ICHP 2014 Spring Meeting Poster Session

Saturday, March 29, 2014 10:00am – 11:00am

POSTER ABSTRACTS

ENCORE

ORIGINAL

STUDENT

PLATFORM PRESENTATION

Category: Encore

Title: Alendronate and *Clostridium difficile* infection: An unusual suspect identified by the FDA Adverse Event Reporting System

Purpose: Exposure to systemic antimicrobials is considered a major risk factor for Clostridium difficile infections (CDI). Recent data have shown possible associations between the risk of CDI and exposure to non-antimicrobial medications.

Methods: We performed a quantitative analysis of alendronate and adverse reactions of CDI in the FDA adverse event reporting system (FAERS) within the United States. All adverse event reports (AER) defined by the Medical Dictionary for Regulatory Activities (version 15.1) as "clostridium colitis" or "pseudomembranous colitis" between January 1999 and December 2011 were included. The proportional number of CDI reports associated with alendronate was determined using the information component (IC). The IC provides information on disproportionate reporting. A positive IC indicates a disproportionately high rate of reporting for a specific adverse event, and an IC >2 is considered to be a significant signal.

Results: During the study period, a total of 3,188,212 AER were submitted, 4,052 were of CDI. There were 18,854 total alendronate AER. The IC for alendronate reports and CDI in Q2 of 2010 was 4.86. The IC continued to be positive after this quarter indicating that the proportion of CDI reactions among alendronate reports was disproportionately high over this time period.

Conclusions: Whereas antimicrobial use is closely linked with CDI, the link between bisphosphonates and CDI is unusual. Bisphosphonates are minimally absorbed, antiresorptive agents with prolonged half-lives. Although agents of this class are used for osteoporosis, anti-infective properties have been identified. Further evaluation of the association between alendronate and Clostridium difficile is warranted.

Authors: Melinda M. Soriano, PharmD, BCPS Infectious Diseases Fellow**; Kevin W. McConeghy, PharmD, BCPS Infectious Diseases Fellow; Larry H. Danziger, PharmD, FIDSA Professor
University of Illinois at Chicago

Category: Encore

Title: The Effectiveness of a Pharmacist-run Patient Aligned Care Team (PACT) Telephone Clinic Managing Chronic Disease States and Therapeutic Monitoring at a Veterans Affairs Medical Center

Purpose: The purpose of this study was to evaluate the effect of pharmacist-run telephone clinics managing type 2 Diabetes Mellitus (DM), hyperlipidemia (HL), and/or hypothyroidism.

Methods: This was a retrospective, electronic chart review of patients referred to the pharmacist-run telephone clinic from November 1, 2010 to July 1, 2011. Patients were > 18 years old, diagnosed with DM, HL, and/or hypothyroidism, and with > 50% interventions made by a pharmacist via telephone. The primary endpoints were changes in hemoglobin A1c (HgbA1c), low density lipoprotein (LDL), and thyroid stimulating hormone (TSH) from pre-intervention to post-intervention. Secondary endpoints included: adverse drug reactions, changes in total cholesterol (TC), triglycerides (TG), high density lipoprotein (HDL), thyroid panel (Free T4, T3). Diabetic indices, diet and exercise counseling, average time followed in clinic, and appointment compliance were also evaluated.

Results: After telephone interventions made by a pharmacist, patients had a mean reduction in HgbA1c of 2.4% ($p < 0.0002$), LDL of 27.5 mg/dL ($p < 0.0001$), TSH of 16.4 uIU/mL, TC of 30.1 mg/dL, but no significant changes in TG, HDL, or Free T4 levels were noted. Majority of patients (82%) did not report any adverse effects with treatment, 78% were compliant with appointments, and 57% with medications. All the DM indices were addressed at least 50% of the time.

Conclusions: In majority of patients, statistically significant improvements in DM, HL, and hypothyroidism endpoints were seen. This study demonstrated that interventions by pharmacists in telephone clinics resulted in improved treatment of these disease states.

Authors: Tania George John, PharmD, BCACP**, Clinical Pharamacy Specialist Sindhu; Abraham, PharmD, BCPS, Clinical Pharmacy Specialist; Brett Geiger, PharmD, Associate Chief of Pharmacy, Clinical Services; Helen Kasimatis, PharmD, Clinical Pharmacy Specialist; Judith Toth, PharmD ,CGP, CDE, Clinical Pharmacy Specialist
Jesse Brown VA Medical Center

Category: Encore

Title: Pharmacists' role in emergency airway responses

Purpose: The objective of this study is to assess the implementation of pharmacist participation in emergency airway responses at a large, academic, teaching hospital. This study evaluates pharmacists' involvement and interventions during rapid sequence intubations, and the perceptions of other healthcare providers regarding pharmacists' involvement.

Methods: The study was approved by the institutional review board. A pharmacy clinical surveillance system was utilized for documentation and data collection. Examples of documented parameters include: response time, arrival of pharmacist in comparison to respiratory care, whether anesthesia was alerted prior to pharmacy, time spent at the airway, pharmacist-driven interventions, and whether the intubation was deemed unsuccessful or progressed to a cardiac arrest. Additionally, specific interventions were documented on. A survey was also distributed to relevant healthcare providers to evaluate their perceptions of pharmacy participation.

Results: From August 14, 2013 to October 19, 2013, a total of 169 emergency airway responses occurred, 59 in which data was documented, collected, and analyzed. The majority of pharmacist response times were less than two minutes and the total duration of time spent at the intubation was generally five to fifteen minutes. Four interventions were documented and described. Survey results show that anesthesia generally agrees that "pharmacists are necessary members of the emergency airway response team".

Conclusions: Pharmacists may be a valuable addition to airway response teams. They have opportunities to make interventions at airway responses such as a selection of agents used, dose-related recommendations and prevention of adverse drug events.

Authors: Gabriela Dimitrievski, PharmD, PGY1 Pharmacy Practice Resident[1]; Whitney Palecek, PharmD, PGY1 Pharmacy Practice Resident*[1]; Kimberly E. Levasseur-Franklin, PharmD, BCPS, Pharmacy Practice Coordinator/ICU Team Leader**[1,2]; Abbie Lyden, PharmD, BCPS, Clinical Pharmacist, Emergency Medicine[1,3]

1 - Northwestern Memorial Hospital; 2 - Midwestern University Chicago College of Pharmacy; 3 -Rosalind Franklin University of Medicine and Science

Category: Encore

Title: Safety, effectiveness and cost analysis of rivaroxaban versus fondaparinux for thromboprophylaxis after joint replacement at an inpatient rehabilitation facility

Purpose: The purpose of this study is to compare safety, effectiveness, and cost of the new oral Factor Xa inhibitor rivaroxaban to fondaparinux, an injectable anticoagulant, for prevention of venous thromboembolism (VTE) after hip or knee arthroplasty within an inpatient rehabilitation facility (IRF). Rivaroxaban is the first available orally active anticoagulant that does not require dose monitoring.

Methods: The IRB approved this retrospective cohort study at a 128 bed IRF. Data was collected on the patient sample of convenience who were either status post total knee arthroplasty or total hip arthroplasty, admitted over a 24 month period (January 2011 to December 2012). All identified patients received either fondaparinux 2.5 mg subcutaneously or rivaroxaban 10 mg orally once daily. Primary effectiveness outcomes were composite of any deep venous thrombosis (DVT), non-fatal, symptomatic, objectively confirmed pulmonary embolism (PE); and all-cause mortality. Primary safety outcomes were any major or non-major bleeding events. Cost comparison was done by calculating acquisition cost of rivaroxaban dispensed and the equal number of fondaparinux doses.

Results: Analysis of 314 patient records (199 patients on rivaroxaban and 115 patients on fondaparinux) indicated no PE events during their IRF stay. No VTE occurred in the patients prescribed rivaroxaban compared to 0.87% in fondaparinux group. Major bleeding events occurred in 0.5% of patients prescribed rivaroxaban compared to 1.74% in fondaparinux group. Minor bleeding events occurred in 1% of patients prescribed rivaroxaban compared to 1.74% of patients in fondaparinux group. Direct acquisition cost comparison revealed savings of approximately 52% ($13,000) in the rivaroxaban group. Event related costs were not analyzed.

Conclusions: In this study rivaroxaban provided a safe and effective alternative to fondaparinux for prevention of VTE in post-operative patients undergoing rehabilitation at IRF. Use of rivaroxaban over fondaparinux resulted in significant cost savings in terms of drug acquisition costs. Rivaroxaban was also favorable compared to subcutaneous fondaparinux due to ease of drug administration.

Authors: Nitika Agarwal, PharmD, Director of Pharmacy**; Mary Mekheil, PharmD, Clinical Pharmacist; Nadia Tancredi, RPh, Clinical Pharmacist; Abhishek Reddy, DO, APM&R Resident Noel Rao, MD, Medical Director
Marianjoy Rehabilitation Hospital

Category: Encore

Title: Intravenous batched medication waste management: a retrospective efficiency review

Purpose: Batch production of IV medications, while contributing to efficiency, can potentially result in excessive medication waste. Efficient and accurate reporting along with timely monitoring of batch production waste allows adjustments in production to be made to ensure cost-effective operations. To improve upon our batch waste monitoring process, we undertook an analysis of a waste monitoring system that utilizes the EMR and batch production records.

Methods: The electronic medical record (EMR) and batch production records were utilized to calculate an anticipated waste level. Waste was defined as the difference between the total number of units manufactured and the total number of units charged to patients over a defined time period. Due to a large discrepancy between our current methods of batch waste monitoring as compared to the EMR method, it was decided to implement a one-month pilot study to validate the accuracy of this process.

Results: After assessing 19 batched medications, we stratified the top 5 with highest volume produced comparing the EMR method versus the pilot study. There was greater than 100% variance between both methods with all five medications reported.

Conclusions: The EMR method overestimated true waste when compared to the pilot study. There are many limitations to both methods presented such as human error and variance in medication expiration. Although the proposed EMR method did not capture the amount of medication waste, the study identified avenues for improvement to implement an efficient and accurate electronic medication waste monitoring system.

Authors: Rhynn J. Malloy, PharmD**; Brian Hoff, PharmD**; Michelle Loose, CPhT; Ana Fernandez, CPhT; Michael Postelnick, RPh, BCPS AQ ID*
Northwestern Memorial Hospital

Category: Encore

Title: Improvement of medication delivery through the use of decentralized pharmacy technicians

Purpose: Previous literature demonstrates the link between uninterrupted nursing time and safe medication administration. Interruptions lead to clerical errors and unclear communication between nursing staff and pharmacy. To maximize efficiency, the use of decentralized pharmacy technicians was investigated.

Methods: This two week prospective study took place between 09/09/2013 and 09/20/2013. Two pharmacy students acting as decentralized pharmacy technicians were placed on a medicine floor. The control unit had similar baseline characteristics as the intervention unit. Medication requests for both units were recorded, as well as a pre and post intervention nursing satisfaction survey. The primary outcome was the number of medication requests (MRs). Secondary outcomes included the number of late doses and the nursing satisfaction with pharmacy.

Results: Medication requests on the intervention unit decreased compared to the control unit during the study period. During the last week of the study period, there were 4 MRs in the intervention unit compared to 34 in the control group (p=0.002, 95% CI [13.33-37.17]). In the intervention unit, the average number of late doses per patient decreased from 36 at baseline to 25 during the study. Finally, nursing satisfaction with pharmacy services improved by 32% during the intervention period.

Conclusions: The results suggest medication requests can be decreased by using decentralized pharmacy technicians. Beneficial results with respect to the timeliness of medication administration and nursing satisfaction with pharmacy services were also seen.

Authors: Brett James Pierce, PharmD, PGY1 Resident[1]*****; Cynthia Herrera, PharmD, PGY1 Resident[1]; Mary Margaret Lenefsky, PharmD, PGY1 Resident[1]******; Puja Chandrakant Patel, PharmD Candidate 2014[2]; Dipa Vijay Shah, PharmD Candidate 2014[2]; Noelle RM Chapman, PharmD, BCPS, Pharmacy Manager*****[1]; Michael John Postelnick, RPh, BCPS, AQID, Pharmacy Manager*****[1]
1 - Northwestern Memorial Hospital; 2 - University of Illinois at Chicago College of Pharmacy

Category: Original

Title: Student Capstone Research Experience: A Five Year Perspective

Purpose: To provide a five year overview of student capstone projects focusing on the type of study design, origin of mentors and professional dissemination of the project information.

Methods: The capstone research experience consists of four components: the Advanced Pharmacy Practice Experience (APPE) Preparation class, a five week APPE rotation to complete the research under the guidance of a mentor, a written manuscript and a poster presentation. A log was kept from 2009 through 2013 on the type of study design for each project, practice site for the mentor and whether the capstone poster was presented at a professional meeting or if the written manuscript was published in a professional journal.

Results: Over the five years, 389 students completed the capstone experience. The study designs included: survey 149 (38%), retrospective chart review 129 (33%), business plan format 65 (17%), bench research 20 (5%) and other 26 (7%). A total of 223 (57%) students chose a faculty member as a mentor while 166 (43%) selected non-faculty mentors. There were 62 (15%) student posters presented at national meetings and 47 (12%) posters at state or regional meetings for a total of 109 (28%). To date, 6 (2%) of the capstone written manuscripts have been published in the literature.

Conclusions: The student capstone projects predominately use either a survey or retrospective chart review as a study design. Students slightly favor faculty over non-faculty as mentors. Over 20% of capstone projects have been presented at professionals meetings or published.

Authors: Cynthia Ann Wuller, BS Pharmacy, MS Pharmacy Admininstration, Clinical Professor, Capstone Coordinator**
St. Louis College of Pharmacy; Southern Illinois University Edwardsville

Category: Original

Title: Prospective order review by Emergency Department (ED) pharmacists: Enhancing patient safety and aligning with regulatory compliance standards

Purpose: To evaluate medication interventions when allowing for prospective order review by a pharmacist at a Level I trauma center ED in Central Illinois during a 2 week pilot.

Methods: A retrospective review of ED medication orders placed from November 11th-November 25th with pharmacist interventions will be performed. Baseline data of pharmacist interventions will be assessed with the auto-verify functionality on to compare intervention type and outcome obtained with auto-verify functionality off. Medication verification time by the pharmacist as well as administration time by the nurse will be measured to assess if prospective order review increases medication administration times.

Results: The 2 week pilot interventions were compared to baseline interventions which were gathered over 90 days. Pharmacist interventions per day were higher during the pilot period (20.2 vs 11.6). The number of critical/high pharmacist interventions per day was also higher during the pilot (11.4 vs 3.4). Time to order verification by the pharmacist was less than 2 minutes for the majority of orders (53%), followed by less than 5 minutes for 82% of orders and less than 10 minutes for 91% of all orders. Time to medication administration by nursing was greater than 15 minutes for the majority of orders (49%).

Conclusions: Pharmacist interventions increased when prospective order review was allowed. Time to medication administration was not adversely impacted by prospective pharmacist review.

Authors: Michaela M. Doss, PharmD, BCPS**; Justin Smith, PharmD; Heather Harper, PharmD, BCPS*
OSF Saint Francis Medical Center

Category: Original

Title: Evaluation of the accuracy and completeness of nurse driven admission medication histories after modifications to current practice

Purpose: Medication errors made during the admission and discharge process account for approximately 46% of all errors during a patient's hospital stay. A baseline study at our institution also demonstrated the need for process improvement in admission medication histories (AMH). This study ultimately aims to reduce errors and omissions by utilizing a standardized process when obtaining the medication histories for newly admitted patients.

Methods: Research will be approved by the ethics committee and institutional review board for our institution. Baseline data was collected to evaluate current practice. This study will measure the effects of two distinct interventions focused on reducing the percentage of errors during AMH. The first intervention will be deletion of existing home medication histories from the electronic health record, therefore preventing the flow of incorrect data from previous admissions. The second intervention will be implementation of an algorithm and scripting for nurses to utilize when completing AMH. Patients will be randomly selected and each AMH reviewed for accuracy (no later than admission day one). This will involve follow-up and repeat AMH by a pharmacist using a standardized procedure. Data will be evaluated at each interval and data sets will be compared to baseline data.

Results: To be submitted

Conclusions: To be submitted

Authors: Andrea Elise O'Dell, PharmD, PGY-1******; Ashlie Kallal, PharmD, Medication Safety Coordinator*****
Memorial Medical Center

Category: Original

Title: Improving the Pharmacist Orientation Program at a Large Medical Center

Purpose: The Pharmacy Department at Saint Francis Medical Center (SFMC) has seen many changes in the past five years, including a new pediatric pharmacy, an updated practice model, and increased staff and services. We recognized that our orientation model for new pharmacists had not adjusted to keep up with the changes. The purpose of this project is to develop an updated pharmacist orientation model that would allow for a better transition from training to practicing pharmacist at SFMC.

Methods: We surveyed two groups on various aspects of the orientation program: new pharmacists hired in the last 2 years and the pharmacists who served as pharmacist mentors in that same time frame. The initial survey allowed us to identify gaps in our orientation program. Organizational Development Personnel assisted in the development and implementation of a new pharmacist orientation program. As part of the new orientation program, a group of experienced pharmacists were selected to serve as peer sponsors for the new pharmacists. Training was provided to the peer sponsors prior to their involvement with the new pharmacists. The new program was instituted with five new pharmacists between July 2013 and January 2014. A follow-up survey will be distributed to these pharmacists and their peer sponsors in February 2014 to determine improvements realized and gaps still outstanding.

Results: We will analyze the follow-up survey to determine project success and the need for adjustments. All future new pharmacists will be surveyed for ongoing maintenance of the orientation program.

Conclusions: To be submitted

Authors: Jennifer C. Ellison, PharmD, BCPS PGY1 Pharmacy Residency Director, Drug Information Pharmacist**; Karin L. Terry, PharmD, Medication Safety Officer**
OSF Saint Francis Medical Center

Category: Original

Title: Impact of pharmacist led discharge counseling on 30-day readmissions and emergency department visits

Purpose: According to the New England Health Care Institute, medication non-adherence has shown to result in $100 billion per year in excess hospitalizations and it is estimated that along with non-adherence, suboptimal prescribing, and other factors could result in as much as $290 billion per year in avoidable medical spending.1 The primary objective of this study is to determine the impact of pharmacist discharge counseling on 30-day post-discharge hospital readmissions and emergency department (ED) visits.

Methods: A prospective, single center intervention study with a pharmacy discharge counseling service from 8 am to 4 pm on Monday through Friday. Inclusion criteria include age ?55 years, being discharged by participating hospitalist group, started or already on a high risk medication as defined by the ISMP, and on ?5 medications. Exclusion criteria include rejection of offer to counsel, discharge from inpatient rehabilitation, and discharge to place other than home. The pharmacist will review the patient's medication list and collaborate with physicians to assess the appropriateness of medication regimen based on evidence based guidelines for patient specific disease states. Patient will receive counseling from a pharmacist prior to discharge and patient knowledge will be assessed using Agency for Healthcare Research & Quality's discharge knowledge assessment tool. Data collected will include patient's age, number of medications, high risk medications, readmissions, and DKAT score. A chart review will be conducted 30 days post discharge for readmissions and ED visits. The results will be compared to the current standard of care with discharge counseling by a nurse.

Results: To be submitted

Conclusions: To be submitted

Authors: Daljeet Kaur, PharmD, PGY-1 Pharmacy Resident**; Taylor Post, PharmD, BCPS, Clinical Pharmacist*
Presence Saint Joseph Medical Center

Category: Original

Title: Pharmacist Involvement in the Medication Management of an Acute Care of Elderly (ACE) Unit

Purpose: The inappropriate use of medications in the elderly population can lead to confusion, falls, and even delirium. This in turn puts their health at an increased risk as well as their mortality rate. A multi-disciplinary approach of elderly patient care in an Acute Care of Elderly (ACE) Unit will work to decrease adverse events, shorten the length of stay, and decrease mortality rates. A pharmacist will be an integral part of this team, overseeing the medication management of the patients as well as making interventions to reduce inappropriate medication dosing and polypharmacy. The primary expected outcome is that there will be an overall decrease in falls on the ACE unit.

Methods: A guideline will be set in place outlining potentially inappropriate medications and the appropriate therapeutic alternative based on BEERS criteria. The BEERS criteria are a guide of safer therapeutic alternatives for health professionals. Education of pharmacy and nursing staff on safe medication use in the elderly will be developed in conjunction with the geriatricians. After the guideline and education is in place, all patients in the ACE unit will be monitored prospectively for falls as well as interventions made by pharmacists.

Results: To be submitted

Conclusions: To be submitted

Authors: Katerina Anastasiou, PharmD, Pharmacy Resident**; Kimberly Janicek, PharmD, CPPS Clinical Pharmacy Manager*; Rashita Shah, PharmD, Clinical Pharmacist
Presence St. Joseph Medical Center

Category: Original

Title: Evaluation of an institution specific cellulitis antimicrobial guideline

Purpose: Cellulitis, a common skin and soft tissue infection, results in a significant amount of hospitalizations and office visits each year with occurrences increasing annually. Current guidelines provide empiric treatment but contain limited information on recommending initial antibiotic treatment according to infection severity. By assessing the current antibiotic prescribing practice at this institution and preparing an antimicrobial guideline, it may be possible to recommend a more appropriate initial cellulitis antibiotic regimen. The primary objective is to evaluate whether an institution specific cellulitis antimicrobial guideline will result in decreased length of stay.

Methods: Approved by the Institution Review Board, this study will be a single-center evaluation of outcomes both pre-and post-cellulitis antimicrobial guideline implementation. A list of patients diagnosed with cellulitis as designated by an ICD-9 code will be obtained from the institution's Midas program. Patients from June to August 2013 will be evaluated prior to implementation of the guideline, as well as patients post-guideline implementation from January 2014 to March 2014. Electronic medical records will be utilized to determine patient demographics, length of stay, and initial antibiotic regimen. The guideline will be developed using the institution's antibiogram and commonly suspected organisms, in addition to published guidelines and previously published studies. Both physicians and pharmacists at this institution will receive education on proper utilization of the guideline. A comparison of data between pre-and post-guideline implementation will be used to determine whether an institution specific cellulitis antimicrobial guideline has a positive effect on initial antibiotic regimen and length of stay.

Results: To be submitted

Conclusions: To be submitted

Authors: Sharlene Huang, PharmD, PGY-1 Pharmacy Practice Resident**; Katherine Allen, PharmD, BCPS, Clinical Pharmacist; Nicole Costa, PharmD, Clinical Pharmacist*
Presence Saint Joseph Medical Center

Category: Original

Title: Pharmacist-led development of an interdisciplinary pain management team within a community hospital setting

Purpose: Poor management of pain is linked to reduced quality of life and decreased patient satisfaction. In a community hospital setting, there is still a need to focus on adequate and appropriate utilization of analgesic therapy. The ideal approach to pain management in an inpatient setting includes the utilization of an interdisciplinary pain team. Currently, pharmacists have a limited role in most hospital pain management teams. The objective of this study is to determine if pharmacist participation in the development of a pain team can improve pain management therapy for patients resulting in better pain control and increased patient satisfaction.

Methods: The pain management pharmacist will work with other healthcare providers to assess and monitor patients while also identifying their existing pain therapy needs. To detect areas needing improvement, patient surveys, medical charts, and the hospital database will be used to collect information. Patient costs and length of stay will be determined using hospital bills, charges from the revenue center and cost department, and hospital-specific Medicare cost reports. Patients will undergo an initial pain assessment by the pharmacist to identify and evaluate the effectiveness of their current pain management therapy. The patients will also be followed by the pharmacist for the duration of their hospital stay and evaluated daily for proper utilization and effectiveness of therapy. The pharmacist will dose pain medication or suggest recommendations to improve current pain management for acute care patients to help facilitate the necessary interventions that will lead to improved patient outcomes.

Results: To be submitted

Conclusions: To be submitted

Authors: Sawsan Ikram, PharmD, PGY-1 Pharmacy practice resident**; Se Choi, PharmD, Pharmacy Director*; Barbara Walker, RN ,Nurse manager, orthopedic unit
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Category: Original

Title: Clinical Outcomes in HIV+ Adults with K65R Mutation

Purpose: The K65R mutation is reported in HIV-infected individuals treated with tenofovir, limiting the use of other nucleoside reverse transcriptase inhibitors. The purpose of this study is to determine virologic, immunologic, and treatment outcomes in patients who acquired K65R.

Methods: Single-site (Ruth M. Rothstein CORE Center), retrospective chart review. Inclusion criteria included K65R mutation on HIV genotype, age ≥18 years, and receiving care at CORE. Patient demographics, HIV genotype, regimen prescribed pre and post K65R development, HIV viral load, and CD4 counts were collected.

Results: 174 patients were identified, 134 qualified for inclusion, and 37 (28%) were lost to follow-up. Demographics: 75% male, 69% African American, median age at time of HIV genotype 44 years. The most common regimen at time of HIV genotype was tenofovir/emtricitabine/efavirenz (63%). The median time on a tenofovir-containing regimen before K65R development was 24 months (IQR, 27 months). 125 patients began a salvage regimen and returned for at least one follow-up appointment, median time on salvage regimen was 29 months (IQR, 46.5 months), 92% achieved undetectable viral load at least once, and the median CD4 count increase was 150 cells/mL (IQR, 217 cells/mL). Patients receiving ≤2.5 vs. ≥3 active drugs were compared. Undetectable viral load was achieved in 87% (34/39) vs. 91% (78/86) in the two groups respectively, p-value = 0.551. Mean changes in CD4 count from baseline were 156 vs. 168 cells/mm^3 respectively, p-value = 0.747.

Conclusion: Most patients with K65R responded to a salvage regimen and achieved undetectable viral load and an increase in CD4 count. The most commonly prescribed salvage regimen in this population was zidovudine/lamivudine + boosted darunavir + raltegravir. While there is a trend toward higher rates of achieving viral suppression and greater increases in CD4 count with a salvage regimen containing ≥3 active drugs, the results were not statistically significant.

Authors: David William Martin, PharmD, PGY-1 Pharmacy Practice Resident**[1]; Blake Max, PharmD, AAHIVE, Clinical Pharmacist*[2]

1 - John H. Stroger, Jr. Hospital of Cook County; 2 - Ruth M. Rothstein Core Center

Category: Original

Title: Evaluating the clinical impact of a computerized physician order entry (CPOE) sepsis bundle order set

Purpose: Sepsis accounts for approximately 10 percent of all intensive care unit admissions. The key to reducing sepsis mortality is early recognition of the onset of sepsis and prompt initiation of goal-directed therapy. The objective of this research is to evaluate the impact of an updated CPOE sepsis bundle order set reflective of best practice sepsis treatment on clinical outcomes in patients with severe sepsis.

Methods: Data will be collected pre-implementation of the evidence-based sepsis order set and post-implementation to allow a comparison of outcomes. Patients included in the study will be identified by a documented positive sepsis screen, indicating the presence of severe sepsis, or septic shock. Patient data will be collected from the electronic medical record and maintained without patient identifiers. Data collected will include: patient age, sex, source of infection, ICU length of stay, inpatient medications, time to receive and appropriateness of antibiotics, vital signs, serum lactate levels, complete blood count (CBC) values, and complete metabolic panel (CMP) values. Primary endpoints to be evaluated will be ICU length of stay and percentage of patients who met sepsis bundle treatment goals including serum lactate measurement within three hours, antibiotics given within three hours, cultures drawn before administration of antibiotics, fluid resuscitation bolus given, and central venous pressure (CVP) measurement within six hours.

Results: To be submitted

Conclusions: To be submitted

Authors: Lisa M. Deegan, PharmD, Pharmacy Resident******; Taylor J. Post, PharmD, BCPS, Clinical Pharmacist
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Category: Original

Title: Characterization of Drug Shortages by Mining a Drug Information Service Database

Purpose: Drug shortages are of increasing concern for policymakers, healthcare providers, and patients. It is crucial that healthcare institutions address drug shortage concerns to avoid compromising patient care. Multiple factors contribute to the frequency and severity of drug shortages, including raw material availability, manufacturer production, distribution mechanisms, business considerations, regulatory restrictions, clinical practice changes, and medical necessity. The volatility and dynamic interplay of these factors can lead to frequent changes in the supply and demand of medications. Therefore, it is necessary to utilize available data to characterize drug shortage trends.

Methods: The Drug Information Group, at the University of Illinois at Chicago responds to queries from clients across the country and maintains this information in a database. This study mined the database from November 1, 2009 to November 1, 2012 using the search terms of "shortage," "alternative" and "instead." Entries were included if they were in regards to the shortage of a drug listed in the American Society of Health-System Pharmacists Drug Shortages Resource Center. Each entry was then categorized according to shortage agent including drug name, dosage form, medication class, and risk level. Specifics of the request and response were also collected including client geographic location, indication(s), and response to shortage. The compiled data were analyzed for trends in the above components to characterize drug shortages experienced by clients, as well as responses provided by the Drug Information Group.

Results: Drug shortage characterization remains under investigation, with data collection and evaluation currently being conducted.

Conclusions: Drug shortage characterization remains under investigation, with data collection and evaluation currently being conducted.

Authors: Aparna D. Reddy, PharmD, PGY2 Drug Information Resident******; Lara K. Ellinger, PharmD BCPS, Clinical Assistant Professor*****
University of Illinois at Chicago

Category: Original

Title: Nuts and bolts of building new service-lines: Blueprints for establishing an outpatient pharmacy

Purpose: Currently, there are no guides that describe a generalized process for initiating new service lines in a healthcare institution. There are many studies presently showing the outcomes and benefits of various service lines, but there is nothing showing how to properly put these ideas into place. This research project is to develop guidelines addressing this process focusing on initiating an outpatient pharmacy to validate the process.

Methods: The project has outlined a step-by-step process starting from the development of the idea for the new service line to the final step of implementing the project in the institution. The process is comprised of 10 steps: identifying a need, identifying relevant personnel, developing a list of options, outlining the required investment, identifying outcomes, judging those outcomes, determining the value of the project, analyzing tradeoffs, creating acceptability, and finally, the implementation. The data collected included retrospective financial data of employee prescriptions as well as pricing of expected inventory. A pro forma was developed to support the guidelines presented.

Results: The final endpoint will be whether or not the process creates a successful initiation of an outpatient pharmacy in the studied institution.

Conclusions: The goal for the project is to encompass all aspects of the decision making process so that anyone who would like to initiate a service line can use these guidelines to start any type of service line in any institution with successful implementation of the project.

Authors: Mark D. Wadley, PharmD, Pharmacy Resident******; Se Choi, PharmD, Director of Pharmacy***** Presence St. Joseph Medical Center

Category: Original

Title: Secondary Prevention Medication Prescription Filling Following an Acute Ischemic Stroke and the Relationship to Hospital Readmission Rates

Purpose: Of the 795,000 who develop a stroke annually, 185,000 (23 percent) are recurrent strokes. Patients with high adherence to antihypertensive medications have been shown to suffer fewer non-fatal vascular events and have lower rates of stroke recurrence. Additionally, nonadherence to evidence-based secondary prevention therapies in patients with atherothrombosis was associated with an increase in mortality. The purpose of this study is to assess if medication pick-up following an acute ischemic stroke hospital discharge reduces hospital readmissions.

Methods: Prior to commencement, this study will be submitted to the institutional review board (IRB) for approval. This retrospective study will identify the discharge medications for acute stroke patients at my institution between April 1, 2012 through September 30, 2013. Medication adherence will be assessed via calling the patient's home pharmacy and identifying if the patient retrieved their medications. Lastly, hospital readmission rates for the patients will be assessed. The primary objective of this study will be to evaluate if medication pick-up from an outpatient pharmacy is a predictor of ischemic stroke patient readmission. Chi-square testing will assess all nominal data and a student's t-test will assess all continuous data.

Results: Results and conclusions to be presented at the ICHP Spring Meeting

Conclusions: Results and conclusions to be presented at the ICHP Spring Meeting

Authors: Ryan Szynkarek, PharmD, BCPS**; Jennifer Austin, PharmD, BCPS*; Olabisi Falana, PharmD, BCPS; James Brorson, MD

Category: Student

Title: Evaluating Hospitalization Rates of Elderly Patients with Diabetes: An Observational Assessment Targeting Antidiabetic Medication Safety

Purpose: Diabetes mellitus (DM) is increasing in persons ≥65 and older. A recent study estimated that 100,000 emergent hospitalizations of patients ≥65 years of age are attributable to adverse drug events, with antidiabetic agents accounting for many of these admissions and readmissions. As a quality improvement pilot project, the authors evaluated hospitalization rates of elderly diabetic patients to assess the role pharmacist care can play in the therapeutic, safety and hospitalization outcomes in older adults at our institution.

Methods: The authors evaluated all elderly (≥65) emergency room visits, admissions, and re-admissions in an urban academic medical center for five consecutive weeks. Relevant components of diabetes care were assessed, including diabetes medication classes, and correlated with drug and patient outcomes.

Results: Fifty-six patients were evaluated (68% F, 59% AA, range 65-91 years of age). Emergency room visits, admissions and re-admissions were 62.5%, 37.5% and 7% respectively. Primary reasons for hospital visits were infection 32 %, bone/muscle disorders 23% and cardiac conditions 11%. Diabetes management included: diet alone 14.3%, insulin 44.6%, oral agents 30.4% and combination therapy 10.7%. Severe hyperglycemia of ≥300mg/dL occurred in 9% (n=5), of which 3.5% (n=2) were admitted with ketoacidosis. Hypoglycemia occurred in 5.4% (n=3) emergency room visits (3.6% (n=2) confirmed), all patients were on insulin; 5.4% (n=3) experienced multiple hypoglycemic episodes during hospitalization course.

Conclusion: Adverse drug events resulting in health care utilization are common in elderly diabetic patients. Pharmacist care can improve therapeutic and safety outcomes through enhanced patient- and provider-level interventions at our institution.

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Category: Student

Title: Achievement of A1C, Lipid, and Blood Pressure Goals in a Free Community Clinic

Purpose: Lack of access to quality health care, including lack of access to proper drug therapy, places many patient populations at risk for poor health outcomes. Chronic diseases such as hypertension, diabetes and dyslipidemia can be difficult and costly to manage, and can lead to significant morbidity and mortality. The objectives of this research project are to compare the treatment options the patients at a free community clinic receive to what the guidelines recommend, and to observe if patients are able to reach their therapeutic goals. Methods: Patient charts were reviewed for those patients diagnosed with hypertension, diabetes, and dyslipidemia. Data regarding laboratory values and medications usage were collected during the chart review. The data was compared against the published guidelines for the management of each of the disease states to determine if patients have reached goals of treatment. Results: Only 30% of patients were able to reach their A1c goal of ≤ 7%. The blood pressure goal of ≤ 140/90 established by the new JNC 8 guideline was achieved in 70% of the patients, and 75% achieved an LDL of ≤ 100. Seventy percent of patients were categorized as obese based on a BMI that was ≥ 30. Conclusion: Blood pressure and lipid control was obtained in the majority of patients, however diabetes control has been proven to be more difficult to achieve. Future research is needed to investigate the contributing factors for poor diabetes control.

Methods: Patient charts will be reviewed for those patients diagnosed with hypertension, diabetes, and dyslipidemia. Data regarding laboratory values and medications used will be collected during the chart review. This data will be compared against the published guidelines for the management of each of the diseases to determine if patients have reached the clinically published goals for treatment. Expected Results: There will be lab results recorded for each patient chart along with the list of medications the patient is taking. This will be compared to what the guidelines recommend, and then evaluate if there are positive results for the lab values. Conclusion: The implications of this study can impact prescribing practices and potentially improve the outcomes of these diseases at the community free clinic.

Results: In progress

Conclusions: In progress

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Category: Student

Title: Evaluating hospitalization rates of elderly patients with potential medication-induced geriatric syndromes: An observational assessment targeting safe prescribing practices

Purpose: Elderly patients (≥65) are at a 4-fold higher risk of drug-related hospitalizations. A recent study found over 25% of elderly hospitalizations related to adverse drug events. This study aims to evaluate hospitalization rates for medication-induced geriatric syndromes. The findings may identify expanded roles for pharmacists in medication management therapy to prevent unnecessary hospitalizations and improve health outcomes.

Methods: A list of geriatric syndromes was determined and the 2012 American Geriatrics Society (AGS) Beers Criteria was utilized to screen patients for inclusion. Elderly patients (≥65) visiting the emergency room or those admitted to the medicine wards during December 2013 were evaluated. Patients with at least two pre-defined geriatric syndromes and at least one medication on the AGS Beers Criteria were included. Qualifying patients were further investigated for correlations between medication regimens and presenting symptoms.

Summary of Results: A hundred and fifty-three patients were evaluated. Six patients met inclusion criteria and seven encounters were eligible for data analysis (4%). Of the seven encounters, 57% were strongly-correlating medication-induced geriatric syndromes and resulted in falls and confusion or dizziness; 71% were taking more than 10 different medications. The most commonly prescribed drugs on the AGS Beers Criteria were amiodarone, tramadol and meclizine. Upon review, 71% had medication lists with potentially severe drug interactions. (Research in progress.)

Conclusions: Medication-induced geriatric syndromes requiring hospitalizations may occur in elderly patients. Polypharmacy and prescribing of Beers Criteria medications were main contributors in these avoidable circumstances. Pharmacists advocating for appropriate use and minimizing medications may improve geriatric health outcomes. (Research in progress.)

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Category: Student

Title: Extended-infusion piperacillin-tazobactam vs. traditional dosing for improving patient outcomes

Purpose: The use of extended-infusion piperacillin/tazobactam was implemented system-wide at Memorial Medical Center in Springfield, Illinois starting April 2013. It was thought that administering higher doses of piperacillin/tazobactam over an extended period of time would lead to improved patient outcomes due to the drug's pharmacodynamic and pharmacokinetic properties. In addition, less frequent dosing with extended-infusion could potentially save in administrative costs. The objective of our current study is to compare the outcomes of patients who received traditional IV piperacillin/tazobactam with those who were given extended-infusion piperacillin/tazobactam as part of the change in protocol in 2013.

Methods: A retrospective analysis of data from the electronic database at Memorial Medical Center, Springfield, Illinois. The hospital switched form traditional IV administration to extended-infusion of piperacillin/tazobactam in April 2013. We are comparing the outcomes of patients who received traditional IV piperacillin/tazobactam between September 1st and November 30th of 2012 to patients who received extended-infusion piperacillin/tazobactam between September 1st and November 30th of 2013. We will compare outcomes which include death or discharge to hospice vs. discharge to home, long-term care, or a rehabilitation facility. Our collected data will also include age, sex, length of admission, duration of antibiotic therapy, adverse drug reactions, and indication for antibiotic therapy.

Results: In progress

Conclusions: In progress

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Category: Student

Title: Evaluating the impact of a follow-up telephone call program in recently discharged heart failure patients on 30 day readmission rates

Purpose: The objective of this research is to evaluate the impact of the implementation of a follow-up telephone call program for heart failure patients on 30-day readmission rates. The follow-up telephone program will allow an assessment of the patients' understanding of heart failure and utilization of their medications. This is also an opportunity to provide additional patient education on medications, home monitoring, lifestyle changes, and when to seek additional help. The implementation of this program has the goal as well as the potential to help decrease readmission rates and improve quality of life for heart failure patients.

Methods: This study will involve patients with the diagnosis of heart failure who were recently discharged from Presence St. Joseph Medical Center. This study will compare data from 3 months before the implementation of this program to prospective post-implementation data to compare the rate of readmission due to heart failure. Subjects will be identified via a MIDAS report run daily to identify all patients discharged the day prior whom have a history of heart failure. During these telephone calls, pharmacists or students will review and counsel the patient on information such as weight monitoring, fluid restriction, low-sodium diet, exercise and social habits, symptoms of worsening heart failure, medication reconciliation, and confirmation of follow-up appointment with physician. Subjects will be de-identified and information will be stored in an Excel worksheet for review and analysis.

Results: In progress

Conclusions: In progress

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Category: Student

Title: Illinois Prescribers' Attitude on the Utility of Medical Marijuana

Purpose: In August of 2013, Illinois Governor Quinn signed House Bill 1, approving the Compassionate Use for Medical Cannabis Pilot Program. This program attempts to implement rules and regulations that will allow patients with certain debilitating conditions to legally obtain and use medical marijuana under Illinois state law. Our study aims to identify physicians' knowledge and attitude toward the use of medical marijuana in hopes to guide future education and clinical policy regarding this practice.

Methods: An anonymous, electronic survey was distributed by email to members of the Illinois Association of Family Physicians (IAFP) in their scheduled monthly e-newsletter. The survey questions aimed to identify demographic information, the knowledge level of prescribers as it relates to the new marijuana law and prescribing guidelines, and their attitudes toward the new law.

Results: One hundred eleven IAFP members responded to the survey. Of these participants, 95% were aware that the bill had been signed. 49% were unlikely to prescribe marijuana and 58% of the participants did not feel comfortable prescribing marijuana. No correlation was found between the prescribers' age or length of time in practice and the likelihood of prescribing marijuana.

Conclusions: In progress

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Category: Original

Title: Comparison of zolpidem to other drugs associated with falls in hospitalized patients

Purpose: Determine if zolpidem poses a higher risk of falls in hospitalized patient as compared to other medications commonly associated with patient falls.

Methods: Retrospective chart review of inpatient medical records of those patients recorded as having fallen during their hospitalization. Dates of data collection were from October 2012 to January 2013 (4 months). Data collection included select medications (i.e. zolpidem, antidepressants, antipsychotics, antihistamines, benzodiazepines, opioid analgesics) administered up to 24 hours prior to the fall, patients? ages and gender. Patients on the pediatric units and in the Emergency Department were excluded. This study was approved by the local Investigational Review Board.

Results: There were 129 patient falls recorded on the hospital units being analyzed. At least one of the drugs associated with an increased fall risk was administered within 24 hours prior to the fall in 108 of the recorded falls. Although zolpidem was administered prior to 8.5% of the falls, opioids (50.4%), antidepressants (33.3%), lorazepam (24%) and antipsychotics (15.5%) were administered significantly more frequently.

Conclusions: Although zolpidem is a risk factor for patient falls in hospitalized patients, the incidence does not appear to be greater than with other medications associated with this hazard.

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Category: Original

Title: Chronic Obstructive Pulmonary Disease (COPD) Exacerbation Inpatient Treatment: A Retrospective Chart Review

Purpose: To evaluate inpatient management of COPD exacerbations and adherence to Global Initiative for Chronic Obstructive Lung Disease (GOLD) guideline recommendations.

Methods: A retrospective chart review was conducted in patients aged 18 to 89 years hospitalized for COPD exacerbation between the dates of April 1, 2013 and June 30, 2013. Subjects were excluded if they received antibiotic or systemic corticosteroid therapy for any reason other than a COPD exacerbation. Data collection for each subject included: smoking history, COPD medication therapy prior to admission and at hospital discharge, presence of cardinal symptoms of a COPD exacerbation at hospital admission, documentation of COPD Assessment Test (CAT) score, inpatient antibiotic and systemic corticosteroid regimens, vaccination screening and administration, time to hospital readmission, and reason for hospital readmission. Inpatient exacerbation treatment was evaluated for adherence to GOLD guideline recommendations.

Results: A total of 60 patients were included in this study. Antibiotics were used inappropriately in 58% of subjects (n=35). A variety of agents were given, of which levofloxacin was most common (n=42). Systemic corticosteroid regimens also varied widely, with total daily doses ranging from 10mg to 120mg. Short-acting bronchodilators, tiotropium, and oral corticosteroids were the most common medications initiated in the hospital that were continued upon discharge.

Conclusions: There is opportunity for improvement in antimicrobial stewardship in COPD exacerbations, specifically symptom-driven antibiotic use and antimicrobial selection. Oral corticosteroid regimens could also be optimized. It is difficult to assess appropriateness of COPD maintenance therapy due to lack of information about baseline disease severity.

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