group compared to 59 in the non-exposed ($p < 0.0001$). The mean number of medications trialed between groups was 3.23 versus 1.42 ($p < 0.0001$). There was no statistical difference in psychiatric rating scales. Only psychiatric hospitalizations and outpatient visits were statistically significant ($p = 0.0360$ and < 0.0001, respectively).
CONCLUSION: Based on the results found in this study, bodybuilding supplement use is associated with increased psychotropic medication use.

Session-Presentation Number: #2-5

ANALYSIS OF INTERPROFESSIONAL EDUCATIONAL EXPERIENCES (IPE) WITHIN A REQUIRED ADVANCED PHARMACY PRACTICE EXPERIENCE (APPE) PROGRAM.

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INTRODUCTION: A quality assurance project was conducted to identify areas of weakness on APPE rotations involving the four tenants of IPE.

METHODS: A survey was conducted and sent to all preceptors that practice at required APPE sites for fourth year pharmacy students. Responses were collected from fourth year students who have completed APPE rotations in the last year regarding a short reflection of their interprofessional education experiences. At the conclusion of each APPE rotation in the prior year (2018-2019), preceptors completed a final competency assessment of their students in the areas of IPE. Data from the survey, student reflections, and preceptor evaluations was analyzed independently and collectively to determine any trends related to the ability of a practice site to effectively deliver quality interprofessional education experiences**.**

RESULTS: Students are graded well on all tenants of IPE, with lowest reported at a 4.67/5 in communication. Regarding student reflections, 21.3% of students reported no IPE on their rotation. Of those, 29.9% were on a rural/community rotation. Students reported that their greatest challenge on rotations involved communication (45.9%), however, 69.1% reported that communication was their most significant interaction. Based on preceptor survey results, the frequency of physician interaction on a daily basis occurs on 76.6% of the practice sites. With 57.9% of that interaction being verbal, face to face interaction.

CONCLUSION: While students are being graded well on all IPE tenants, students report struggling most with interprofessional communication. Pilot programs will be implemented to help achieve IPE goals within the TTUHSC SOP.

Session-Presentation Number: #3-1

ORAL VERSUS INTRAVENOUS OPIOID ADMINISTRATION FOR PAIN: EFFECT ON CLINICAL OUTCOMES FOLLOWING AN INTRAVENOUS NATIONAL SHORTAGE

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INTRODUCTION: To evaluate the efficacy and safety of a pharmacist managed protocol aimed at reducing intravenous administration of hydromorphone and morphine.
METHODS: This is a retrospective analysis comparing administration methods of hydromorphone and morphine before and after a national IV opioid shortage. A protocol was implemented at our institution to allow pharmacists to automatically convert IV morphine and hydromorphone to an equianalgesic oral dose. The primary endpoints assessed were median IV and oral opioids administered (as expressed in morphine milligram equivalents) and median pain scores. Secondary endpoints assessed were use of adjunct analgesic agents, adverse effects, use of naloxone, and cost-savings.
RESULTS: Two hundred eight patients were considered in the analysis of clinical outcomes (105 in the pre-protocol group and 103 in the post-protocol group). There was a statistically significant difference between the median IV morphine milligram equivalent [0 (IQR 0-4) vs. 0 (IQR 0-0); p = 0.03] and oral morphine milligram equivalent [97.5 (IQR 40-167.5) vs. 142.5 (IQR 61.5-217.5); p = 0.01] opioids administered between the pre-protocol and post-protocol groups, respectively. There was no statistically significant difference between the pre-protocol and post-protocol groups in regards to median pain scores (median score 3 vs. 3, p = 0.77182).
CONCLUSION: Based on this retrospective analysis, transitioning from IV administration of hydromorphone and morphine to oral administration had no deleterious effects on clinical outcomes.

Session-Presentation Number: #3-2

EVALUATION OF VITAMIN B_{12} MONITORING IN VETERANS WITH TYPE 2 DIABETES ON METFORMIN THERAPY

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INTRODUCTION: Since 2017, the American Diabetes Associations (ADA) *Standards of Medical Care in Diabetes* Guideline has included a new recommendation for periodic vitamin B_{12} measurements in metformin-treated patients. The impact of this recommendation has yet to be determined.

METHODS: Electronic medical records of patients on metformin who started therapy prior to 2005 at the VA North Texas Health Care System (VANTXHCS) were reviewed. Vitamin B_{12} monitoring records for 2016 and 2018 were compared for each patient.

RESULTS: Of 394 patients included for the primary outcome, 136 (34.5%) had at least one vitamin B_{12} level in 2016 versus 198 (50.3%) patients in 2018 (OR 1.94, $p<0.001$). 55 patients were identified with no vitamin B_{12} levels since starting metformin therapy prior to 2004 (mean duration 16.33 years). Of the 394 patients, 157 were diagnosed with neuropathy or prescribed a medication for neuropathy without a vitamin B_{12} level in the previous year or with a low level that was not supplemented.

CONCLUSIONs: Vitamin B_{12} monitoring significantly increased between 2016 and 2018, corresponding with the release of the 2017 ADA guidelines. The lack of overall vitamin B_{12} monitoring could potentially increase the risk of patients being mistreated for or misdiagnosed with diabetic neuropathy due to overlapping symptoms.

Session-Presentation Number: #3-3

ASSESSMENT OF STATIN USE AND THE INCIDENCE OF ALZHEIMER'S DISEASE IN VETERANS

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INTRODUCTION: It is suggested that statin users were less likely to develop Alzheimer's Disease (AD) due to the changes in the brain cholesterol homeostasis and other mechanisms such as control of neuroinflammation. It is unclear whether the association differs between the different statins, as they have varying lipophilicities and potencies.
METHODS: Using data retrospectively collected between October 1998 and September 2018 from the VA North Texas' electronic database. The primary outcome is to compare the incidence in development of AD between those taking atorvastatin, simvastatin, pravastatin and rosuvastatin. Secondary outcomes include time to development of AD from statin initiation and lipid levels at time of AD diagnosis.
RESULTS: A total of 2,354 patient charts were reviewed for this retrospective analysis, of which 389 persons has true diagnosis of AD. Of these, 312 were on simvastatin, 64 on atorvastatin, 13 on rosuvastatin, and 26 on pravastatin. For the primary outcome, simvastatin had a significantly lower incidence of AD (0.14%) compared to rosuvastatin (0.37%; $p < 0.001$), pravastatin (0.38%; $p = 0.003$) and atorvastatin (0.23%; $p=0.002$). Results for lipid levels were insignificant at the time of AD diagnosis. Those on simvastatin had longer time without AD, 6.8 years, compare to the other study statins, atorvastatin (5.9 years), pravastatin (4.4 years) and rosuvastatin (4.2 years), $p =0.000282$.
CONCLUSION: Based on this data, simvastatin may be associated with lower incidence of developing or delaying AD. This doesn't appear to be correlated to serum lipid levels. However, more research is needed to confirm these results.

Session-Presentation Number: #3-4

UTILITY OF THE SUBSEQUANT MEDICARE ANNUAL WELLNESS VISIT.

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INTRODUCTION: Medicare Annual Wellness Visits (AWV) focus on preventive health for beneficiaries. The value of the initial AWV has been studied, but no studies to date evaluate subsequent AWVs.

METHODS: This was a retrospective chart review of patients who completed an initial AWV and at least one subsequent AWV. The primary objective was to evaluate the utility of subsequent AWVs by comparing the total number of health recommendations at the initial and subsequent visits. Secondary objectives compared the number of individual recommendations between visits.

RESULTS: A total of 115 patients were included in the study. Mean age at the initial and subsequent visit was 67 and 70 years, respectively ($p=<0.001$). There was an average of 3.2 preventative health recommendations made at the initial visit and 2.9 made at the subsequent visit ($p= 0.32$). Significant differences between the initial and subsequent AWVs were found for preventative health recommendations regarding CVD screening (initial=20%, subsequent=8.7%, $p=0.02$), influenza vaccination (initial=39%, subsequent=20.8%, $p=0.003$), zoster vaccine recombinant, adjuvanted (initial= 1.7%, subsequent= 22.6%, $p=<0.0001$) and zoster vaccine live (initial= 41.7%, subsequent= 20.8%, $p<0.001$).

CONCLUSIONS: Findings of the study indicate there is utility in completing AWVs as valuable preventative health recommendations are being made. However, further studies are needed to determine the appropriate duration of time between subsequent AWVs.

Session-Presentation Number: #4-1

UTILITY OF RESPIRATORY SPECIMEN GRAM STAIN FOR PREDICTING FINAL CULTURE RESULT IN PATIENTS WITH CLINICALLY DIAGNOSED PNEUMONIA

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INTRODUCTION: IDSA guidelines recommend obtaining a respiratory tract specimen for Gram stain and culture in patients with suspected pneumonia. Conflicting evidence has led to questions about the value of the Gram stain for identifying a causative pathogen. The purpose of this study was to assess the utility of the Gram stain for predicting final culture results in patients with pneumonia.

METHODS: This retrospective chart review evaluated hospitalized adults with clinically diagnosed pneumonia who had a respiratory specimen submitted for Gram stain and culture. The primary outcome was the correlation between Gram stain and final culture. Secondary outcomes included influence of antibiotic exposure prior to specimen collection, as well as the correlation rates based on the semi-quantitative count of bacteria on Gram stain.

RESULTS: A total of 269 acceptable specimens were assessed. Of the 72 specimens with an organism identified on Gram stain, 41 subsequently grew a potential pathogen in culture, resulting in a positive predictive value (PPV) of 56.9%. Of 197 specimens with no bacteria on the Gram stain, 154 grew either normal flora or nothing on final culture. This equated to a negative predictive value (NPV) of 76.7%. The NPV of Gram stain was decreased if antibiotics were administered for > 24 hours prior to specimen collection. The PPV increased linearly with higher semi-quantitative counts on Gram stain.

CONCLUSION: The respiratory specimen Gram stain demonstrates limited ability to predict bacterial isolation in final culture. Therefore, empiric antibiotic regimens should be adjusted cautiously based solely on Gram stain results.

Session-Presentation Number: #4-2

ASSESSMENT OF IMPLEMENTATION OF A RAPID BLOOD CULTURE DIAGNOSTIC PANEL AT A VETERANS AFFAIRS MEDICAL CENTER

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INTRODUCTION: We sought to determine the clinical impact of a rapid blood culture identification (BCID) panel in an established Antimicrobial Stewardship Program (ASP).
METHODS: Data was collected on inpatients at the VA North Texas Health Care System with at least one positive blood culture for bacterial or yeast isolates during the study period. The primary outcome was a composite of time to optimal therapy from blood culture collection, defined as escalation, de-escalation, discontinuation or optimization of antimicrobials retrospectively. Secondary outcomes included time to effective therapy, total days of therapy (DOT), length of stay, and 30-day mortality and readmission rates.
RESULTS: 195 patients were screened with 130 patients included in the study. No significant differences in baseline characteristics were observed between groups. 61 patients were included in the pre-BCID arm and 69 in the post-BCID arm. Median time to optimal therapy was 82.9 hours (IQR; 12.8 -99.8) in the pre-BCID arm and 33.9 hours (IQR; 11.2-64.8) in the post-BCID arm (p=0.005). No significant change in 30-day mortality or 30-day readmission rates was noted. Median vancomycin DOT was 4 and 3 days (p=0.024), and piperacillin-tazobactam DOT was 4 and 2 days (p=0.043), in the pre-BID and post-BCID groups, respectively.
CONCLUSION: Introduction of BCID into the daily workflow of our ASP resulted in a significant reduction in time to optimal therapy for bloodstream infections and DOT for select broad spectrum antibiotics. This study highlights the potential benefit of rapid diagnostics without negative impact to patient care even in settings without resources for 24/7 ASP review.

Session-Presentation Number: #4-3

EFFECT OF A PHARMACIST-DRIVEN MANAGEMENT PROTOCOL ON THE PROBIOTIC COMBINATION OF LACTOBACILLUS STRAINS FOR PREVENTION OF CLOSTRIDIUM DIFFICILE INFECTION (CDI) IN HOSPITALIZED ADULT PATIENTS

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INTRODUCTION: *Lactobacillus* strains have been shown to reduce the incidence of *Clostridium difficile* infection (CDI) in adult hospitalized patients.

METHODS: This was a single-center, observational, retrospective cohort pre-post study. Bio-K Plus® probiotics versus no probiotic was compared in patients who were admitted to Hendrick Medical Center and received broad-spectrum antibiotics on admission. Bio-K® Plus was started within 48 hours of admission and continued until patient discharged. Primary outcome was the incidence of CDI during hospitalization. Secondary outcomes included antibiotic-associated diarrhea (AAD) during hospitalization and hospital length of stay. Safety was measured by monitoring for incidence of *Lactobacillus* bacteremia. In addition, compliance rate, number of probiotic doses, and antibiotics given to patients at discharge were analyzed.

RESULTS: The study included 457 patients (Probiotics = 232, No probiotics 213). The incidence of CDI in each group was six (Probiotics = 2.52%, No probiotic = 2.74%, p-value 0.884). AAD rate was significantly less in the probiotics group (9.24% versus 16.44%, p=0.021). Hospital length of stay was also shorter in patients who received *Lactobacillus* probiotics (6.62 days versus 8.52 days). There was no case of *Lactobacillus* bacteremia.

CONCLUSIONS: The findings of the study show probiotics may not significantly help in reducing the CDI rate, however there is a trend in decreasing antibiotic-associated diarrhea as well as shorter hospital length of stay. The study with larger sample size is warranted in order to confirm this finding.

Session-Presentation Number: #4-4

CALCIUM REPLACEMENT STRATEGIES IN CRITICALLY ILL PATIENTS RECEIVING MASSIVE TRANSFUSION

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INTRODUCTION: Hypocalcemia is a complication associated with massive transfusion protocol (MTP). There are two approaches to calcium replacement: a proactive strategy where calcium is given based on anticipated transfusion requirements and a reactive strategy, where calcium is administered in response to a low ionized calcium (iCa).
METHODS: We conducted a retrospective cohort study of adult patients who received MTP at a tertiary care hospital. Subjects were identified by query of Trauma Services and Blood Bank transfusion records and confirmed by chart review. Primary outcomes were lowest iCa and prevalence of critical iCa level (<0.9 mmol/L). Secondary outcomes included calcium replacement practices and clinical outcomes.
RESULTS: 119 (81.5%) patients received calcium replacement in a reactive strategy while 27 (18.5%) received calcium proactively. The lowest reported iCa was higher in the proactive versus reactive group (1.03 vs 0.9 mmol/L, p=0.003). More patients in the reactive group had a critical iCa (<0.9 mmol/L) although not statistically significant (40.9% vs. 18.2%, p=0.0538). There was no difference in total calcium received or time to initial calcium replacement. Time to first iCa was significantly longer in the proactive group (3.64 vs. 1.19 hours, p=0.003). There was no difference in ICU mortality, arrhythmia, recurrent bleeding, and shock requiring vasopressors. Fewer patients in the proactive group required mechanical ventilation (87.4% vs. 70.4%, p=0.04).
CONCLUSION: Reactive calcium replacement is common. This approach was associated with a lower mean iCa and a trend towards higher risk of critical iCa values. Implementation of protocol-driven calcium replacement for patients receiving MTP may prevent critical iCa levels and associated complications.

Session-Presentation Number: #5-1

EFFECTS OF PHARMACIST-DRIVEN MOLECULAR DIAGNOSTIC ALERTS ON CLINICAL OUTCOMES.

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PURPOSE: To evaluate the impact of pharmacist molecular diagnostic result alerts on clinical outcomes including: Time from pharmacist queue alert to the administration of appropriate antimicrobial therapy, hospital length of stay, and in-hospital mortality.
METHODS: Retrospective chart review including patients with a documented positive Verigene Sepsis PCR molecular diagnostic result. Patients were stratified into either a pre-implementation or post-implementation molecular diagnostic pharmacist queue alert cohort. Patients were selected between October 1st and April 1st for the years of 2016, 2017, and 2018. Primary outcomes include hospital length of stay and in-hospital mortality. Secondary outcomes include the time of administration of appropriate antimicrobial therapy and change of antimicrobial agent per pharmacist recommendation.
RESULTS: Data collection and analysis in progress
CONCLUSION: Conclusions to be presented following completion of pending results.

Session-Presentation Number: #5-2

OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY PROGRAM EVALUATION WITHIN A LARGE VETERANS AFFAIRS HEALTH CARE SYSTEM

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INTRODUCTION: Outpatient parenteral antimicrobial therapy (OPAT) allows safe delivery of IV antibiotics in ambulatory settings to facilitate hospital discharge. Within the Veterans Affairs (VA) system, OPAT programs face the unique challenges of large geographic coverage areas and referrals for veterans from non-VA hospitals.
METHODS: Patients enrolled in the VA North Texas Health Care System OPAT program during fiscal years 2016 to 2018 had data collected. Data were collected from retrospective chart review as a quality improvement project. All enrolled OPAT patients required either an inpatient infectious disease (ID) consult or, for patients from non-VA facilities, required medical records review and telephone consultation with approval by a VA ID clinician. A third-party infusion company provided all medications and line care. Weekly laboratory monitoring and follow-up telephone visits were conducted by ID-trained pharmacists.
RESULTS: During the evaluation period, 485 unique OPAT encounters (425 patients) were completed, with 164 patients (33%) directly admitted to OPAT upon referral from non-VA hospitals. Most common OPAT indications were osteomyelitis/diabetic foot infections (40.4%), bacteremia (17.3%), prosthetic joint infections/septic arthritis (12.4%), and urinary/intrabdominal infections (11.7%). Readmission rates while on therapy were similar, ranging from 13.4% to 13.7% each year. Patient demographics and OPAT outcomes demonstrated steady growth in the program. The program served patients in 35 counties and 158 zip codes across a broad geographic region in North Texas and southern Oklahoma.
CONCLUSION: Our program has demonstrated the ability to safely and effectively provide OPAT across a large geographic region from a central location.

Session-Presentation Number: #5-3

EVALUATION OF EMPIRIC ANTIBIOTIC PRESCRIBING FOR URINARY TRACT INFECTION PATIENTS IN A COMMUNITY HOSPITAL EMERGENCY DEPARTMENT.

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INTRODUCTION: Urinary tract infections (UTI) are a leading cause of infection among patients presented to the emergency department. Increasing antibiotic resistance requires clinicians to prescribe effective empiric antibiotic therapy without overprescribing.
METHODS: A retrospective, single-center, cohort study was conducted in adult patients with urinary tract infections admitted to the emergency department at a 500-bed community hospital between July 2017 and September 2018. The primary outcome was the percentage of patients in the emergency department prescribed appropriate empiric antibiotics for urinary tract infection. The secondary outcome was 30-day return visits to the emergency department for urinary tract infection.
RESULTS: A total of 200 patients were included in the study. The majority of the cases had uncomplicated cystitis at 63%. 44 patients had appropriate empiric antibiotic therapy for UTI (22%, $p < 0.05$). The most common prescribing error was duration of therapy, making up 40% of the inappropriate therapy group, while the least common prescribing error was antibiotic dosing at 12.6%. Of those patients that received inappropriate empiric antibiotic therapy, 10.9% returned to the ED within 30 days for UTI ($p=0.20$).
CONCLUSION: The findings of this study indicate a high rate of empiric antibiotics prescribed in the emergency department for UTI are inappropriate. Factors such as increased frequency and extended duration of antibiotic therapy could contribute to increasing antibiotic resistance rates over time.

Session-Presentation Number: #5-4

THE EFFICACY AND SAFETY OF DUAL VERSUS TRIPLE-AGENT ANTIRETROVIRAL THERAPY IN HIV-TREATMENT NAÏVE VETERANS

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INTRODUCTION: Dual-agent antiretroviral therapy (ART) – including an integrase inhibitor and a protease inhibitor – has been suggested to improve CD4/CD8 ratio and may reduce toxicity of antiretroviral therapy. However, the durability and long-term safety of these regimens have not been extensively evaluated.

METHODS: Electronic medical records of HIV-positive treatment-naïve veteran patients who were prescribed either raltegravir (RAL) plus darunavir/ritonavir (DRV/r) or tenofovir/emtricitabine (TDF/FTC) plus DRV/r at the VA North Texas Health Care System (VANTHCS) were retrospectively reviewed to assess treatment responses. To compare the efficacy between the dual and triple treatment regimens, HIV-RNA viral load and immune function parameters, including CD4/CD8 ratio, were evaluated out to 96 weeks of treatment. In addition, secondary safety measures including increases in serum creatinine and changes in lipid levels from baseline were analyzed.

RESULTS: At week 96, 66.7% of patients treated with the NRTI-sparing dual therapy regimen achieved a viral load of less than 50 copies/mL, whereas 100% of patients treated with the standard triple-therapy regimen had an undetectable viral load; p=0.014. There were no statistically significant differences at 96 weeks in the change in CD4, CD8, CD4/CD8 ratio, and safety parameters (lipids, serum creatinine) from baseline between the dual and triple-agent ART regimens.

CONCLUSIONS: In a single-center cohort study of HIV-treatment naïve veteran patients receiving ART, we found that dual therapy with RAL plus DRV/r had a similar toxicity profile and immunologic response when compared to TDF/FTC plus DRV/r. However, RAL plus DRV/r resulted in a less favorable virologic response at 96 weeks.

Session-Presentation Number: #6-1

ASSESSMENT OF GLYCEMIC CONTROL IN VETERANS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND TYPE II DIABETES MELLITUS ON INHALED CORTICOSTEROID THERAPY

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INTRODUCTION: The objective of this study was to determine if the use of Inhaled Corticosteroid (ICS) therapy affects glycemic control in patients with Chronic Obstructive Pulmonary Disease (COPD) and Type 2 diabetes mellitus (T2DM). Currently, studies have shown mixed evidence on the association between ICS and worsening glycemic control in patients with pre-existing diabetes.
METHODS: Data were recorded from electronic medical records of Veteran patients ages 18 to 80 with COPD and T2DM on at least two oral antiglycemic medications from January 1, 2000 to December 31st, 2017 at the VA North Texas Health Care System (VANTHCS). The primary outcome was time to A1c progression >10% at 12 months and 5 years.
RESULTS: This study included 127 patients (64 in the ICS group and 63 in the non-ICS group); baseline characteristics between groups were similar with the exception of age and tobacco use. It found no statistically significant differences between groups in regards to the primary outcomes. More patients in the non-ICS group had antiglycemic medications initiated at 12 months ($p = 0.009$) and 5 years ($p = 0.003$) compared to the ICS group.
CONCLUSION: Inhaled corticosteroids did not negatively impact glycemic control among Veterans with comorbid COPD and T2DM.

Session-Presentation Number: #6-2

ASSOCIATION BETWEEN HIGH-INTENSITY STATIN ADHERENCE AND CHOLESTEROL REDUCTION IN VETERANS WITH CHRONIC KIDNEY DISEASE

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INTRODUCTION: Previous studies have associated higher rates of adherence to greater low-density lipoprotein cholesterol (LDL-c) reduction; however, the evidence on the effects of adherence with high-intensity statins on LDL-c reduction and safety in patients with chronic kidney disease (CKD) is limited.

METHODS: We conducted a retrospective cohort study evaluating the relationship between high-intensity statin adherence (medication possession ratio [MPR] ≥80%) versus high-intensity statin nonadherence (MPR < 80%) and LDL-c reduction in patients with CKD. We utilized the Wilcoxon rank-sum test to compare 12-month changes in LDL-c from baseline between groups. The secondary outcome of the safety of statins in patients demonstrating adherence versus nonadherence on the basis of adverse events and liver enzyme abnormalities was assessed via Fisher's exact test.

RESULTS: A total of 20 patients receiving high-intensity atorvastatin were included in the study (nonadherent = 10, adherent = 10). The median MPR for nonadherent and adherent groups was 0.69 and 0.88, respectively. The median reduction in plasma concentrations of LDL-c was -22.1 mg/dL in the nonadherent group versus -37.4 mg/dL in the adherent group (p=0.88). There was no statistically significant difference in the change in AST (p=0.36) and ALT (p=0.54) enzymes between groups. No adverse effects were reported.

CONCLUSIONS: In patients with CKD and receiving high-intensity atorvastatin, there was no significant difference in lipid parameters and safety outcomes between nonadherent and adherent groups. The impact of compliance on high-intensity rosuvastatin and resulting lipid parameters remains unclear.

Session-Presentation Number: #6-3

IMPACT OF A PHARMACIST-DRIVEN PROTOCOL TO IMPROVE GUIDELINE-CONCORDANT PRESCRIBING OF ORAL DIABETES MEDICATIONS IN PATIENTS WITH ATHEROSCLEROTIC CARDIOVASCULAR DISEASE

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INTRODUCTION: New guidelines recommend sodium-glucose transporter-2 (SGLT2) inhibitors and glucagon-like peptide-1 (GLP1) agonists to reduce risk of cardiovascular (CV) events in patients with type 2 diabetes and atherosclerotic cardiovascular disease (ASCVD). However, many indicated patients are not on these medications.
METHODS: A retrospective pre-/post-intervention study was conducted at a university-based family medicine clinic. The primary objective was to determine if a pharmacy-driven protocol improved guideline-concordant prescribing of SGLT2 inhibitors and GLP1 agonists in adults with type 2 diabetes and ASCVD. The protocol included an in-service presentation delivered to providers, distribution of a medication algorithm for patients with ASCVD, and referral to a clinical pharmacist if eligible. Data were collected prior to implementation and at 6 months post-implementation. Patients ≥ 18 years of age with diagnoses of type 2 diabetes and ASCVD were included.
RESULTS: Two hundred thirty-four patients were screened and 108 met inclusion. Thirty-four percent were scheduled with a clinical pharmacist, 24% declined the offer, and 42% were unreachable. Almost half of the patients (43%; 16 of 37) attended the pharmacist appointment. Of those, 31% were initiated on an evidence-based medication for type 2 diabetes and ASCVD. Of the 71 patients not scheduled, 1 patient has since been initiated on an evidence-based regimen. In comparing pre- to post-implementation of this protocol, the rate of guideline-concordant prescribing increased by 57% (7% to 11%).
CONCLUSION: Implementation of a pharmacy-driven protocol can increase guideline-concordant prescribing. However, further exploration of patient- and system-level barriers is necessary to more broadly implement such a program.

Session-Presentation Number: #6-4

IMPLEMENTATION OF A DIRECT ORAL ANTICOAGULANT KNOWLEDGE ASSESSMENT AND EDUCATION SERVICE.

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INTRODUCTION: Education and follow-up requirements for patients receiving direct oral anticoagulants (DOACs) are not clearly defined. This study aimed to assess anticoagulation knowledge in patients prescribed a DOAC compared to those prescribed warfarin.
METHODS: A two-phase study is being conducted in a university-based family medicine clinic. Patients were identified by electronic health record query for anticoagulants between January 2017 and December 2018. Active anticoagulant users were verified through manual review. Patient and regimen-specific characteristics were collected before contact. Baseline understanding of prescribed anticoagulant use was evaluated by phone survey using a modified anticoagulation knowledge tool (phase 1). Targeted education was provided based on question responses. Patients meeting criteria for follow-up were scheduled for pharmacist in-clinic visit. Phase 2 will evaluate the effectiveness of the intervention through repeat phone screening at 3 months post-intervention.
RESULTS: Three hundred eighty-six patients were screened with 55.0% meeting inclusion. Of those, 34.7% were taking warfarin, 38.0% apixaban, 25.8% rivaroxaban, and 1.4% dabigatran. Knowledge assessment was completed on 15 warfarin and 25 DOAC users. Scores were higher in the warfarin group compared to the DOAC group (18.1/25 vs. 14.9/25 respectively; p=0.004). DOAC users were more likely to miss bleeding as a side effect compared to warfarin (36.0% vs. 20.0%; p=0.477). Potential interventions for anticoagulants prescribed by family medicine providers were more frequently identified in DOAC users; (22.3% and 5.7%; p=0.002).
CONCLUSIONS: DOAC users were not as well educated about their medication, particularly as it relates to bleeding. These data may support the implementation pharmacist-driven DOAC service.