Category: Original - Research in Progress

Content List

Original Research In Progress 1

Title: Evaluation of Clinical Outcomes Pre and Post Implementation of Matrix Assisted Laser Desorption/Ionization Time of Flight (MALDI-ToF) in Gram Negative Non-Enterobacteriaceae Associated Urinary Tract Infection (UTI) in Community Hospital

Submitting Author: SingPing Chow, PharmD

Abstract:
Purpose: Conventional bacterial identification and susceptibility testing using Vitek 2 has been utilized and validated to have high sensitivity and specificity. However, the turnaround time is one of the disadvantages of Vitek 2, as faster diagnostic identification of bacteria have shown improved patient outcomes . Vitek MS utilizes matrix assisted laser desorption/ionization time of flight (MALDI-ToF), and the turnaround time in bacterial identification is substantially reduced. MALDI-ToF has been studied in patients with bacteremia and found to improve time to appropriate antibiotic therapy, but data on its utilization for UTI is lacking. Different workflows may significantly impact the benefit and utilization of MALDI-ToF. At OSF Healthcare St. Anthony Medical Center (SAMC), the workflow of utilization of MALDI-ToF is different from the previously published studies on MALDI-ToF utilization. Based on the differences in laboratory workflow, combined with the seriousness of nosocomial UTI infections, whether there are differences in clinical outcomes associated with the utilization of MALDI-ToF in nosocomial UTI needs further investigation.

Methods: This research will be a retrospective cohort study. A retrospective chart review from 2013 to 2018 will be conducted at SAMC. The primary endpoint is to determine if there is an association of time difference to effective therapy in gram negative non Enterobacteriaceae UTI before and after MALDI-ToF was implemented. Patients will be included if 1) they are >18 years old 2) admitted to OSF Healthcare St. Anthony Medical Center 3) had positive symptoms of UTI, defined as increased frequency, urgency, painful urination, suprapubic pain 4) causative pathogens were resistant to empiric treatment resulting in change of therapy. Patients enrolled from December 2013- December 2015 will be considered “pre MALDI-ToF implementation” group, and patients from July 2016- July 2018 will be “post MALDI-ToF implementation” group. Patients will be identified by positive urine culture data, which will be collected from SAMC microbiology laboratory data. Patients with positive urine culture will be evaluated based on defined inclusion and exclusion criteria. Two tailed t test and chi squared test will be used for continues data and categorical data respectively. 151 patients from pre MALDI-ToF implementation group and 151 patients from post MALDI-ToF implementation group will provide a power of 80% to detect a difference of 5% in the primary outcome.

Results: Research in progress.

Conclusion: Research in progress.

Organization: OSF Healthcare St. Anthony Medical Center

Authors: SingPing Chow, PharmD (UIC College of Pharmacy), OSF Healthcare St Anthony Medical Center; Marianne K. Pop, PharmD (Midwestern University-Chicago), BCPS, UIC College of Pharmacy at Rockford; Timothy F. Murrey, PharmD (UIC College of Pharmacy), BCPS, OSF Healthcare St Anthony Medical Center.

Original Research In Progress 2

Title: Evaluation of Patient Factors and Their Impact on Time in Therapeutic Range on Warfarin Therapy in a VA Medical Center

Submitting Author: Anitta Aickareth, PharmD

Abstract:
Purpose: To determine the impact of age, sex, compliance, differing international normalized ratio (INR) goals, the care assessment needs score (CAN), renal function, drug interactions, dementia, and admission dates on a patient's time in therapeutic range (TTR) with warfarin.

Methods: In this retrospective, observational, single center study, a list of patients and their time in therapeutic range on warfarin from 06/07/19 to 11/14/19 at the Edward Hines, Jr. VA Hospital was generated via the National TTR Dashboard Tool and divided into 2 arms depending on if the patient met a TTR goal of 70% or not. The TTR Dashboard computed patient TTRs from INR test results over the 160-day time period. A random sample of 225 patients from each group were evaluated on their age, sex, compliance, CAN score, INR goal, renal function, inpatient admissions, dementia, and drug interactions. The primary outcome is to determine the impact of various patient factors on the TTR for patients receiving warfarin. The primary hypothesis is that the various patient factors identified will negatively impact the TTR, including increasing age, non-compliance, non-standard INR goals, higher CAN scores, poor renal function, diagnoses of dementia, major drug interactions, and increased inpatient admission days. Results will be calculated using a multiple logistic regression test with significant values reaching $p<0.05$.

Results: Research in progress.

Conclusion: Research in progress.

Organization: Edward J. Hines VA Hospital

Authors: Primary Investigator: Anitta James Aickareth, PharmD (Florida A&M University), PGY1 Pharmacy Practice Resident, Edward Hines, Jr. VA Hospital, Hines, IL. Additional Investigators: Julie M. Stein, PharmD, VHA-CM (University of Illinois at Chicago), Associate Chief, Pharmacy Clinical & Education Programs Director, Director of PGY1 Pharmacy Residency, Edward Hines, Jr. VA Hospital, Hines, IL; Alexander B. Chew, PharmD, BCPS (University of Illinois at Chicago), Clinical Pharmacy Specialist, Edward Hines, Jr. VA Hospital Hines, IL; Tiffany Nicole Chaddick-Dyas, PharmD, BCPS (University of Illinois at Chicago), Clinical Pharmacy Specialist, Edward Hines, Jr. VA Hospital, Hines, IL.

Original Research In Progress 3

Title: Evaluation of the safety and efficacy of a fixed-dose Four-Factor-Prothrombin Complex Concentrate protocol compared to a weight-based dosing protocol

Submitting Author: Melissa Harvey, PharmD

Abstract:
Purpose: Vitamin K-antagonist related bleeding often calls for administration of reversal agents that have rapid therapeutic effects. Four-Factor Prothrombin Complex Concentrate (4F-PCC) is the recommended reversal agent for life-threatening vitamin K antagonist-related bleeding events. Available dosing options for 4F-PCC administration include weight-based and fixed-dose strategies. There has not yet been clear evidence of safety or efficacy of fixed-dosing versus the FDA approved weight-based dosing strategy in INR reduction and hemostatic efficacy. This study aims to provide further evidence through evaluating outcomes between implementation of the weight-based and fixed-dose protocols utilized at Memorial Medical Center.

Methods: This is an observational, retrospective cohort study looking at hemostatic efficacy and INR values for adult patients with vitamin K antagonist associated acute major bleeds requiring reversal with 4F-PCC. Patient data will be obtained for adult patients who have experienced bleeding while on vitamin K antagonist therapy. Data will be analyzed to evaluate the safety and efficacy of the weight-based and fixed-dose 4F-PCC protocols. Data for weight-based dosing will be from January 2013 through March 2018. Fixed-dose data will be from April 2018 through September 30, 2019. Primary outcomes for efficacy will consist of INR values and hemostatic efficacy. Hemostatic efficacy will be determined based on pre-established Endpoint Adjudication Board (EAB) approved definitions. Secondary outcomes for efficacy will analyze use of 4F-PCC rescue doses and the administration of blood transfusions. Outcomes to assess for safety of weight-based and fixed-dose 4F-PCC will be thrombotic events, in-hospital mortality, and patient disposition.

Results: Research in progress.

Conclusion: Research in progress.

Organization: Memorial Medical Center

Authors: Melissa Harvey, PharmD; Mike Guithues, PharmD, BCPS; Don Ferrill, PharmD, BCPS; Lucas Stoller, PharmD, BCPS; Mike Sheppard PharmD, BCPS; Katelyn Fryman, PharmD, BCPS; Bilal Butt, MD; Rebecca Tracy, DO; Maithili Deshpande, PhD

Original Research In Progress 4

Title: Impact of a Pharmacy-Driven Antimicrobial "Time-out" on Duration of Therapy in Community-Acquired Pneumonia

Submitting Author: Amolee R Patel, PharmD

Abstract:
Purpose: The recommended duration of therapy for Community-Acquired Pneumonia (CAP) is no less than five days of therapy with the shortest duration possible. Literature supports the safety and efficacy of shorter durations of therapy for many infections, but many patients continue to receive arbitrarily longer durations of therapy. The Joint Commission Antimicrobial Stewardship Standards require that antimicrobial stewardship programs implement systematic evaluation of need for ongoing treatment after a set period of time. One such intervention is an antimicrobial "time-out" which should prompt assessment of patient response to therapy, appropriateness of therapy, and a plan for duration of therapy. Previous studies have demonstrated the efficacy of primary care team-driven and provider-driven antimicrobial "time-outs" in reducing antimicrobial exposure. In January 2018, OSF Healthcare System implemented a 48 hour pharmacy-driven "time-out" in the electronic health record to alert pharmacy staff when a patient has been receiving broad-spectrum antibiotics for 48 hours. The purpose of this study is to determine if the implementation of a pharmacist-driven 48 hour antimicrobial "time-out" in the electronic health record decreases the duration of antimicrobial therapy in the treatment of CAP.

Methods: We will conduct a multi-site, retrospective chart review of adults hospitalized with CAP at OSF Healthcare Saint Anthony and Saint Francis Medical Centers between May 2016 - October 2017 (pre-implementation) and April 2018 - September 2019 (post-implementation). Patients will be excluded for criteria that warrant deviation from Community-Acquired Pneumonia Guidelines and/or extended durations of therapy, such as pregnancy, concomitant extra-pulmonary infection, neutropenia, leukopenia, immunosuppression, and mechanical ventilation. The primary outcome being studied is the duration of antimicrobial therapy, defined as the total number of days the patient received at least one dose of an antimicrobial agent between hospitalization and discharge prescriptions. Secondary outcomes include length of hospital stay, time to IV to PO switch, and rates of treatment failure, relapse, and antimicrobial-associated adverse events. Adverse events include C. difficile infection, diarrhea, allergic reaction, or acute kidney injury. Subgroup analyses will be performed for each site and treatment regimen (beta-lactam based or fluoroquinolone based). Continuous data will be analyzed using an unpaired, positive t-test of mean and discrete data will be analyzed using either a chi-squared or Fischer's exact test depending upon sample size.

Results: Research in progress.

Conclusion: Research in progress.

Organization: OSF Healthcare St. Anthony Medical Center

Authors: Amolee R Patel, PharmD, PGY1 Pharmacy Resident; Timothy F Murrey, PharmD, Infectious Diseases Pharmacotherapist Coordinator, PGY1 Pharmacy Residency Coordinator

Original Research In Progress 5

Title: Impact of the Implementation of an Infusion Reaction Documentation Template at UChicago Medicine

Submitting Author: Katherine Moser, PharmD

Abstract:
Purpose: Rituximab is labeled with a black box warning for severe or fatal infusion-related reactions. It is known that approximately 80% of all infusion reactions with these agents occur with the initial infusion. The RATE study established that after the initial rituximab infusion, treatments can be given safely over 90 minutes in patients with untreated diffuse large B-cell lymphoma (DLBCL) or follicular lymphoma, who have never had a previous grade 3 or 4 reaction. By decreasing drug infusion time in an outpatient infusion clinic, appointment times can be significantly reduced. Currently, at The University of Chicago Medicine (UCM), there is no standardized method for nurses to document infusion reactions. Clinical staff pharmacists convert patients from standard to rapid infusion for rituximab; however, without a standardized method of documenting previous infusion reactions, the process for assessing eligibility is not efficient. Therefore, a standardized flowsheet for nurses to record the presence or absence of infusion reactions to improve communication between clinical staff regarding appropriate infusion rates and patient safety was developed.

Methods: The following data will be collected and evaluated using a medication utilization report: chemotherapy regimen, indication, chemotherapy cycle, prior use of rituximab, appropriate infusion rate of rituximab, documentation of infusion reactions, anticipated chair time needed, chair time used, and chair time scheduled. The primary endpoints are the incidence of appropriate escalation to rapid infusion in patients receiving rituximab and appropriate infusion reaction documentation before and after flowsheet implementation. The secondary endpoint is the incidence of accurate chair time scheduling before and after flowsheet implementation. Categorical data will be evaluated utilizing the Chi-Square Test.

Results: Research in progress.

Conclusion: Research in progress.

Organization: UChicago Medicine

Authors: Katherine Moser, PharmD (Midwestern University-Downers Grove, IL), Non-traditional PGY1 Resident, UChicago Medicine; Connor Roth, PharmD (Auburn University), Hematology/Oncology Pharmacy Specialist, Franciscan Health; Zachary Schlei, PharmD (University of Wisconsin-Madison), Clinical Pharmacist Specialist Hematology/Oncology, UChicago Medicine.

Original Research In Progress 6

Title: Safe Communication Standards to Address Medication Delays

Submitting Author: Charlene Hope, PharmD

Abstract:
Purpose: The Joint Commission reported "ineffective communication" among the top three root causes of sentinel events reported between the years 2010 – 2013. A 2018 University of Chicago Medicine Culture of Safety Survey revealed that "resources" and "teamwork" ranked as the largest safety theme opportunities. Reported medication events in the organization during the same time frame were primarily missing or delayed medications. The purpose of this study is to improve communication between nursing and pharmacy team members through achievement of a 90% adherence rate of electronic medical record messages to established internal pharmacy safe communication standards.

Methods: Four safe communication standard criteria were established after baseline review of 100 electronic medical record messages. Rapid cycle improvement approach was used to guide process improvement. Pharmacy technicians and nurses were educated on the safe communication standards during team meetings, huddles, and email prior to the start of data collection. Electronic medical record messages from nurses that were responded to by pharmacy technicians were audited weekly for adherence to the safe communication standards and response rates. Adherence and additional safe communication standard education was provided to pharmacy team members every two weeks. Results/Conclusion: Process improvement interventions included establishment of new electronic medical record message request categories and standardized response templates. Adherence to safe communication standards and response rates over 6 months from baseline increased by 44% and 10%, respectively. Satisfactory response rates remain a challenge when pharmacy technicians handle multiple responsibilities, nurses select incorrect electronic medical record message categories, and nurses inability to locate medications efficiently. Results demonstrate that safe communication standard establishment improves the culture of safety by fostering teamwork between pharmacy and nursing.

Results: Research in progress.

Conclusion: Research in progress.

Organization: University of Chicago Medical Center

Authors: Charlene Hope, PharmD; Bryan C. McCarthy Jr., Pharm.D., M.S., M.J., BCPS Inpatient Director of Pharmacy University of Chicago Medicine.

Original Research In Progress 7

Title: Team HPV: Cancer Free! Implementing a Multimodal Approach to Increase HPV-Vaccination Rates in the Ambulatory Setting – Phase I

Submitting Author: Michelle Monzon-Kenneke, PharmD

Abstract:
Purpose: Nearly 80 million Americans are infected with the Human Papillomavirus (HPV). Improvements in HPV immunization rates lead to decreased HPV infections which most commonly cause cancer[1]. The CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination at age 11 or 12. HPV vaccination has decreased uptake due to parents' perception and lack of education provided about the vaccine[2,3].Our scope was boys and girls ages 11 and 12 who were seen for a well child visit with a primary care physician (designated sites and physicians) documented in EPIC during the measurement period. At baseline, 32.5% of our 11-12 year olds seen for a well child visit received the HPV vaccine. Our immediate goal was to increase HPV vaccination amongst the 11 and 12 year olds seen for a well child visit from 32.5% to 40% by 2/28/19. Our long range goal is an increase in HPV vaccination up to 64%, which aligns with national benchmarks.

Methods: A review of commercial insurance claims data revealed low HPV immunization rates in patients 13 and younger. Utilizing retrospective chart review, we measured provider individual immunization rates and compared to national benchmarks. Reviewing literature studies identified beliefs and reasons for low HPV vaccination.

An anonymous survey was conducted of select family medicine, med/peds and pediatricians to determine perception of the vaccine and reasons HPV uptake was not at benchmark levels. Physician survey results confirmed literature findings; public perception was largest barrier to uptake of HPV immunization.

Clinic and physician staff education on how to discuss HPV cancers and recommend vaccination was provided. Training included discussing vaccination according to the CDC's presumptive bundled approach, where HPV vaccination is recommended in the same way and on the same day as other adolescent vaccines. Parent focused HPV vaccine informational clings were distributed to all of our designated practices to be placed in each exam room. Additionally, access was given to a role-playing video demonstrating commonly asked questions and interaction simulations.

An electronic medical record enhancement was made to default the best practice alert (BPA) checkbox in the EPIC Smart-Set to "on" for HPV vaccination. We also utilized various social media outlets to promote HPV Awareness – Facebook; Twitter; local radio.

Results: In 6 months, our team's interventions resulted in an increase in HPV immunization rates from 32.5% to 48%. Results since our initial measurement period concluded have demonstrated sustained improvement. We reached 64% in January 2020, accomplishing our benchmark goal. Variations in HPV rates were noted by medical specialty. We are targeting our future interventions to address these differences.

Conclusions: Our continued goal is to raise our provider's vaccination rates by persistently engaging our physicians and staff with education and validated best practices to improve HPV vaccination.

Implications to pharmacy practice: The pharmacist is well-known at being adept at multilevel communication to a varied audience: parents, patients and providers. Pharmacists are valued members of the healthcare team and should have an active role in population health initiatives. Our project's initial beginnings were incited by an HPV vaccination presentation given by our pharmacist during a quarterly ambulatory pharmacy and therapeutics subcommittee meeting. The topic spurred the interest of one of our pediatrician members who was surprised at how low our HPV immunization rates were based on commercial claims data.

Future evolution of our project will be focusing on ensuring patients complete vaccination series (2-doses) by age 13.

References:

(1) Centers for Disease Control and Prevention. Human Papillomavirus (HPV). Updated December 15, 2016. Accessed February 13, 2019. www.cdc.gov/vaccines/vpd/hpv/

(2) Hansen C, Credle M, Shapiro E, Niccolai L. "It all depends"; A qualitative study of parents' views of human papillomavirus vaccine for their adolescents at ages 11-12 years. *J Cancer Educ.* 2016; March; 31(1):147-152.

(3) Gilkey M, Calo W, Marciniak M, Brewer N. Parents who refuse or delay HPV vaccine: Differences in vaccination behavior, beliefs and clinical communications preferences. *Hum Vaccin Immunother.* 2017; 13(3):680-686.

Organization: Northwestern Medicine

Authors: Michele Monzon-Kenneke, PharmD, BCPS, BCGP - Clinical Pharmacist - Northwestern Medicine; Tina McClain, RN - Clinical Quality Leader - Northwestern Medicine; Karin Podolski, RN, MSN, MPH - Director of Community Health Services; Erin Schutte, MD, FAAP - Pediatrician - Northwestern Medicine Regional Medical Group; Sofia Shakir, MD - Pediatrican - Pediatric Health Associates, Ltd.; Debbie Fager - Hospital Systems Manager - American Cancer Society; Ashley Lach - Hospital Systems Manager - American Cancer Society

Original Research In Progress 8

Title: Venous Thromboembolism Prophylaxis in Hemorrhagic Stroke Patients: Comparing Safety and Efficacy of Unfractionated Heparin Dosing Intervals

Submitting Author: Kyle Vost, PharmD

Abstract:
Purpose: The use of unfractionated heparin is common for venous thromboembolism prophylaxis in patients admitted for intracranial hemorrhages. These patients are at high risk for both rebleeding and venous thromboembolisms. When choosing an unfractionated heparin dosing interval (every eight-hours or every twelve-hours), clinicians must balance the risk of bleeding with the risk of thromboembolism. The purpose of this study is to determine if patients on every twelve-hour unfractionated heparin have a lower frequency of bleeding and rebleeding without increasing the frequency of venous thromboembolisms when compared with every eight-hour dosing.

Methods: This study is a cross-sectional, retrospective chart review looking at adult patients at Memorial Medical Center in Springfield, Illinois, from June 2014 to June 2019. Patients presented with intracerebral hemorrhage upon admission and received low-dose unfractionated heparin for venous thromboembolism (VTE) prophylaxis within four days of hospital admission. Patients will be identified through ICD 9 and ICD 10 codes, with an estimated sample size of 100 patients. Our primary outcome is patient safety as measured by intracranial rebleeding after the diagnosis of hemorrhagic stroke seen on CT (with measured hematoma growth > 6 cc or >33% from admitted hematoma size as measured by the ABC/2 score), or an International Society on Thrombosis and Haemostasis (ISTH) defined major bleed. Secondary outcomes are comparative rates of VTEs between the eight and twelve-hour dosing regimens, length of stay, and rate of heparin-induced thrombocytopenia. Continuous data will be presented as a mean with standard deviation. Categorical data will be expressed as percentages. T-tests or Mann Whitney for continuous data, and chi-square or Fisher exact test for categorical data will be used to evaluate for between-group differences depending on sample size.

Results: Research in progress.

Conclusion: Research in progress.

Organization: Memorial Medical Center

Authors: 1.Kyle Vost, PharmD, PGY-1 Pharmacy Resident @ MMC 2.Katelyn Conklen, PharmD, BCPS, BCCCP - Critical Care Pharmacist @ MMC 3.Hesham Allam, MD - Neurologist @ SIU 4.Don Ferrill, PharmD, BCPS - Manager, Pharmacy Education & Clinical Services @ MMC 5.Laura Fiorito, PharmD, BCPS - Clinical Pharmacist @ MMC 6.Faisal Ibrahim, MD - Neurology Resident @ SIU