8th Annual
OPRC
Ohio Pharmacy Resident Conference
Friday, May 15th
Ohio Northern University
Welcome everyone, virtually to the eighth Ohio Pharmacy Resident Conference (OPRC). What a truly unique time in our nation and in healthcare. I am truly grateful that you have made the choice to continue to participate in OPRC this year given the many challenges I know you all have faced.

This year’s conference too will be unique, although it is my hope that you’ll find it to be as worthwhile to you and your residents as you have found it to be in years past. Today, 151 of our residents will have the opportunity to remotely present their projects to peers, preceptors, and other colleagues. Residents will have 22 minutes to present their project followed by a brief question and answer period. Presentations must be kept within the time frames allotted to facilitate the entire conference. The full conference schedule can be found here: https://ohioprc.com/schedule/.

Audience members are encouraged to provide each resident feedback on their presentation utilizing the Google evaluation form found here: https://docs.google.com/forms/d/e/1FAIpQLSfK82fu6I5f-Z8zzbFlrFMOO_4B_ITPgC1q_QiOEJ9LU7B8g/vie wform
Or by printing and emailing the form found here to a-mcpheron.1@onu.edu:
Each presenter will be provided written feedback from evaluators who have attended their session. This feedback will be given to the preceptors once information has been processed.

Continuing education credit submission can be found at: http://raabecollegeofpharmacy.org/oprc/ . CE credit must be submitted by May 29th 2020 at 11:59pm.

Thank you for your participation in OPRC. Good luck to all presenters!

Sincerely,

Michael J. Rush, PharmD, BCACP, CDE, NCTTP
Planning Committee Chair
Ohio Pharmacy Resident Conference
2020 OPRC Planning Committee

Brittany Bates
Chandra Dunbar
Kathy Fruchey
Karen Kier
Gary Long
Steven J. Martin
Adellyn McPheron
Pat Parteleno
Michael Rush
# Sessions Attended – Personal Tally Form

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Code</th>
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**TOTAL** ____________/0.85
Continuing Education

Accreditation:

All programs for the 2020 Ohio Pharmacy Residency Conference are accredited by the Raabe College of Pharmacy at Ohio Northern University. Ohio Northern University is accredited by the Accreditation Council for Pharmacy Education as providers of continuing pharmacy education. All program credit is delineated in the individual program summary and is knowledge-based, unless otherwise noted.

Disclosure:

All persons participating in any Ohio Northern University continuing education programs are expected to disclose any real or apparent conflict(s) of interest that may have any bearing on the subject matter of the continuing education programs. Disclosure pertains to relationships with any pharmaceutical companies, biomedical device manufacturers, or other corporations whose products or services are related to the subject matter of the presentation topic. The intent of this disclosure is not to prevent a speaker with a potential conflict of interest from making a presentation, but to let the audience know about the relationship before the presentation. It is intended that financial interest or affiliations be openly identified so that, with the full disclosure of the facts, the attendees may form their own judgments about the presentation.

Statement for 2019 OPRC – No Speaker or Program Faculty have any pertinent conflicts of interest or disclosures to report.

CPE Credit Requirements:

All pharmacist participants that wish to be awarded continuing pharmacy education (CPE) credit must be registered with CPE Monitor, which is a national collaborative between the National Association of Boards of Pharmacy (NABP) and the Accreditation Council for Pharmacy Education (ACPE). To receive credit, the pharmacist participant must have their NABP e-profile number (CPE Monitor number) and their date of birth in MM/DD format. Once registered, any ACPE-approved CPE will be available via a comprehensive list within the CPE Monitor website. If you do not yet have an active NABP e-profile number through the CPE Monitor website, you may do so at the following website: http://www.nabp.net/programs/cpe-monitor/cpe-monitor-service. Any specific problems with accessing CPE Monitor or setting up your NABP e-profile number can be addressed directly to NABP through their customer service phone number (847-391-4406) or via their e-mail (custserv@nabp.net).

To receive CPE credit for the programs attended, participants must copy down the session codes announced during each program and save them for access to the online evaluations system. After or during the conference, all attendees will need to access ONU online CPE system for the 2020 OPRC at http://raabecollegeofpharmacy.org/oprc to complete all program evaluations. Instructions for accessing and enrolling into the system are clearly delineated on the website. You may choose to initiate your profile in the system prior to the OPRC, but you will be unable to access specific evaluations as session codes will not be announced until the time of the scheduled session. The deadline for submitting your evaluations is Friday, May 29th, 2020. Statements of participation will be available to
you on your CPE Monitor profile after all credit has been uploaded. Please allow 4 weeks after the
program for the upload to occur. Any questions subsequent to the deadline date about credit should be
directed to the Director of Continuing Education, Andrew Roecker, at a-roecker@onu.edu.
Instructions for Evaluators, Preceptors and Room Moderators

**Audience Evaluators**

Please review the presentations evaluation form found here:

https://docs.google.com/forms/d/e/1FAIpQLSfK82fu6i5f-Z8zzbFlreffMO0_4B_ITPgClq_QIOEJ9LU7B8g/viewform

ALL audience members should provide an evaluation of EVERY presentation they attend. The more feedback the better!! The format is designed to allow for written comments and suggestions for improvement. The preferred timing for the presentation is 18-22 minutes. No presentation including questions and answers session may run longer than 25 minutes.

**Preceptors**

It is very important for the preceptor to keep the session on time both beginning and ending.

The preceptor has a number of functions during the presentation:

1. Try to relax the presenter
2. Troubleshoot and assist with IT concerns on your end of the “call”
3. Introduce the resident’s name and practice location/institution.
4. Do not announce the resident’s presentation title. (Allow the resident to state as part of their introduction)

**Room Moderators**

Each room will be assigned a room moderator. The role of the room moderator is to:

1. Serve as a host for the Zoom meeting
2. Help the resident navigate Zoom and make sure it is functioning properly and focused throughout the presentations.
3. In the case that residents cannot share their screens, the room moderator will display the presentation through screen share and advance the slides for the resident
4. Announce the CE code for the presentation at the beginning and the end of each presentation, (Code will be provided)
5. Maintain the official time for the presentation.
<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Presenter</th>
<th>Title</th>
<th>Institution</th>
<th>Link</th>
</tr>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>1</td>
<td>Bennett, Brittany</td>
<td>Promoting resilience and well-being among pharmacists in a community</td>
<td>St. Elizabeth Healthcare</td>
<td>931-2173-1508</td>
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<td>Phan, Thanh</td>
<td>Capturing pharmacy technician productivity within an infusing center</td>
<td>OhioHealth Grant Medical Center</td>
<td>981-3677-2360</td>
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<td>8:30 AM</td>
<td>3</td>
<td>Comshaw-Arnold,</td>
<td>A Multicenter, Retrospective Cohort Evaluating the use of Ceftriaxone</td>
<td>Cleveland Clinic Akron General</td>
<td>986-6835-6486</td>
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<td></td>
<td></td>
<td>David</td>
<td>versus Vancomycin in Staphylococcus aureus Osteomyelitis</td>
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<td>4</td>
<td>Johnson, Bailey</td>
<td>Evaluation of the effects of targeted education on pharmacist</td>
<td>The Christ Hospital Health Network</td>
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<td>verification and monitoring of QTc interval-prolonging medications</td>
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<td>8:30 AM</td>
<td>5</td>
<td>Marsman, Christopher</td>
<td>Impact of a pharmacist-led culture review on antibiotic</td>
<td>Mercy Health - Fairfield Hospital</td>
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<td>stewardship in the emergency department</td>
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<td>Elliott, Shelby</td>
<td>Medication Use Evaluation of Vancomycin for Methicillin-Resistant Staphylococcus aureus Coverage in Pneumonia at a Rural Community Hospital</td>
<td>Ashtabula County Medical Center</td>
<td>942-5737-8673</td>
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<td>Nguyen, Brittany</td>
<td>Effects of continuous glucose monitoring in diabetic patients who do not qualify for insurance coverage of continuous glucose monitors</td>
<td>Blanchard Valley Hospital</td>
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<td>8:30 AM</td>
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<td>Anderson, Shelby</td>
<td>Implementation of Pharmacy Education on Documentation of Penicillin Allergies and Antibiotics Prescribing at OhioHealth Mansfield Hospital</td>
<td>OhioHealth</td>
<td>924-2787-9691</td>
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<td>Kim, Seong Jung</td>
<td>Impact of Clinical Pharmacy Consultation on Pain Management for Hospitalized Patients</td>
<td>The Jewish Hospital - Mercy Health</td>
<td>987-2105-8279</td>
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<td>9:00 AM</td>
<td>1</td>
<td>McQuitty, Brook</td>
<td>Preventing drug diversion in a multicenter healthcare system: a failure modes and effects analysis</td>
<td>St. Elizabeth Healthcare</td>
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<td>Holland, Molly</td>
<td>Impact of Pharmacist Intervention in Discharge Transition of Care: A Quality Improvement Study</td>
<td>OhioHealth Mansfield Hospital</td>
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<td>3</td>
<td>McGuire, Matthew</td>
<td>The use of change management to expand decentralized pharmacy services: impacts on patient outcomes and employee satisfaction.</td>
<td>Cleveland Clinic Akron General</td>
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<td>Chen, Alice</td>
<td>Retrospective Evaluation of Inpatient Initiation of Sacubitril/Valtsartan during Hospitalization for Acute Heart Failure</td>
<td>The Christ Hospital</td>
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<td>Entsuah, Nana</td>
<td>Role of a clinical pharmacist in developing a business-practice model for heart failure patients in the ambulatory care setting after assessing causes of readmission.</td>
<td>Mercy Health - Fairfield Hospital</td>
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<td>Nkwocha, Chinyere</td>
<td>The PHARMer’s Market: Reducing A1c in Type II Diabetes Patients Through Active Dietary Education and Lifestyle Modifications</td>
<td>University of Cincinnati</td>
<td>920-8820-1389</td>
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<td>9:00 AM</td>
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<td>Young, Keith</td>
<td>Implementation of a computerized pharmacy workflow management system in a rural community hospital</td>
<td>Ashtabula County Medical Center</td>
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<td>Hepp, Cody</td>
<td>Evaluation of provider prescribing patterns before and after antimicrobial stewardship education in the ambulatory setting</td>
<td>Blanchard Valley Hospital</td>
<td>999-9676-3503</td>
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<td>Gordon, Erin</td>
<td>Analysis of the implementation of a selective tranexamic acid administration protocol in a level one trauma center</td>
<td>OhioHealth</td>
<td>970-2159-5309</td>
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<td>Giessler, Paige</td>
<td>Impact of a pharmacist-driven methicillin-resistant Staphylococcus aureus (MRSA) nasal screening protocol on de-escalation of empiric vancomycin and linezolid</td>
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<td>Sinclair, Colin</td>
<td>Evaluating the implementation of an antimicrobial stewardship pathway for urinary tract infection</td>
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<td>Hopton, Samantha</td>
<td>Utilization of an Electronic Health Record System as a Formulary Alignment Catalyst</td>
<td>OhioHealth Mansfield Hospital</td>
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<td>Nicholson, Carli</td>
<td>Evaluation of Levocarnitine and Lactulose for the Treatment of Valproic Acid-Induced Hyperammonemia in Critically Ill Patients</td>
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<td>Bребberman, Kelsey</td>
<td>Effect of intravenous metoprolol versus diltiazem on heart failure with reduced ejection fraction in the setting of atrial fibrillation with rapid ventricular response</td>
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<td>Hirschy, Katherine</td>
<td>Evaluation of the implementation of a community-based falls prevention program led by student pharmacists</td>
<td>University of Cincinnati</td>
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<td>Shivani, Bhakta</td>
<td>Impact of a pharmacist-led post-discharge transitions of care (TOC) clinic</td>
<td>Aultman Alliance Community Hospital</td>
<td>957-9517-6784</td>
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<td>9:30 AM</td>
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<td>Apfeld, Jasmine</td>
<td>Outcomes associated with resumption of direct oral anticoagulants (DOAC) after gastrointestinal bleed</td>
<td>Cleveland Clinic South Pointe</td>
<td>936-1942-5819</td>
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<td>Gaffer, Jourdan</td>
<td>Evaluation of surgical site infections (SSIs) in spinal fusion surgeries at OhioHealth:</td>
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<td>Simonyan, Ana</td>
<td>Impact of pharmacist intervention on percentage of diabetes patients with hemoglobin A1c&gt;9% in a network of patient-centered medical homes</td>
<td>The Ohio State University College of Pharmacy</td>
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<td>Brewer, Jessica</td>
<td>Optimizing management of patients admitted with a heart failure complication</td>
<td>St. Elizabeth Healthcare</td>
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<td>Roberts, Chelsea</td>
<td>Impact of Pharmacy Intern Review of After Visit Summaries</td>
<td>OhioHealth Riverside Methodist Hospital</td>
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<td>3</td>
<td>Bennett, Sean</td>
<td>Utility of Nasal Methicillin Resistant Staphylococcus Aureus (MRSA) Screening for MRSA Intra-Abdominal Infections in Critically Ill Adult Patients: A multicenter cohort</td>
<td>Cleveland Clinic Akron General</td>
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<td>Crabtree, Curtis</td>
<td>Hyperglycemia management in the setting of total parenteral nutrition</td>
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<td>Ledford, Kelsie</td>
<td>Workflow Quality Improvement to Increase Pharmacy Collaborative Practice Visits</td>
<td>University of Cincinnati</td>
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<td>Holder, Jordan</td>
<td>Effectiveness of pharmacist led warfarin management in a dual long-term care-rehabilitation center</td>
<td>Aultman Alliance Community Hospital</td>
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<td>Kabbani, Salam</td>
<td>Evaluation of the total duration of therapy in patients discharged with antimicrobials at a community teaching hospital</td>
<td>Cleveland Clinic South Pointe Hospital</td>
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<td>Case, Kelsey</td>
<td>Evaluation of Pharmacologic Agent Selection on Endotracheal Intubation Outcomes</td>
<td>OhioHealth</td>
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<td>10:00 AM</td>
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<td>Top, Erika</td>
<td>Multidisciplinary post-fracture osteoporosis management within a physician-owned primary care medical group</td>
<td>The Ohio State University Wexner Medical Center</td>
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<td>1</td>
<td>Koch, Lindsey</td>
<td>Assessment of post-operative morphine milliequivalents in orthopedic procedure before and after the implementation of a multi-modal pain management order set</td>
<td>St. Elizabeth Healthcare</td>
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<td>10:30 AM</td>
<td>2</td>
<td>Wai, David</td>
<td>Optimizing medication distribution in automated dispensing cabinets: dashboard implementation and evaluation</td>
<td>OhioHealth Riverside Methodist Hospital</td>
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<td>10:30 AM</td>
<td>3</td>
<td>Cetnarowski, Alicia</td>
<td>Evaluation of intravenous lorazepam dosing strategies and the incidence of refractory status epilepticus</td>
<td>Cleveland Clinic Akron General</td>
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<td>Stoll, Ann Marie</td>
<td>Evaluation of patient, medication, and care-related risk factors for inpatient falls: a retrospective case-crossover study</td>
<td>The Christ Hospital</td>
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<td>10:30 AM</td>
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<td>Bluemel, Madison</td>
<td>Impact of Administration of Long-Acting Injectable Antipsychotics on Length of Stay and Readmission Rates to a Behavioral Health Unit</td>
<td>Mercy Health - Lorain Hospital</td>
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<tr>
<td>10:30 AM</td>
<td>6</td>
<td>Hall, Kendra</td>
<td>Assessing Pharmacy Students’ Knowledge and Confidence Level on Fall Prevention Education to Community Dwelling Geriatric Patients</td>
<td>University of Cincinnati College of Pharmacy</td>
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<td>10:30 AM</td>
<td>7</td>
<td>Forman, Anna</td>
<td>Evaluation of the impact of opioid alternative care sets and education on the use of opioids and opioid alternatives for acute pain management in the emergency department</td>
<td>Aultman Hospital</td>
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<td>10:30 AM</td>
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Implementation of a transitions of care pharmacist within a healthcare system

Abby Krabacher, PharmD- PGY2 Ambulatory Care Resident St. Elizabeth Healthcare
Suzi Francis, PharmD, BCACP, CDE; Jennifer Copenhaver, PharmD, BCPS; Emma Sapp, PharmD, BCACP; Tim Finley, PharmD; Sarah Gilian, PharmD, BCPS

UAN: 0048-2020-028

Learning Objectives:

1. Identify potential services provided by pharmacists working in transition of care roles
2. Describe potential medication errors that may occur during the transitions of care processes

Purpose:
The transition between inpatient and outpatient services is known to be high risk for medication errors to occur and has the opportunity for pharmacological interventions to clinically optimize a patient’s care. The purpose of this project was to assess the process, challenges, and clinical opportunities of implementing a transitions of care pharmacist within St. Elizabeth Healthcare.

Methods:
St. Elizabeth Healthcare piloted a transitions of care pharmacist in February 2020. This pharmacist would serve as the bridge for family medicine patients between inpatient and outpatient, with one day a week inpatient and one day a week outpatient. While inpatient, the pharmacist completed admission medication reconciliation, medication education, and discharge medication reconciliation. They also made recommendations to the treatment team to optimize medication therapy. All patients who the pharmacist interacted with inpatient were scheduled for an outpatient post-discharge medication reconciliation either in person or by telephone. The primary outcomes of this study were the number and type of interventions made during admission and discharge medication reconciliations along with the time spent performing these services. Secondary outcomes include the number of educations performed, the number of post-discharge follow-ups, number of recommendations made while the patient was inpatient, and the number and type of interventions made post-discharge.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Retrospective Evaluation of Inpatient Initiation of Sacubitril/Valsartan during Hospitalization for Acute Heart Failure

Alice Chen, PharmD - PGY2 Cardiology Pharmacy Resident, The Christ Hospital Health Network
Kathryn B. Weber, PharmD, BCCP, BCPS; Hilary G. Raidt, PharmD, BCCCP; Gregory F. Egnaczyk, MD, PhD; Eugene S. Chung, MD; Abigail G. Rhoades, PharmD, BCCCP

UAN: 0048-2020-029

Learning Objectives:

1. Review current guideline recommendations regarding the role and appropriate use of angiotensin receptor-neprilysin inhibitors (ARNIs) in heart failure patients
2. Discuss published literature regarding the inpatient initiation of angiotensin receptor-neprilysin inhibitors (ARNIs)

Purpose:
Inpatient versus post-discharge initiation of sacubitril/valsartan may enhance long-term adherence. However, the optimal time to initiate sacubitril/valsartan inpatient is unclear. The purpose of this study is to characterize initiation of sacubitril/valsartan in patients admitted to a community teaching hospital for acute decompensated heart failure (ADHF) and identify potential risk factors for discontinuation at discharge.

Methods:
All patients admitted with physician-documented ADHF requiring intravenous (IV) diuresis who received at least one dose of sacubitril/valsartan while hospitalized during the study period (June 1, 2018 to May 31, 2019) were included. Patients on sacubitril/valsartan prior to admission were excluded. Initial dose, location of initiation, renal function, hemodynamic parameters, increase in dose of IV diuretics and use of IV inotropes and/or vasodilators documented prior to initiation of sacubitril/valsartan were collected. The primary outcome was percentage of patients who continued sacubitril/valsartan at discharge. Prespecified variables and those statistically significant on univariate analysis were analyzed using binomial logistic regression to identify risk factors for discontinuation.

Results:
Of the 98 patients included, 77 (78.6%) continued sacubitril/valsartan at discharge. Baseline characteristics were similar between patients who continued and discontinued sacubitril/valsartan at discharge. Increases in the dose of IV diuretics and the use of inotropes within 24 hours prior to initiation were significantly associated with discontinuation prior to discharge on binomial logistic regression (OR 0.15 [95% CI 0.04-0.60] and OR 0.14 [95% CI 0.03-0.61], respectively). Patients who did not continue sacubitril/valsartan at discharge had higher rates of worsening renal function and physician-documented hypotension during admission compared to patients continuing sacubitril/valsartan at discharge.

Conclusions:
In this study, most patients initiated on sacubitril/valsartan during admission for ADHF continued therapy at discharge. Increases in dose of IV diuretics and use of inotropes within 24 hours prior to inpatient initiation of sacubitril/valsartan may be associated with discontinuation at discharge.
Evaluation of intravenous lorazepam dosing strategies and the incidence of refractory status epilepticus

Alicia Cetnarowski, PharmD* – Cleveland Clinic Akron General
Brittany Cunningham, PharmD, BCPS, BCCCP; Chanda Mullen, PhD; Melissa Fowler, PharmD, BCPS, BCCCP

UAN: 0048-2020-030

Learning Objectives:
1. Review current dosing recommendations for intravenous lorazepam in status epilepticus
2. Discuss the potential influence of lorazepam dosing on the incidence of refractory status epilepticus

Purpose:
For emergent treatment of status epilepticus (SE), the recommended intravenous (IV) lorazepam dose is 0.1mg/kg/dose, up to a maximum of 4mg. It has been shown that lorazepam is commonly under dosed in SE, but there is conflicting data on whether this has a negative impact on patient outcomes. This study assessed any dose less than 4mg to help identify the effects of under dosing lorazepam in SE.

Methods:
This was a retrospective study of patients admitted to a quaternary health system between October 1, 2017 and September 30, 2019 that experienced SE and were initially treated with IV lorazepam. Patients were divided into two cohorts, less than 4mg or 4mg, based on the initial dose of lorazepam received. The primary outcome was the proportion of patients that progressed to refractory status epilepticus (RSE) that received an initial IV lorazepam dose of 4mg compared to less than 4mg for the treatment of SE. Secondary outcomes evaluated include length of stay, mortality, and other clinical outcomes.

Results:
One hundred twenty patients were included in this study (107 patients received less than 4mg and 13 patients received 4mg). The primary outcome of progression to RSE was observed in a significantly greater proportion of patients in the less than 4mg group compared to the 4mg group (93 [87%] vs. 8 [62%], p=0.03). There was no difference in hospital or intensive care unit length of stay. However, there was an increased rate of mortality in patients who received 4mg compared to less than 4mg (5 [39%] vs. 12[11%], p=0.02).

Conclusions:
The majority of patients in the study received less than the recommended dose of IV lorazepam for SE. Patients who received less than 4mg experienced an increased progression to RSE, which supports current guideline recommended dosing.
Impact of comprehensive chart reviews by pharmacists on the risk adjustment factor in family medicine practices

Alicia R. Sawmiller, PharmD, BCPS, PGY2 Ambulatory Care Resident, Mercy Health St. Rita’s Medication Management Clinic
Staci Dotson, PharmD, BCPS, BCACP, BC-ADM; Debra Parker, PharmD, BCPS

UAN: 0048-2020-031

Learning Objectives:

1. Define Hierarchical Condition Categories and associated Risk Adjustment Factors
2. Discuss the impact of changes to a patient’s problem list on Risk Adjustment Factors
3. Evaluate the impact of comprehensive chart reviews by pharmacists on the risk adjustment factor

Purpose:
Pharmacist-driven care compared to usual medical care has led to clinically relevant reductions in medication side effects and overall healthcare utilization. In the family practice setting, pharmacists are already evaluating other parts of the chart including the problem list, laboratory values, and previous documented encounters in addition to comprehensive medication reviews. The pharmacist can also ensure the medications have an appropriately documented indication and that the problem listed provides accurate additional details. Some conditions are considered hierarchal condition categories which have an associated risk adjustment factor. A risk adjustment factor has a score and associated cost of care for the following year for a given hierarchal condition category diagnosis. Therefore, it is important to ensure these conditions are appropriately categorized so the provider receives appropriate reimbursement for the cost of care. The purpose of this study is to evaluate the impact of comprehensive chart reviews by pharmacists on risk adjustment factors in family medicine practices.

Methods:
This study was reviewed and approved by the local institutional review board. Pharmacists will complete comprehensive chart reviews (including review of labs, medications, problem list, and previous care within Mercy Health) on patients covered under Mercy Health’s Medicare Shared Savings Program within a family and internal medicine practice. During the patient’s appointment, the pharmacist will complete a comprehensive chart review and provide physicians with recommendations regarding therapy. While reviewing the chart, the pharmacist will also review the problem list to ensure accurate documentation of hierarchical condition category diagnoses and make recommendations to update them as appropriate. If a patient has an identified potential risk adjustment factor gap, the pharmacist will evaluate to see if a true gap in care exists and inform the physician of the gap to ensure it is addressed during the visit. The data collected will include provider type, number and type of medication changes made, change in risk adjustment factor score, and gap closure. The primary outcome will evaluate the changes in risk adjustment score for hierarchical condition categories associated chronic disease states and gap closure. Secondarily, the reduction in polypharmacy will be evaluated by the number and type of medication changes made.

Results:
Data collection and analysis currently in process. Results will be presented at Ohio Pharmacy Resident Conference in May 2020.

Conclusions:
N/A (research in process)
Coronary artery bypass grafting delay secondary to oral P2Y12 inhibitor use

Alicia Senart, PharmD-PGY1 Pharmacy Resident, Cleveland Clinic Fairview Hospital
Lori Rose, PharmD, BCPS; Lu Wang, MS

UAN: 0048-2020-032

Learning Objectives:
1. Describe the role that oral P2Y12 inhibitors play in the delay of coronary artery bypass grafting
2. Discuss the current and proposed roles of cangrelor in acute coronary syndrome

Purpose:
With approximately 200,000 procedures completed each year, coronary artery bypass grafting (CABG) is one of the most common cardiac procedures in the United States. Current guidelines recommend discontinuation of oral P2Y12 inhibitors at least five to seven days prior to CABG. Early use of P2Y12 inhibitors prior to cardiac catheterization may be associated with an increased delay to CABG, however, limited studies exist evaluating the degree of this delay. In 2017, a retrospective analysis published by Badri and colleagues showed that patients who received oral P2Y12 inhibitors experienced longer median times from cardiac catheterization to CABG, as well as higher risk of post-CABG major bleeding and transfusion. The intravenous P2Y12 inhibitor, cangrelor, may be useful in patients awaiting CABG due to its short half-life and comparable platelet inhibition to oral P2Y12 inhibitors, but further studies are needed to evaluate its financial impact.

Methods:
A retrospective chart review was conducted for patients admitted to Fairview Hospital with myocardial infarction (MI) between January 1, 2018 and August 31, 2019 who were referred for CABG during their stay. Excluded patients were those without an acute MI, on an oral P2Y12 inhibitor at baseline, or with surgery delayed due to other causes. The primary outcome studied was the difference in mean time from cardiac catheterization to CABG in patients with and without administration of an oral P2Y12 inhibitor. The start or incision times defined in procedure notes and surgical notes were used to calculate the time between cardiac catheterization and CABG. Secondary outcomes include the estimated mean cost difference between using cangrelor and increased length of stay due to delayed surgery, and number of patients discharged home for future CABG due to receiving an oral P2Y12 inhibitor.

Results:
To be presented at OPRC.

Conclusions:
To be presented at OPRC
Impact of multimodal opioid-sparing ordersets on opioid use and pain scores in postoperative patients

Alison Dittmer, Pharm.D. - PGY1 Resident, UC Health - West Chester Hospital
Sheila Takieddine, Pharm.D., BCPS; Marcie Malone, Pharm.D.; Denver Stewart, Pharm.D; Jane Zimmer, Pharm.D., BCPS; Bradley Budde, MD

UAN: 0048-2020-033

Learning Objectives:

1. Recall the therapeutic options and evidence for multimodal analgesia in the postoperative setting.
2. Describe the impact of opioid-sparing orderset revisions on relevant patient outcomes and the potential for application in postoperative surgical populations.

Purpose:
Due to the growing opioid use epidemic in the US, a heightened awareness on the untoward effects of opioids has influenced prescribing, especially in postoperative patients. Employing a multimodal analgesic approach may help reduce postoperative opioid use. Changes were implemented to postoperative ordersets to improve both the use of multimodal analgesia and reduce default opioid doses for acute pain after surgery. This opioid-sparing approach was enhanced by orderset features that provided guidance based upon individualized clinical criteria to select opioid doses. The objective of this study was to compare patients before and after orderset implementation to determine the impact of the changes on opioid use and pain control.

Methods:
This single-center, retrospective cohort study included postoperative adult patients undergoing brain tumor surgery, thoracic surgery, or trauma surgery. Patients who used a multimodal opioid-sparing orderset were matched to a patient prior to orderset implementation according to surgery type, age, and opioid tolerance. The primary outcome was opioid use in oral milligram morphine equivalents (MME) from postoperative days (POD) one through three. Additional outcomes included pain scores, utilization of non-opioid analgesics, MME prescribed at discharge, length of stay, and use of naloxone. It was hypothesized that patients in the opioid-sparing multimodal orderset group would use fewer opioids without significant worsening in pain scores.

Results:
120 patients were included for analysis. Opioid use was significantly reduced from POD 1-3, with a mean difference of 33.3 MME over the three days. No difference was noted in median pain scores over the three days. Patients in the opioid-sparing multimodal orderset group also received fewer opioids upon discharge (210 MME versus 375 MME) and used significantly more non-opioid analgesics than their comparators. There was no difference in length of stay.

Conclusions:
Opioid-sparing multimodal ordersets reduced inpatient and discharge opioid prescribing without deterioration in pain control.
Evaluation of automatic dispensing cabinet (ADC) optimization on pharmacy returns

Allen Ahn, PharmD* Non-traditional PGY1 resident – Beaumont Hospital Royal Oak
Richard Taylor, PharmD, Director of pharmacy - Beaumont Wayne, Alicia Thorne, PharmD, MPA, BCPS, Pharmacy supervisor –Beaumont Royal Oak, Lisa L. Forsyth, PharmD, FCCM, pharmacy manager – Beaumont Farmington Hills

UAN: 0048-2020-034

Learning Objectives:

1. Describe the current pharmacy dispensing models and its relations to pharmacy returns
2. Define optimization of ADC’s impact in pharmacy returns
3. Define optimization of ADC’s impact on centralized versus decentralized dispenses

Purpose:
Previous studies on optimization of ADCs have demonstrated medication cost savings, improved nursing satisfaction, improved medication availability, and reduced risk of expired medication administration. This study is to continue the investigation of ADC optimization and its benefit on pharmacy operations. The focus of this study was to analyze the relationship between ADC optimization and the quantity of medications returned to the inpatient pharmacy as well as its effect on centralized and decentralized dispensing.

Methods:
This study was conducted on 15 inpatient ADCs covering general internal medicine and step-down units at Beaumont-Royal Oak hospital. The optimization process used three different methods: removal of unused medications, addition of high patient specific dispensed medications to the unit, and par level adjustments. Overall descriptive data was collected pre- and post-optimization. All medications were analyzed except common stock, emergency medication, compounded IV medication, bulk items. The primary outcome of this study was to determine if there was a reduction in quantity of medications returned to the inpatient pharmacy post optimization. The secondary endpoint evaluated the effect of ADC optimization between centralized dispensing versus decentralized dispensing. Results will be analyzed using descriptive statistics and the paired t-test.

Results:
Overall, there was an average reduction of 700 medications returned to the pharmacy post-optimization (p=0.18) on most study units during the study period. Pre-optimization centralized dispensing was an average of 21.17%. Post optimization centralized dispensing was an average of 18.36 %.

Conclusions:
As previously demonstrated, ADC optimization is beneficial. Optimization of ADCs may not have significant influence on medications returned to the pharmacy despite a downward trend. Due to the short length of the study, further investigation to identify the nadir of this effect is recommended. The decrease of centralized dispenses was reflective with increase of decentralized dispensing.
Evaluation of pharmacy clarification of antimicrobial allergies and appropriate choice of pre-operative therapy in patients

Amanda M. Conklin, PharmD* - University Hospitals St. John Medical Center
Rachana Patel, PharmD, BCPS

UAN: 0048-2020-035

Learning Objectives:

1. Develop a background knowledge on the prevalence of penicillin allergy reporting and the importance of reporting/clarifying the allergy correctly.
2. Review University Hospitals St. John Medical Center procedures on allergy clarification.
3. Discuss primary and secondary endpoints, methodology, and planned data analysis of this review.

Purpose:
Beta-lactam antibiotics are the most often prescribed class of antibiotics, however, their use is declining due to poor reporting of penicillin allergies1. Penicillin allergy is the most common allergy documented in the United States with a prevalence of 10% of the population1. Penicillin allergy testing is ideal to determine if a patient has an anaphylactic reaction that would contraindicate the use of beta-lactam agents. A study from 2016 analyzed data from a physician-pharmacist led penicillin allergy testing protocol, which determined 90.5% of patients did not have a true allergy and the allergy was removed2. Allergy clarification by pharmacy can guide in determining a prophylactic antibiotic for surgery and distinguish which patients may benefit from penicillin allergy testing. Cefazolin is the typical first line agent for surgical prophylaxis. If a patient is allergic to beta-lactams, vancomycin, clindamycin, or ciprofloxacin are alternative agents. Clarifying penicillin allergy reactions is an important process in antimicrobial stewardship. The purpose of this review is to review the revised process that is used to clarify antimicrobial allergies. The primary endpoint of this review is the number of cefazolin doses administered after pharmacy led allergy clarification. The secondary endpoint is the number of patients that are potential penicillin allergy testing candidates based on the reaction reported.

Methods:
This is a quality improvement review from October 2019 to March 2020 of outpatient surgery patients that have unknown, penicillin, beta-lactam, clindamycin, or fluoroquinolone allergies. Data that will be reviewed includes, but is not limited to: antibiotic allergy, severity of reaction, type of reaction, age when reaction occurred, hospitalization of the patient after reaction, and if the patient has tolerated an antibiotic in a similar class. Additionally, total doses of cefazolin that were given after allergy clarification will also be shared.

Results:
To be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2020 Ohio Pharmacy Resident Conference.
Effect of dexmedetomidine on total opioid and benzodiazepine consumption in the neonatal intensive care unit.

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Kelsey Fink, PharmD, BCPS, BCPPS

UAN: 0048-2020-036

Learning Objectives:

1. Describe why alpha-2 agonists may be favorable over opioids for sedation in the neonatal intensive care unit (NICU).
2. Identify the potential adverse effects associated with the use of dexmedetomidine.

Purpose:

Pain management and sedation are crucial components of patient care in the intensive care setting. Currently, opioids and benzodiazepines are the primary agents used for analgosedation in the neonatal intensive care unit (NICU). However, studies have shown that these agents may have detrimental effects on neurodevelopment. Alpha-2 agonists, such as dexmedetomidine, have increasingly been utilized as adjunct or alternative therapy, due to potential negative long-term effects of opioids and benzodiazepines on these patients. Recent literature also suggests that alpha-2 agonists may confer both neuroprotective and anti-inflammatory effects. Despite these hypotheses, data supporting the routine use of dexmedetomidine for sedation in neonates remains sparse. The objective of this study was to determine the effect of dexmedetomidine usage on total opioid consumption during the NICU stay. The primary endpoint for this study is the total cumulative required amount of opioids (in morphine mg equivalents) during the NICU stay; secondary endpoints include the total cumulative amount of benzodiazepines (in midazolam mg equivalents) during the NICU stay, and total ventilator days.

Methods:

A retrospective chart review identified neonatal patients with an order for dexmedetomidine between July 1, 2017 and June 30, 2019. Patient lists from Hillcrest Hospital, Fairview Hospital, and Main Campus were queried. Patients were matched by gestational age and ventilator status. Demographics and data involving respiratory support, dosing of dexmedetomidine, changes in hemodynamic parameters, opioid use, and benzodiazepine use were collected.

Results:

Two-hundred eighty-five patients were included in the analysis, with 193 patients in the dexmedetomidine group and 92 patients in the opioid group. Significantly more patients in the dexmedetomidine group were premature and required intubation and hemodynamic support. In-hospital mortality was 9.3% in the dexmedetomidine group and 5.4% in the opioid group. Statistical analysis is ongoing.

Conclusions:

Final results will be presented at the Ohio Pharmacy Resident Conference in May 2020.
Impact of pharmacist intervention on percentage of diabetes patients with hemoglobin A1c>9% in a network of patient-centered medical homes

Anahit R. Simonyan, PharmD - The Ohio State University College of Pharmacy/General Internal Medicine
Stuart J. Beatty, PharmD, BCACP, FAPhA; Kelli D. Barnes, PharmD, BCACP; Cory P. Coffey, PharmD, BCACP, BCPP

UAN: 0048-2020-037

Learning Objectives:
1. Review payment models and metrics associated with diabetes in primary care
2. Evaluate literature surrounding impact of pharmacist-led intervention on diabetes care
3. Analyze changes in clinical parameters as a result of pharmacist interventions in a network of patient-centered medical homes

Purpose:
The purpose of this study is to evaluate the impact of pharmacist intervention on clinical outcomes in patients with diabetes. The primary objective is to assess the change in percentage of patients with hemoglobin A1c >9% before and during pharmacist management. Secondary objectives include determining the change in mean hemoglobin A1c as a result of pharmacist intervention and number of ambulatory care sensitive condition (ACSC) hospital admissions before and during pharmacist management.

Methods:
This is a retrospective study utilizing an electronic health record (EHR) to collect patient-specific information. Patients will be included if they have a diagnosis of diabetes and >3 encounters with a pharmacist between July 2018 – December 2019. Demographic information, including age, gender, race, insurance type, and diabetes type will be collected. Baseline hemoglobin A1c values will be collected, as well as any hemoglobin A1c drawn 1 year before and during the study period. Percentage of patients with an A1c >9% will be measured 3, 6, 9, and 12 months after the initial date of pharmacist intervention. The total number of diabetes related ACSC hospital admissions during the study period and 1 year prior to the study period will also be collected. Inferential statistics will be used to show differences in A1c control and frequency of ACSC hospital admissions before and during pharmacist management.

Results:
Data is currently being analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Data is currently being analyzed. Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluation of patient, medication, and care-related risk factors for inpatient falls: a retrospective case-crossover study

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Rebecca Dudley, PharmD; Alexandra Carusone, PharmD; James M. Keeler, PharmD, BCPS

UAN: 0048-2020-038

Learning Objectives:

1. Identify high risk medication classes that are most frequently associated with falls in the inpatient setting.
2. Recognize other patient and care-related risk factors that may contribute to fall risk.

Purpose:
The prevention of falls in the hospital setting is complex and multifactorial in nature. Most falls are preventable, with medications being a common modifiable risk factor. There are various medications that can increase fall risk via different mechanisms, making the impact of individual medications challenging to evaluate and quantify. This project was designed to discover classes of high-risk medications most often associated with inpatient falls at a community teaching hospital.

Methods:
This retrospective, single center study evaluated patients who experienced a documented fall during admission using a case-crossover design to assess the association between medication use and falls, with patients serving as their own control during periods where fall risk was equivalent. Patients were excluded if they were less than 18 years old or experienced a fall outside of the main hospital or on a critical care, rehabilitation, obstetric, or behavioral health unit. The primary outcome of the study sought to identify high-risk medications associated with falls at the institution. Secondary outcomes included characterization and quantification of other patient and care-related risk factors among patients who experienced a fall during their admission, including contributory past medical history; number of medications; hypotension or hypoglycemia at the time of the fall; newly initiated versus prior to admission medications; and presence of catheter, continuous infusion, or nasal cannula at the time of fall.

Results:
One hundred patients were included. Thirteen high-risk medication classes were evaluated. Logistic regression modeling to identify which medication classes were associated with falls at the institution is currently underway. Among patients who fell, antihypertensives, opioids, and antidepressants were the most frequently administered medication classes. A vast majority of patients received greater than one high-risk medication and most of these medications were newly initiated.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluation of impact between pharmacy driven opioid management clinic and electronic consults (e-consult) in the primary care setting: a retrospective chart review

Anna Collett, PharmD
Stephanie J. Bahrey, PharmD, BCACP; Jacqueline O. Dages, PharmD, BCPS

UAN: 0048-2020-039

Learning Objectives:

1. Recognize current pharmacist recommendation acceptance rate for chronic opioid management.
2. Identify areas of improvement for opioid monitoring parameters.

Purpose:
The Cincinnati Veterans Affairs Medical Center (CVAMC) Pain Pharmacy Clinic has a high demand for patient e-consults and clinic encounters. The purpose of this project is to determine if e-consults are as effective at chronic opioid management as the clinic encounters. The primary outcome is to evaluate the acceptance rate of recommended opioid medication adjustments between e-consults and clinic encounters. An accepted recommendation is defined by any attempt or trial of the Clinical Pharmacy Specialist’s recommendation within the first six months from the date of the recommendation. Secondary outcomes include morphine equivalent daily dose reduction, improvement on monitoring parameters, opioid discontinuation rate, difference in time spent between encounters, recommendations carried out to completion, and recommendations that divert to original pain regimen.

Methods:
This retrospective chart review and descriptive analysis will be conducted at the CVAMC Pain Pharmacy Clinic. Two treatment arms will be evaluated, comparing e-consult to clinic encounters. Patient records from January 1, 2017 – December 31, 2018 will be randomized and reviewed until a total of 138 patient records (69 in each group) are included. Inclusion criteria includes initial encounters that recommended a change to an opioid medication, opioid prescription managed by CVAMC primary care provider, and use of long-term opioid therapy (LOT) for chronic non-cancer pain (>3 months). Exclusion criteria includes pregnant/lactating females, death during the identified data collection period, and previous Pain Pharmacy Clinic encounter (e-consult or clinic) within the prior 2 years.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Evaluation of the impact of opioid alternative care sets and education on the use of opioids and opioid alternatives for acute pain management in the emergency department

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Rebecca Prewett, PharmD, BCPS; Scott Perry, PharmD, BCPS

UAN: 0048-2020-040

Learning Objectives:

1. Review the background literature on various emergency departments who have implemented opioid alternative care sets for the treatment of acute pain conditions.
2. List potential opioid alternative treatments for acute headache/migraine, abdominal, and musculoskeletal pain.

Purpose:
As the opioid epidemic continues, health care providers seek ways to slow the growth. This project evaluates the use of opioid alternatives for acute management of headache/migraine, musculoskeletal, and abdominal pain after education is presented to emergency department providers on new opioid alternative care sets.

Methods:
A retrospective chart review was completed on ordering trends in the emergency department before and after care set implementation and education was given to emergency department providers on new opioid alternative care sets. Data was evaluated from January 2019 to February 2020 to determine if there was a reduction in opioid use compared to before care set implementation. Patients were identified through the electronic medical record and were included if they were at least 18 years old and received a medication in the emergency department for the treatment of acute headache/migraine, musculoskeletal, or abdominal pain. The primary outcome was change in morphine equivalent doses (MEDs). Secondary outcomes included if an opioid or opioid alternative was ordered, need for a rescue medication, or return to the emergency department within 5 days with the same chief complaint. Chi-Square and Mann-Whitney U tests were used to evaluate data.

Results:
135 patients for each pre- and post-data met the inclusion criteria. Of those assessed, there was no difference in mean MEDs in the pre- vs. post-data group (4.805 vs. 4.952, p=0.918). No difference in opioids received was found between groups (40% vs. 38%, p=0.709). Those who received an opioid required a rescue medication more frequently vs. those who did not receive an opioid (22% vs. 11%, p

Conclusions:
While implementation and education about opioid alternative care sets did not change the MEDs administered to emergency department patients, patients who received an opioid first were more likely to require additional pain medications later.
Evaluating the Impact of a Depression Screening Intervention on Medication Adherence in Patients with Chronic Conditions in a Large Community Pharmacy

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Erin Rogers, PharmD, CDE; Ashley Johnson, PharmD, BCACP; Katelyn Johnson, PharmD, MS, BCACP

UAN: 0048-2020-041

Learning Objectives:

1. Discuss the feasibility of incorporating a pharmacist led depression screening in an adherence assessment in a large community pharmacy chain.
2. Describe the impact of a holistic adherence assessment on medication nonadherence.

Purpose:
Medication nonadherence is associated with increased morbidity and mortality, higher rates of hospital admissions, and increased healthcare costs. Nearly half of all adults have a chronic condition requiring chronic medications and approximately 50% of patients do not take their medications as prescribed. Community pharmacists are focused on identifying patients who are nonadherent and can improve their approach by assessing adherence holistically and integrating a depression screening into the adherence assessment. The purpose of this study was to assess the feasibility of conducting a depression screening as part of a comprehensive adherence assessment for nonadherent patients or patients at risk of becoming nonadherent.

Methods:
The study was conducted in two pharmacies within a large community pharmacy chain with an existing adherence intervention program. The primary objective of this project was to evaluate the impact of a comprehensive adherence intervention on patient adherence. The secondary objectives were to evaluate patient reported barriers to adherence, Patient Health Questionnaires 2/9 (PHQ2/9) results, and pharmacist interventions. Study participants were included if they had chronic medications waiting to be picked up for seven or more days. Pharmacists conducted an adherence assessment and performed a depression screening in a private counseling room or telephonically. An organization specific protocol was used to interpret and respond to the PHQ2/9 results.

Results:
During the study period, 63 patients completed an adherence assessment and were screened for depression. Nine patients (14%) screened positive on the PHQ-2. Of the patients who completed the PHQ-9, three patients (27%) were referred to their providers for evaluation. Following the adherence assessment, 50% of patients received the next fill of their chronic medication on time.

Conclusions:
The preliminary results of this study illustrated pharmacists can incorporate a depression screening into an adherence assessment to address behavioral barriers that may be impacting medication adherence.
Evaluation of initial warfarin dosing assisted by a pharmacist-led protocol in hospitalized patients

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Derek A. Frost, PharmD, MBA, BCPS; Jessica Emshoff, PharmD, BCPS, BCGP, May Li, PharmD Candidate

UAN: 0048-2020-042

Learning Objectives:
1. Discuss the clinical challenges of dosing warfarin
2. Discuss the impact of clinical pharmacists managing the initial doses of warfarin in hospitalized patients

Purpose:
The purpose of this study was to determine if there is a difference in time to therapeutic INR in hospitalized patients whose initial doses of warfarin are managed by licensed independent practitioners compared to clinical pharmacists.

Methods:
This study was a retrospective chart review conducted at multiple University Hospitals Medical Centers from August 2015 to August 2019. Patients 18 to 95 years of age who were initiated on warfarin therapy upon hospitalization were included. Pregnant or breastfeeding women, patients who were taking warfarin within two weeks prior to hospitalization, had a baseline INR $\geq 1.4$, and those who received less than three doses of warfarin during hospitalization were excluded from the study. Included patients were separated into two groups: patients whose initial doses of warfarin were managed by a licensed independent practitioner and those who were managed by a clinical pharmacist. The primary outcome for this chart review was time to therapeutic INR. Secondary outcomes are the number of INRs $\geq 4$, thromboembolic events, and bleeding events. Additionally, as a secondary outcome, time to therapeutic INR between patients whose warfarin therapy was managed by a clinical pharmacist or a clinical pharmacist following a hospital-approved protocol was compared. In order to meet 80% power with an alpha of 0.05, 64 patients were needed in each group to see a 0.5 day difference in length of stay.

Results:
Results will be presented at the 2020 Spring OPRC Meeting.

Conclusions:
Conclusions will be presented at the 2020 Spring OPRC Meeting.
Implementation of pharmacy services into an outpatient cardiology clinic

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Ashley Brown, PharmD, BCPS, BCPP; Victoria Cho, PharmD, BCPS, BCACP; David Ferris, PharmD, BCGP; Amy Murray, PharmD, BCACP

UAN: 0048-2020-043

Learning Objectives:

1. Discuss areas of opportunity for pharmacists in an outpatient cardiology setting
2. Recognize billing opportunities for pharmacists in ambulatory care pharmacy

Purpose:
The epidemic of cardiovascular disease continues to grow; therefore, the American College of Cardiology emphasizes the need for team-based care. Pharmacists are a critical component of this team. Their involvement has shown significant improvements in risk of discrepancies and prescription errors especially in heart failure patients. Incorporating a pharmacist into outpatient cardiology can lead to improved patient outcomes with anticipated reductions in cardiac-related readmissions. The primary objective of this study is to assess medication therapy problems (MTPs) identified by a pharmacist as well as the status of the intervention including if it was accepted or deferred. The Pharmacy Quality Alliance MTP Categories Framework is a standardized reference for categorizing and rationalizing MTPs. The secondary objective is to determine cost savings by having a clinical pharmacist role in this setting and to assess reimbursement made through comprehensive billing.

Methods:
This is a prospective study taking place from January – June 2020. The role of the pharmacist in the outpatient cardiology setting includes performing medication reconciliations prior to a patient’s cardiologist appointment or seeing the patient for an office visit with the cardiologist. Through this collaboration, the pharmacist has the opportunity to participate in shared decision making with the cardiologist and patient regarding medication regimens as well as provide patient education, cost assistance, smoking cessation, and drug information. Interventions are recorded as MTPs to show the impact of adding pharmacist-specific services to this patient population. The estimated revenue is also being calculated based on the number of appointments a pharmacist and cardiologist attend together.

Results:
Preliminary results to be presented at OPRC.

Conclusions:
Preliminary conclusion to be presented at OPRC.
Evaluation of hydrocortisone discontinuation strategy for patients with septic shock: a quality improvement study

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UAN: 0048-2020-044

Learning Objectives:

1. Review literature and practice guideline recommendations pertinent to the use of steroids in septic shock
2. Evaluate discontinuation strategies of steroids in patients with septic shock

Purpose:
The Surviving Sepsis Campaign guidelines currently recommend the use of hydrocortisone 200 milligrams per day in patients with refractory hemodynamic instability after adequate fluid resuscitation and vasoressor therapy initiation with an ungraded suggestion to taper corticosteroids when vasoressors are no longer indicated. The purpose of this quality improvement project was to assess the adherence to current guideline suggestions for tapering hydrocortisone upon discontinuation of vasoressors in patients with septic shock and evaluate the impact of adherence on patient outcomes.

Methods:
A multi-center retrospective chart review was completed for the time period of January 1, 2019 to March 31, 2019 for patients admitted to an intensive care unit who had a diagnosis of sepsis, severe sepsis, or septic shock by ICD-10 codes, initiated on hydrocortisone 50 milligrams every 6 hours, initiated on norepinephrine, and were at least 18 years of age.

Results:
A total of 99 patients were included (61 taper, 38 abrupt cessation). The mean hydrocortisone length of therapy prior to the discontinuation strategy (3.9 vs. 2.6 days; p < 0.001) and intensive care unit length of stay (15.4 vs. 10.6 days; p = 0.013) were significantly increased in the taper group. There were no significant differences between groups for baseline characteristics, norepinephrine length of therapy (3.0 vs. 2.9 days; p = 0.857), norepinephrine reinitiation (29.5% vs. 18.4%; p = 0.244), new hyperglycemic events (34.4% vs. 26.3%; p = 0.505), or hospital length of stay (21.4 vs. 17.0 days; p = 0.094).

Conclusions:
Patients with septic shock undergoing a tapering strategy for discontinuation of hydrocortisone had an increased intensive care unit length of stay with no increase in norepinephrine reinitiation or new hyperglycemic events. These results support the potential for abrupt cessation of hydrocortisone in this patient population.
Prescribing trends in empiric therapy for neonates treated with cefotaxime and cefepime

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Betsy Walters-Burkey, PharmD, BCPS; Katie Rivard, PharmD, BCPS, AAHIVP, BCIDP; Zachary Pentoney, PharmD, BCPS, BCIDP; Hany Aziz, MD; Camille Sabella, MD, FAAP; Lu Wang, MS

UAN: 0048-2020-045

Learning Objectives:
1. Describe cephalosporins’ place in therapy for neonatal infection
2. Recall the different characteristics of patients who received cefotaxime vs. cefepime

Purpose:
For most neonatal infections, ampicillin and gentamicin is preferred empiric therapy. Cefotaxime is a reasonable alternative to gentamicin in suspected meningitis or in patients who have risk factors for ampicillin-resistant infections, but it is not routinely used because of concern for increased mortality and the possibility of resistance patterns changes in comparison with gentamicin.1,2,3 Recently, cefotaxime has become largely unavailable in the United States, requiring an alternative cephalosporin. Other institutions in the country have chosen to replace cefotaxime with ceftazidime which has also been associated with alterations in susceptibility patterns.4 Cleveland Clinic Pediatric Institute has selected cefepime as the alternative to cefotaxime. This analysis aims to compare the antibiotic utilization (AU) rates of cefepime and cefotaxime, describe the patient characteristics of those who received one versus the other, and assess any change in susceptibility patterns before and after cefotaxime was no longer available.

Methods:
This was a retrospective cohort study of patients aged 60 days or less from January 1, 2018 to July 31, 2019 who received cefotaxime or cefepime. The study was split into two nine month periods, before and after the manufacturing of cefotaxime ceased. Patient characteristics and positive cultures were collected from the electronic health record. The primary objective was assessed using a linear regression model fit with main effects and interaction for time and drug. Patient characteristics were compared using the Wilcoxon rank sum tests for continuous and ordinal characteristics and Chi-squared or Fisher’s exact tests for categorical characteristics. All tests were two-tailed and performed at a significance level of 0.05. SAS 9.4 software was used for all analyses.

Results:
Antibiotic use rate increased by 3.15 per month (95% CI 0.46-5.84, p = 0.025), however the overall AU rates did not significantly change between the cefotaxime and cefepime prescribing periods (p=0.12). One hundred fourteen patients were included in the analysis of patients: no significant differences in patient characteristics were identified, other than the origination of order between: NICU sepsis order set, NICU admit order set, and manual entry (p

Conclusions:
No associated differences were identified between AU rate, patient characteristics, or susceptibility rates after the change from cefotaxime to cefepime.
Evaluation of the effects of targeted education on pharmacist verification and monitoring of QTc interval-prolonging medications

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Kathryn Weber, PharmD, BCPS, BCCP; Rebecca Dudley, PharmD

UAN: 0048-2020-046

Learning Objectives:

1. Recall patient-specific risk factors in hospitalized patients that increase the risk of drug-induced QTc prolongation.
2. Discuss potential pharmacist interventions during verification of QTc-prolonging medications in hospitalized patients.

Purpose:
Prolongation of the corrected QT (QTc) interval can lead to a rare but life-threatening arrhythmia known as torsades de pointes (TdP). A number of medications utilized in the hospital setting can increase the risk of QTc prolongation. This study evaluated the impact of targeted education on the comfort level of pharmacists in evaluating and verifying QTc-prolonging medications.

Methods:
This single center, retrospective, pre-post study evaluated the effect of targeted education on the comfort level of pharmacists in verifying QTc-prolonging medications. In addition to a pharmacy-wide continuing education presentation, an educational tool providing strategies to monitor and manage QTc-prolonging medications was distributed to pharmacists. The primary outcome of pharmacist comfort level was assessed via anonymous pre- and post-education surveys. Secondary outcomes included characterizing and quantifying pharmacist interventions from a two-week pre-education period in November 2018 to the same post-education period in November 2019. Data was obtained from electronic medical records of patients who received scheduled therapy with a QTc-prolonging agent from a pre-determined medication list.

Results:
Forty-one pharmacists in the pre-education group and forty pharmacists in the post-education group were included. There was a significant increase in comfort level between groups. A total of 300 patients were retrospectively evaluated, including 150 in each group. There was a 133% increase in documented pharmacist interventions but no improvement in the overall number of missed intervention opportunities or percentage of accepted interventions.

Conclusions:
Targeted education focusing on management and monitoring of QTc-prolonging medications significantly increased pharmacist comfort level in evaluating and verifying QTc-prolonging medications. Following this education, the overall number of documented pharmacist interventions increased in patients with scheduled QTc-prolonging medications ordered. Additional strategies are necessary to reduce missed interventions and improve the acceptance rate of recommendations in patients at high risk for QTc prolongation.
Direct Oral Anticoagulants in Long-Term Care Facilities: Rates of FDA-Approved Dosing

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Katie Sakel, MS, Tim Oser, RPh, BCGP, Nicole Hammell, RPh, Adam McCabe, PharmD, Aaron Lengel, PharmD, BCACP

UAN: 0048-2020-047

Learning Objectives:
1. Review dosing considerations for direct oral anticoagulants (DOACs) for patients in long-term care facilities
2. Describe how inappropriate doses of DOACs can increase risk for adverse outcomes for patients in long-term care facilities.

Purpose:
Many patients in long-term care facilities require anticoagulation for several different indications. Direct oral anticoagulants (DOACs) require less monitoring throughout therapy than vitamin K antagonists or heparin. However, initial dosing of DOACs requires careful review to ensure safe and effective medication therapy.

A previous study found that in patients prescribed DOACs for atrial fibrillation, 43% of patients with a renal indication for dose reduction were on a standard dose. 13.3% of patients without a renal indication were on a reduced dose.

In 2019, the Joint Commission issued a Sentinel Event Alert on managing risks associated with DOAC therapy. Recommendations include: educating health care providers, patients, and families about DOACs, and following evidence-based guidelines to ensure proper dosing and monitoring.

The primary objective of the study is to determine the rate of FDA-approved dosing of direct oral anticoagulants for any indication in patients residing in long-term care facilities.

Methods:
This is an observational, retrospective, chart review including patients receiving one of three direct oral anticoagulants (DOACs) - apixaban, rivaroxaban, or dabigatran. Patients were included if they were prescribed any of the aforementioned DOACs between August and October, 2019, and if they were a resident in a long-term care facility that utilizes PointClickCare (PCC) - an electronic health record.

A drug utilization report was run to identify prescriptions for the three targeted anticoagulants. Duplicate prescriptions for the same patients were removed, and the list was randomized. The first 30 prescriptions for each of the three medications were chosen to be included in the study.

After identifying patients, charts in PCC were reviewed and the following data was collected: prescribed DOAC, dose, frequency, and duration (if indicated), and indication; patient’s height, weight, most recent serum creatinine. Based on FDA-approved dosing, the collected data was reviewed and marked as “correct” or “incorrect” dose, and “incorrect” doses were further classified as “too high” or “too low.” If duration of therapy was indicated in the order, it was also evaluated for “correct” or “incorrect” based on FDA-recommended durations of therapy.

Results:
This study included 90 patients - 30 from each of the targeted medications. 37% of patients were found to have a non-FDA-approved dose. Further breakdown showed 17% of patients were receiving “too high” of a dose and 20% of patients were receiving “too low” of a dose. Analysis by specific medication showed the most non-FDA-approved doses with rivaroxaban. Six out of thirty patients on rivaroxaban were on a standard dose, but their renal function warranted a dose reduction, and seven patients received a reduced dose without an indication.

The secondary objective was to determine rates of FDA-approved duration of therapy. Fifty-eight patients were appropriately on indefinite therapy, and seven patients had an inappropriate duration. One of those patients was prescribed a DOAC post-DVT for 12 months, but therapy was continued for over 2 years. The appropriate duration of therapy was not determined for 25 patients due to lack of information in their charts.

Conclusions:
Direct oral anticoagulants were not prescribed based on FDA-approved dosing in 33% of patients in our study. Most commonly, incorrect doses were due to failure to adjust therapy based on diagnosis, age, weight, or renal function.

Appropriate duration of therapy is largely determined based on diagnosis and patient risk factors for future clotting. For most patients, enough information was not available to make a strong conclusion on appropriateness of durations of therapy.
Effect of a pharmacist anticoagulation clinic on warfarin hospital admissions vs. traditional outpatient management

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Courtney Hochman, PharmD, BCPS; Kathryn Corlett PharmD, BCPS; Erin Onder, PharmD, BCPS, CIC

UAN: 0048-2020-048

Learning Objectives:

1. Define a major adverse event of warfarin.
2. Discuss the differences between anticoagulation clinics managed by pharmacists and traditional outpatient management.

Purpose:
When managing warfarin, close monitoring of the International Normalized Ratio (INR) is crucial to adequately anticoagulate patients while avoiding supratherapeutic levels. Pharmacist-managed anticoagulation clinics have proven to be a safer way to manage patients on warfarin compared to standard care, physician management. Multiple studies have demonstrated that a pharmacist-managed anticoagulation clinic has resulted in fewer warfarin-related adverse events. The purpose of this study is to determine the number of these adverse events in the pharmacist-managed Western Reserve Anticoagulation Clinic (WRAC) versus traditional outpatient management.

Methods:
This is a retrospective chart review from January 1, 2017 to June 30, 2019 of warfarin patients managed by the WRAC compared to patients from two physician networks within Western Reserve Hospital (WRH), Unity Health Network (UHN) and Pioneer Physician Network (PPN). The WRAC will be compared to UHN patients and to PPN patients as separate study groups. The WRAC has managed 167 patients within the time of the chart review. Patients from both physician networks will be randomly selected, separately, to equate the 167 WRAC patients. To be included in the study, patients must be 18 years old or greater, a patient managed by the WRAC, UHN, or PPN with more than one management appointment during the dates of the chart review, and had been taking warfarin as an outpatient. Patients will be excluded if they have never attended or only attended one outpatient visit. The null hypothesis states there is no difference in warfarin-associated events between the WRAC and standard care. The alternative hypothesis states that there is a difference in warfarin-associated events between the WRAC and standard care.

Results:
Results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the 2020 Ohio Pharmacy Residency Conference.
A Quality Improvement Pilot Identifying an Inpatient Population for Pain and Opioid Stewardship

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Pamela S. Moore, PharmD, BCPS; Clinical Lead Pharmacist – Pain Management and Palliative Care; Paula A. Politis, PharmD, BCPS; Clinical Lead Pharmacist – Antimicrobial Stewardship; Dean M. Frate, MD; Physician Advisor – Case Management, Internal Medicine

UAN: 0048-2020-049

Learning Objectives:

1. Recognize standards for inpatient pain management and monitoring safe opioid use set forth by The Joint Commission
2. Identify risk factors for opioid-induced respiratory depression

Purpose:
The Joint Commission standards now include identifying and monitoring patients at high-risk for adverse outcomes of opioid use. Summa Health System Akron Campus does not have a method to identify at risk patients. This pilot aimed to assess the feasibility of pharmacist-lead identification of a population in need of pain management and opioid stewardship at our institution.

Methods:
All admitted patients were screened. Patients less than 18 years of age or consulted to the acute pain or palliative care services were excluded. Electronic health record reports identified all opioid, antidepressant, and benzodiazepine administrations within the previous 24 hours, and pertinent family and social history risk factors for Opioid Use Disorder (OUD) and opioid-induced respiratory depression (OIRD). Data exported to spreadsheets calculated risk scores using the ORT-OUD and RIOSORD tools, and opioid utilization and morphine milligram equivalents (MME) were tabulated. Chart reviews were completed on patients identified as high risk for OUD or OIRD, if MME was 90 or greater, or they received four or more “as needed” opioid doses in the previous 24 hours. Potential regimen adjustments based on the primary investigator’s judgement were categorized. Descriptive statistics were used.

Results:
Data were collected from 11/1/2019 to 12/17/2019; average daily census was 365 during this time. Mean number of patients per day identified as high risk were 9.2 for OUD and 25.1 for OIRD, and 2.4 per day were at risk for both OUD and OIRD. Daily mean number of patients identified for stewardship was 13. The three most common potential interventions were opioid dose adjustment, scheduling acetaminophen, and addition of a non-steroidal anti-inflammatory drug, with a mean of 5.1, 4.7, and 3.9 interventions daily.

Conclusions:
Based on the findings of this project pharmacist-lead identification of an inpatient population warranting pain and opioid stewardship is feasible and beneficial for patient care and standard compliance.
Simulations in pharmacist education: an evaluation of simulation-based training through knowledge retention and attitude surveys

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Thomas Patrick Collins, PharmD; Lian Chen, PharmD; Katherine Kelley, PhD

UAN: 0048-2020-050

Learning Objectives:

1. Describe the impact of simulation-based training on improving pharmacist proficiency in medication order verification in a pediatric academic medical center.
2. Discuss barriers to the effective implementation of a simulation-based training program within a pharmacy enterprise.

Purpose:
The aim of this study is to evaluate the effectiveness of simulation-based training in pharmacist education at a pediatric academic medical center. This project had two objectives: (1) assess the impact of simulation-based training in enhancing pharmacist proficiency during verification of a high-risk, low frequency medication order, and (2) evaluate participants’ attitudes towards simulation-based education upon completion of the training.

Methods:
A pre-post interventional model was employed to identify changes in pharmacist proficiency from baseline during medication order verification. Study subjects included pharmacists with various levels of experience who practiced in the inpatient setting within the Department of Pharmacy. Investigators observed participants complete one simulation, marked their performance against a standardized checklist, and then reviewed the performance with the participant. Approximately 21 days later, the participant was evaluated in a second, similar simulation. Differences in scores between the two simulations were interpreted as changes in pharmacist proficiency. Participant attitudes regarding simulation-based training methods were measured via a survey conducted upon completion of the last simulation.

Results:
Pharmacist proficiency and accuracy significantly improved in the second simulation compared to performance in the first simulation (p=0.02). Participants with fewer years of pharmacy practice were more likely than pharmacists with more experience to report benefits associated with simulation in improving clinical and operational knowledge and confidence in verifying high-risk, low frequency medication orders. All participants were very likely or extremely likely to recommend simulations to their colleagues and considered simulations to be an effective teaching mechanism.

Conclusions:
Simulations represent a teaching modality that hospital and health-system departments of pharmacy may use to enhance the effectiveness of their training programs. This project has shown that simulations improve pharmacist proficiency and accuracy in verification of high-risk, low frequency medication orders. Simulations were well-received by all participants, and pharmacy leaders should consider how this teaching platform may be integrated within their own departments.
Assessment of thyroid replacement therapy impact on atrial fibrillation and atrial flutter

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UAN: 0048-2020-051

Learning Objectives:
1. Classify thyroid status based on the two primary thyroid function tests
2. Explain the relationship between thyroid function and atrial fibrillation/flutter

Purpose:
Hypothyroidism is a condition of the thyroid gland treated with hormone replacement therapy. Patients receiving thyroid replacement therapy require dose titration to avoid excess levels, which may precipitate atrial fibrillation (AF). Several studies have looked at the relationship between thyroid function and risk of AF and found an association with low serum thyroid stimulating hormone (TSH) and increased serum free thyroxine (FT4). The purpose of this study is to evaluate the impact of chronic thyroid replacement therapy on AF and atrial flutter, as well as identify opportunities for pharmacist intervention in this setting.

Methods:
This retrospective chart review evaluated subjects admitted with AF/flutter and on chronic thyroid replacement therapy between August 1, 2018 and July 31, 2019. Exclusion criteria include those receiving thyroid hormone for organ donation or myxedema coma, history of thyroid cancer or thyroidectomy, or pregnancy. The primary outcome is the evaluation of thyroid status based on admission TSH level. Secondary outcomes include development of rapid ventricular response on admission, 10-year history of osteoporosis or fracture, and dose adjustment of thyroid replacement therapy. Baseline demographics, admission service, and other medications that may contribute to AF will be collected to assess differences between subgroups. Age groups are defined as greater than 18 or less than 70 years of age for adults and greater than or equal to 70 years of age for older adults. Data analysis includes descriptive statistics, chi-squared, and Fisher’s exact test as appropriate for outcome comparisons.

Results:
Data collection is ongoing, with nine subjects included to date. Preliminary analysis shows a mean admission TSH of 2.74 mIU/L. Using age based TSH goals from clinical practice guidelines, more than half of the subjects can be classified as hyperthyroid.

Conclusions:
To be determined pending data analysis.
Promoting resilience and well-being among pharmacists in a community hospital

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Katherine Moore, PharmD, BCCCP; Shelbi Vincent, PharmD, BCPS; Deanna Fliehman, PharmD, BCPS

UAN: 0048-2020-052

Learning Objectives:

1. Review the causes and signs of burnout among healthcare professionals.
2. Identify opportunities to reduce burnout and improve resilience among pharmacists.

Purpose:
Burnout is defined as a state of emotional, mental, and often physical exhaustion brought on by prolonged or repeated stress. To combat this growing epidemic among healthcare providers, the American Society of Health-System Pharmacists (ASHP) has encouraged raising visibility of clinician burnout, improving baseline understanding of challenges to clinician well-being, and advancing evidence-based solutions to improve patient care by caring for the caregiver. In accordance with this initiative, the pharmacy leadership team at St. Elizabeth Healthcare is working to promote staff well-being and build resilience among pharmacists at each of our sites.

Methods:
St. Elizabeth Healthcare pharmacists were surveyed utilizing the Maslach Burnout Inventory- Human Services Survey (MBI-HSS). The MBI-HSS consists of the following domains: emotional exhaustion, depersonalization, and low sense of personal accomplishment, which aids in identifying healthcare provider burnout. The survey was distributed in January 2020 and results were collected utilizing a group report generated by Mind Garden, Inc.

Results:
Data collection and analysis are currently being conducted. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection and analysis are currently being conducted. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Effects of continuous glucose monitoring in diabetic patients who do not qualify for insurance coverage of continuous glucose monitors

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UAN: 0048-2020-053

Learning Objectives:

1. To identify eligibility requirements that allow insurance coverage of continuous glucose monitoring systems (CGMs)
2. To describe the impact of easy access of CGMs on multiple health outcomes
3. To recognize how CGMs can potentially reduce financial burden versus using multiple test strips per day

Purpose:
Continuous glucose monitoring systems (CGM) are beneficial in enhancing glucose control in Type 1 Diabetes patients. However, there are a lack of studies about diabetes patients that cannot qualify for these through insurance. Access to sensor-based tools can significantly increase glucose data and lead to enhanced patient understanding of the effects of lifestyle and medication on blood glucose throughout the day. The primary objective is to evaluate outcomes: hemoglobin A1c (HbA1c), weight, body mass index (BMI), lipids, and blood pressure trends after 3 months of CGM use in patients that would have been unable to qualify for these through insurance.

Methods:
This study will be submitted to the Blanchard Valley Institutional Review Board for approval. Patients will be provided education on how to use their CGM and then demonstrate their understanding via teach back method at the same visit. Glucose data will be downloaded and assessed at the initial visits and at each month interval. Additionally, patients will be counseled at each visit about their results. Healthy lifestyle modifications will be encouraged, but not required in this study. Change from baseline will be measured for the following values: HbA1c, LDL, triglycerides, weight, BMI, and blood pressure. These vitals will be measured at baseline and after 3 months. HbA1c will be drawn at the Blanchard Valley Diabetes Center office. The CGM utilized in this study will provide blood glucose levels and number of blood glucose checks throughout each day. All data will utilize unique numeric identification for each study participant; however, confidentiality will be maintained throughout the study period.

Results:
Statistical analysis is in progress. The final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
The conclusions will be presented at the Ohio Pharmacy Resident Conference.
Preventing drug diversion in a multicenter healthcare system: a failure modes and effects analysis
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UAN: 0048-2020-054

Learning Objectives:
1. Define drug diversion and discuss the importance of prevention.
2. Identify potential sources of medication diversion in the health system medication use process.

Purpose:
Medication diversion within the health system can have negative implications for patients, healthcare workers and the organization. A failure modes and effects analysis (FMEA) is a structured way to proactively identify specific process points that may be at risk for diversion in the healthcare system. Identifying areas of vulnerability and assigning a Risk Priority Number (RPN), allows for prioritization of potential sources of diversion and implement solutions in areas most immediately in need.

Methods:
Medication use process maps were first created for three of the five sites at this multicenter healthcare system to gain understanding of the current medication use process. An FMEA was then developed by a 5-member cross-functional team from the pharmacy department and an internal audit was conducted. The team outlined the major steps a controlled substance must go through prior to reaching the patient. As part of the FMEA, the team identified current controls, and ways in which the medication supply process might fail and result in controlled substance diversion. Scoring criteria assessing the likelihood of occurrence, likelihood of detection, and severity were developed in order to provide each failure mode with a RPN. The failure modes with the five highest scores were deemed high risk.

Results:
Data collection and analysis are currently being conducted; results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection and analysis are currently being conducted; conclusions will be presented at the Ohio Pharmacy Resident Conference.
Evaluation of the effectiveness and safety of direct oral anticoagulants in the treatment of acute venous thromboembolism in patients with morbid obesity

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UAN: 0048-2020-055

Learning Objectives:
1. Describe pharmacodynamic and pharmacokinetic considerations when using direct oral anticoagulants (DOACs) in obesity.
2. Discuss current literature for use of direct oral anticoagulants (DOACs) in the obese population.

Purpose:
The purpose of this study was to evaluate the efficacy and safety of direct oral anticoagulants (DOACs) for treatment of acute venous thromboembolism (VTE) in patients with morbid obesity compared to patients with morbid obesity treated with warfarin. The study also evaluated treatment of acute VTE with DOACs in patients with morbid obesity compared to patients without morbid obesity.

Methods:
This retrospective cohort study included patients 18 years of age or older with acute VTE prescribed apixaban, dabigatran, rivaroxaban, or warfarin. Pregnant women, patients on dialysis, patients with mechanical heart valves, and patients on an anticoagulant at the time of VTE occurrence were excluded. The primary efficacy outcome was a composite of recurrent VTE and ischemic stroke. The primary safety outcome was a composite of major bleeding or clinically relevant non-major bleeding.

Results:
A total of 121 patients per group were included. The incidence of recurrent VTE and ischemic stroke was 5.8% in the group of morbidly obese patients taking DOACs compared to 2.5% in the group of morbidly obese patients taking warfarin (p=0.333). The incidence of recurrent VTE and ischemic stroke was 5.8% in the group of morbidly obese patients taking DOACs compared to 5.0% in the group of patients without morbid obesity taking DOACs (p=1.000). The incidence of bleeding events was 6.7% in the group of morbidly obese patients taking DOACs compared to 12.4% in the group of morbidly obese patients taking warfarin (p=0.188). The incidence of bleeding events was 6.7% in the group of morbidly obese patients taking DOACs compared to 9.1% in the group of patients without morbid obesity taking DOACs (p=0.633).

Conclusions:
The incidence of recurrent VTE and bleeding was similar in morbidly obese patients treated with DOACs compared to morbidly obese patients treated with warfarin and patients without morbid obesity treated with DOACs.
Evaluation of pharmacy driven methods for improving sepsis patient care in a community hospital

Caleb Hartzler, PharmD – PGY-1 Pharmacy Resident, Southwest General
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UAN: 0048-2020-056

Learning Objectives:
1. Review current treatment recommendations for sepsis and the Surviving Sepsis Guidelines
2. Discuss the requirements for meeting Centers for Medicare and Medicaid Services (CMS) sepsis bundle measures and ways pharmacists can impact this metric.

Purpose:
Treating patients according to the Surviving Sepsis Guidelines has been shown to improve patient outcomes and decrease mortality. These guidelines are the basis of the CMS sepsis bundle. A review of patients not in the emergency department that fell out of the sepsis bundle showed that most of the opportunity for improvement revolved around nursing and lab duties. It was hypothesized that a pharmacist providing education to nurses on the observation unit, general medical floor, and intensive care units (ICUs), would result in more patients treated according to the guidelines, and better care would be achieved.

Methods:
A retrospective review in the emergency department of our hospital showed that when a pharmacist was involved in a septic patients’ care, bundle compliance increased nearly 10%. Pharmacists involvement was also shown to increase percentage of patients receiving antibiotics within 60 minutes and percentage of patients receiving the appropriate fluid bolus within 3 hours. An improvement in time to antibiotic and vasopressor administration was also noted in the pharmacist intervention group. When this program was rolled out to the rest of the hospital, recruitment was nearly non-existent. By a review of patients “falling out” of the bundle, it was determined that nursing education was the greatest opportunity for increase in sepsis bundle compliance. Surveys were sent to the nursing staff on the inpatient units, followed by education and a mandatory training program. The survey was again sent to nursing and results were compared to initial survey results.

Results:
Initial results to be presented at OPRC

Conclusions:
Conclusions to be published following OPRC
Operational Implications to Biosimilar Adoption within an Community-Based Health System

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UAN: 0048-2020-057

Learning Objectives:
1. Determine the impact of biosimilars within a health-system
2. Identify barriers to implementation of biosimilars

Purpose:
Biologics include a wide range of products such as vaccines, blood and blood components, allergenics, somatic cells, gene therapy, tissues, and recombinant therapeutic proteins. Biological therapy have increasingly become a costly treatment option and continues to increase in comparison to other treatment regimens. Biosimilars are a grouping of medications that show a highly similar likeness to a reference biological product with no clinical differences that may provide a lower total cost of care. Biosimilar adoption as a therapeutic alternative has been met with resistance by both healthcare providers and patients alike.

Erythropoetin stimulating agents (ESAs) are used to stimulate the production of hemoglobin in patients with anemia secondary to chronic kidney disease or chemotherapy in oncology patients. Epoetin alfa-epbx (Retacrit) is a biosimilar product for the reference product of both Epogen and Procrit. Previous studies have determined Retacrit to be highly similar to both products for all FDA-approved indications. OhioHealth is a 12 hospital health-system located in central Ohio that utilizes ESAs for inpatient hemodialysis and in outpatient infusion centers. The primary objective of this study is to identify barriers to implementation of Procrit to Retacrit. The secondary objective is to identify potential operational, clinical, and financial considerations for adoption of additional biosimilar products on the inpatient and outpatient setting.

Methods:
A conversion from the formulary product Procrit to Retacrit was performed from October 2019 at all OhioHealth hospitals and associated infusion centers. A post-implementation, cross-sectional survey will be conducted and distributed to providers, nurses, pharmacists, and pharmacy revenue integrity individuals overseeing patients who receive Retacrit. Descriptive statistics is analyzed for success of implementation of the biosimilar, Retacrit, and barriers that providers have for ESAs and future biosimilars.

Results:
A total of 82 survey responses were completed. Nurses reported the highest level of comfort for discussing the change to a biosimilar (84.2%) amongst all other groups. All survey groups reported the need for further education on biosimilars. 26% of nurses reported that the communication of the change was too late. Prescribers reported their biggest concerns with biosimilar conversions as payer coverage for the patient (38.9%) and coordination with the pharmacy (27.8%). Pharmacists reported a comfort level of recommending a biosimilar when it is on-label for an indication, 73.9%, versus when it is off-label, 26.1%.

Conclusions:
Converting a reference product to a single biosimilar did not exhibit concern for providers, nurses, or pharmacists. Providers; greatest fear is the third-party payer landscape for biologics with multiples different biosimilars. Pharmacists lowest comfort level falls in the non-FDA approved indications for biosimilars when the reference product would have the the approved indication. With further biosimilar implementation, streamlined education to providers on the alignment with current guidelines and payer landscape along with sufficient cross-over for the infusion staff to modify workflow and educate patients on upcoming change.
Impact of Pharmacist Intervention on Antibiotic Prescribing Rates for Asymptomatic Bacteriuria within a Small Community Hospital

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Jeremy J. Taylor, PharmD, BCPS; Andrew Pollard, DO

UAN: 0048-2020-058

Learning Objectives:
1. Describe the overall proportion of antibiotic utilization rate in patients with asymptomatic bacteriuria (ASB) at Doctors Hospital utilizing Infectious Diseases Society of America (IDSA) guidelines for ASB definitions
2. Describe current antibiotic prescribing practices and ASB diagnosing patterns at Doctors Hospital following the implementation of an ASB educational intervention

Purpose:
Despite available published guidelines on ASB management, antibiotic overprescribing continues to be an issue. This may be attributed to the difficulty of distinguishing between ASB and urinary tract infection (UTI) diagnosis due to presence of nonspecific symptoms. Unnecessary use of antibiotics increases antibiotic resistance, adverse events including Clostridium difficile infection, and healthcare costs. Implementation of educational interventions for ASB have shown to be beneficial in reducing antibiotic prescribing rates, with other healthcare systems having developed ASB management guidance documents for clinicians.

Methods:
This was a retrospective quality improvement study of patients admitted to Doctors Hospital with ASB based on current IDSA guidelines. The main objective was to determine the impact of a pharmacy-driven educational intervention on antibiotic prescribing rates for ASB, which consisted of an IDSA ASB summary sheet and a screening and treatment algorithm. The two-month pre-intervention phase was compared to a two-month post-intervention phase.

Results:
A total of 72 patients were included in this study (47 pre-education and 25 post-education). The percentage of patients receiving antibiotics in the pre-intervention and post-intervention groups were 85.1% and 84.0%, respectively (p = 1.00). The most common non-specific UTI symptom was altered mental status (15.3% overall).

Conclusions:
No difference was found in antibiotic usage for ASB before and after implementing an educational session with clinicians. However, reduction in included patients in the post-intervention group may be attributed to better documentation of symptoms. Antibiotic use in ASB continues to be a challenge as evidenced by the high percentage of patients receiving antibiotics in both groups.
Evaluation of Levocarnitine and Lactulose for the Treatment of Valproic Acid-Induced Hyperammonemia in Critically Ill Patients

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UAN: 0048-2020-059

Learning Objectives:

1. Review the available literature regarding the use of levocarnitine and lactulose for valproic acid-induced hyperammonemia
2. Discuss the observed effects of levocarnitine and lactulose for the treatment of valproic acid-induced hyperammonemia in critically ill patients

Purpose:
Critically ill patients treated with valproic acid are at risk for hyperammonemic encephalopathy due to alterations in metabolism, drug interactions, and high doses of valproic acid administered. Both levocarnitine and lactulose, either alone or in combination, have been used in practice, however the two medications have not been directly compared in the literature. The objective of this study was to compare the effect of levocarnitine, lactulose, and combination therapy for the treatment of valproic acid-induced hyperammonemia in critically ill patients.

Methods:
This was a retrospective, system-wide, cohort study of critically ill patients who received valproic acid and either levocarnitine, lactulose, or combination therapy from January 1, 2012 to October 31, 2019. The primary outcome of the study was the change in ammonia level from baseline to the lowest point within the first 48 hours of treatment. Secondary outcomes included the average change in ammonia levels within the first 7 days, the incidence of a clinically significant reduction (defined as at least a 15% reduction), ICU length of stay, hospital length of stay, and hospital mortality.

Results:
A total of 371 charts were reviewed and 114 patients (levocarnitine [n=15], lactulose [n=72], and combination [n=27]) were included. No difference in the primary outcome was observed (levocarnitine [11umol/L] vs. lactulose [20 umol/L] vs. combination [23 umol/L], p=0.605). There was no significant difference in the incidence of a clinically significant reduction in ammonia levels. There was a significant difference in the change in ammonia level within the first 7 days of treatment, as well as the intensive care unit length of stay and hospital length of stay.

Conclusions:
In critically ill patients with valproic acid-induced hyperammonemmmia, there was no significant difference in the reduction in ammonia levels in the first 48 hours of treatment between levocarnitine, lactulose, and combination therapy.
Safety of Inpatient Dofetilide Initiation per Cardiology Services: A Retrospective Review

Carrie Cicirale, PharmD
Jennifer Jackson, PharmD

UAN: 0048-2020-060

Learning Objectives:

1. Review the current atrial fibrillation guidelines on inpatient initiation of dofetilide and the criteria patients need to meet in order to start therapy.
2. Assess different risk factors for development of life threatening arrhythmias that can occur from dofetilide therapy.
3. Evaluate the safety of dofetilide for patients initiated appropriately versus inappropriately according to the protocol.

Purpose:
Dofetilide is an antiarrhythmic medication that has the potential to cause life threatening arrhythmias, such as Torsade de pointes. The 2014 ACC/AHA/HRS guidelines for the management of patients with atrial fibrillation state that patients need to meet certain criteria to be initiated on dofetilide as well as three days of inpatient monitoring. Patients who are not initiated on this therapy according to the guideline criteria are likely to be at higher risk of adverse reactions, especially the life threatening arrhythmias that occur from increased QTc intervals. The purpose of this study is to evaluate the safety of dofetilide in patients who were initiated on therapy inappropriately versus appropriately according to the protocol.

Methods:
This is a single center, retrospective chart review of patients who were initiated on dofetilide from July 2016-December 2019. Patients included in the study were those who were initiated on dofetilide as a new antiarrhythmic and monitored inpatient for at least three days. The primary outcome was a composite of incidence of cardiac arrhythmias, cardiac arrest, cardiac death, and hospital readmission within 30 days due to a cardiac condition. Secondary outcomes included each of these outcomes alone.

Results:
There were 224 patients included in the analysis: 190 patients who were initiated on dofetilide inappropriately and 34 that were initiated appropriately. These groups were equal in terms of baseline characteristics. The primary outcome (composite of cardiac arrhythmia, cardiac arrest, cardiac death, and hospital readmission) was statistically significant with more patients experiencing an outcome in the group initiated inappropriately, and patients who were inappropriately initiated on therapy were 13.5 times more likely to experience one of these adverse reactions. These results were driven primarily by arrhythmias and cardiac readmissions. There were no incidences of cardiac deaths in the study.

Conclusions:
Patients are placed at a higher risk of adverse reactions when this potentially dangerous antiarrhythmic medication is not used according to the protocol set forth by the ACC/AHA/HRS guidelines. Practitioners should use caution when prescribing dofetilide and should educate patients on the risks involved with this medication. Other antiarrhythmic medications or non-pharmacologic options should be considered due to the incidence of these dangerous adverse reactions. Larger studies should be conducted in order to confirm these findings.
Utilization of Piperacillin-tazobactam Bolus Dosing in Accordance with Regulatory Standards on Initial Antibiotic Administration Timing in Nosocomial Sepsis: A Retrospective Review

Casey Nelson, PharmD
Matthew Walker, PharmD, BCPS

UAN: 0048-2020-061

Learning Objectives:
1. Evaluate the different criteria used in identifying septic patients
2. Discuss the regulatory measures in place for treating septic patients
3. Review the results of the resident research project

Purpose:
The aim of this study was to evaluate the impact of a 30-minute piperacillin-tazobactam bolus order set on timing of broad spectrum antibiotic administration. Primary outcomes include compliance with the 3-hour Surviving Sepsis Campaign Bundle and 1-hour Centers for Medicare and Medicaid Services (CMS) Sepsis Core Measures. Secondary outcomes include hospital length of stay (LOS) and intensive care unit (ICU) LOS.

Methods:
This was a before and after, retrospective chart review evaluating patients with nosocomial sepsis. Between February 2019 – July 2019 patients were reviewed for administration of standard piperacillin-tazobactam extended infusion. From August 2019 – January 2020 patients were reviewed for administration of the new piperacillin-tazobactam bolus order set. International Classification of Diseases Tenth revision (ICD-10) codes were used to identify septic patients. Patients were eligible if they met Systemic Inflammatory Response Syndrome (SIRS) criteria and received the correct piperacillin-tazobactam order set for their respective study period. Patients were excluded if they were

Results:
A total of 43 patients were eligible (17 pre-order set and 23 post-order set). A significant difference was found between groups on timing of antibiotic administration (184 minutes pre-order set and 67.5 minutes post-order set [P = 0.005]). This resulted in a significant difference between groups on compliance with Surviving Sepsis Campaign Bundle (41.2% pre-order set and 92.3% of patients post-order set [P < 0.001]). A significant difference was noted on hospital and ICU LOS (16.8 days pre-order set and 9.5 days post-order set [P < 0.001]; 9 days pre-order set and 4 days post-order set [P = 0.042], respectively).

Conclusions:
Patients who received piperacillin-tazobactam as a 30-minute bolus saw a more timely administration of antibiotics resulting in improved outcomes. These results align with previous research that earlier administration of antibiotics has benefit in septic patients.
Impact of intravenous push administration on time to antibiotic initiation in septic patients

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Kevin Ordons, PharmD, BCPS, BCCCP; Kristen Longstreth, PharmD,BCPS; Jay Kerns, PhD

UAN: 0048-2020-062

Learning Objectives:
1. Explain the importance of timely antibiotic administration on outcomes in septic patients
2. Discuss the role of intravenous (IV) push administration of antibiotics in the initial treatment of septic patients

Purpose:
Time to antibiotic administration has a direct impact on sepsis survival. Previous studies have examined the impact of utilizing IV push antibiotics to shorten the time to antibiotic administration. The purpose of this study is to assess the impact of IV push antibiotic administration on the time to the initiation of empiric antibiotics in septic patients.

Methods:
This before/after study was conducted as a retrospective chart review of septic patients that received antibiotics in the ED during two separate time periods. Data from October 2017 to April 2018 was collected for the intervention (IV push) group and data from October 2018 to April 2019 was collected for the comparator (standard 30-minute infusion) group. The primary outcome was time from ED arrival to administration of empiric antibiotics. Secondary outcomes included time from antibiotic order placement to complete administration, compliance to the 3-hour and 1-hour Surviving Sepsis bundles, hospital length of stay, hospital mortality, and cost savings associated with IV push administration.

Results:
A total of 189 patients were included. Time to empiric antibiotic administration from ED arrival was not statistically significant between the IV push and IV infusion groups (3.46 vs. 3.49 hours; p=0.32). Time from empiric antibiotic order placement to administration was significantly shorter for the IV push group compared to the IV infusion group (1.47 vs. 1.77 hours; p=0.01). Compliance with the sepsis bundles, hospital length of stay, and hospital mortality were not significantly different between the two groups. Average drug and supply cost per dose was $11.88 for IV infusion compared to $4.99 for IV push administration.

Conclusions:
Use of IV push antibiotics did not significantly change the time from ED arrival to empiric antibiotic administration. However, once antibiotic orders were placed, administration time was significantly shorter with IV push administration.
Migraine cocktail efficacy: Identifying treatment regimens associated with migraine relief in an academic emergency department

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UAN: 0048-2020-063

Learning Objectives:

1. Recall the pathophysiology of migraine headache and triggering factors that can precipitate its development
2. Review the current treatment recommendations for the acute management of uncomplicated migraine.

Purpose:
Migraine pain causes frequent visits to the emergency department (ED). Guidelines for migraine treatment offer some medications, such as triptans and non-steroidal anti-inflammatory agents, for outpatient management of acute migraine. However, recommendations do not strongly recommend any agent for treatment of acute migraine upon ED presentation. At Mercy Health St. Vincent Medical Center’s ED, providers use a variety of agents to abort a patient’s migraine. Medications most efficacious for migraine management should be identified to streamline care and treatment for migraine patients at St. Vincent’s ED. The study aims to identify the agents associated with overall treatment success, defined as aborting the patient’s migraine without need for subsequent treatment.

Methods:
This study is a retrospective chart review of up to 250 patients who presented to the Mercy Health St. Vincent Medical Center ED between January 1, 2018 and December 31, 2018. Patients aged 18 through 89 years will be identified based on ICD-10 codes consistent with uncomplicated migraine. Excluded patients are prisoners, pregnant, diagnosed with mental retardation or developmental disabilities, or have neurology consulted. The primary outcome is to identify agents that aborted the patient’s migraine without need for subsequent treatment. Other outcomes include identifying the agents associated with treatment success in patients not relieved with home migraine medications within 24 hours prior to arrival, determining the agents associated with treatment success in patients who did not trial home meditations prior to presentation, distinguishing pain score reductions with the use of the treatment agents, and identifying any adverse events of the migraine treatments. Statistical analysis will be conducted based on normalcy of data at the end of the data collection phase.

Results:
Data analysis is ongoing. Results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of Pharmacy Intern Review of After Visit Summaries

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UAN: 0048-2020-064

Learning Objectives:
1. Review the current literature of utilizing pharmacy interns in direct patient care
2. Discuss the benefits of pharmacist chart review and utilization of pharmacy interns in this area of pharmacy practice

Purpose:
Pharmacy interns can provide cost benefit, decrease pharmacist workload, and enhance their clinical knowledge by completing medication histories. No published studies have evaluated the impact of pharmacy intern review of after visit summaries (AVS) at hospital discharge. The primary objective of this study is to evaluate the volume of AVS reviews completed by both pharmacists and pharmacy interns during the weekend, pre and post implementation of adding pharmacy interns to the AVS work flow. The second objective is to evaluate the difference in interventions identified between the two groups.

Methods:
This Institutional Review Board approved quality improvement study assessed the type of interventions completed by pharmacy interns and pharmacists from 2/1/19-7/31/19. Interventions are categorized using a classification tool that mimics the APS-Doc Classification System, a validated tool to classify drug-related problems. The project population included patients discharged from a subset of general medicine floors at OhioHealth Riverside Methodist Hospital whose AVS review was completed by a pharmacist or pharmacy intern. The first objective of this study evaluated weekend AVS reviews completed during this date range to determine whether they were completed by a pharmacist or pharmacy intern. The second objective evaluated interventions identified by a pharmacy intern in AVS reviews completed on weekends during the study period in comparison to an equal number of randomly selected AVS reviews completed by pharmacists on weekdays during the date range.

Results:
Pharmacy interns reviewed a total of 503 after visit summaries on weekends between 5/4/2019 and 8/31/2019 in comparison to 5 after visit summaries completed by pharmacists during this time frame. 150 after visit summaries reviewed by pharmacists and 150 reviewed by pharmacy interns are included in the study. A total of 15 interventions were documented in each group with no statically different findings in the type of interventions identified. Pharmacists spent an average of 13.2 minutes on AVS reviews in comparison to 5.6 minutes spent on AVS reviews by pharmacy interns (p

Conclusions:
Riverside Methodist Hospital does not currently utilize pharmacists to complete AVS reviews on the weekends, but implementing a pharmacy intern-based process helped reach additional patients during the weekend workflow. Pharmacy interns greatly increased the number of AVS reviews completed on the weekends during this study. There were no differences in interventions identified between the two groups. These results support that interns are a viable alternative to pharmacist for AVS review.
The PHARMer’s Market: Reducing A1c in Type II Diabetes Patients Through Active Dietary Education and Lifestyle Modifications

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Lydia Bailey, PharmD, Bethanne Brown, PharmD, BCACP, TTS, Michael Espel, RPh, Russell Curington, PharmD, BC-ADM

UAN: 0048-2020-065

Learning Objectives:

1. List the various components of diabetes self-management education (DSME)
2. Discuss the relevance of food security in diabetic patients
3. Analyze the relationship between food deserts and low-income patients with diabetes; documented in current literature

Purpose:
This study explored the impact of a pharmacy-driven, dietary initiative on hemoglobin A1c. Patients in the PHARMer’s Market Program (PMP) received dietary counseling, diabetes-friendly recipe cards and food as a prescription.

Methods:
A retrospective chart review identified 50 patients enrolled in the PMP. Their A1c at enrollment was ≥ 9%. Their initial A1c was compared to a final A1c; collected 3 months post intervention. Change in A1c was the primary endpoint and was analyzed using a one-way paired t test. Secondary endpoints included: body mass index, blood pressure, and assessments of eating habits, food security, and medication adherence. A1c values between the intervention group (enrolled in PMP) and comparison group (not enrolled) were also assessed.

Results:
74% of participants who completed the PMP experienced a statistically significant reduction in A1c (p = 0.003) compared to 64% of participants in the comparison group (p < 0.001). Although not statistically significant, participants in the comparison group experienced a greater A1c reduction. Additionally, there was no statistically significant difference in secondary outcomes (blood pressure, food security, eating habits and medication adherence). However measured scores for food security, eating habits and medication adherence were improved.

Conclusions:
Patients enrolled in the PMP received dietary counseling and diabetic friendly recipe cards. This intervention resulted in a statistically significant reduction in A1c. Patients in the PMP were more likely to experience a reduction in A1c than patients in the comparison group. This further affirms the relationship between dietary intake and diabetes.
Quality Improvement Project Evaluating the Utilization and Impact of Pharmacist Involvement for Patients in a Primary Care Setting

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Lisa McIntyre, PharmD, BCACP

UAN: 0048-2020-066

Learning Objectives:

1. Identify potential barriers or gaps within the current clinical pharmacy referral process which may have limited physician use of the referral functionality.
2. Quantify and classify the most common types of clinical pharmacy referrals which are received.

Purpose:
The purpose of this quality improvement project is to increase the number of clinical pharmacy referrals received by Mercy Health Medication Management Service – Jefferson. This will be done by identifying and intervening on potential barriers within the current clinical pharmacy referral process. These interventions will be implemented specifically for providers working within the Mercy Health Family Practice – Jefferson clinic and doing so would theoretically increase the number of patients enrolled in this service. This project will also seek to evaluate the clinical patient outcomes and economic impact of the established clinical pharmacist referral process for Mercy Health Medication Management Service – Jefferson.

Methods:
This project is designed to assess all clinical pharmacy referrals which are received by Mercy Health Medication Management Service – Jefferson from 3/11/2020 until 11/18/2020. Presently, pharmacists from Mercy Health Medication Management Service – Jefferson are providing patient care and education for patients whose primary care provider (PCP) practices at Mercy Health Family Practice – Jefferson clinic without an electronic referral being placed within the patient’s chart. Data will be collected from the referral work queue and generated reports for the Mercy Health Family Practice – Jefferson clinic.
The primary objective is change in the number of clinical pharmacy referrals placed for Mercy Health Medication Management Service – Jefferson, baseline to project conclusion. Data will be categorized to determine the frequency of each type of clinical pharmacy referral and assessed to determine if the patient matches established referral criteria. Additional information will be collected on physician utilization, encounter duration, frequency of patient encounters, and pharmacist interventions.

Results:
Data collection and analysis are in process. Preliminary results will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
Preliminary conclusions will be presented at the 2020 Ohio Pharmacy Resident Conference.
Impact of a pharmacist-led culture review on antimicrobial stewardship in the emergency department

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Marissa Guillen, PharmD

UAN: 0048-2020-067

Learning Objectives:

1. Discuss the importance of antimicrobial stewardship as it relates to patients discharged from the emergency department
2. Identify the impact of a newly implemented pharmacist-led culture review process in the emergency department

Purpose:
The Centers for Disease Control (CDC) have labeled antimicrobial resistance as the biggest healthcare challenge of our time. It is estimated that the US healthcare system currently spends $21-34 billion treating resistant infections annually. The CDC estimates that 30% of prescribed antibiotics are prescribed unnecessarily and emergency department providers in the United States contribute an annual 14.2 million prescriptions for antibiotics. The purpose of this study is to evaluate the antimicrobial stewardship benefit provided by pharmacist involvement in the review of cultures of discharged patients collected at the Mercy Health Fairfield Hospital Emergency Department.

Methods:
This study is an IRB-approved, retrospective, pre-post intervention study assessing the impact of a pharmacist-driven culture review protocol implemented at the Mercy Health Fairfield Hospital Emergency Department (ED). The study population includes patients 18 years or older who were discharged from the ED between October 2019 and January 2019 and between October 2019 and January 2020 with a collected blood, urine, wound, or stool culture. Exclusions include patients from long-term care facilities or a nursing home and patients admitted to a hospital within the previous 90 days. Patients are classified into two groups: cultures reviewed by the pre-existing nurse-driven protocol and cultures reviewed by the pharmacist-driven protocol. The primary outcome is the percentage of antimicrobial therapy prescribed in accordance with Infectious Disease Society of America (IDSA) treatment guidelines. Secondary outcomes include type of pharmacist interventions performed during culture review, percentage of revisit to the ED within 72 hours, percentage of 30-day hospital readmission, and time to intervention. Data analysis includes descriptive statistics and Fischer’s exact test or Chi-square for categorical data.

Results:
Final results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the 2020 Ohio Pharmacy Residency Conference.
Evaluation of basal insulin dose reductions in hospitalized patients while unable to eat

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UAN: 0048-2020-068

Learning Objectives:

1. Describe the recommended insulin for hospitalized patients with type II diabetes with poor oral intake or taking nothing by mouth.
2. Discuss basal insulin dosing strategies for non-intensive care unit hospitalized patients with type II diabetes taking nothing by mouth.

Purpose:
The American Diabetes Association recommends a basal insulin or basal plus correctional insulin regimen for non-intensive care unit (ICU) hospitalized patients with type II diabetes mellitus (T2DM) with poor nutritional intake or are unable to eat (NPO, nil per os). There is limited evidence available examining the ideal basal insulin dose reduction for non-ICU patients who are NPO to prevent hypoglycemia. This study aims to determine the percent reduction of maintenance basal insulin that would provide the least hypoglycemic incidence in non-ICU patients with T2DM.

Methods:
This was an IRB-approved retrospective cohort study at ProMedica Toledo Hospital between January 1, 2017 and July 31, 2019. Adult patients with T2DM prescribed outpatient basal insulin with a minimum NPO status of two hours were included. Patients were divided into four groups 75% of basal insulin administered compared to home dose. The primary endpoint was the incidence of hypoglycemia during NPO period. Secondary endpoints included incidence of hyperglycemia, severe hypoglycemia, median daily blood glucose (BG) and hospital length of stay.

Results:
A total of 173 patients were included. The primary outcome of hypoglycemia (5.9% vs 8.8% vs 14.3% vs 12.3%; P=0.578) and median daily BG (P=0.428) was similar in all treatment groups. There was one documented incidence of severe hypoglycemia in the study. The incidence of hyperglycemia was not significantly different between groups (P=0.701). Patient’s receiving 51-75% of home basal insulin had the longest NPO duration (16.1hrs; P=0.026); however, this was not statistically significant when adjusted using the Bonferroni correction for multiple tests.

Conclusions:
No differences were observed in hypoglycemic events in hospitalized, non-ICU patients with T2DM while NPO receiving various basal insulin dose reductions. These findings suggest that there is no optimal dose reduction for patients who are NPO.
Rheumatoid Arthritis Disease Activity Score and Medication Adherence in University Hospitals’ Patients with Rheumatoid Arthritis

Claire K. Chen, PharmD - PGY-1 Pharmacy Resident at University Hospitals Specialty Pharmacy
Emily Davies, PharmD; Svetlana Lyamkin, PharmD

UAN: 0048-2020-069

Learning Objectives:
1. Review the place of DMARD therapy in Rheumatoid Arthritis as supported by the American College of Rheumatology.
2. Identify a common objective disease activity metric for RA disease activity and how it can be used as a tool to help prescribers “treat-to-target.”

Purpose:
This study describes the current state of disease activity, as determined by the Routine Assessment of Patient Index Data (RAPID3) scores, for patients with rheumatoid arthritis (RA), treated with a disease-modifying anti-rheumatoid drug (DMARD) by the Rheumatology teaching service within University Hospitals Health System.

Methods:
This is a retrospective chart review of adult patients with an International Classification of Diseases (ICD-10) code reflecting a RA diagnosis. Patients were included in this study if they were found to be treated with a DMARD and had a RAPID3 result recorded in the electronic medical record (EMR) between March 1, 2019 and February 29, 2020. The primary objective was to determine, during this time period, the level of disease activity the patients with RA were experiencing based on RAPID3 scores. Secondary objectives include: medication adherence, as measured by proportion of days covered (PDC) for patients filling with University Hospitals Specialty Pharmacy (UHSP), determining if a correlation exists between adherence calculation and level of disease activity, and comparing the disease activity of patients who were treated by UHSP compared to disease activity of patients who were not treated by UHSP.

Results:
Pending

Conclusions:
Pending
Dose reductions in first-line therapy for metastatic colorectal cancer (mCRC) in the elderly and survival implications

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UAN: 0048-2020-070

Learning Objectives:

1. Describe current evidence regarding the impact of dose reduction (DR) and overall survival (OS) in colorectal cancer (CRC) and relate results of the study to this growing body of thought
2. Identify common toxicities seen in elderly patients receiving approved chemotherapy agents for first-line treatment of mCRC

Purpose:
CRC poses significant morbidity and mortality to older adults. Elderly are at higher risk for toxicities requiring DR of chemotherapy. The impact of DR on OS are debated. One trial suggested that DR during chemotherapy for mCRC resulted in similar OS. Another in gastrointestinal cancers found empiric DR (eDR) resulted in similar progression free survival as standard dosage, but led to less toxicity and better overall treatment utility. The aim of this study was to validate this correlation.

Methods:
A retrospective chart review was conducted on elderly mCRC patients that received approved treatments in Ohio Cleveland Clinic facilities from January 1, 2014 to January 1, 2020. Patients receiving full dose (FD) chemotherapy completed eight cycles of per protocol dosing. The eDR group had a DR of chemotherapy on day one. The therapeutic DR (tDR) cohort experienced a DR during treatment for side effects. OS was assessed with Kaplan Meier curve and compared among three dose groups by log-rank test. Cox proportional hazards model was utilized to compare OS among groups.

Results:
194 patients met eligibility criteria. Baseline characteristics were balanced amongst groups with the exception of age. The mean ages of the groups were 68, 70.5, and 76 years for the FD, tDR, and eDR groups, respectively. Overall mortality was 55.7%. The FD group had a lower risk of death when compared to the eDR group (HR [95%CI] 0.52 [0.27, 0.996], p=0.049). There was no difference in OS between eDR and tDR (HR 0.60 [0.33, 1.07], p=0.082). Traits correlated with DR other than age included pre-treatment carcinoembryonic antigen level, performance status, and creatinine clearance.

Conclusions:
This study suggests that elderly receiving FD chemotherapy had a better OS. It appears that OS is not impacted by the timing of DR, whether it is done prophylactically or during treatment.
Implementation of a pharmacist-managed prescription delivery and home visitation service in a rural community

Clayton L. Miller, PharmD - PGY-1 Pharmacy Practice Resident with ONU HealthWise (Ohio Northern University Raabe College of Pharmacy)

Katie Westgerdes, Michael Rush, Karen L. Kier, Megan Stephan

UAN: 0048-2020-071

Learning Objectives:

1. Develop an effective prescription delivery program for an independent community pharmacy practice site
2. Expand healthcare-related services within the pharmacist’s scope of practice
3. Describe our patient community through surveying barriers and/or social determinants of health (SDOH)
4. Provide accessibility and adaptability with healthcare-related services for the patient community

Purpose:

Outpatient healthcare facilities and providers aim to improve patient outcomes after hospital admissions and with chronic diseases such as diabetes mellitus, hypertension, and dyslipidemia. Social determinants of health (SDOH) have become more of a factor in the rural patient population in managing chronic diseases and further preventing hospital admissions as accessibility and availability of resources are limited. The objective of this study is to develop and interpret the value of a prescription delivery and home visitation service provided through an independent community pharmacy practice to provide patient-specific healthcare services and address SDOH for a rural community.

Methods:

This prospective cohort study has been approved by Ohio Northern University’s (ONU) Institutional Review Board for approval. Patients will be identified for inclusion who have utilized ONU HealthWise services and have at least one chronic disease state (hypertension, dyslipidemia, diabetes mellitus) that can be managed in an ambulatory care setting. Qualified patient will have their medication synchronized and scheduled for home delivery with the pharmacist. A pharmacist accompanied by additional pharmacy personnel including IPPE and APPE student pharmacists will provide home visitation for medication therapy management and education. The following data will be collected: patient age, gender, ethnicity, health conditions, and medications. If appropriate, point of care testing values (blood pressure, blood glucose, or lipid panel) will also be collected. Information with regards to social determinants of health (SDOH) including accessibility to care and transportation, socioeconomics, and other health-related disparities will be collected via patient self-reported survey. Clinical outcomes that will be assessed include number of hospital admissions after implementation of service, number of referrals with regards to SDOH addressed, and improvements in values with regards to patient disease states. All data will be recorded without patient identifiers and maintained confidentially. Follow-up will occur on a monthly basis for all patients. Data will be analyzed using both descriptive and inferential statistics for the patient outcomes in the rural community.

Results:

Data collection is ongoing and results will be finalized at the end of April.

Conclusions:
Evaluation of provider prescribing patterns before and after antimicrobial stewardship education in the ambulatory setting

Cody Hepp, PharmD - PGY1 Pharmacy Resident
Nick Bellman, RPh, PharmD, CACP, BCPS, BCCC; Kristin Spangler, RPh, PharmD, BCPS

UAN: 0048-2020-072

Learning Objectives:
1. Review the CDC core elements of outpatient antibiotic stewardship and recognize ways that your institution may enhance its antibiotic stewardship program.
2. Identify common disease states that are often inappropriately treated with antibiotics in the outpatient setting.
3. Recognize opportunities for pharmacist involvement in outpatient antimicrobial stewardship.

Purpose:
The Centers for Disease Control and Prevention Core Elements of Outpatient Antibiotic Stewardship recognize the need for antimicrobial stewardship program involvement in the ambulatory setting. Pharmacist involvement in the ambulatory setting may help enforce the four core elements: commitment, action for policy and practice, tracking and reporting, and education and expertise. The objective of this study is to optimize provider antibiotic prescribing patterns through pharmacist provided antimicrobial stewardship education.

Methods:
This study will be submitted to the Blanchard Valley Health System Institutional Review Board for approval. Prior to the intervention, a three month period of patients who received a prescription for azithromycin, ciprofloxacin, levofloxacin, or sulfamethoxazole/trimethoprim with cephalaxin written from one of the eight selected ambulatory care settings will be analyzed. Data such as patient age, allergies, diagnosis, drug name, drug dose, drug duration, ordering provider, location, and total prescriptions written as well as patient visits per location will be collected. These patients will then be assessed for appropriate antibiotic use, including appropriate drug choice relative to indication, proper dose and duration, and other clinically important factors affecting choice of antibiotic, such as patient age and allergies or suspected source of infection. Evaluation of this data will be repeated for a three month period following the pharmacist provided intervention. Due to limitations with the data retrieval system, patient cases in which antibiotics were not prescribed when truly needed will not be assessed.

Results:
To be presented at OPRC

Conclusions:
To be presented at OPRC
Evaluating the implementation of an antimicrobial stewardship pathway for urinary tract infection

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Mike Turk, PharmD, BCPS, AAHIVP - Antimicrobial Stewardship Pharmacist at St. Elizabeth Healthcare

UAN: 0048-2020-073

Learning Objectives:

1. To explain the impact an antimicrobial stewardship team provides for St. Elizabeth Healthcare.
2. To illustrate the overprescribing of antibiotics for patients experiencing asymptomatic bacteriuria instead of a urinary tract infection.

Purpose:
The inappropriate treatment of asymptomatic bacteriuria (ASB) and urinary tract infection (UTI) is a growing issue within healthcare due to increased microbial resistance as a result of unnecessary antibiotic use. Resistance to certain antibiotics continues to increase worldwide. Locally, resistance rates of E.coli to fluoroquinolones and sulfamethoxazole/trimethoprim have exceeded 40%, indicating that microbial resistance has made these agents unsuit for empiric therapy as they were often used in the past. Our antimicrobial stewardship team has developed a treatment pathway to promote appropriate therapy of UTIs and to deter inappropriate treatment of ASB with a goal of minimizing microbial resistance. The purpose of this project was to deliver education on a treatment pathway for UTIs and ASB based on recent applicable guidelines and to evaluate provider adherence to a treatment pathway after this education was delivered.

Methods:
This retrospective chart review included patients at least 18 years of age who were admitted to St. Elizabeth Healthcare via the emergency department with a diagnosis of UTI between August 1st, 2019 and October 31st, 2019 and between April 1st, 2020 and April 30th, 2020. A treatment pathway for UTI and ASB, incorporating current guideline recommendations and institutions-specific guidance, was developed by the antimicrobial stewardship team. Emergency department physicians and hospitalists were educated on this treatment pathway. Antibiotic regimens ordered for included patients were reviewed for appropriateness prior to and after delivery of education. An antibiotic was deemed appropriate if it followed the treatment described in the pathway. Additionally, patients were evaluated to determine whether their diagnosis of UTI was appropriate according to guideline-based diagnostic criteria.

Results:
Data collection is currently ongoing. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection is currently ongoing. Results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Hyperglycemia management in the setting of total parenteral nutrition

Curtis Crabtree, PharmD, PGY-1 Pharmacy Resident - The Christ Hospital
Matt Keeler, PharmD, BCPS, Internal Medicine Clinical Pharmacist - The Christ Hospital

UAN: 0048-2020-074

Learning Objectives:

1. Identify risk factors for hyperglycemia with TPN administration
2. Discuss strategies to improve hyperglycemia management in the setting of TPN

Purpose:

Total parenteral nutrition (TPN) is often beneficial and may be indicated in patients with severe burns, long-term ventilation, and a variety of other critical illnesses. In comparison to the general population, patients receiving TPN have an increased risk of hyperglycemia with an incidence exceeding 50%. With such a high prevalence of hyperglycemia, there is conflicting evidence to guide hyperglycemia management in the hospital setting. The Christ Hospital does not currently have a protocol to guide the management of hyperglycemia in patients receiving TPN. The purpose of this study is to evaluate hyperglycemia management strategies in order to improve patient outcomes and prevent the complications associated with hyperglycemia.

Methods:

This is an IRB approved, single center, retrospective study that included hospitalized patients who received both TPN and insulin. Each day of therapy was evaluated for glycemic control and categorized based on the glucose management strategy used (intravenous, subcutaneous, insulin within the TPN, or a combination). Glycemic control was defined as 24 hours with ≤ 1 blood glucose outside of the range of 71-180 mg/dL. The electronic medical record (EMR) was used to collect patient data including baseline characteristics, route of insulin administration, and blood glucose. The primary outcome was the percent of days with glycemic control within the first nine days of TPN therapy for each insulin regimen. Secondary outcomes included mean glucose levels per patient day, average GIR, total daily dose (TDD) of insulin, and hypoglycemic events. A regression analysis was conducted to determine if an association exists between glycemic control and route of insulin, TDD of insulin, glucose infusion rate (GIR), history of type 2 diabetes mellitus, insulin use prior to admission, or chronic steroid use.

Results:

Results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:

Conclusions will be presented at the 2020 Ohio Pharmacy Residency Conference.
Systemic thrombolysis versus ultrasound-assisted catheter-directed thrombolysis for the treatment of acute pulmonary embolism

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Jessica Winter, PharmD, BCCCP; Lukas Martin, PharmD; Suzanne Bennett, MD, Nicole Harger, PharmD, BCPS, BCCCP,
Lindsey Federle, PharmD, BCPS, Suzanne Van Fleet, PharmD, BCCCP; Matthew Weaver, PharmD Candidate

UAN: 0048-2020-075

Learning Objectives:

1. Describe the pathophysiology, risk categorization, and standard treatments for acute pulmonary embolism.
2. Recognize the difference between systemic, catheter-directed, and ultrasound-assisted administration techniques for thrombolysis in acute pulmonary embolism.

Purpose:
Acute pulmonary embolism (PE) can range in severity from outpatient management to life-threatening emergencies. Treatment for intermediate and high risk PEs include anticoagulation and either systemic thrombolysis, surgical management, or catheter directed therapies (e.g. clot evacuation or thrombolytic administration). Ultrasound-assisted catheter-directed thrombolysis (USAT) is a technology that provides pulse ultrasound vibrations and low dose thrombolytic at the site of clot. This is an attractive alternative to higher dosed systemic thrombolytic in patients with intermediate risk PE or patients with high bleeding risk. Guidelines have yet to elucidate USAT’s place in PE treatment. The purpose of this study is to compare USAT to systemic thrombolytic therapy for the treatment of PE with the hypothesis that USAT will result in lower incidence of major bleeding compared to systemic thrombolysis.

Methods:
This retrospective, multicenter, cohort study compared patients that received either USAT or systemic thrombolytic therapy for a PE between January 2013 and October 2019. The primary endpoint is the incidence of major bleeding within 48 hours after thrombolytic initiation. Efficacy was assessed with a composite endpoint that evaluates the resolution of hemodynamic instability and absence of treatment escalation. Other secondary endpoints include in-hospital mortality, ICU and hospital length of stay, and readmission at 30 days. A sub-group analysis of patients treated by the pulmonary embolism response team will describe time to anticoagulant initiation and therapeutic effect, time to thrombolytic or USAT therapy, and follow up imagining. All endpoints will also be evaluated in an intermediate-risk PE subgroup. Data collection will include demographic data, severity of illness scores, pulmonary embolism severity index scores, diagnostic methods of PE, laboratory measures, and medications used in treatment including anticoagulants, vasoactive agents, and bleeding reversal agents.

Results:
Data collection and analysis are ongoing. Results and conclusions will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2020 Ohio Pharmacy Conference.
Implementation of an electronic nursing tool in the emergency department to improve Centers for Medicare and Medicaid Services SEP-1 bundle compliance

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Alexander Bobrov, DO, FACEP; Elizabeth Legros, PharmD, BCPS; Nancy Rampe, PharmD, MHA; Grant Recker, BSN, RN; Nicole Recker, PharmD Candidate; Krista Shepherd, PharmD, BCPS; David Toro Chaves, MD, FACEP, FAWM, FAAEM; Kristi Walker, PharmD Candidate

UAN: 0048-2020-076

Learning Objectives:
1. Describe the core components that need achieved to be compliant with the sepsis bundle requirements
2. Evaluate whether the use of an electronic nursing tool improved compliance with the sepsis bundle requirements

Purpose:
Quick recognition and appropriate treatment of septic patients leads to lower mortality and improved patient outcomes. This concept is supported by the Surviving Sepsis Campaign (SSC), which developed a bundle approach to sepsis care. The Centers for Medicare and Medicaid Services (CMS) adopted a modified version of the SSC bundles known as SEP-1. SEP-1 measure is utilized to demonstrate that participating hospitals are providing timely and appropriate care to septic patients. This study is being conducted to determine if implementing an electronic sepsis tool in an emergency department (ED) will impact SEP-1 measure compliance and patient-centered outcomes.

Methods:
This will be a retrospective chart review of adult patients presenting to the ED with sepsis or septic shock for which the sepsis narrator was opened and utilized. The sepsis narrator is an electronic tool built into our electronic medical record, Epic, that is opened by a nurse at the time of suspicion or recognition of sepsis. Once opened, the sepsis narrator functions as a continuous application and will provide real-time alerts to the nurse that are relevant and dynamic in helping ensure bundle-compliant sepsis treatment. The sepsis narrator will continue running until a nurse charts an end time. The data from these patients will be compared with previously collected data on patients presenting with sepsis or septic shock prior to the availability of the sepsis narrator. The primary outcome of this study is to determine the impact of implementation of the sepsis narrator in the ED on overall SEP-1 bundle adherence. Secondary outcomes will evaluate the bundle components of fluid administration and repeat lactic acid as well as in-hospital mortality and hospital length of stay. An estimated sample size of 58 patients per group is needed to achieve 80 percent power for a statistical difference in the primary outcome of at least 25 percent.

Results:
n/a currently

Conclusions:
n/a currently
A Multicenter, Retrospective Cohort Evaluating the use of Ceftaroline versus Vancomycin in Staphylococcus aureus Osteomyelitis

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Bhavin Mistry, PharmD BCIDP; Donald Dumford III, MD; Chanda Mullen, PhD; Dustin Freshwater, PharmD BCIDP

UAN: 0048-2020-077

Learning Objectives:
1. Describe the current literature regarding ceftaroline fosamil use in various indications
2. Compare ceftaroline fosamil use in S. aureus osteomyelitis to vancomycin

Purpose:
Osteomyelitis is thought to affect 1 in 675 US hospital admissions per year. The Infectious Disease Society of America (IDSA) Methicillin-resistant Staphylococcus aureus (MRSA) guidelines state that the antibiotics available for parenteral administration in bone and joint osteomyelitis include vancomycin, amongst others. The fifth generation cephalosporin ceftaroline is an antibiotic that has not to date been evaluated in osteomyelitis directly against vancomycin.

Methods:
This was a retrospective chart review of patients diagnosed with Staphylococcus aureus osteomyelitis from January 1st 2012 to January 1st 2019 throughout the Cleveland Clinic system. Patients older than 18 were included in the ceftaroline or vancomycin groups if they had been treated for at least 28 days. The primary outcome of clinical success is defined as the sum of clinical cure or clinical improvement. Clinical cure is defined as discontinuation of all antibiotics. Clinical improvement is defined as step-down to oral antibiotics after parenteral antibiotic therapy completion. Secondary outcomes include clinical cure, clinical improvement, and adverse events.

Results:
A total of 112 patients are included in the study, equally distributed among groups. Clinical success was achieved in 86% of patients in the ceftaroline group and 89% of patients in the vancomycin group, (p=0.568). There was a significantly higher number of patients who obtained clinical improvement in the ceftaroline group compared to the vancomycin group (38% vs. 10%, respectively, p=0.002). The most common adverse events in both the ceftaroline group and the vancomycin group include acute kidney injury and Clostridium difficile associated-diarrhea (18% vs 20%; p = 0.809 and 7% vs 7%; p = 1.00 respectively). Patients in the ceftaroline group were more often discharged to a rehabilitation facility compared to the vancomycin group (45% vs 21%; p=0.005).

Conclusions:
Ceftraroline fosamil showed similar clinical success rates and adverse effects to vancomycin in Staphylococcus aureus osteomyelitis.
Evaluation of the Management of Patients Using U-500 Insulin by Pharmacists in a Federally Qualified Health Center—A Retrospective Analysis

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Jackie Boyle, PharmD; Magdi Awad, PharmD; Tiffany Rentsch, PharmD

UAN: 0048-2020-078

Learning Objectives:

1. Identify patients who may be indicated for pharmacist management of U-500 insulin
2. Be able to discuss the benefit pharmacist are associated with in the management of U-500 insulin

Purpose:
A small but increasing subset of patients with diabetes mellitus are classified with severe insulin resistance indicating treatment with high-dose insulin regimens. A method to improve convenience, thus compliance, is to utilize high-concentration insulin, also known as U-500. The patient population for this evaluation were from one Federally Qualified Health Center (FQHC). Of those patients with a diagnosis of diabetes mellitus at this site, approximately forty have a history of severe insulin resistance evidenced by their use of a high-concentration insulin. Traditionally, barriers for the adoption of U-500 management in the primary care setting have been frequent monitoring, greater risk of hypoglycemia, and dosing errors leading to coma or death. Many patients managed by FQHCs have limited access to care due to restrictions in transportation, access to quality food, lower rates of health literacy, limited income and are either underinsured or uninsured. Pharmacist integration as members of the health care team in FQHCs has been steadily growing. However, pharmacist led management of complex medication regimens such as the management of U-500 insulin remains underutilized.

Methods:
At this site, primary care providers (PCP) referred patients with diabetes to be managed by pharmacists per protocol. A pharmacist adjusted insulin doses as appropriate and requested a change in insulin types from PCPs when necessary. Patients who required a total daily insulin dose of &gt;200 units were indicated for initiation of U-500 insulin. This program review was a retrospective chart review of patients on U-500 insulin managed by a pharmacist. Results were determined from the point of the initiation of U-500 insulin managed by a pharmacist. Point of termination was defined as 12-months after initiation, when records end due to loss to follow-up, or on the date data collection began. Inclusion criteria included: age &gt; 18 years, last documented hemoglobin A1c within 6-months prior to the initiation of U-500, at least one recorded follow-up encounter with a pharmacist, and a least one documented hemoglobin A1c no sooner than 3 months after initiation of U-500 insulin. Baseline characteristics, hemoglobin A1c, patient weights and number of insulin adjustments made by the pharmacist during the study period were evaluated with descriptive statistics. The primary efficacy endpoint for the program review was A1c reduction at 6- and 12-months. The primary safety endpoint was the number of reported acute hypoglycemic events requiring treatment by paramedics, urgent care, emergency room, or requiring hospitalization. The secondary safety endpoint was weight gain at 6- and 12-months.

Results:
From November 1st, 2009 till November 1st, 2019, 44 patients were identified on U-500 insulin. Of the 44 patients, 13 either were managed or were currently having their U-500 insulin managed by a pharmacist and fit all inclusion and exclusion criteria. The patients demonstrated a significant reduction in hemoglobin A1c from baseline to 6- and 12-months (-0.8% [P=0.036]; -1.3% [P=0.041]). Weight gain was insignificant at 6-months however, significant at 12-months (1.8 kg [P=0.195]; 4.7 kg [P=0.034]). There were no recorded instances of emergent hypoglycemia reported. Non-emergent reports of hypoglycemia ranged from an average of 0-3.5 episodes.

Conclusions:
Pharmacist managed U-500 insulin regimens resulted in similar hemoglobin A1c reduction compared to standard care in literature with no increase in significant adverse events. Pharmacist in ambulatory care clinics expand access to care for patients who require high-dose insulin regimens.
Comparison of the Efficacy of Sodium Bicarbonate vs. Sodium Acetate for Metabolic Acidosis in Critically Ill Patients

David A Huynh, PharmD* - Beaumont Hospital, Dearborn
Gustavo T Rengifo, MD, Jennifer Gregory, PharmD, Jessica Jones, PharmD

UAN: 0048-2020-079

Learning Objectives:

1. Discuss the place in therapy of intravenous sodium bicarbonate in metabolic acidosis in critically ill patients
2. Evaluate the literature supporting the use of sodium bicarbonate in metabolic acidosis
3. Compare and contrast the use of intravenous sodium acetate and intravenous sodium acetate in the treatment of metabolic acidosis

Purpose:
Critically ill patients with metabolic acidosis have double the mortality rate compared to patients without metabolic acidosis; therefore, proper management is imperative. Although utilization of sodium bicarbonate (bicarbonate) for the treatment of metabolic acidosis has been controversial, it continues to be a mainstay of therapy. Due to shortages of bicarbonate, sodium acetate (acetate) is used as an alternative as it is converted to bicarbonate in vivo. There is a lack of evidence for the utilization of acetate in metabolic acidosis. Our goal is to determine the difference in time to resolution of acidosis in critically ill patients receiving acetate versus bicarbonate.

Methods:
This is a retrospective cohort analysis at Beaumont Hospital – Dearborn comparing patients treated with bicarbonate (n=50) versus acetate (n=50) for metabolic acidosis. Groups were matched 1:1 based on age, gender, and admitting unit. Categorical variables were compared using Pearson’s Chi-square tests. Continuous variables were analyzed using t-tests.

Results:
Patients in the bicarbonate cohort had significantly more acute kidney injury (90% vs. 66%, p

Conclusions:
The trend in time to resolution of acidosis appears to favor acetate. Despite similar severity of illness scores, the bicarbonate cohort had more acute renal/hepatic dysfunction and more severe acidemia to overcome. This may have contributed to lower survival at ICU discharge. A larger scale of patients should be examined to make definitive conclusions.
Opioid prescribing within a large health system

David A. Rippetoe, PharmD - Population Health Fellow
Aimrie Ream, PharmD, BCACP, BCGP

UAN: 0048-2020-080

Learning Objectives:

1. Review laws and guidelines that have impacted opioid prescribing
2. Identify benefits of prescription drug monitoring programs (PDMP) and urine drug testing in patients prescribed opioid medications

Purpose:
One of the most pressing health care issues in the United States continues to be the opioid epidemic. According to the National Institute on Drug Abuse, in 2017, Ohio had the second highest rate of overdose death due to opioids in the country and higher opioid prescribing rate than the national average. One study evaluating interventions for pain management demonstrates effectiveness of interventions, such as proper follow-up care, multidisciplinary teams, metric tracking, and educational tools, at a patient-, clinician-, system-, and community-level. In addition to literature, various laws and guidelines have been implemented to help guide opioid prescribing in Ohio. Examples of these laws include restrictions in duration and morphine equivalent dose (MED) for initial acute opioid prescriptions and requiring day supply on prescriptions. The purpose of this study is to describe opioid prescribing data from a large health system and develop a timeline of various initiatives to assess the impact on prescribing patterns.

Methods:
This study is a non-interventional, retrospective medical chart review of adult patients admitted to a Cleveland Clinic Main Campus ICU from December 1, 2017 through June 17, 2018 who were identified as high risk (HR) for readmission, identified as HR within their ICU stay and received AMR during same admission. The primary objective is to describe the patient population and workflow process for AMR in ICU. The secondary objective is to compare the number of interventions made for patients with AMR completed in the ICU versus after transfer out of the ICU.

Results:
After Institutional Review Board approval, data collection will include retrospective review of prescribing information from January 1, 2016 to December 31, 2019. Key information to be collected will include MED, the number of pain management contracts, number of patients seen in pain management clinics, whether those prescribed opioids have had a recent urine drug screen, naloxone prescribing rates, provider specialty and SBIRT encounter type. Analyses will be performed to see if there is any difference between population health patients and non-population health patients and in between regional markets. Furthermore, a timeline will be developed to assist in assessing if certain initiatives or outreach correlate to any positive impacts related to prescribing practices.

Conclusions:
Results will be presented at the Ohio Pharmacy Residency Conference
Optimizing medication distribution in automated dispensing cabinets: dashboard implementation and evaluation

David Wai, PharmD, BCPS, CPHIMS
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UAN: 0048-2020-081

Learning Objectives:

1. Explain concepts of optimization of automated dispensing cabinets
2. Describe the use of a dashboard tool to optimize automated dispensing cabinets

Purpose:
Recently published literature have described how to optimize automated dispensing cabinet (ADC) technology through the use of vendor-provided data reports and inventory formulas. What remains largely unresolved is an efficient process for the identification of medications dispensed from pharmacy that could be optimized to be dispensed from an ADC. Optimizing medication dispensing requires analysis and reconciliation of dispensing data from both the ADC and the Electronic Medical Record (EMR). The objective was to assess the impact of the ADC tool on key performance indicators (KPI). We hypothesize that the implementation of the ADC tool would translate into improved KPI measures (lower stock out percent, missing dose messages from nursing, adherence to administration time and increase vend:refill ratio, and staff satisfaction).

Methods:
Eleven ADCs were optimized according to dashboard recommendations for (1) removal of unused medications over 90 days, (2) adjusting par levels (desired on-hand inventory), and (3) addition of commonly dispensed medications from central pharmacy. We used an interrupted time series to assess the impact of the ADC tool by comparing the observed effect on KPIs during the post-implementation period versus the pre-implementation period. The pre-implementation period was January 1, 2018 through December 31, 2018, and the post implementation was January 1, 2019 through March 2020. We compared the post-implementation slope with the pre-implementation slope and also compared the change in intercept before and after implementation.

Results:
Pending. Final results will be shared at the Ohio Pharmacy Resident Conference on Friday May 15th, 2020.

Conclusions:
Pending. Final results will be shared at the Ohio Pharmacy Resident Conference on Friday May 15th, 2020.
Impact of antiemetic choice on QTc prolongation and other adverse events

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UAN: 0048-2020-082

Learning Objectives:
1. Describe risk factors for QTc prolongation
2. Discuss the relative safety of ondansetron, metoclopramide, prochlorperazine, and scopolamine

Purpose:
QTc prolongation is associated with an increased risk of arrhythmias and death. Accordingly, QTc prolonging medications are avoided, if possible, in patients with risk factors. Antiemetics are among the most commonly administered medications in the hospital and emergency department, and many carry a risk of QTc prolongation. The evidence supporting this risk is lacking. The purpose of this study is to investigate the effect that antiemetics have on QTc prolongation and any associated adverse events.

Methods:
This was a multi-center, retrospective study which evaluated the effect of ondansetron, metoclopramide, prochlorperazine, and scopolamine on QTc prolongation and associated adverse events. The primary outcome was to compare the difference in QTc prolongation between antiemetics by measuring the change in QTc interval from baseline.

Results:
Preliminary results (N=178) show a significant difference in the magnitude of change in QTc from baseline after administration of ondansetron, prochlorperazine, metoclopramide, and scopolamine (4.76±37.46 vs 4.04±30.20 vs -7.90±52.86 vs -0.20 ± 94.67, respectively; p=0.046). There was no effect of dose, route of administration, or time since administration on QTc prolongation.

Conclusions:
This study suggests relative safety among antiemetics investigated. Ongoing data analysis will determine whether a statistically significant difference exists between each antiemetic and scopolamine.
Economic impact of pharmacist interventions in pediatric ambulatory care clinics

Elaine Yung, PharmD
Megan McNicol, PharmD; Dusty Lewis, PharmD, MBA; Jessica Fischer, PharmD, MS; Kayla Petkus, PharmD, BCACP; Sonya Sebastian, PharmD, BCACP; Kelsey Schmuhl, PharmD; Mahmoud Abdel-Rasoul, MS, MPH; Kelly Wise, PharmD, BCACP

UAN: 0048-2020-083

Learning Objectives:

1. Identify pharmacist interventions related to the prevention and management of adverse drug events in pediatric ambulatory care clinics.
2. Describe a method of evaluating cost avoidance related to pharmacist interventions in pediatric ambulatory care clinics.

Purpose:
Ambulatory care pharmacists have a unique opportunity to identify and prevent adverse drug events (ADEs). Pharmacists’ interventions can reduce unexpected clinic visits or hospitalizations which may lead to decreased healthcare costs. However, research on this topic has not been conducted in the pediatric population. This study’s primary objective is to determine the cost avoidance of pharmacist interventions associated with the prevention or management of ADEs in pediatric ambulatory care clinics.

Methods:
Pharmacist interventions from pediatric ambulatory care clinics were collected during a four-month period. These documented interventions were categorized into one of four ADE subtypes: drug interaction, drug not indicated, prevent or manage ADEs, or prevent or manage drug allergy. A review panel consisting of pediatric ambulatory care pharmacists reviewed the documented interventions. The review panel determined the severity of the ADE that would have likely occurred had the pharmacist not intervened. The expected probability of the event was classified according to the Nesbit Method (0-0.6), and the level of care necessary to treat the suspected ADE was determined. Potential levels of care included: hospitalization, ambulatory care, and self-care. The cost avoidance associated with each prevented ADE was calculated by multiplying the probability of the ADE occurring by the average charge of the expected level of care.

Results:
Of the 8755 interventions documented, 407 were included. The median age of the patients that had interventions included was 20 years (IQR 11-36 years). The cost avoidance from each ADE subtype was $217,901 (n=55) from drug interaction, $21,793 (n=61) from drug not indicated, $361,729 (n=287) from prevent or manage ADE, and $289 (n=4) from prevent or manage drug allergy. Combining the 407 interventions, the total cost avoidance was determined to be $601,709.

Conclusions:
Pediatric ambulatory care pharmacists optimize healthcare cost savings through the prevention and management of ADEs as integrated members of the healthcare team.
Survival to Hospital Discharge Utilizing Amiodarone Infusions Post Cardiac Arrest

Emily Willard, PharmD
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UAN: 0048-2020-084

Learning Objectives:
1. Discuss current guideline recommendations and clinical practice surrounding antiarrhythmic therapy post cardiac arrest secondary to ventricular fibrillation or pulseless ventricular tachycardia
2. Review the utilization of amiodarone infusions and the impact on patient outcomes post cardiac arrest

Purpose:
Amiodarone intravenous infusions are routinely used to prevent recurrent arrhythmias and cardiac arrest in patients with return of spontaneous cardiac activity (ROSC) post ventricular fibrillation (VF)/pulseless ventricular tachycardia (pVT) cardiac arrest. Utilization of this therapy has not been well defined in guideline recommendations. Given the significant gap in literature and the routine use of amiodarone infusions post-cardiac arrest, it is important to evaluate related outcomes. The primary objective of this study is to evaluate the use of amiodarone infusions in patients with ROSC post VF/pVT cardiac arrest.

Methods:
A multi-center, retrospective cohort study of patients from July 1, 2015 to July 1, 2019 at least 18 years old surviving a cardiac arrest event due to VF or pVT was conducted. Patients were excluded if they were pregnant, had a known allergy to amiodarone, received lidocaine during cardiac arrest, or arrested due to trauma. The primary outcome of this study is to determine if amiodarone infusions post cardiac arrest improve survival to hospital discharge. Secondary outcomes include recurrent cardiac arrest, quality of life at discharge, hospital length of stay and intensive care unit length of stay.

Results:
A total of 122 patients were screened for inclusion with 88 included for analysis. More patients received amiodarone infusions post cardiac arrest compared to those that did not (63 patients v. 25 patients). Amiodarone infusions did not significantly affect survival to hospital discharge (74.6% v. 68%, p=0.599). Additionally, amiodarone infusions did not significantly prevent recurrent cardiac arrest (22.2% v. 4%, p=0.057) or patients quality of life prior to discharge using AMPAC scoring (p=0.193).

Conclusions:
In this small, retrospective, cohort study, amiodarone infusions post cardiac arrest did not significantly impact survival to hospital discharge.
Integrating a Clinical Pharmacist into the Emergency Department of a Rural Level Three Trauma Center

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BCACP, Dave J. Waller RPh, MS, Rachael M. Macko PharmD, BCPS, MBA

UAN: 0048-2020-085

Learning Objectives:

1. Describe three types of interventions a clinical pharmacist can make in the emergency department
2. Discuss the cost avoidance associated with implementing a clinical pharmacist in the emergency department

Purpose:
Utilization of a clinical pharmacist in the emergency department (ED) has been documented since the 1970s and continues to be on the rise in recent years. Pharmacist interventions can ensure proper medication utilization and have a positive impact on hospital cost avoidance, cost savings, and quality of patient care. One study has shown a thirteen-fold increase in errors during periods of pharmacist absence. Furthermore, other studies have shown high rates of physician and nurse satisfaction when a pharmacist is available within the department. Firelands Regional Medical Center (FRMC) does not currently have a pharmacist staffed in the ED. This study aimed to integrate a pharmacist within the ED and evaluate impact through percent of accepted interventions.

Methods:
A prospective observational study conducted in November and December of 2019 at FRMC placed a clinical pharmacist in the emergency department. Pharmacist interventions were documented, categorized, and assessed in a spreadsheet during this time. All patients presenting to the emergency department during the study period were included. Physician and nursing staff received education prior to implementation of the study to outline the roles and responsibilities of the pharmacist as well as how pharmacy services can be utilized. The primary outcome evaluated was percent of accepted interventions. Secondary outcomes include a comparison of pre- and post-satisfaction surveys from physician and nursing staff, evaluation of cost avoidance and savings, and number of accepted interventions by type including: antimicrobial stewardship, drug information, code and high-risk procedure response, opioid stewardship, pediatric interventions, and patient discharge oversight. This study received Institutional Review Board approval from Ohio Northern University.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
Multidisciplinary post-fracture osteoporosis management within a physician-owned primary care medical group

Erika Top, PharmD, MPH - The Ohio State University Wexner Medical Center  
Melissa J. Snider, PharmD, BCPS, BCACP, CLS; Margaret Ladlie, PharmD, BCACP, CDE; Diana Vinh, PharmD, BCPS, CLS, BCGP; Laurence Blosser, MD; Mary Cook, MD

UAN: 0048-2020-086

Learning Objectives:

1. Describe real-world post-fracture osteoporosis management in a large primary care setting.
2. Discuss how post-fracture osteoporosis management compares with payor metric.

Purpose:
Fractures related to osteoporosis result in significant morbidity, mortality, and healthcare cost. Osteoporosis Management in Women Who Had a Fracture (OMW) is a Healthcare Effectiveness Data and Information Set (HEDIS) measure aimed at secondary prevention of non-traumatic fractures. While OMW measure criteria include bone mineral density (BMD) testing and/or treatment with osteoporosis medication, measure completion does not necessarily indicate appropriate osteoporosis treatment. The purpose of this study is to evaluate appropriateness of post-fracture therapy, irrespective of payor metric.

Methods:
A retrospective chart review was conducted utilizing a list of patients with a documented fracture while admitted to a participating hospital between February and December 2019. Patients charts were reviewed for appropriateness of therapy received, then grouped according to OMW quality measure status: no measure gap (BMD or osteoporosis medication in the 24 or 12 months prior to fracture, respectively), completed measure (BMD and/or osteoporosis medication in the 6 months post-fracture), and open measure gap (no BMD or osteoporosis medication in the 6 months post-fracture). The primary outcome was to determine rates of appropriate post-fracture osteoporosis management at 6 months post-fracture. Secondary outcomes included assessment of patient characteristics.

Results:
Of the 127 patients reviewed, 82 were at least 6 months post-fracture and included in interim analysis. When group by OMW quality measure, the majority (50 patients) were excluded (no measure gap), while 22 of the remaining 32 closed the measure gap. Overall, rates of appropriate post-fracture osteoporosis management were 63.4% (no measure gap 76%, closed measure 63.6%, open measure gap 0%).

Conclusions:
Preliminary results suggest 63.4% of the patients evaluated received appropriate post-fracture osteoporosis care. Further results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Analysis of the implementation of a selective tranexamic acid administration protocol in a level one trauma center

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Daniel Dybdahl, PharmD, Daniel James, PharmD, Chance Spalding, DO, PhD, Michelle Kincaid, MD, MS

UAN: 0048-2020-087

Learning Objectives:
1. Define tranexamic acid’s mechanism of action
2. Describe the rationale for using thromboelastography to identify patients who may benefit from tranexamic acid administration

Purpose:
Background: Administration of tranexamic acid (TXA) to hemorrhaging trauma patients became the standard of care after the CRASH-2 trial demonstrated reduced mortality with early use. More recent literature suggests that use of viscoelastic assays, like thromboelastography (TEG), can be a targeted way to identify the subset of trauma patients that are experiencing excessive levels of clot degradation, and thus would be most likely to benefit from TXA administration.

The purpose of this research study was to evaluate whether selective TXA administration based on TEG data offers a mortality benefit over empiric TXA in hemorrhaging trauma patients.

Methods:
This retrospective, single center, cohort study aimed to compare trauma patients cared for under two separate institution specific protocols. Patients received either empiric administration of TXA or selective TXA administration based on TEG parameters, depending on the time the patient was admitted. Safety and efficacy data was then compared between groups. Secondary analysis aimed to quantify protocol adherence, delays in therapy and identify predictors of hyperfibrinolysis.

Results:
A total of 279 patients were analyzed, with 124 in the empiric group and 155 in the selective group. Final results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions: Conclusions will be presented at the 2020 Ohio Pharmacy Residency Conference.
Evaluation of Chronic Obstructive Lung Disease Shared Medical Appointment Readmission Rates

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Richard Chan, PharmD, BCPS, Renee Marincic, RN

UAN: 0048-2020-088

Learning Objectives:

1. Discuss prior research on shared medical appointment (SMA) readmission outcomes
2. Describe the components of a shared medical appointment

Purpose:
Chronic Obstructive Lung Disease represents an important public health challenge that is both preventable and treatable, and is the fourth leading cause of death in the United States. Increased hospital readmissions is a growing issue across the United States, prompting the Center of Medicare and Medicaid Initiative to launch Bundle Payments for Care Improvement Initiative (BPCI) in 2013. With the need to decrease hospital readmissions rates, new initiatives such as shared medical appointments have been put into place by health systems to target high-risk patients. A shared medical appointment is a clinical encounter in which a group of patients receive patient education and counseling, physical examination, and clinical support in a group setting with other patients. Prior studies comparing shared medical appointments to usual care in heart failure patients have shown a decrease in readmission rates. This study aims to evaluate the readmission rates of patients that complete COPD shared medical appointments versus those who did not.

Methods:
This is a single-center, retrospective, IRB-approved, chart review of patients who were admitted to Euclid Hospital with COPD from October 1, 2018 to October 1, 2019. The primary outcome of interest was to evaluate the effects of COPD shared medical appointments on readmission rates. Secondary endpoints included assessing readmitting diagnosis and determine appropriateness of inhalers prescribed.

Results:
Interventions were analyzed for 83 patients with an average age of 62 years. There were 56 patients in the group that attended shared medical appointments and 27 patients in the group that did not attend shared medical appointments. The study did not achieve 80% power. There was no difference in readmission rate for patients that attended shared medical appointments at 30 days (p=0.99) and 90 days (p=0.114). Pulmonary causes of readmission were the most common 53.5% and 37.5%, respectively.

Conclusions:
COPD shared medical appointments demonstrated no difference on readmission rates.
Impact of Pharmacist Intervention on Thrombolytic Therapy

Haley Bajdas, PharmD - PGY1 Pharmacy Practice Resident at Mercy Health St. Elizabeth Youngstown
Brian Sabol, PharmD, Kevin J. Ordons, PharmD, BCPS, BCCCP, G. Jay Kerns, PhD

UAN: 0048-2020-089

Learning Objectives:

1. Describe factors that have been identified as causing delays in door-to-needle (DTN) times of intravenous (IV) tissue-type plasminogen activator (tPA) administration.
2. Identify the benefits of an emergency medicine pharmacist (ED RPh) in initial acute ischemic stroke (AIS) care,

Purpose:
The American Heart Association and American Stroke Association published the Target: Stroke Initiative in 2010 with a goal to achieve DTN times of IV tPA administration of less than 60 minutes in 50% of AIS patients. The aim of this study is to determine the impact of ED RPh on time to IV thrombolytic therapy.

Methods:
A retrospective chart review was conducted on patients presenting to St. Elizabeth Youngstown Hospital from January 1, 2013 to May 1, 2018 with AIS who received tPA. Patients were excluded based on the following criteria: received tPA from an outside hospital prior to transfer; incomplete data regarding arrival time, DTN time, or tPA administration time; tPA administration for another indication; and intra-arterial tPA administration. The primary objective of this study is to compare DTN times of patients who received tPA for AIS with an ED RPh involved in initial stroke care (present group) to patients without initial stroke care involvement of an ED RPh (absent group).

Results:
A total of 221 patients were included (138 patients in the present group, 83 patients in the absent group). ED RPh involvement was associated with a significant improvement in DTN time (median 43.5 minutes [IQR: 30 – 56] vs 69 minutes [IQR: 54 – 89]; p &lt; 0.0001). The median time to blood pressure control of less than 185/110 mmHg prior to tPA administration was significantly shorter in the present group (median 6 min vs 22 min; p = 0.0005).

Conclusions:
Patients who received tPA for AIS with an ED RPh involved in initial stroke care were associated with significantly shorter DTN times and time to blood pressure control than patients without the involvement of an ED RPh. These findings support the benefit of ED RPh involvement in stroke care.
Evaluation of scheduled acetaminophen and NSAIDs versus as-needed opioid for pain control post-cesarean delivery

Haley Whitehair, PharmD, PGY-1 Pharmacy Resident University Hospitals Portage Medical Center
Derek Frost, PharmD, MBA, BCPS; Jessica Emshoff, PharmD, BCPS, BCGP; Shaina Bird, PharmD Candidate

UAN: 0048-2020-090

Learning Objectives:
1. Describe background information that contributes to the need of evaluating scheduled acetaminophen (APAP) plus non-steroidal anti-inflammatory drug (NSAIDs) in post-cesarean population
2. Discuss the methods for evaluating the effects of scheduled acetaminophen plus NSAIDs

Purpose:
The primary objective of this study was to determine if there was a difference in analgesia in patients post cesarean delivery using scheduled acetaminophen (APAP) and non-steroidal anti-inflammatory drugs (NSAIDs) versus as-needed opioids.

Methods:
For this study, a retrospective chart review was conducted on patients who were admitted to University Hospitals Portage Medical Center. All patients over 18 years old admitted to the birth center, who had a cesarean delivery, term pregnancy (37-42 weeks gestation), received post-partum pain assessments and received at least 24 hours of analgesics were included in the study. Included patients were assigned to one of two groups, patients who received as need opioids for pain control versus patients who received scheduled APAP and NSAIDs. Patients that were less than 18 years old were excluded. Based on 80% power analysis for the study, with a 0.05 alpha, 128 patients were needed to be included to detect a 30% difference between numeric rating scale (NRS) in non-opioid users versus patients treated with opioids for pain relief post-cesarean delivery. The primary endpoint was average pain score per pain assessment. Secondary endpoints were the use of as-needed opioids for breakthrough while using scheduled APAP and NSAID, patient’s comorbidity score, adverse effects of medications, use of epidural pain medication and chronic use of opioids prior to delivery.

Results:
To be presented at OPRC 2020 Virtual Meeting.

Conclusions:
To be presented at OPRC 2020 Virtual Meeting.
**Evaluation of empiric antimicrobial prescribing for community-acquired pneumonia at a community hospital**

Harold Schneider, PharmD - Cleveland Clinic Medina Hospital
Andrea M. Pallotta, PharmD, BCPS, BCIDP, AAHIVP; Brandon Mottice, PharmD, BCPS; Laine Vicarel, PharmD, BCPS

**UAN: 0048-2020-091**

**Learning Objectives:**
1. Describe stewardship interventions that can be utilized for community-acquired pneumonia
2. Discuss areas of improvement within a stewardship program in regards to community-acquired pneumonia

**Purpose:**
Community-acquired pneumonia (CAP) is a target for syndrome-specific antimicrobial stewardship program (ASP) interventions to improve empiric antibiotic selection and duration of therapy. This study evaluated site-specific empiric therapy guideline concordance for empiric CAP antibiotic selection and identify risk factors for non-concordant therapy through multivariable analysis.

**Methods:**
Adult patients admitted to Medina Hospital with CAP and receiving antimicrobials between January 1, 2017 – December 31, 2018 were included in the retrospective cohort study. Exclusion criteria included: hospital-acquired or healthcare-associated pneumonia, intensive care unit admission, previous enrollment, pregnancy, or infections other than CAP. Guideline concordance was defined as azithromycin or doxycycline+ceftriaxone/cefidinir or levofloxacin if life-threatening beta-lactam allergy at time of hospital admission. This study enrolled 126 patients to find a 10% difference in concordance rate compared to 80% historical rate (alpha = 0.05).

**Results:**
One hundred twenty six patient were included. Age, admission location, and length of stay did not differ between the two groups. The concordance rate was 76% (96/126) which was not statistically different than assumed 80% population concordance (p=0.29). After admission, seven discordant therapies were changed to concordant (n=103, 82% total concordance). Beta-lactam allergy was more common in discordant group (43%) than concordant group (23%, p =0.029). No difference was found in duration of therapy between groups, respectively (8 ±2.33 days vs 9 ±4.40 days, p=0.54). Multivariable analysis identified patients presenting through the ED who had antibiotics changed upon admission were more likely to be discordant than patients who were directly admitted and did not present through ED (OR: 11.45, [3.32, 46.21]).

**Conclusions:**
This study found similar rates of concordance with empiric CAP antibiotics compared to historical data. Opportunities exist for improvement in duration of therapy and antibiotic selection in the presence of beta-lactam allergy.
Outcomes associated with resumption of direct oral anticoagulants (DOAC) after gastrointestinal bleed

Jasmine Apfeld, PharmD South Pointe Hospital
Julianne Mazzola, PharmD, BCPS; Cara Weisenberger, PharmD, BCPS; Carly McKenzie, PharmD, BCPS

UAN: 0048-2020-092

Learning Objectives:
1. Identify outcomes associated with resumption of DOAC after gastrointestinal bleed
2. Review potential resumption time for DOAC following gastrointestinal bleed

Purpose:
Recommendations for resumption of anticoagulation after gastrointestinal bleeding is limited. Referenced evidence studied warfarin resumption which cannot be extended to direct oral anticoagulants (DOACs) due to differing pharmacokinetic profiles. The objective of this study is to characterize timing of restarting DOACs and risk of thrombosis or bleeding complications.

Methods:
Retrospective chart review using admission diagnosis of gastrointestinal bleed, based on ICD 10 code

Results:
To be presented at spring conference

Conclusions:
To be presented at spring conference
Implementation of LIBERATE protocol with focus on delirium in an acute care community hospital’s medical and cardiovascular intensive care units

Jasmine Hossler, PharmD
Emily A. Sedio, PharmD, RPh, BCPS; Karen L. Kier, Ph.D., M.Sc, RPh, BCPS, BCACP, CTTS, FASHP

UAN: 0048-2020-093

Learning Objectives:

1. Describe the Society of Critical Care Medicine’s Liberation bundle and its proposed benefits for patients
2. Review delirium etiology and current treatment options

Purpose:
Delirium is a complication that typically occurs in critically ill patients admitted to intensive care units (ICUs). In 2018, the Society of Critical Care Medicine (SCCM) introduced the ICU Liberation initiative. This initiative is focused on liberating patients from the harmful effects of pain, agitation/sedation, and delirium (PADIS). Lima Memorial Health System will implement a new LIBERATE protocol to ensure optimal patient outcomes in critical care areas. The primary aim of this study will be to implement and assess the impact of the LIBERATE protocol, with a focus on delirium, in the medical and cardiovascular ICUs of a community hospital.

Methods:
This is a single center, prospective investigation of provider prescribing habits for patients with delirium. Currently, the Confusion Assessment Method for the ICU (CAM-ICU) is only assessed with an order from the provider. The LIBERATE protocol will direct nursing to conduct a CAM-ICU on all patients twice daily. Any positive score documented will trigger a notification to the provider, who will ensure multicomponent, non-pharmacologic interventions have been optimized and patients are not displaying signs of agitation. If the patient displays signs of delirium with agitation or worrisome behaviors, providers may implement pharmacologic treatment as directed by the protocol. Physicians will be educated to only use these interventions if the patient is displaying agitation or worrisome behaviors. Patients with a positive CAM-ICU will have a pharmacy consult ordered. This will direct the clinical pharmacist to review the patient’s medications for those associated with delirium, based on a guide developed by the pharmacy resident. The clinical pharmacist will then make therapy recommendations to discontinue or modify deliriogenic medications. The pharmacist will document these interventions in a clinical monitoring software. The primary outcome will be ICU length of stay for each treatment modality. Secondary outcomes will include mean daily sedative dose, total number of benzodiazepine doses, appropriate discontinuation of pharmacologic therapy used for delirium, duration of delirium, number of pharmacy interventions, and adverse reactions related to pharmacologic intervention.

Results:
Data analysis in progress.

Conclusions:
Will be presented at the 2020 Ohio Pharmacy Residency Conference.
Comparison of oral versus intravenous tranexamic acid in total hip and knee arthroplasty

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Rachana Patel, PharmD, BCPS1, Karen Kier, Ph.D., M.Sc., BCPS, BCACP, TTS

UAN: 0048-2020-094

Learning Objectives:

1. Explain the use of tranexamic acid (TXA) in the setting of total hip arthroplasty (THA) and total knee arthroplasty (TKA)
2. Review University Hospitals St. John Medical Center (UHSJMC) TXA protocol in THA and TKA
3. State study objectives, design, methodology, data analysis, results, and conclusion
4. Explain limitations to this study

Purpose:
Total hip arthroplasty (THA) and total knee arthroplasty (TKA) cause a significant amount of blood loss perioperatively which can lead to anemia and the need for blood transfusions. Therefore, guidelines recommend the use of tranexamic acid (TXA), an antifibrinolytic, to minimize blood loss in THA and TKA. Although routes of administration of TXA are still uncertain, intravenous (IV) and topical TXA have become widely used to prevent blood loss in THA and TKA. Intravenous and topical TXA were found to reduce the risk of transfusions compared to placebo by 60% and 71%, respectively.

University Hospitals St. John Medical Center standard TXA protocol consists of a total of 2000mg of IV TXA. Since September 2019, oral TXA has been administered as 2 to 3 doses (3900mg or 5850mg). Previous studies have shown no difference between IV and oral TXA including a meta-analysis of 7 studies showing no difference in hemoglobin change, blood loss, or amount of transfusions given between IV and oral TXA groups.

The aim of this study is to compare IV to oral TXA in THA and TKA. The primary endpoint is to compare the hemoglobin change (g/dL) in patients using IV versus oral TXA after THA or TKA. The secondary endpoints are to compare the amount of blood loss (mL), amount of transfusions (mL), length of stay (days), and amount of iron used (mg).

Methods:
This is a retrospective prospective chart review of patients who receive IV or oral TXA during a THA or TKA. Inclusion criteria are patients receiving IV TXA between September 1, 2018 to February 28, 2019 or patients receiving oral TXA between September 1, 2019 to February 29, 2020 for a THA or TKA. Patients will be excluded if they are less than 18 years old, patients who have a history of cognitive/psychosocial impairment, dementia, or language barrier, have had a deep vein thrombosis or pulmonary embolism within the past 12 months, have a history of deep vein thrombosis or pulmonary embolism being treated with anticoagulation, known congenital thrombophilia, or cardiac stent or ischemic stroke within 1 year. Primary endpoint will be analyzed using a standard independent T-test comparing mean change in hemoglobin. Secondary endpoints will be analyzed using descriptive statistics.

Results:
A total of 357 patients were reviewed for inclusion in the study with a total of 289 patients enrolled, 257 and 32 in the IV group and oral group, respectively. There were 107 THA and 150 TKA included in the IV TXA group. There were 18 THA and 14 TKA included in the oral TXA group. The primary outcome of change in hemoglobin was -2.513 ± 1.09 g/dL for the IV TXA group and -2.721 ± 1.04 g/dL for the oral TXA group (p < 0.001). The secondary outcomes were also significantly different. Blood loss was 189.35 ± 180.2 mL for the IV TXA group and 89.69 ± 70.7 mL for the oral TXA group (p < 0.001). Length of stay was 2.02 ± 1.05 days for the IV TXA group and 1.84 ± 1.05 for the oral TXA group (p < 0.001). Only one patient received a transfusion of 2 units during this study therefore statistical tests could not be performed. A post hoc analysis was performed comparing THA to TKA. Hemoglobin change, length of stay, and transfusions were non-inferior to each other but amount of blood loss was significantly more for THA versus TKA (p < 0.001).

Conclusions:
A retrospective review of the use of IV and oral TXA at UHSJMC for THA and TKA showed a benefit to the use of oral TXA over IV. There was a significantly less decrease in hemoglobin, less blood loss, and a shorter length of stay when administering 1950mg 90 minutes prior to surgery followed by an additional 2 doses postoperatively.
Evaluation of Direct Oral Anticoagulation Failure in Obese Patients at Summa Health

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Alexandra Schrock, PharmD, BCPS; Kathleen Babcock, PharmD, BCPS; Leah Bruno, PharmD Candidate 2020, M. David Gothard, MS

UAN: 0048-2020-095

Learning Objectives:

1. Review current recommendations for using direct oral anticoagulants in obese patients
2. Discuss the results of this quality improvement project and how this information can provide guidance to physicians prescribing these medications in the obese population

Purpose:
Direct oral anticoagulant (DOAC) use has increased for stroke prevention in atrial fibrillation and prophylaxis or treatment of venous thromboembolism. The use of DOACs has been studied in a variety of patient populations, but no evidence exists for dosage adjustments in obese patients. Current guidelines and recommendations state DOACs should not be used in patients with body mass index (BMI) &gt; 40 kg/m² or a weight of &gt; 120 kg because of limited clinical data.

Methods:
Charts at Summa Health were retrospectively reviewed to determine if the patient was obese (BMI &gt; 40 kg/m² and/or &gt; 120 kg) and prescribed a DOAC between June 1, 2017 and May 31, 2018. The primary endpoint was occurrence of thromboembolic events in obese patients prescribed DOACs at Summa Health. Exclusion criteria included pregnant patients, non-adherence or DOAC therapy interruption for planned procedure or per physician instruction. Clinical outcomes were compared using Pearson chi-square tests and Fisher’s exact tests.

Results:
A total of 309 patients were analyzed for DOAC use and failure across Summa Health. Fifty-two patients were excluded, mostly due to non-adherence (90.4%). Across the remaining patients, the average BMI was 43.5 kg/m² with an average weight of 134.2 kg. It was found that 22 patients met the primary outcome (7.1%), but only 9 patients (2.9%) met both criteria for BMI &gt; 40 and weight &gt; 120 kg. From these results, no statistical difference was found between failure on apixaban or rivaroxaban meeting both BMI and weight categories (p=0.159).

Conclusions:
For patients with BMI &gt; 40 kg/m² and/or weight &gt; 120 kg, the use of DOACs should be considered, along with their risk versus benefit profile. Although this project had a small study population, there was no difference in the rate of failures between treatment options, BMI or weight at Summa Health.
Optimizing management of patients admitted with a heart failure complication

Jessica Brewer, PharmD - Pharmacy Resident St. Elizabeth Healthcare
Katy Miller, PharmD, BCPS; Jordan Adkins, PharmD, BCPS

UAN: 0048-2020-096

Learning Objectives:

1. Discuss essential monitoring parameters associated with inpatient heart failure management
2. Identify risks associated with managing heart failure patients without a monitoring tool

Purpose:
The purpose of this project is to improve monitoring of patients admitted to the hospital with a heart failure exacerbation or complication. During a heart failure admission, it is of utmost importance to ensure the whole patient is being reviewed several times per day. Heart failure management is complex, involving a variety of pharmacologic and non-pharmacologic therapies. Diligent monitoring by the healthcare team includes a review of medications, laboratory values, cardiac imaging, fluid status, and many other factors. Medical management of patients with heart failure may include a variety of therapies in different drug classes for symptom management as well as enhanced survival. With the patient’s clinical status changing constantly throughout the course of the admission, it can be difficult to keep track of changes that are occurring each day. This places patients at a higher risk for errors to occur due to the sheer complexity of their care. This study will evaluate the effect of a heart failure monitoring tool to assist in improving patient care with guideline-directed medical management.

Methods:
A thorough review of the current heart failure monitoring tool was performed to assess utility in current practice and relevance to guideline recommendations. The tool allows providers to easily review laboratory values and medications that require diligent monitoring in heart failure patients. All features of the tool itself were compared to current American College of Cardiology/American Heart Association guidelines for heart failure treatment and monitoring. Face-to-face interviews were conducted with clinical pharmacists who currently work closely with the heart failure patients at St. Elizabeth in order to evaluate limitations of this tool and areas for improvement. A retrospective chart review will be conducted evaluating the management of heart failure patients before and after reconstruction of the heart failure monitoring tool.

Results:
Research in progress. Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Research in progress. Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Effectiveness of pharmacist led warfarin management in a dual long-term care-rehabilitation center

Jordan Holder, PharmD- Aultman Alliance Community Hospital
Megan King, PharmD

UAN: 0048-2020-097

Learning Objectives:

1. Discuss safety and efficacy of pharmacist-managed warfarin within a nursing facility
2. Outline the process of obtaining referral and subsequently managing warfarin in a nursing facility

Purpose:
Pharmacists have shown benefit in the management of warfarin in many settings. In a two meta-analyses one conducted by Hou et al and the other conducted by Zhou et al, they look at the efficacy of pharmacist management, and note pharmacists have a significant impact on patient satisfaction and also report reports significant decreases in the risk of hemorrhagic events both minor and major, as well as decreased thrombotic events. At this time, no large study looks into direct-pharmacist warfarin management within a long-term care facility or rehabilitation center. Aultman Alliance Community Hospital’s pharmacist run clinic recently started managing warfarin for patient’s in the attached nursing facility. The study focuses on assessing days in range via the INR checks and both bleeding or clotting events requiring hospitalization in the study population. This study compares a timeframe prior to pharmacist management and a timeframe after initiation of pharmacist management of warfarin therapy.

Methods:
Upon admission, patients medication lists are reconciled and patients on warfarin have a referral sent to the MEDS Clinic. Once a patient has a signed referral, the MEDS Clinic pharmacist will obtain a baseline INR utilizing a CoaguCheck point-of-care meter. Patients with stable INRs are checked at least once monthly, however, patients with unstable INR readings require variable checks until INR stabilizes. Clinical decisions are documented in the appropriate EHR. The pharmacist also writes handwritten orders to be placed in the patient’s paper chart. If patients are started on new medications that affect INR, the dispensing pharmacy notifies the MEDS Clinic of the interaction and the MEDS clinic will adjust monitoring as needed. All bridging with enoxaparin or heparin is managed through the MEDS Clinic. At discharge the MEDS Clinic sends a referral to the patient’s primary care physician for continued management of that patient.

Results:
Data being collected and analyzed currently. Results to be presented at the Ohio Pharmacy Residency Conference (OPRC).

Conclusions:
Conclusions to be presented at OPRC.
Pharmacist-led oral medication therapy management in an outpatient hematology-oncology center (PO-MTM)

Jordan Young, PharmD - PGY1 Resident Southwest General
Caroline Townley, PharmD, BCOP, Ashley Brown, PharmD, BCPS, BCPP, Victoria Cho, PharmD, BCPS, BCACP, Michelle Cheselka, Timothy Myers, PhD, RN, Gil Peleg, MD

UAN: 0048-2020-098

Learning Objectives:
1. Describe the rationale for study initiation and potential benefits relating to patient care
2. Recognize how the results of this study have shaped the future goals of Southwest General

Purpose:
Oral chemotherapy is a treatment option for patients with hematologic and oncologic conditions, which make up over 40% of all oncologic medications approved by the Food and Drug Administration. This therapy option allows more patients to receive treatment in the outpatient setting; however, the regimens are often complex resulting in poor adherence and clinical outcomes.

With practices expanding, oncologists are seeing more patients on a daily basis. The increase in patient volume has placed additional demands on the oncologists. There is opportunity for pharmacists to help ease the oncologists’ workload as well as elevate the quality of patient care provided. The purpose of this study was to determine the benefit of establishing a pharmacist-led program for the management of oral chemotherapy as well as oral therapy for benign hematologic conditions. For the remainder of this paper these therapies will be termed “oral therapy.”

Methods:
This was a prospective cohort study from November 1, 2019 to March 31, 2020 conducted through the outpatient oncology center within a community hospital. Pharmacist-led medication therapy management appointments were conducted with patients started on oral therapy. Appointments occurred at initiation of therapy, at 2-4 weeks of therapy, and at 3 months of therapy through a combination of in-person and telephone appointments. Comprehensive medication reviews were completed at the initial visit. During each appointment side effects, mitigation strategies, pertinent education, patient reported adherence, and patient questions were addressed. The pharmacist was responsible for reaching out to the patients and coordinating with the oncologists, nurse practitioners, and nurse coordinators to facilitate patient care.

Results:
To be presented at OPRC

Conclusions:
To be presented at OPRC
Clinical outcomes of beta-lactam monotherapy versus dual Pseudomonas aeruginosa coverage with levofloxacin for the treatment of nosocomial pneumonia

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Thomas J. Bonsall, PharmD, BCPS, Rebecca M. Prewett, PharmD, BCPS

UAN: 0048-2020-099

Learning Objectives:
1. Recall current guideline recommendations for the treatment of nosocomial pneumonia
2. Discuss the utility of combination antibiograms in determining optimal empiric antimicrobial regimens for patients diagnosed with nosocomial pneumonia

Purpose:
In the treatment of nosocomial pneumonia, dual coverage against Pseudomonas aeruginosa has been advocated in several clinical practice guidelines. However, the risks of using fluoroquinolones for empiric treatment may outweigh the benefit they actually provide. The rationale for dual coverage was derived from in-vitro data suggesting that dual therapy may result in greater bacterial killing, but this has not been replicated in clinical outcomes. The purpose of this study is to investigate clinical outcomes of dual coverage over beta-lactam monotherapy for the treatment of nosocomial pneumonia.

Methods:
A single center, IRB approved, retrospective cohort study was performed investigating patients ≥ 18 years-old who were diagnosed with nosocomial pneumonia. Patients received empiric antimicrobial therapy with at least one beta-lactam with activity against Pseudomonas aeruginosa that was included in the study site’s combination antibiogram. Data was collected via electronic medical records and included demographic information, treatments received, treatment duration, length of stay, and 30-day readmission rates.

Results:
400 patients were included in the study; 253 were empirically treated with beta-lactam monotherapy, and 147 were treated with dual therapy including levofloxacin. Patients who were administered dual therapy received a longer overall treatment course than those empirically treated with beta-lactam monotherapy (10 days vs. 9 days, p = 0.027). Those who received levofloxacin as part of an empiric regimen were also more likely to be readmitted within 30 days of discharge (30.6% vs. 20.9%, p = 0.030). There was no difference in length of stay noted between the two groups (6 days vs. 6 days, p = 0.523).

Conclusions:
Patients with nosocomial pneumonia who empirically receive levofloxacin in addition to a beta-lactam with activity against Pseudomonas aeruginosa are more likely to receive a longer treatment course and be readmitted within 30 days of discharge than those who received a beta-lactam alone.
Evaluation of surgical site infections (SSIs) in spinal fusion surgeries at OhioHealth:

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Brian Kramer, PharmD, BCCC – OhioHealth Grant Medical Center

UAN: 0048-2020-100

Learning Objectives:

1. Describe pre-operative surgical best practices within the orthopedic and spinal fusion surgery space.
2. Discuss the occurrence of SSIs among patients undergoing spinal fusion surgeries at OhioHealth locations: GMC, RMH, and DMH during the project time period.

Purpose:
Within the last few years, OhioHealth Grant Medical Center (GMC), Riverside Methodist Hospital (RMH), and Dublin Methodist Hospital (DMH) Quality and Patient Safety team has examined National Healthcare Safety Network (NHSN) defined rates of infection. This quality improvement (QI) project will further examine GMC, RMH, and DMH’s pre-operative testing protocols for spinal fusion surgery, which will guide pre-operative testing protocol discussions and result in the increased emphasis of protocol adherence or adaptation of the orderset(s)/panel(s). Ultimately, the goal is to enhance OhioHealth’s processes to improve patient outcomes by decreasing the frequencies of SSIs among spinal fusion surgery patients.

Methods:
This study was an IRB-approved retrospective Quality Improvement project at GMC, RMH, and DMH between January 2018 to November 2019. Adult patients that underwent a spinal fusion surgery NHSN were included.

Results:
Results will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2020 Ohio Pharmacy Resident Conference.
Weight Impact on Anti-Xa Concentration in High-Risk Trauma Patients Receiving Enoxaparin for Venous Thromboembolism Prophylaxis: A Retrospective Cohort Study

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UAN: 0048-2020-101

Learning Objectives:

1. Review primary literature supporting anti-factor Xa concentration monitoring in low molecular weight heparin (LMWH) chemoprophylaxis in trauma patients.
2. Identify risk factors for subtherapeutic anti-Xa concentrations and venous thromboembolism in trauma patients.

Purpose:
Enoxaparin is the preferred chemoprophylaxis agent in high-risk trauma patients, and serum anti-factor Xa concentrations (anti-Xa) have been postulated to guide dosing. The purpose of this study was to evaluate weight-based enoxaparin dose differences between patients with subprophylactic versus prophylactic initial anti-Xa troughs.

Methods:
The study was a retrospective cohort of patients admitted to the trauma service at an academic, level 1 trauma center from January 1, 2014, through July 31, 2019. Inclusion criteria were ≥18 years of age, enoxaparin chemoprophylaxis, and surveillance duplex ultrasound of lower extremities during admission. Exclusion criteria were therapeutic anticoagulation prior to chemoprophylaxis, chemoprophylaxis initiated ≥7 days after admission, unfractionated heparin prophylaxis ≥3 days prior to enoxaparin, enoxaparin frequency different than every 12 hours, total body weight (TBW) ≥200 kg, anti-Xa trough drawn 14 hours after previous dose, pregnant women, and prisoners. Patients were stratified into two groups based on first appropriately obtained anti-Xa: prophylactic (≥0.1 IU/mL) and subprophylactic (0.2 IU/mL and ≥0.3 IU/mL, and comparison of packed red blood cells transfusions between groups.

Results:
A convenience sample of 887 patients was enrolled; 75.8% were subprophylactic, and 23.2% were prophylactic. Preliminary results show an initial weight-based enoxaparin dose of 0.34 (0.3-0.41) mg/kg in the subprophylactic group and 0.38 (0.33-0.44) mg/kg in the prophylactic group (P < 0.001). In patients who received a dose adjustment, mean weight-based dose was 0.47 ± 0.1 mg/kg. VTE occurred in 10.4% of subprophylactic patients and 9.2% of prophylactic patients (P = 0.71).

Conclusions:
Data analysis is ongoing. Additional results and conclusions will be presented at the 2020 Ohio Pharmacy Resident Conference.
Evaluation of risk factors for multidrug-resistant Gram-negative urinary tract infections

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Maria Guido, PharmD, BCPS; Siyun Liao, PharmD, PhD, BCPS, BCIDP; Anthony Gentene, PharmD, BCPS

UAN: 0048-2020-102

Learning Objectives:
1. Explain the impact of multidrug-resistance on patient outcomes and antibiotic efficacy
2. Discuss risk factors for development of multidrug-resistant Gram-negative urinary tract infections

Purpose:
The incidence of multidrug-resistant (MDR) Gram-negative urinary tract infections (UTIs) is increasing in both community and hospital settings. Clinicians must select empiric antibiotic treatment without knowing whether the causative organism is MDR while balancing the risk of ineffective therapy against unnecessarily broad antibiotic treatment. There is concern the rise in resistance will increase carbapenem utilization, which may in turn contribute to the spread of carbapenem resistance. When a patient is admitted to UC Health with a suspected UTI, the patient is commonly covered empirically with a carbapenem if the patient has a history of a Gram-negative multidrug-resistant organism (MDRO) urine culture. The aim of this study was to determine which patients presenting with a UTI should receive empiric broad-spectrum antibiotic coverage with a carbapenem.

Methods:
This investigator-initiated, one health-system, retrospective study included patients 18 years of age or older receiving care at UC Health with at least two urinary isolates positive for Gram-negative organisms between January 1, 2013 to June 30, 2019. The primary objective of this study is to determine if history of Gram-negative MDR UTI is a risk factor for repeated Gram-negative UTI with a MDRO. The secondary objectives are to determine other risk factors for MDROs in patients with multiple Gram-negative UTIs and to develop a clinical prediction tool to be utilized at the bedside for predicting patients with a Gram-negative MDR UTI prior to culture identification. Continuous variables will be compared using the Student t test for normally distributed variables and the Mann-Whitney U test for non-normally distributed variables. Categorical variables will be evaluated with the chi-square or two-tailed Fisher exact test. Variables associated with MDRO isolation in the univariate analysis will be included in a logistic regression model.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Retrospective review of HIV pre-exposure prophylaxis (PrEP) prescribing in a large community health system

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Megan C. Borchers, PharmD, BCACP, AAHIVP

UAN: 0048-2020-103

Learning Objectives:

1. Describe current guideline-directed treatment recommendations for HIV pre-exposure prophylaxis (PrEP)
2. Identify opportunities for standardization of care for patients on HIV PrEP in a pharmacist-run clinic based on retrospective review of prescribing habits

Purpose:
HIV pre-exposure prophylaxis (PrEP) is a safe and effective option for patients at high risk for acquisition of HIV. Many studies identified the benefits of PrEP in a variety of patient populations at risk, including men who have sex with men (MSM), people in serodiscordant relationships, and people who inject drugs (PWID). While PrEP prescribing has been increasing since 2012, nearly 50% of prescribing occurs in 5 states. PrEP prescribing rates are lowest in southern states, despite these states having 52% of diagnoses in 2017. Much of this expanded prescribing occurs in primary care offices. This study aims to compare the current prescribing to the current guidelines. A retrospective review was performed to compare current use of HIV PrEP to the Center for Disease Control and Prevention’s (CDC) guideline recommendations. The goal is to improve quality of care and identify opportunities for improvement to current practice.

Methods:
A retrospective chart review was performed for all patients prescribed tenofovir disoproxil fumarate-emtricitabine (TDF-FTC) or tenofovir alafenamide-emtricitabine(TAF-FTC) for HIV PrEP within a community health system electronic health record from January 1st to December 31st, 2019. The primary outcome was percentage of patients managed adequately. Adequate management was all of the following: all laboratory tests necessary for safety, including HIV antigen/antibody (Ag/Ab), serum creatinine, and Hepatitis B screening; a ratio of number of months of number of HIV Ag/Ab to months of prescription sent of more than 0.25; and any sexually transmitted infection screening if indicated by patient’s risk. Multiple secondary outcomes were evaluated including all components of primary outcomes as well as provider type, number of visits, medication prescribed, and number of refills sent.

Results:
Data analysis is currently being conducted. Results will be presented at the 2020 Ohio Pharmacy Resident Conference (OPRC).

Conclusions:
Pending analysis of results, conclusions will be presented at the 2020 OPRC.
Appropriate prescribing and impact of primary prophylactic granulocyte-colony stimulating factor therapy on incidence of febrile neutropenia in patients receiving intermediate risk chemotherapy regimens

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UAN: 0048-2020-104

Learning Objectives:

1. Describe the clinical presentation of febrile neutropenia
2. Identify when it is appropriate to use granulocyte-colony stimulating factor therapy as primary prophylaxis for febrile neutropenia

Purpose:
Chemotherapy regimens with febrile neutropenia (FN) risk classified as intermediate do not always warrant use of a granulocyte-colony stimulating factor (G-CSF) as primary prophylaxis. Recent data suggests that the decision to initiate primary prophylaxis in intermediate risk regimens can be challenging, and patients with multiple patient specific risk factors have a higher incidence of FN. The purpose of this study is to analyze the appropriateness of initiating primary prophylaxis to protect against FN in intermediate risk regimens.

Methods:
This single-center, retrospective chart review evaluated patients ≥18 years old who received either modified FOLFOX6 (mFOLFOX6 - fluorouracil continuous infusion/leucovorin/oxaliplatin) for colorectal cancer or carboplatin/etoposide +/- immunotherapy for small cell lung cancer, the two most common intermediate risk regimens within the Kettering Health Network, from May 1, 2016, to September 1, 2019. The primary outcome is incidence of FN admissions between those who received G-CSF therapy versus those who did not. The secondary outcome is the number of identifiable patient specific risk factors for FN as listed in the National Comprehensive Cancer Network Guidelines (NCCN) guidelines.

Results:
Of the 185 patients who met inclusion criteria, 47 patients were in the G-CSF group and 138 in the non-G-CSF group. Results demonstrate that 3 (6.38%) in the G-CSF group and 6 (4.35%) in the non-G-CSF group experienced the primary outcome of FN (p=0.575). However, the number of identifiable patient specific risk factors was higher in the G-CSF group than in the non-G-CSF group (1.47 vs. 1.12, p=0.028).

Conclusions:
This study reports the incidence of FN in mFOLFOX6 for colorectal cancer and carboplatin/etoposide for small cell lung cancer to be similar between those who received G-CSF versus those who did not. Larger studies are needed to assess the impact of G-CSF on the incidence of FN that include a variety of intermediate risk regimens.
Impact of substance use disorders on sedation requirements on mechanically ventilated patients

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Bianca Naguit, PharmD, BCPS

UAN: 0048-2020-105

Learning Objectives:

1. Recall the Society of Critical Care Medicine Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU.
2. Review the literature findings for the impact of substance use disorders on sedation requirements on mechanically ventilated patients.

Purpose:
Substance use disorders cause changes within the brain due to a prolonged release of dopamine. These neural changes impact learning and memory and strengthen drug-associated behaviors. Patients with substance use disorders have been shown to need higher sedation requirements compared to patients without substance use disorders.

Methods:
A retrospective chart review was performed on a data generated list that identified medical record numbers for mechanically ventilated patients in the medical ICU from July 1, 2018 to June 30th, 2019. Patients over the age of 18, ventilated for longer than 24 hours, and transferred to a step-down unit post extubation were included in data collection. The following data was collected: patient age, sex, time on the mechanical ventilator, sedation requirements, number of sedative agents used, diagnosis of a drug use disorder using ICD-10 codes and toxicology reports, and if analgesia was used for sedation. All information was recorded without patient identifiers.

Results:
A total of 64 patients were included. 31 (48.4%) patients had been diagnosed with a substance use disorder. Patients who had been diagnosed with a substance use disorder required statistically significantly more lorazepam equivalents

Conclusions:
Patients with substance use disorders require increased amounts of sedation and analgesia while on mechanical ventilation in order to achieve similar RASS scores to patients on mechanical ventilation without substance use disorders.
Evaluation of the implementation of a community-based falls prevention program led by student pharmacists

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Bethanne Brown PharmD, BCACP; Matthew Willoughby, PharmD; Joshua Postolski, PharmD

UAN: 0048-2020-106

Learning Objectives:
1. Discuss common barriers that increase fall risk among independent seniors.
2. Identify the benefits to the community of student pharmacist-student lead falls prevention programming.

Purpose:
The study aim was to determine if a student pharmacist led falls prevention program decreased the number of falls in community dwelling seniors. The study outcomes included number of medication changes and effectiveness of programming using Center for Disease Control and Prevention’s risk assessment tool.

Methods:
Student pharmacists hosted a falls prevention event for underserved community seniors focused on: medication reviews, balance exercises, home hazard safety and general education. The home hazard safety booth contained a model demonstrating potential dangers. The general fall risk education booth discussed statistics on falls and potential long-term effects. Simple balance exercises were demonstrated to promote stability. Lastly, student pharmacists conducted individualized medication reviews and provided pharmacist-reviewed written provider recommendations. Demographics collected included: age, gender, household occupancy, ethnicity, and number of falls within the past 12 months. Assessment of participant’s current fall risk was measured before the start of the event. Information will be mailed to the participants’ homes at one, two and three months after the program to reinforce learning. Finally, a follow-up phone call will be conducted at three months to assess retention of knowledge, number of falls, and track medication changes.

Results:
A total of 14 participants were included: 12 females and 2 males, self-identified ethnicity as 7 white, non-Hispanic and 7 black or African American. Half of the participants had fallen within the past year and most experienced two falls (57.1%). Majority of participants lived alone (78.6%), used or were advised to use a cane/walker (64.3%), sometimes felt unsteady while walking (78.6%), worried about falling (57.1%), used their hands to push themselves up (78.6%), had trouble stepping on a curb (64.3%), and often had to rush to the toilet (71.4%). No medication change recommendations were made.

Conclusions:
These results to date support student pharmacist led falls prevention programming within senior communities.
Impact of Pharmacist Decentralization on Antibiotic De-escalation

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UAN: 0048-2020-107

Learning Objectives:
1. Assess the impact of pharmacist decentralization on antibiotic de-escalation
2. Identify recommendations pharmacists can make to enhance antimicrobial stewardship efforts

Purpose:
Due to alarming rates of antibiotic resistance, antimicrobial stewardship is critical. The goal of this study was to evaluate how pharmacist participation on the rounding healthcare team, impacts antibiotic de-escalation by assessing duration of broad-spectrum antibiotics, duration of intravenous (IV) antibiotics, duration of oral (PO) antibiotics and total duration of IV and PO antibiotics.

Methods:
This retrospective, single-center study evaluated the use of antibiotics in adult patients admitted to a general medicine unit within a community hospital from October 1 to December 31, 2017 and October 1 to December 31, 2018, before and after pharmacist decentralization. To be included, patients had an active order for an IV antibiotic. Patients were excluded if they remained on the unit less than 24 hours. The primary outcome evaluated the average time to antibiotic de-escalation by quantifying the total duration of therapy and the average number of days for IV, PO, and broad-spectrum antibiotic therapy. Secondary outcomes included length of stay and percentage of pharmacist interventions accepted.

Results:
A total of 804 patients were included in the study; 393 patients from the pre-intervention group and 411 patients from the post-intervention group. Overall, there was no statistical difference between the total number of antibiotic days, nor number of IV, PO or broad-spectrum antibiotic days. Significantly more pharmacist recommendations were accepted post-intervention, 71.5% vs 39.66% (p-value 0.001). Intervention subtype breakdowns showed statistical significance for duration (p-value 0.008) and de-escalation (p-value 0.004).

Conclusions:
Pharmacists can make clinically and statistically significant impacts on antibiotic therapy when integrated into multidisciplinary rounding teams.
Effects of an automated electronic 48-hour antibiotic timeout

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UAN: 0048-2020-108

Learning Objectives:

1. Describe the role of an antimicrobial stewardship program.
2. Explain how an antibiotic timeout (ATO) best practice advisory (BPA) alert can be used in practice.

Purpose:

An antibiotic timeout (ATO) best practice advisory (BPA) alert is a tool used to aid in the reassessment of antibiotic therapy. Our BPA alert fires after a patient receives a broad-spectrum antibiotic for 48 hours. The physician acknowledges the BPA by selecting either: 1) I will de-escalate antibiotics, 2) Cannot de-escalate at this time, 3) Defer to attending service, or 4) Defer to Infectious Disease. The study aims to assess whether our 48-hour ATO BPA design is effective.

Methods:

This retrospective, quality improvement project included patients age 18 years or older who were admitted to an inpatient OhioHealth facility during March 2019 and received an intravenous broad-spectrum antibiotic for greater than 48 hours. The study was designed to determine the frequency providers received the BPA, assess agreement between provider BPA choice and subsequent action, and calculate average days of therapy with and without the BPA.

Results:

The ATO BPA was seen by a provider in 78.6% of the 618 patient encounters. The provider’s BPA acknowledgement selection matched their subsequent action in 75.7% of the 411 encounters evaluated. “Cannot de-escalate” and “Defer to Infectious Diseases” were the most common selections matching the provider’s subsequent action, 86.8% and 71.9%, respectively. The average duration of antibiotic therapy was longer for patients with at least one BPA seen versus no BPA seen by a provider (5.0 vs 3.23 days)

Conclusions:

The BPA reached providers in the majority of patient encounters analyzed. However, the overall outcome of the BPA alerts did not result in de-escalating antibiotic therapy, as the highest number of accurate BPA responses was “Cannot de-escalate”. Therefore, ATO BPA alerts should be used as a supplement to antimicrobial stewardship programs to assist providers in narrowing antibiotic therapy.
Implementation of a computerized pharmacy workflow management system in a rural community hospital

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UAN: 0048-2020-109

Learning Objectives:

1. Explain the functionality and potential benefits of implementing a computerized pharmacy workflow management system in a rural community hospital.
2. Assess the impact of implementing a computerized pharmacy workflow management system on medication safety in a rural community hospital.
3. Assess the impact of implementing a computerized pharmacy workflow management system on emergency order responsiveness in a rural community hospital.
4. Assess the impact of implementing a computerized pharmacy workflow management system on cost efficiency in a rural community hospital.

Purpose:
Ashtabula County Medical Center (ACMC) is the only full-service hospital in Ashtabula County, OH. As part of a planned renovation of the physical space for the main pharmacy, a computerized sterile compounding workflow management system, PharmacyKeeper™ (Grifols, Los Angeles, CA) is being implemented with the goals of increasing patient safety and controlling costs while maintaining emergency responsiveness and sterile compound throughput. Aside from verification and barcode identification functionalities currently provided by the hospital’s electronic medical record system, Epic™ (Epic Systems, Verona WI), the pharmacy had previously utilized a quality control and tracking system largely based on written/electronic documents and verbal communication. PharmacyKeeper™ is a software suite produced by MedKeeper™, a division of Grifols™. PharmacyKeeper provides capabilities including photographic verification, electronic documentation, and tracking of sterile compounds.

Methods:
This QI project involving the implementation of the PharmacyKeeper™ system has occurred in phases with patient specific orders going live in April, 2020. System configuration to support the hospital’s formulary along with interface development have been ongoing since 4th quarter of 2019. This process has involved stakeholders at ACMC, MedKeeper, and Cleveland Clinic Health System. As of April 1, 2020, formulary medication records have been integrated and operators have been trained to use the system. Batch processing has recently gone live. Effect on workflow will be assessed by comparing pre-implementation data for patient specific sterile compound processing to data collected post-implementation. Impact on safety will be assessed using reported data on rejected compounds while impact on cost efficiency will be assessed using data on duplicate dispensing for compounds unable to be located. Data collection is ongoing.

Results:
Data collection and analysis are in progress with results to be presented at OPRC.

Conclusions:
Data collection and analysis are in progress with conclusions to be presented at OPRC.
Effect of intravenous metoprolol versus diltiazem on heart failure with reduced ejection fraction in the setting of atrial fibrillation with rapid ventricular response

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UAN: 0048-2020-110

Learning Objectives:

1. Identify medications used for acute heart rate control in patients in atrial fibrillation with rapid ventricular response
2. Discuss the rationale for the recommendation against the use of diltiazem in patients with reduced ejection fraction heart failure

Purpose:
Atrial fibrillation (AF) with rapid ventricular response (RVR) is a common comorbidity in patients with heart failure with reduced ejection fraction (HFrEF). Acute heart rate (HR) control is typically achieved with intravenous (IV) metoprolol or diltiazem. Despite guideline recommendations to avoid diltiazem in HFrEF due to its negative inotropic effects, these patients may receive IV diltiazem in emergent situations. The purpose of this study is to determine if there is a difference in the incidence of worsening HF symptoms 48 hours after administration of IV diltiazem versus metoprolol in the setting of AF with RVR.

Methods:
This retrospective, single center cohort study evaluated patients with HFrEF presenting in AF with RVR who were treated with IV metoprolol or diltiazem. Patients were included if they were ≥18 years old, had a documented EF ≤40%, and a documented HR ≥120 bpm at study drug initiation. Patients with ventricular assist devices or on any form of renal replacement therapy were excluded. The primary endpoint was worsening HF, defined as one or more of the following within 48 hours of study medication administration: increased inotropic support, increased diuretic requirements, oxygen saturation drop ≥5% or below 92%, or addition of mechanical support. Secondary outcomes included 30- and seven-day readmissions, length of stay, incidence of hypotension or bradycardia, and 30-day all-cause mortality.

Results:
Of 1095 patients screened, 96 were included: 72 (75%) patients received diltiazem and 24 (25%) received metoprolol. Baseline characteristics were similar between groups. Worsening HF occurred in 89% of patients who received diltiazem and 66.7% of those who received metoprolol (p=0.011). Hypotension occurred in a larger percentage of patients who received diltiazem. Other secondary endpoints were not significantly different.

Conclusions:
Both worsening HF and hypotension occurred more frequently in the HFrEF patients who received diltiazem than those who received metoprolol for AF with RVR.
Evaluation of Pharmacologic Agent Selection on Endotracheal Intubation Outcomes

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UAN: 0048-2020-111

Learning Objectives

1. Review medications used to facilitate endotracheal intubation and the benefits to utilization of paralytic agents
2. Characterize the use of paralytics and impact on procedural complications and hemodynamic parameters

Purpose:
Rapid sequence intubation (RSI) is a common procedure that consists of the utilization of a sedative followed by a neuromuscular blockade agent (NMBA) to facilitate endotracheal tube placement and reduce the risk of aspiration. Selection of agents is often based on theoretical risks, benefits and patient specific factors including hemodynamic status, comorbidities and indication for intubation. Practice trends vary greatly among providers.

Methods:
This study is a retrospective, single-center chart review of patients who received pharmacologic agents to facilitate intubation at OhioHealth Riverside Methodist Hospital. The primary objective of this study is to compare the incidence of complications including hypoxia, multiple placement attempts, trauma, and aspiration events between patients receiving NMBA versus those who did not. Secondary objectives include characterizing hemodynamic adverse effects associated with various agents and dosing strategies, duration mechanical ventilation, ICU length of stay, and hospital length of stay.

Results:
A total of 400 patients were screened for inclusion in this study. 185 patients who received NMBA and 112 who received no NMBA were included. There was no significant difference found in the primary composite outcome (NMBA 31.4% vs no NMBA 39.3% (p=0.168)). However, a difference in number of attempts was found between groups (NMBA 14.9% vs no NMBA 25.7% (p=0.029)). It was also found that patients who received NMBA had significantly less hypotension 34.9% vs 49.0% (p=0.023). No difference in the use of vasopressor within 60 minutes was found between groups (NMBA 20.5% vs No NMBA 25.69% (p=0.323)).

Conclusions:
Patients receiving paralytics were found to require less attempts than those who did not. Additionally, patients receiving paralytics had significantly less hypotension than those who did not.
Effectiveness of pharmacist intervention in tobacco cessation utilizing the Ohio Tobacco Program in low to moderate income patients

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Verna Paschal, RPh

UAN: 0048-2020-112

Learning Objectives:

1. Explain the pharmacists’ role in recommending nicotine replacement therapy.
2. Utilize new skills to assist tobacco and nicotine addicted patients.
3. Describe the barriers to tobacco cessation for low to moderate income patients.
4. Discuss the potential health implication of tobacco cessation in patients with COPD.

Purpose:
It is well-known that low income populations are more likely to smoke or use tobacco products and less likely to attempt to quit. Stark County in Ohio has a smoking rate that is above the national average. In the Canton-Massillon area of Stark County, this rate is even higher. The purpose of this study is to determine if pharmacist intervention, along with utilization of the Ohio Tobacco Quit Line, improves tobacco cessation rates compared to the quit line alone in low to moderate income adults.

Methods:
Patients eligible to enroll in this study are identified upon enrollment in the pharmacy by completing a questionnaire about their tobacco use habits. This same questionnaire is included in the data forms used to monitor chronic obstructive pulmonary disease (COPD) and asthma patients at the pharmacy. Additionally, established patients requesting over the counter or receiving prescribed nicotine replacement therapy (NRT) are given information on the tobacco cessation program and are invited to enroll. Eligible patients must be active patients at Beacon Charitable Pharmacy, at least 18 years of age or older, current tobacco or e-cigarette users, ready to quit using tobacco products or e-cigarettes, and agreeable to the terms and conditions of the tobacco cessation program. Eligible patients are enrolled in the Ohio Tobacco Quit Line while in office and are provided with 2 weeks of NRT. Pharmacist counseling of NRT is provided and an individualized action plan is created for each patient. Additional resources and information are available to patients upon request and perceived need. The pharmacist follows up with each patient by phone every two weeks and in person each month. The following data will be recorded without patient identifiers and maintained confidentially: enrollment date, quit date, type of tobacco product and amount used, number of previous quit attempts and method, blood pressure, number of relapses, compliance to NRT and time spent tobacco-free.

Results:
A total of 42 patients screened positive for tobacco use, of these 21 (50%) stated they were willing to quit and 21 (50%) were unwilling to quit. Over the 7-month course of the study 8 (38%) total patients changed their answer from unwilling to quit to willing to quit. 5 patients ultimately enrolled in the study (11.9% total patients with positive screening results, 23.8% of patients willing to quit). Of these 5, 3 were lost to follow-up within the first month (60%), leaving 2 total patients enrolled who followed-up regularly.

Conclusions:
It cannot be reasonably concluded that pharmacist intervention and management of tobacco cessation utilizing the Ohio Tobacco Program significantly improved quit rates for low-to moderate income patients. The Ohio Tobacco Program claims to have a 30% quit rate when utilized along with regular counseling. In this study, 0% of patients were able to completely quit their tobacco use.
Implementation of a standardized process addressing dental care amongst patients receiving antiresorptive therapy: a quality improvement project

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UAN: 0048-2020-113

Learning Objectives:

1. Discuss the mechanism by which antiresorptive agents cause adverse effects review indications for these agents in oncology patients
2. Describe current recommendations regarding dental care amongst oncology patients receiving treatment with intravenous antiresorptive agents

Purpose:
Antiresorptive agents are used in oncology to manage bone related complications associated with malignancy. Medication-related osteonecrosis of the jaw (MRONJ) is a rare, but serious adverse effect associated with the use of these agents. To reduce the risk of MRONJ, it is recommended that patients receive dental examination prior to and throughout therapy. Previous study results completed at OhioHealth identified a pre-treatment dental examination adherence rate amongst oncology patients of 13.8% with only 7.5% of patients having documentation regarding this information within their electronic medical record. Only 12.5% of patients reported having received education regarding the need for proper dental examination and care. The primary objective of this project was to evaluate documentation rates by nursing regarding dental care amongst oncology patients receiving antiresorptive therapy following implementation of a standardized documentation process. This project also evaluated distribution rates of patient education following implementation of a standardized education note embedded in after visit paperwork.

Methods:
Oncology patients receiving therapy with intravenous bisphosphonates or denosumab at the Bing Cancer Center were interviewed by nursing during intake regarding dental clearance status and hygiene practices. This information was documented using a progress note template within the patient’s electronic medical record. Nursing then provided after visit paperwork to the patient with education regarding proper dental care. Data was collected on a rolling basis as patients were seen at the Bing Cancer Center.

Results:
Following implementation of the abovementioned interventions, dental status documentation rates increased to 47.2% from 7.5%

Conclusions:
Rates of dental clearance status documentation and patient education were significantly increased following implementation of a standardized process for utilization by nursing. System wide implementation is necessary to ensure patient safety across practice sites.
Workflow Quality Improvement to Increase Pharmacy Collaborative Practice Visits
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Anne Metzger, PharmD, BCPS, BCACP

UAN: 0048-2020-114

Learning Objectives:

1. Review current literature pertinent to the benefit of Collaborative Drug Therapy Management (CDTM) services in the primary or ambulatory care setting.
2. Discuss factors limiting the utilization of Collaborative Drug Therapy Management (CDTM) or other pharmacist-led services by healthcare providers.

Purpose:
Five Rivers Health Centers (FRHC) is a federally qualified health center (FQHC) in Dayton, Ohio which primarily serves uninsured, under-insured, and homeless populations through a variety of healthcare services. Pharmacists at FRHC’s primary care location currently provide Collaborative Drug Therapy Management (CDTM) services for chronic disease states through a Collaborative Practice Agreement (CPA). Although this service exists to improve patient outcomes, it is currently underutilized by providers and medical residents within the clinic. This purpose of this project is to determine if a change in scheduling workflow and education of clinical staff can impact the number of patients referred to CDTM services.

Methods:
Clinical pharmacists at the clinic evaluated provider schedules to identify patients who would benefit from CDTM services, primarily those with hemoglobin A1C >9% or uncontrolled hypertension >140/90 mmHg. At the beginning of each clinic day, providers and medical staff were provided with the list of eligible patients to review. If deemed appropriate, patients were scheduled to follow up with a pharmacist for CDTM prior to their next provider visit. In addition to altering scheduling workflow, a portion of time was spent prior to and throughout implementation on educating providers and medical staff about CDTM services.

By March 30, 2020, the goal of the project is to increase the average number of scheduled CDTM appointments per month by 50% as compared to the previous calendar year. In 2019, the number of scheduled CDTM appointments for January, February, and March were six (6), five (5), and three (3) respectively. Four complete PDSA cycles were implemented to evaluate and modify the process. Improvements in no-show rates for the CDTM services were also evaluated.

Results:
To date, the results of the project are promising. The first month of evaluation (January 2020) showed a 133% increase in the number of scheduled appointments as compared to January 2019. For the same month, the no-show rate for patients scheduled decreased from 83% in 2019 to 64% in 2020. Final results for the project are still being collected and will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Assessing Pharmacy Students’ Knowledge and Confidence Level on Fall Prevention Education to Community Dwelling Geriatric Patients

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UAN: 0048-2020-115

Learning Objectives:

1. Explain the importance of fall prevention in community dwelling geriatric patients and the role pharmacists can play to decrease their falls.
2. Establish a fall prevention program for health care professional students in your organization.

Purpose:
Falls are a large problem in patients over the age of 65. In 2014, 28.7% of geriatric patients fell at least once within the year and 37.5% of those falls required medical treatment. The purpose of this study is to measure the change in pharmacy students’ knowledge of the fall risk and confidence and motivation to work with geriatric patients.

Methods:
In this prospective study, student leaders from the University of Cincinnati’s (UC) American Society of Consultant Pharmacists organization, developed and trained other pharmacy students to deliver a community-based falls prevention program. Each participating student was evaluated on their knowledge of prevention, impact, and causes of falls by taking a pre-/post-training quiz. Using the Kirkpatrick levels 2 and 3 survey, the student’s comfort level was assessed before the training and after first community event.

Results:
Of the 40 participants, the average age was 24 years old and 2 completed the geriatrics elective course. Based on UC’s 4-year curriculum, there were 12, 20, and 7 first to third year students in attendance. The overall average quiz scores increased by 14.25% (77.75% pre, 92.00% post, SD +/- 1%, p-value

Conclusions:
This study indicates that students gained knowledge of fall risks in the geriatric population and prevention strategies by attending the training. While based on the pre-survey results, students have low confidence in their abilities to prevent falls but high motivation to learn. After completion of an event, students self-reported feeling both more confident and more motivated to prevent falls.
Beyond Opioids: Alternative Therapy for Acute Pain Management and its Impact on Opioid Utilization in the Emergency Center

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UAN: 0048-2020-116

Learning Objectives:
1. Describe the current prescribing practices for analgesics in the emergency department and the current opioid epidemic
2. Assess the impact of the implementation of the ALTO protocol at Beaumont-Hospital Dearborn

Purpose:
The Colorado American College of Emergency Physicians published the Opioid Prescribing & Treatment Guidelines on June 2017 which provided recommendations for alternative therapies for treating acute pain. Due to the success experienced in Colorado, a multi-state study by Michigan Health & Hospital Association (MHA) Keystone Center was initiated. Beaumont Hospital – Dearborn is a participating site and has implemented the protocol effective February 2019. The purpose of this study is to assess and evaluate the impact of the Alternative To Opioids (ALTO) protocol on prescribing practices of opioids in the emergency department.

Methods:
This retrospective cohort study analyzed data from patients who were admitted to Beaumont Hospital-Dearborn’s Emergency department pre- and post- availability of the ALTO protocol. The primary objective is to assess opioid use in Beaumont Hospital-Dearborn’s Emergency department following the implementation of the ALTO approach protocol for acute pain management. The secondary objective is to determine if the implementation of the ALTO approach decreases use of opioids in ED patients for common conditions causing acute pain and outcomes such as length of stay and time to adequate analgesia.

Results:
During the study, opioid usage in the emergency department decreased from 6.46 to 5.78 MME/day after implementation of the ALTO protocol, a difference of (10.5%). Of the 240 patients enrolled, 58 (24%) patients in the pre-ALTO group and 25 (10%) patients in the post-ALTO group received opioids in the ED (p

Conclusions:
There was a significant reduction in opioid prescribing in the ED post implementation of the ALTO protocol with subsequent reduction in time to adequate analgesia and length of stay.
The Incidence of Outpatient Fluoroquinolone Prescriptions and Associated Adverse Events

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UAN: 0048-2020-117

Learning Objectives:

1. Describe current literature regarding outpatient fluoroquinolone (FQ) prescribing habits and the gaps that exist
2. Identify adverse events due to FQ that have resulted in FDA safety communications

Purpose:
In 2016 the FDA determined that the risks outweigh the benefits of using FQ to treat acute sinusitis, acute exacerbation of chronic bronchitis (AECB), and uncomplicated urinary tract infections (UTI) in patients that have other options. Previous studies have analyzed FQ outpatient prescribing prior to this warning and lacked data on adverse events. Thus, this study aims to not only define the incidence of outpatient FQ prescribing after the warning, but also explore what proportion of patients receiving FQ prescriptions experienced an adverse effect compared to those that received a non-FQ.

Methods:
This is a retrospective chart review of patients age 18 and older that visited an Akron General primary care office from January 2018 to January 2019 for acute sinusitis, AECB, or uncomplicated UTI. The primary outcome is the incidence of FQ prescriptions issued for these three indications. Secondary outcomes include the proportion of FQ prescriptions that were potentially inappropriate and the incidence of adverse events among patients that received a FQ compared to the incidence of adverse events among patients that received a non-FQ antibiotic.

Results:
A total of 155 patients were included in this study. Of these, only 19% were prescribed a FQ. When broken down by indication, 29% of prescriptions issued for acute uncomplicated UTI were FQ, whereas incidence was significantly lower for both acute sinusitis and AECB (2% and 6%, respectively.

Conclusions:
The principle finding in this study was that there was a low incidence of FQ prescriptions among the three indications that the FDA deemed the risks outweigh the benefits for FQ use.
Assessment of post-operative morphine milliequivalents in orthopedic procedure before and after the implementation of a multi-modal pain management order set

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UAN: 0048-2020-118

Learning Objectives:
1. Discuss the global impact of the opioid epidemic
2. Review current postoperative pain management guidelines for treatment
3. Evaluate the benefit of multimodal pain management on morphine milliequivalents used following orthopedic surgery

Purpose:
Discussion of the opioid epidemic has been increasing over past years in various healthcare settings. Multiple strategies are being implemented to decrease the number of opioids that are being prescribed to patients in inappropriate settings. Recent orthopedic post-operative pain management guidelines emphasize the importance of non-opioid pain management modalities as being essential in managing pain levels in patients. This study will evaluate the changes in inpatient opioid usage after post-operative pain management order sets are revised to include a multimodal pain regimen.

Methods:
Data collection was performed by retrospective chart review from June 2019 – December 2019 prior to implementation of post-operative multi-modal pain management order set updates and from March 2020 – May 2020 following the implementation of the order set updates. Randomization of 10 patients from each of the 5 order sets to be updated was completed for data analysis. The number of morphine milliequivalents and pain scores at 6-hours, 12-hours, 24-hours and 48-hours following surgery will be evaluated in patients before and after the order set updates have been implemented. The number of patients receiving non-opioid therapy with gabapentinoids, anti-inflammatories or acetaminophen will be evaluated before and after the order set updates to ensure compliance with current practice guidelines.

Results:
Data collection is currently being conducted; results and conclusions will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Data collection is currently being conducted; results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Assessing pharmacist adherence with medication management processes in a pediatric academic medical center

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UAN: 0048-2020-119

Learning Objectives:

1. Outline the steps needed to implement a Credentialing and Privileging Quality Assurance Program.
2. Identify the resources needed to create a sustainable quality assurance (QA) program.

Purpose:
The objective of this study is to assess pharmacist adherence with medication management processes described within the institutional consult agreement between physicians and pharmacists by implementing a Quality Assurance (QA) program. The second objective is to assess the resources needed to maintain a QA program.

Methods:
Using the plan, do, study, act (PDSA) framework, the project will be divided into three phases. Phase one will define the acceptable parameters of performance which will be used to determine overall adherence to each of the activities described within the institutional consult agreement. The following medication management activities will be assessed: discontinuing sucrose, dose rounding, modifying dosage forms, converting dose frequency for ED orders, discontinuing duplicate saline flush orders, initiating carrier fluids, and ordering medication administration supplies. The research team will coordinate with pharmacy informatics to build necessary reports needed for auditing pharmacist medication order modifications. The Institute for Healthcare Improvement Quality Improvement toolkit will be used as the framework to track and trend adherence to each medication management activity over time. A standardized assessment flowchart will be created to complete the audit, the flowchart will also be used to assess inter-rater reliability. Phase two will measure baseline adherence for each of the medication management activities as defined in phase one, the results of the audit will be logged into a tracking software. The project team will use initial data to determine minimum acceptable adherence rates for each standard. Pharmacist educational programming will be developed to reeducate pharmacists when the protocol was not met.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Appropriate Use and Cost Management of Methylnaltrexone at St. Elizabeth Healthcare

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Shelbi Vincent, PharmD-St. Elizabeth Healthcare

UAN: 0048-2020-120

Learning Objectives:
1. Recognize appropriate indications for subcutaneous methylnaltrexone
2. Identify possible cost savings opportunities for subcutaneous methylnaltrexone

Purpose:
The treatment of opioid induced constipation (OIC) is dependent on several factors which including chronic opioid use, stool softener and laxative regimen, number of bowel movements in the last week, and type of bowel movements. Methylnaltrexone is a peripheral acting mu-opioid receptor antagonist (PAMORA) that is FDA approved for the treatment of opioid induced constipation. It should be reserved for those on chronic opioid therapy with OIC that is refractory to first-line laxative agents. Methylnaltrexone is contraindicated in those with known or suspected bowel obstruction or those at high risk for recurrent obstruction. The purpose of this project is to develop criteria for use for subcutaneous methylnaltrexone to improve appropriate use and reduce costs at St. Elizabeth Healthcare.

Methods:
Appropriate use of methylnaltrexone will be defined using evidence-based literature and disease state guidelines where applicable. A medication use evaluation (MUE) will be performed on a subset of patients who received methylnaltrexone between January 1, 2018 and December 31, 2019 to determine current usage patterns at St. Elizabeth Healthcare. Multiple factors were evaluated to determine whether use was appropriate, including indication, chronic opioid use, trial of a bowel regimen, and contraindications. Approximately 2 orders of methylnaltrexone per month per year were looked at, adding up to a total of 24 orders out of 452 for 2018 and 24 orders out of 421 for 2019. These orders were all inpatient orders across all three of St. Elizabeth’s campuses (EDG, FTT, and FLO).

Results:
Data collection and analysis are currently being conducted; results and conclusions will be presented at the 2019 Ohio Pharmacy Resident Conference.

Conclusions:
Data collection and analysis are currently being conducted; results and conclusions will be presented at the 2019 Ohio Pharmacy Resident Conference.
Evaluation of Transdermal Scopolamine for the Prevention of Post-operative Nausea and Vomiting

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UAN: 0048-2020-121

Learning Objectives:

1. Review current literature and practice guideline recommendations regarding the use of transdermal scopolamine for the prevention of post-operative nausea and vomiting.
2. Discuss the potential harm of overuse of transdermal scopolamine.

Purpose:
Postoperative nausea and vomiting (PONV) is a common undesirable surgical complication. The Society for Ambulatory Anesthesia guidelines recommend options including transdermal scopolamine (TDS) as first-line for PONV prevention based upon risk level. Pretreatment with antiemetics is not recommended for low risk patients. While the convenience of TDS is appealing, it is costlier than some alternatives. The purpose of this study is to evaluate use of TDS for prevention of PONV with regards to risk level and appropriate dosing.

Methods:
This retrospective chart review evaluated subjects who underwent surgery at Mercy Health St. Vincent Medical Center and received TDS prior to procedure for the prevention of PONV from November 1, 2018 to April 30, 2019. Subjects were excluded if they had a past medical history of chronic nausea and vomiting or underwent emergency surgery. The primary outcome was the total number of TDS orders with a frequency of every 72 hours instead of once and the percentage of subjects that received multiple patches. Secondary outcomes include timing of patch placement, duration of patch use (including number of discharge prescriptions for TDS), adverse reactions, and percentage of low risk subjects, based on Apfel score, who received TDS. A subgroup comparison of TDS use in bariatric surgery vs. non-bariatric procedures is planned. Data analysis will include descriptive statistics with categorical data analyzed using a chi-squared or Fisher’s exact test and continuous data assessed with a Student’s t-test or Mann-Whitney U test.

Results:
Data collection is ongoing. To date, 30 subjects have met inclusion criteria. Of these subjects, 25% were ordered TDS for every 72 hours. Only 1 subject received more than one patch and no orders were written for TDS upon discharge. Two subjects have been identified as low risk.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of Administration of Long-Acting Injectable Antipsychotics on Length of Stay and Readmission Rates to a Behavioral Health Unit

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Sarah Suffel, Pharm.D., BCPS, CACP; Lori Ernsthausen, Pharm.D., BCPS

UAN: 0048-2020-122

Learning Objectives:

1. Identify the role of antipsychotics in the management of mental illness
2. Compare the efficacy of oral antipsychotics and long-acting injectable antipsychotics
3. Analyze the primary and secondary outcomes in terms of comparing oral antipsychotic therapy with long-acting injectable antipsychotic therapy

Purpose:
Oral antipsychotics have proven to be effective in the treatment of first-episode schizophrenia, but introduce the risk of non-adherence, which is already a significant issue in the mentally ill patient population. Long-acting injectable antipsychotics (LAIAs) are typically used to promote adherence and have been shown to be quite effective. LAIAs could be especially valuable in helping to maintain remission and preventing relapse.

Methods:
A retrospective, single-center chart review was conducted to identify patients diagnosed with a mental health condition with a psychotic component and treated with either an oral antipsychotic or a LAIA from May 1, 2018 through October 1, 2019. Data was collected by performing a chart review within the electronic medical record. All data was analyzed and compared between the two treatment groups to evaluate the primary outcomes of length of stay and readmission rates to the Behavioral Health unit, and the secondary outcomes of time to discharge and Global Assessment of Functioning (GAF) score.

Results:
A total of 270 subjects were reviewed; 135 in the oral antipsychotics group and 135 in the LAIAs group. The average length of stay was 10.8 days in the oral antipsychotics group and 7.1 days in the LAIAs group. Readmission after discharge occurred in 33.3% in the oral antipsychotics group and 43% in the LAIAs group. The most occurring time to readmission after discharge was &gt; 30 days in both the oral antipsychotics group and the LAIAs group. The majority of patients in both the oral antipsychotics group and the LAIAs did not have a GAF score documented.

Conclusions:
The results of this study did not prove a statistically significant impact on the administration of LAIAs on patients’ length of stay in the Behavioral Health unit, readmission rates, time to readmission after discharge, or GAF score.
Evaluation of pharmacy-driven medication reconciliation at pre-admission testing appointments in patients undergoing surgery

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Jennifer Copenhaver, PharmD, BCPS; Jennifer Wright, PharmD, BCPS

UAN: 0048-2020-123

Learning Objectives:

1. Define the role of medication reconciliation as it relates to patient safety.
2. Discuss benefits of pharmacy involvement in the pre-admission testing appointments.

Purpose:
Obtaining the best possible medication history is important to a patient’s care in the hospital setting in order to reduce medication errors, unintended adverse effects, and inaccurate allergy reporting. Points of transition are particularly significant due to the opportunity and high likelihood for medication discrepancies. Studies have shown that medication discrepancies are common in patients admitted to surgical units and can be improved with pharmacy intervention. The goal of this study was to determine if implementing pharmacy-driven medication reconciliation at pre-admission testing appointments would decrease medication discrepancies upon admission to the hospital.

Methods:
This is a prospective study in which patients undergoing planned surgery were randomized to receive pharmacy-driven medication reconciliation compared to standard of care at pre-admission testing (PAT) appointments. Standard of care is defined by medication reconciliation performed by nursing staff in which medications were clarified, deleted, and added using patient or family provided information. During pharmacist medication reconciliation, medications were clarified, deleted, and added using patient or family provided information, prescription fill history, provider notes, and previous medication lists. Medication lists were then audited during each patient’s admission to the hospital to evaluate discrepancies for each group.

Results:
Data is currently being collected and analyzed. Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of perioperative antimicrobial regimen on the rate of surgical site infections in patients undergoing total knee or hip arthroplasty

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Nicole Fabiilli, PharmD; Sandra Hartnagle, PharmD, BCPS

UAN: 0048-2020-124

Learning Objectives:
1. Review current practice guideline recommendations on antimicrobial prophylaxis in total knee or hip arthroplasty
2. Identify whether there was a difference in prophylactic antimicrobial prescribing between patients who developed surgical site infection and patients who did not develop an infection throughout health system hospitals

Purpose:
DisSurgical site infection (SSI) is an infection developed at the site of incision or underlying tissue/space after surgery. SSIs are associated with prolonged hospital stay, increased treatment cost, and considerable morbidity and mortality. SSIs are among the most common reasons for surgical revision of primary total knee replacement. Guidelines recommend cefazolin as the primary agent for SSI prophylaxis in patients undergoing total knee or hip replacement. Alternative agents include vancomycin and clindamycin. The purpose of this study is to evaluate whether there was a difference in antimicrobial regimen selection in patients that developed SSI after primary total knee or hip replacement surgery versus patients that did not develop an infection.

Methods:
This is a retrospective study of adult patients that underwent primary total knee or hip replacement surgery and developed a SSI after the procedure. Pertinent patient data was collected through an electronic medical record review. Patients were included if they were at least 18 years old and underwent primary total knee or hip replacement surgery at one of the hospitals within an 8-hospital health system. Patients were excluded if the primary surgery occurred outside of health system or if there was a previous infection with a resistant pathogen in the affected joint. The primary objective of the study was to evaluate a difference in selection, dosing, timing, and duration of prophylactic antibiotics in patients that developed a prosthetic joint infection versus patients that did not develop an infection. The secondary objectives were to assess incidence of patient reported allergic reactions to penicillins or cephalosporins and use of post-operative antibiotics. Descriptive statistics will be utilized to compare patient baseline characteristics and prophylactic antimicrobial regimens. Categorical variables will be analyzed using chi-square test. Continuous variables will be analyzed using either student’s t-test or Mann-Whitney U test.

Results:
To be presented at the Ohio Pharmacy Residency Conference

Conclusions:
To be presented at the Ohio Pharmacy Residency Conference
Antipsychotic Monitoring and Management in Pediatric Patients: A Pharmacist-Driven Population Health Model

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UAN: 0048-2020-125

Learning Objectives:

1. Outline appropriate metabolic monitoring parameters for pediatric patients taking atypical antipsychotics based upon American Academy Child and Adolescent Psychiatry and American Diabetes Association guidelines and HEDIS measures.
2. Identify the impact of pharmacist intervention in the monitoring and management of atypical antipsychotics in pediatric patients.

Purpose:
Outpatient pediatric antipsychotic prescribing in the United States increased nearly five-fold between 1995 and 2002. This dramatic increase corresponds with the introduction of second generation or “atypical” antipsychotic medications, which are associated with fewer extrapyramidal symptoms than first generation antipsychotics. However, atypical antipsychotic agents have serious metabolic side effects including weight gain, hyperglycemia, and dyslipidemia. These side effects are of particular concern in children because they can predict adult obesity, diabetes mellitus, metabolic syndrome, and cardiovascular morbidity. Despite increasing awareness, current literature suggests the rate of recommended monitoring is inconsistent in pediatric populations with only 31.6% and 13.4% of atypical antipsychotic-treated children receiving glucose and lipid testing, respectively. Additionally, recent national quality measures have begun to focus on the safe and judicious use of antipsychotic agents in children and adolescents, with emphasis on metabolic monitoring.

Methods:
Using a population health management approach, a report will be generated for a general psychiatric clinic at a pediatric academic medical center to identify patients based upon the inclusion criteria below. A pharmacist will review the electronic medical record for identified patients who are actively prescribed an antipsychotic agent to determine if recommended monitoring parameters have been obtained. Patients will be included if they are between the ages of 1 and 17 years, are actively prescribed one or more atypical antipsychotics, and have an upcoming appointment scheduled at the specified clinic. Monitoring recommendations will be communicated via electronic medical record using standardized messaging to the prescriber, who can accept or decline the pharmacist recommendation. The impact of the intervention will be assessed by obtaining the number of patients who had appropriate monitoring parameters obtained pre- and post-intervention. Descriptive statistics will be used to analyze and summarize the data.

Results:
Data analysis and results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluation of the implementation of an area under the curve/minimum inhibitory concentration (AUC/MIC) ratio-guided vancomycin dosing protocol at a rural community hospital.

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UAN: 0048-2020-126

Learning Objectives:

1. Translate new evidence favoring AUC/MIC ratio-guided vancomycin dosing to develop a pharmacy-driven pharmacokinetic dosing protocol for vancomycin
2. Discuss the difference between the percentage of patients at a therapeutic level of vancomycin using an AUC/MIC ratio-guided vancomycin dosing protocol and a time-matched cohort of patients dosed with a trough-based protocol
3. Discuss the difference between the rates of vancomycin-associated acute kidney injury (AKI) using an AUC/MIC ratio-guided vancomycin dosing protocol and a time-matched cohort of patients dosed with a trough-based protocol

Purpose:
AUC/MIC ratio-guided dosing of vancomycin has been shown to reduce the risk of nephrotoxicity while maintaining therapeutic concentrations when compared to trough-only monitoring. The purpose of this study was to determine if AUC/MIC ratio-guided dosing of vancomycin results in a higher percent time spent in therapeutic range compared to trough-based dosing.

Methods:
The existing Firelands Regional Medical Center vancomycin dosing policy was updated to include AUC/MIC ratio-guided dosing utilizing an internally-developed tool. Patients admitted receiving vancomycin therapy were included in the study. Patients were excluded for age under 18 years, pregnancy, renal impairment (creatinine clearance

Results:
We reviewed 231 patients in the time-matched period and 230 patients in the AUC/MIC ratio-guided protocol. Of these, 62 patients and 47 patients met inclusion criteria. For the primary outcome, 75.8% of patients (47/62) for the trough-based and 93.6% of patients (44/47) in the AUC/MIC group attained therapeutic levels of vancomycin. Regarding the secondary outcome, the incidence of vancomycin-associated AKI was 29% (18/62) in the trough-based and 10.6% (5/47) in the AUC/MIC group.

Conclusions:
Compared to trough concentration targets, AUC/MIC ratio-guided vancomycin dosing was associated with an increased percentage of patients achieving therapeutic concentrations of vancomycin, as well as a decreased percentage of vancomycin-associated AKI.
The use of change management to expand decentralized pharmacy services: impacts on patient outcomes and employee satisfaction.

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Thomas Kahle, PharmD, MSHI, BCPS, Chanda Mullen, PhD, Michael Hoying, RPh, MS

UAN: 0048-2020-127

Learning Objectives:
1. Define common change management theories
2. Discuss how change management practices help reduce disruption and improve chances of lasting change

Purpose:
Continuous quality improvement initiatives create an environment of consistent change. Departments and individuals are being held more accountable as costs continue to rise, federal resources remain scarce, and organizations are forced to seek high value investments. Healthcare managers are challenged to maximize value by increasing quality while reducing costs. Change management is a proactive approach that is commonly used to mitigate disruption and inspire success during transformations. In 2019, pharmacy services at CCAG were transitioned from a central operations model to a more robust mixed central and decentralized pharmacy practice model. The objective of this study was to determine how the use of change management impacts the alignment of an expanding decentralized pharmacy practice model.

Methods:
A practice management committee (PMC) was created to provide a setting that allows co-creation and shared ownership for the data driven performance accountabilities. Change management techniques were utilized to help the department and the employees through this transformation. A focus of ours was centered on discussions regarding why these changes are occurring in combination with transparent data presentations to formulate action items. Frequent virtual huddles and in-person meetings occurred to identify areas of real-time success and improvement.

Results:
Preliminary results showed average employee engagement based on the UWES-17 scoring interpretation of vigor (4.3[3-5.5,0.8]), dedication (4.7[3-6,1.0]), and absorption (4.1[3.5.5,0.8]). Final results are pending but will include bedside delivery capture rate as a surrogate for patient access, 30-day readmission rates as an indicator of patient outcomes, pharmacy specific HCAHPS survey results to understand patient perception, and the impacts on employee engagement.

Conclusions:
As the PMC was implemented, active participate and increased ownership of team initiatives was observed. It was important to present succinct data throughout the process, while directing feedback to remain positive in an effort to overcome group dynamics opposing departmental success.
Oral versus intravenous diltiazem in hemodynamically stable patients for atrial fibrillation with rapid ventricular response in the emergency department

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UAN: 0048-2020-128

Learning Objectives:

1. Describe dilemmas faced by providers when treating atrial fibrillation (AF) with rapid ventricular response (RVR) during the recent intravenous (IV) diltiazem shortage
2. Review trial design and protocol
3. Describe the efficacy of oral diltiazem compared to IV diltiazem for AF with RVR

Purpose:
Diltiazem is commonly used in the emergency department (ED) for patients with AF with RVR. However, due to national shortage, it was unavailable across the Cleveland Clinic Health System from August 29, 2018 to February 13, 2019. One alternative used in hemodynamically stable patients was immediate-release oral diltiazem. The purpose of this retrospective non-inferiority trial was to determine whether oral diltiazem is non-inferior to IV diltiazem for the treatment of AF with RVR in the ED.

Methods:
Hemodynamically stable adults presenting to an Ohio Cleveland Clinic ED between May 28, 2018 – August 28, 2018 (IV diltiazem group) and August 29, 2018 – February 13, 2019 (oral diltiazem group) were eligible for inclusion. Patients were matched by initial HR and presenting ED. Excluded from the study were patients who received both oral and IV diltiazem, were transferred outside of the health system, or were discharged against medical advice. The primary outcome was treatment success, defined as achievement of rate control at one hour. Secondary outcomes compared time to achievement of rate control, disposition from the ED, ED and hospital length of stay, and the incidence of adverse effects.

Results:
A total of 72 patients were included in each group. Treatment success occurred in 24 (33.3%) of patients in the oral group and 39 (54.2%) in the IV group (P = 0.76, 95% CI 0.34). Median time to rate control was 1.8 h (IQR 3.2) in the oral group and 1.0 h (IQR 1.3) in the IV group (P = 0.009). An increased ED length of stay was found in the oral diltiazem group. There were no significant differences in disposition, hospital length of stay, or adverse effects.

Conclusions:
Evidence supporting non-inferiority of oral diltiazem to IV diltiazem for the treatment of AF with RVR in the ED cannot be provided.
Expanding services of a pharmacist-led rural mobile health clinic to school-aged children and parents

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Karen L Kier, Michael Rush

UAN: 0048-2020-129

Learning Objectives:
1. Distinguish areas of health education that are lacking amongst current students within school systems in Hardin County, Ohio
2. Create a series of informative education and fitness initiatives amongst the youth and families
3. Adapt initiative goals as needed to best align with a specific school system’s goals and health-related needs
4. Evaluate the effectiveness of the initiative through surveys and physician referrals

Purpose:
The primary outcome of this study is to measure the number of lives impacted from the education and services provided through a health education series to pediatrics, young adults, and working class adults. Secondary outcomes of this study are to measure school-aged students’ perceptions on health-related topics through educational programming and number of adult referrals to primary care providers made from the results of POCT. The hypothesis is that utilization of the rural mobile health clinic will increase by creating unique preventative health opportunities for kindergarten through twelfth grade students and their parents.

Methods:
This trial is an ongoing, prospective, observational study design conducted in Hardin County, Ohio through the ONU. This trial is an ongoing, prospective, observational study design conducted in Hardin County, Ohio through the ONU HealthWise mobile clinic and Ada Exempted Village Schools, targeting school students and middle-aged adults. A Wilcoxon signed rank test will be performed on survey data to gauge improvement of perceptions of health topics discussed. In addition to measuring family impact with descriptive statistics, a correlation analysis will be conducted on adults referred to primary care providers to examine trends between those who have had recent health screenings compared to those that have not had recent health screenings within the last year.

Results:
To date, the initiative has impacted 541 students in kindergarten through eighth grade through three completed events. The pre-series survey amongst youth revealed that only 0.3% of students indicated that they personally smoked tobacco, but 22.79% indicated they have friends that smoke. A gap in knowledge found that only 43.7% of students have heard about organ donation with only 22.25% that are registered organ donors. Knowledge of epinephrine autoinjectors has been examined with analysis in progress. This initiative remains on-going and more data will be made available as it is collected and analyzed.

Conclusions:
Students within one school system appear to be knowledgeable in some health topics, but lack understanding in others. With further educational activities, forums, and interactions, the analysis should reveal improvement in comprehension. This initiative is in process of being adopted at multiple schools throughout Hardin County, Ohio and data comparisons will result following the conclusion of each series of events.
Evaluation of Enoxaparin, Apixaban and Rivaroxaban Use for the Treatment of Cancer-Related Venous Thromboembolic Disease

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Tyler Bulcher, PharmD, BCPS; Tara Tokar, PharmD, BCPS

UAN: 0048-2020-130

Learning Objectives:

1. Review the etiology of cancer-associated venous thromboembolisms (VTEs)
2. Apply current guidelines and primary literature supporting the use of individual anticoagulants in the management of cancer-associated VTEs

Purpose:
Several recent, randomized controlled trials regarding efficacy and safety outcomes have compared direct factor Xa inhibitors to low-molecular weight heparin (LMWH). The National Comprehensive Cancer Network supports the use of enoxaparin, rivaroxaban or apixaban for the management of cancer-associated VTEs; however, current practice is dependent on physician preference. This quality improvement (QI) project aims to determine current practice within the OhioHealth system while comparing efficacy and safety outcomes between enoxaparin, rivaroxaban and apixaban.

Methods:
A retrospective chart review of adult patients with active, recurrent or metastatic malignancy admitted to Grant Medical Center or Riverside Methodist Hospital from July 1, 2015 to June 30, 2018 presenting with VTE and evidence of outpatient management on enoxaparin, apixaban or rivaroxaban. The primary endpoint was recurrence of VTE within 12 months from time of anticoagulation initiation. Secondary endpoints included hospitalization due to bleeding within 12 months and documented mortality within 12 months.

Results:
A total of 210 patients were included in the study with 128 receiving enoxaparin, 66 receiving rivaroxaban and 36 receiving apixaban. There was VTE recurrence within 12 months for 5.5% of enoxaparin, 9.1% of rivaroxaban and 11.1% of apixaban patients without statistical difference seen between groups (p=0.428). A statistically significant difference was seen with hospitalization due to bleeding within 12 months with 21.9% of enoxaparin, 6.1% of rivaroxaban or 13.9% of apixaban patients (p=0.016). All-cause mortality within 12 months was also statistically significantly different between groups with 46.9% of enoxaparin, 12.1% of rivaroxaban and 44.4% of apixaban patients.

Conclusions:
This QI project suggests that there is no difference in efficacy between agents; however, rivaroxaban may have a lower incidence of hospitalization due to bleeding and lower all-cause mortality compared to enoxaparin and apixaban. No institutional practice changes can be recommended from this study due to the small sample size and confounding variables.
Implementation of pharmacogenomic testing in a community hospital

Melvi Chacko, PharmD - St. Elizabeth Healthcare
Alicia Gesenhues, PharmD, BCOP; Brooke Phillips, MD; Andrea Schumann, PharmD; Nihal El Rouby, PharmD, BCPS, PhD

UAN: 0048-2020-131

Learning Objectives:

1. Outline the value of pharmacogenomic testing to a healthcare system
2. Explain implementation of a pharmacogenomic testing pilot program at St. Elizabeth Healthcare

Purpose:
Personalized medicine is a new concept that tailors drug treatment to a patient’s genetic makeup. Implementation of personalized medicine is accomplished through pharmacogenomic testing. The purpose of this study is to implement a pharmacogenomic testing service with other healthcare professions. This initiative ensures the right drug is given to the right patient, at the right dose, at the right time.

Methods:
This multi-center, retrospective, cohort study will include patients at least 18 years of age or older with established care at St. Elizabeth Healthcare. Indication for pharmacogenomic testing is provider dependent. This initiative was executed in three phases to address system wide need for pharmacogenomic implementation. The data focuses on patients undergoing testing starting in November 2018. Data collected from the electronic medical record include ordering provider, indication for testing based on order questions, medication(s) associated with pharmacogenomic testing, number of pharmacist interventions documented in chart notes, number of pharmacist consults, and number of therapy adjustments based on pharmacogenomic test results. Pharmacy is routinely consulted to review and provide recommendations for all patients.

Results:
Of 84 patients ordered pharmacogenomic testing, reports for 46 patients are available at time of assessment. Pharmacogenomic testing per patient request occurred in 6/46 patients (13%). Other reasons for testing include failed therapy and previous adverse event. Major depressive disorder was the most common medical condition associated with testing (14/46 consults, 30%). Additional disease states include generalized anxiety disorder and attention deficient disorders. Changes in therapy based on reports have occurred in 8/46 patients thus far.

Conclusions:
Data collection is ongoing and will be presented later.
Time to Ordering and Administration of Venous Thromboembolism Prophylaxis in Trauma Patients at Summa Health – Akron Campus

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UAN: 0048-2020-132

Learning Objectives:

1. Describe the importance of timely venous thromboembolism (VTE) prophylaxis in trauma patients.
2. Identify a literature-supported pharmacological thromboembolism prophylaxis regimen for trauma patients.

Purpose:
The Chest guideline for prevention of venous thromboembolism (VTE) cites delay in commencement of thromboprophylaxis as an independent risk factor for VTE and therefore has a Grade 1A recommendation that patients without contraindications to anticoagulants receive prophylaxis as soon as it is safe to do so. At Summa Health – Akron Campus (SH-AC), providers completing a trauma patient’s history and physical (H&P) are required to indicate whether the patient is immediately eligible to receive VTE prophylaxis. The aim of this quality improvement project was to determine if trauma patients admitted to SH-AC are receiving appropriate VTE prophylaxis promptly after contraindications are ruled out.

Methods:
This was a retrospective chart review of trauma patients at SH-AC from May through September 2019. Inclusion criteria were: admitted to Trauma Services for a traumatic injury, eligible to immediately receive prophylaxis (as documented in the H&amp;P note), and received a literature-supported agent for prophylaxis. Time points for completion of the H&amp;P, ordering of VTE prophylaxis, and administration of the first dose of therapy were collected and the average times from starting the H&amp;P note to ordering and administration of prophylaxis were reported. Non-parametric testing was employed to compare process times across sample strata.

Results:
A total of 47 patients met inclusion criteria. The average time from H&amp;P note to order placement for VTE prophylaxis was 6.15 hours, with a maximum time of 19.28 hours. The average time from H&amp;P note to anticoagulant administration was 9.63 hours, with a maximum time of 25.55 hours.

Conclusions:
This QI project analyzed times from identification of eligibility for prophylaxis to both ordering and administration of the agent, and while the average times were within a literature-based acceptable range, there are opportunities for improvement. This study was unable to identify specific weaknesses contributing to time delays.
Comparing a phenobarbital protocol with a benzodiazepine protocol for the management of alcohol withdrawal syndrome in intensive care unit (ICU) patients

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Suzanne Marques, PharmD, BCPS, BCCCP; Eyob Adane, PhD, BSPharm, BCPS; Libby Stabler, PharmD Candidate 2020

UAN: 0048-2020-133

Learning Objectives:

1. Describe a phenobarbital protocol for the management of alcohol withdrawal syndrome (AWS).
2. Discuss the effects of a symptom-triggered phenobarbital AWS protocol when compared with a benzodiazepine AWS protocol on ICU based outcomes.

Purpose:
Benzodiazepines and phenobarbital may be used to manage alcohol withdrawal syndrome (AWS). While benzodiazepines and phenobarbital are GABA receptor agonists, phenobarbital also inhibits upregulated excitatory NMDA receptors and has a significantly longer half-life than lorazepam, which may be beneficial for treating AWS. The purpose of this study is to examine differences in clinical outcomes when using a symptom-triggered phenobarbital protocol compared with a Clinical Institute Withdrawal Assessment of Alcohol (CIWA) based symptom-triggered benzodiazepine protocol in the management of AWS in ICU patients.

Methods:
This study is an Institutional Review Board approved retrospective cohort study that examined subjects that were treated for AWS in the ICU between October 1, 2017 and December 1, 2019. Subjects were divided into two groups: subjects that utilized the benzodiazepine protocol during ICU admission and subjects that utilized the phenobarbital protocol during ICU admission. The primary outcome for the study is ICU length of stay. Secondary outcomes include total hospital length of stay, rates of mechanical ventilation, use of secondary sedating medications during AWS treatment, milligrams of medication (phenobarbital and/or lorazepam) used in each group, and duration of AWS protocol treatment.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
SGLT-2 Inhibitors and the Reduction of Cardiovascular Events

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Sarah Suffel, PharmD, BCPS, CACP; Lori Ernsthausen, PharmD, BCPS

UAN: 0048-2020-134

Learning Objectives:
1. Identify the role of SGLT-2 inhibitors in diabetes management and their potential benefits in cardiovascular disease.
2. Compare cardiovascular benefits found in this study to benefits found in the EMPA-REG OUTCOME trial and CANVAS trial.

Purpose:
Diabetes Mellitus has increased in prevalence significantly over the last two decades, and with it the rise of cardiovascular disease (CVD). Sodium glucose cotransporter-2 (SGLT-2) inhibitors canagliflozin and empagliflozin have been shown to provide cardiovascular benefit during clinical trials. This study will determine rate of admissions due to cardiovascular disease in patients on canagliflozin or empagliflozin.

Methods:
This prospective, single centered, chart review analysis will evaluate patients using canagliflozin or empagliflozin at Mercy Health- Lorain Hospital in Lorain, OH. Patients will be enrolled from October 1, 2016 to August 1, 2019 and information will go into a secure data collection spreadsheet for evaluation.

Results:
This study evaluated 38 patients receiving 93 administrations of an SGLT-2 inhibitor. While 35 out of 38 patients evaluated had a past medical history of CVD, the admissions due to CVD in patients receiving SGLT-2 inhibitors were insignificant. In the initial visit, 42.1% (16 patients) were admitted for cardiovascular causes. Due to cardiovascular causes, 4 patients (10.52%) were readmitted within 7 days, 3 patients (7.89%) were readmitted within 7-30 days, and 10 patients (26.32%) were readmitted ≥30 days later.

Conclusions:
This study showed that patients presenting to Mercy Health- Lorain Hospital who were administered empagliflozin or canagliflozin were not shown have a significantly reduced rate of admission with primary diagnoses of cardiovascular disease. This is varied from the results of larger studies that evaluated these drugs for cardiovascular benefits, such as the EMPA-REG OUTCOME and CANVAS trials.
Impact of Pharmacist Intervention in Discharge Transition of Care: A Quality Improvement Study

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Amanda Styer, Marilyn Roper, Marie Lockhart

UAN: 0048-2020-135

Learning Objectives:

1. Determine the financial impact of pharmacist intervention during the discharge transition of care process.
2. Determine the clinical impact of pharmacist intervention during the discharge transition of care process

Purpose:
Pharmacists’ roles in transition of care (TOC) teams continues to grow and with this growth comes the need to define the clinical and financial impact of the pharmacist contribution. Currently in literature, studies have looked at the pharmacist interventions in the discharge process with little or mixed support for financial and clinical impact. About 14% of patients discharged from hospital to home have been found to have a medication discrepancy and when pharmacists were involved with review of medication lists before discharge, over 44% of patients had a discrepancy the pharmacists identified. Mansfield Hospital specifically has not assessed the impact of their pharmacists have on the discharge medication list, otherwise known as after visit summary (AVS). In this project we will take a look at the financial and clinical impact of pharmacist intervention at discharge transition of care at OhioHealth Mansfield Hospital.

Methods:
Patients discharged from OhioHealth Mansfield Hospital who had an AVS review completed by pharmacists will be identified using reports generated by the electronic medical record intervention summaries system (iVents). Clinical impact will be described, in the context of this study, as error type, drug class, medication, and count of interventions made on AVS reviews. Financial impact will be described with a calculated cost-benefit ratio of time spent on AVS reviews, average pharmacist salary at Mansfield Hospital, and average cost of preventable medication errors estimated at $4,151.34 per ADE from literature with cumulative inflation applied. The results of the data will be used to guide future quality improvement to the after visit summary reviews completed by pharmacists at OhioHealth Mansfield Hospital.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Evaluation and Improvement of a Health System using the ISMP Gap Analysis Self-Assessment Tool

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Brad Schmidt, PharmD, Eric Nordman, PharmD, MBA

UAN: 0048-2020-136

Learning Objectives:

1. Discuss ISMP gap analysis and the tools available to help evaluate a health system.
2. Discuss the value of identifying gaps in workflow process at a health system and how to implement solutions to close those gaps.

Purpose:

According to the National Coordinating Council for Medical Error Reporting and Prevention (NCCMERP) a medication error is defined as a preventable event that may cause or lead to inappropriate medication use or harm while medication is in the control of healthcare professional, patient, or consumer. Medication errors can occur in many different aspects of healthcare. To prevent these errors from happening, risk reduction strategies and systems need to be established to prevent and mitigate patient harm.

The Institute for Safe Medication Practices (ISMP) is a non-profit organization dedicated to preventing medication errors. ISMP is known for providing recommendations considered to be the gold standard for medication safety information. To help with identifying opportunities to improve current processes within a health system, ISMP provides resources such as medication safety self-assessments. These self-assessments provide information pertaining to gap analyses in specific areas depending on the type of assessment that is completed. The purpose of this project was to use the ISMP gap analysis self-assessment tool to determine and close gaps that were identified at St. Elizabeth Healthcare.

Methods:

A review of the ISMP High Alert self-assessment gap analysis tool results for St. Elizabeth Healthcare will be conducted to determine areas of improvement. A review of current policies and procedures regarding high-alert medications will also be conducted. The specific high-alert medication categories this project will address are as follows: general high-alert medications, magnesium sulfate injection, lipid-based medications and conventional counterparts, methotrexate for non-oncologic use, oral and parenteral chemotherapy, anticoagulants, neuraxial opioids and local anesthetics. Updates to policy and procedures will be implemented based on the opportunities identified through the evaluation of the results of the ISMP gap analysis tool.

Results:

Results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:

Conclusions will be presented at the 2019 Ohio Pharmacy Residency Conference.
Effectiveness of alternative dosing regimens of intrapleural alteplase and dornase alfa in parapneumonic effusions and empyemas

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UAN: 0048-2020-137

Learning Objectives:

1. Describe the role of intrapleural alteplase and dornase alfa in parapneumonic effusions and empyemas
2. Recall the intrapleural alteplase and dornase alfa dosing strategies for parapneumonic effusions and empyemas used in primary literature

Purpose:
Parapneumonic effusion and empyema are common in the inpatient setting, as up to 40% of hospitalized patients with pneumonia will develop pleural sepsis. A solution for these complications was demonstrated in the Multicenter Intrapleural Sepsis Trial 2 (MIST 2 Trial). In this study, an intrapleural 3-day treatment regimen of twice-daily dornase alfa 5 mg and alteplase 3 mg improved pleural drainage, decreased hospital length of stay, and decreased the number of patients referred to cardiothoracic surgery. Since the MIST-2 trial, multiple smaller studies have demonstrated that alternative dosing regimens using decreased frequencies and/or doses of alteplase and dornase alfa may be as effective in treating parapneumonic effusions and empyemas. Therefore, the purpose of this study is to evaluate the mortality risk associated with treating parapneumonic effusions and empyemas in real-world practice with diverse dosing regimens.

Methods:
This was an IRB-approved retrospective, multisite cohort study in patients treated from November 2016 to November 2019. Patients 18 years or older with parapneumonic effusions and empyemas who were prescribed both intrapleural alteplase and dornase alfa for at least 36 hours were included. Patients were divided into 4 cohorts based upon the total amount of alteplase they had received: 20 mg, 30 mg, 40 mg, and ≥50 mg. Exclusion criteria were usage of intrapleural alteplase and dornase alfa within the past 6 months, previous pneumonectomy on the affected side, placement of chest tube 1 week or more prior to admission, current hemorrhage or trauma, coincidental stroke, pregnancy, and lactation. The primary outcome was all-cause mortality at 90 days post-intervention. Secondary outcomes included pleural bleeding and surgical intervention at 90 days post-intervention.

Results:
Data analysis is ongoing. Results will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2020 Ohio Pharmacy Resident Conference.
Role of a clinical pharmacist in developing a business-practice model for heart failure patients in the ambulatory care setting after assessing causes of readmission.

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Alex Rozzo, PharmD; Nicole Williams, PharmD

UAN: 0048-2020-138

Learning Objectives:

1. Discuss barriers and obstacles in heart failure management.
2. Identify opportunities for pharmacist-driven interventions in heart failure management.

Purpose:
Heart failure (HF) affects approximately 5.7 million people in the United States. This number is expected to rise significantly by 2030. Several studies have assessed the value and impact of pharmacist involvement in heart failure management and found that pharmacist interventions in these clinics can result in a decrease in HF readmission rates and lengths of stay. The purpose of this study is to assess the various causes of HF readmissions at Mercy Health-Fairfield Hospital in order to develop a HF business-practice model in the ambulatory care setting.

Methods:
This study is a retrospective, electronic chart review of patients who were readmitted to Mercy Health-Fairfield Hospital with heart failure between November 2018 and November 2019. The number of readmissions at times 30 and 90 days post discharge will be counted and documented. Ejection fraction (EF) at discharge and at readmission will also be documented. The medication regimen optimization will be measured by the completion of CORE measures defined as a current record of EF, orders for an ACEI/ARB and BB, as well as documentation if any of these measures are not present. Adherence will be measured by assessing patient refill history using the dispense report in EPIC. Patients will be deemed adherent if refill history shows medications were filled within one of week of their due date. Length of stay will be recorded in days. The presence of comorbidities will be documented including a history of smoking, hypertension, hyperlipidemia, diabetes mellitus, atrial fibrillation and COPD. Specialist follow-up will be defined as a follow-up with a cardiologist within 3 months of discharge. Cost of readmission will be measured in dollars and defined as the direct cost of HF readmissions to Mercy Health-Fairfield Hospital.

Results:
Final results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:
Final conclusions will be presented at the 2020 Ohio Pharmacy Residency Conference.
Evaluation of desmopressin (DDAVP) outcomes for antiplatelet reversal in intracranial hemorrhage (ICH)

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UAN: 0048-2020-139

Learning Objectives:
1. Describe the role of desmopressin for antiplatelet reversal in intracranial hemorrhage management.
2. Discuss the impact and outcomes of desmopressin on the management of intracranial hemorrhage.

Purpose:
Antiplatelet agents such as aspirin, clopidogrel, and ticagrelor are the mainstay for prevention and treatment of cardiovascular diseases. Despite the widespread use of these agents, antiplatelet use increases the risk for intracranial hemorrhage (ICH) and mortality. Desmopressin (DDAVP) may reverse the effects of antiplatelet agents by many mechanisms including, an increase in von Willebrand factor and factor VIII to promote platelet adhesion. This off-label indication for DDAVP is acknowledged in the 2016 Neurocritical Care Society and Society of Critical Care Medicine guidelines as a conditional recommendation for the reversal of antiplatelet-associated intracranial hemorrhage. Although a conditional recommendation, DDAVP is currently being used for this indication at many institutions. Previous studies evaluating this indication have relatively small patient populations and reveal inconsistencies in DDAVP dose, efficacy, and safety. More studies are needed to evaluate antiplatelet reversal effects on hematoma expansion, mortality, and to strengthen recommendations overall. The purpose of this study is to assess outcomes of DDAVP therapy for antiplatelet reversal in patients with intracranial hemorrhage to help optimize use of DDAVP at three hospitals within a large academic health system.

Methods:
This multicenter, retrospective chart review evaluated patients diagnosed with intracranial hemorrhage while prescribed antiplatelet therapy that received at least one dose of desmopressin for antiplatelet reversal from February 1, 2016 to July 30, 2019. Exclusion criteria included patients on anticoagulation, incomplete prior to admission antiplatelet history, and history of coagulation disorder. The primary outcome was evaluation of repeat CT scan imaging following desmopressin administration. Secondary outcomes included the impact of desmopressin dosing strategies, prior to admission antiplatelet regimens, need for neurosurgical interventions, and safety of desmopressin.

Results:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Antibiotic prescribing practices for aspiration pneumonia in patients post-cardiac arrest

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Tara H. Lines, PharmD, BCIDP; Kevin M. Wohlfarth, PharmD, BCPS, BCCCP, BCCP; Alicia M. Hochanadel, PharmD, BCPS

UAN: 0048-2020-140

Learning Objectives:

1. Recognize current guideline recommendations regarding empiric antibiotic coverage for aspiration pneumonia.
2. Identify the most common pathogens isolated from positive sputum cultures in patients with aspiration pneumonia post cardiac arrest.

Purpose:
Many cardiac arrest patients aspirate gastric contents and subsequently receive empiric antibiotic therapy for aspiration pneumonia. However, the optimal management of aspiration pneumonia in this patient population remains unclear. This study set out to assess antibiotic prescribing practices for aspiration pneumonia in post-cardiac arrest patients and explore clinical outcomes stratified by the duration and type of antibiotic therapy.

Methods:
This retrospective cohort conducted at a single, Level I trauma center included adult patients who presented with a primary diagnosis of cardiac arrest and received antibiotic therapy for aspiration pneumonia. Patients were divided into two groups: those with positive respiratory cultures (other than normal flora) and those with negative respiratory cultures. The primary endpoint was the incidence of antibiotic de-escalation before day seven. Secondary endpoints included type of de-escalation, patient clinical outcomes, and epidemiology of organisms isolated.

Results:
Eighty-six patients were included: 45 patients with negative respiratory cultures and 41 patients with positive cultures. Antibiotic de-escalation before day seven occurred in 39 (86.7%) patients in the culture negative group, and 34 (82.9%) patients in the culture positive group (p=0.63). Among the subgroup of patients with cardiac arrest secondary to ventricular tachycardia or ventricular fibrillation, positive cultures were not associated with de-escalation (89.5% in the culture negative group vs. 93.3% in the culture positive group, p=0.69). Regardless of culture positivity, providers frequently stopped unnecessary anti-methicillin resistant Staphylococcus aureus coverage (96.7% in culture negative group vs. 100% in culture positive group, p=0.085). Further results to be forthcoming and presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
Culture positivity was not associated with antibiotic de-escalation in post-arrest patients with aspiration pneumonia. Opportunities exist for further de-escalation in this population, particularly in patients with unnecessary anti-pseudomonal coverage. Further conclusions to be presented at the 2020 Ohio Pharmacy Resident Conference.
A comparison of variable versus fixed insulin infusion rate on resolution of diabetic ketoacidosis

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John Moorman, PharmD, BCPS; Brittany Cunningham, PharmD, BCPS, BCCC; Chanda Mullen, PhD; Melissa Fowler, PharmD, BCPS, BCCC

UAN: 0048-2020-141

Learning Objectives:

1. Describe the use of intravenous (IV) insulin infusions strategies for the treatment of diabetic ketoacidosis (DKA)
2. Discuss the effect of IV insulin infusion strategies on outcomes in patients presenting with DKA

Purpose:
Diabetic ketoacidosis (DKA) is a well-known, potentially fatal complication of diabetes that requires immediate medical attention. Exogenous insulin is vital in the setting of DKA to prevent formation of ketone bodies and achieve euglycemia. In practice, both variable and fixed intravenous (IV) insulin infusion strategies are used. However, there is limited literature comparing the safety and efficacy of these two strategies, and current guidelines give no preference.

Methods:
This is a single center, retrospective chart review of patients who presented with DKA between January 1, 2018 and December 31, 2018. The primary objective of this study was to determine if a variable IV insulin infusion strategy reduced the time to DKA resolution compared to a fixed infusion strategy in the absence of a formalized institutional protocol. Insulin infusions were considered to be variable if the infusion rate changed within the first 8 hours of therapy, whereas fixed infusions remained unchanged for the same time period.

Results:
Sixty seven patient encounters were included in the study (53 patients in the variable infusion group and 14 patients in the fixed infusion group). The median time to resolution of DKA was 9.3 hours in the variable infusion group compared to 7.8 hours in the fixed infusion group (p=0.77). Hypoglycemia was observed in 53% of the patients in the variable infusion group and in 64% of the patients in the fixed infusion group (p=0.443). Severe hypoglycemia was observed in 13% of the patients in the variable infusion group and in 50% of the patients in the fixed infusion group (p=0.006).

Conclusions:
This study did not show a significant difference in the time to resolution of DKA between variable and fixed insulin infusion strategies. Severe hypoglycemia was more common in the fixed infusion group but there was no difference in overall hypoglycemia between groups.
Evaluating A1c lowering in Diabetics managed by Hospital In Home or Usual Care

Nathan Sexton, PharmD; Cincinnati VA Medical Center
Dr. Bonnie Clark, PharmD, BCPS; Dr. Jennifer Curtis, PharmD, BCACP

UAN: 0048-2020-142

Learning Objectives:

1. Describe the Hospital In Home program and role HIH clinical pharmacy specialist has in diabetes management
2. Identify areas of impact found when involving a clinical pharmacy specialist in HIH diabetes management

Purpose:
Primary objective is to evaluate the A1c-lowering effect found in patients managed by the Cincinnati VA Medical Center Hospital In Home (HIH) Clinical Pharmacy Specialist (CPS) at 3-, 6-, and 12-months after hospital discharge compared to usual outpatient follow-up care. The secondary objectives will evaluate worsening in A1c with increase above goal, number of days between discharge and next A1c, number of days between A1c’s, which condition had the largest A1c reduction, continuation of follow-up care, hospital re-admissions and emergency department visits, if a pharmacist was following a patient prior to admission, and documented hypoglycemia occurring during follow-up.

Methods:
Data was collected via retrospective chart review from the VA Computerized Patient Record System (CPRS) to establish if a patient fulfills inclusion criteria and had diabetes management performed by either the HIH CPS or usual care following a HIH-eligible hospitalization from July 1, 2014 to March 1, 2018. Patient inclusion is based on hospital discharge ICD-10 codes for conditions that qualify for HIH admission. Patient data to be collected includes patient age, sex, race/ethnicity, gender, diabetes classification (Type 1 or 2), hospital discharge date, date of first follow-up for diabetes management, pre-discharge A1c value and date, post-discharge A1c values and dates for 1 year following discharge, dates of any hospital re-admissions or emergency department visits within 30 days of discharge and within the duration of project period, if a referral was made for continued diabetes management by patient-aligned care team clinical pharmacy specialists and if that referral was completed with a documented visit. Safety endpoints will be tracked by collecting documented hypoglycemic events. This project will evaluate approximately 150 patients, 75 patients in both the HIH group and the usual care group.

Results:
Results are pending and will be presented at the Ohio Pharmacy Resident Conference

Conclusions:
Conclusions are pending and will be presented at the Ohio Pharmacy Resident Conference
Impact of inpatient oncology pharmacy services on patient outcomes

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UAN: 0048-2020-143

Learning Objectives:

1. Integrate appropriate metrics when evaluating a new pharmacist service.
2. Summarize the benefit of having a pharmacist integrated into a medical team.

Purpose:
Studies evaluating new oncology pharmacist services and associated interventions relating to medication adverse events, calculations and education have shown a positive impact on patient care. Surveys taken by providers and patients have shown increase satisfaction in care when a pharmacist is integrated in the medical team. St. Elizabeth Healthcare has recently expanded oncology services to include inpatient acute leukemia services. The institution identified inpatient oncology as an area in need of consistent pharmacy support. The purpose of this study is to describe the impact of an inpatient oncology pharmacist, especially as it pertains to review of discharge medication reconciliation, patient education, and recommendation for prophylaxis and/or chemotherapy dose adjustments.

Methods:
This retrospective, cohort study included patients 18 years of age or older with planned admissions for chemotherapy administrations from March 2019 to March 2020. Patients who were newly diagnosed with cancer during their admission were excluded. Patients were divided into two groups: 1) those admitted March 2019-August 2019 prior to implementation of inpatient oncology pharmacy services and 2) those admitted October 2019-March 2020 after implementation of those services. Data collected for all patients included: time of admission, time of discharge, oncologic diagnosis, treatment regimen, time lab resulted, time of chemotherapy verification, and time of chemotherapy administration. Additional data points collected for patients post implementation of pharmacy services included: pharmacist review of discharge medication reconciliation, prophylaxis recommendation, education and chemotherapy regimen dose adjustment recommendation. The primary endpoint of the study was patient length of stay and time from admission to chemotherapy administration.

Results:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Formulary Stewardship Maintenance of Rifaximin, Sugammadex and Albumin at St. Elizabeth Healthcare

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R.J. Frey, PharmD; Jillian Arrasmith, PharmD

UAN: 0048-2020-144

Learning Objectives:

1. Define formulary stewardship and the importance as it relates to patient outcomes.
2. Recognize St. Elizabeth Healthcare-specific appropriate criteria for use of rifaximin, sugammadex, and albumin.
3. Review and monitor proper use of each formulary medication according to appropriate criteria.

Purpose:
Without formulary stewardship, inappropriate use of medications is likely to occur. Verifying medications that are being prescribed according to approved criteria for use will increase compliance. These results include decrease in cost, increase in patient safety, increase in efficiency and decrease in error. The focus of this cost management project is to assess adherence to approved criteria, reduce cost when possible, and verify appropriate use of rifaximin, sugammadex, and albumin.

Methods:
Criteria for use for targeted medications have previously been established through the St. Elizabeth Healthcare Pharmacy and Therapeutics/Infection Control committee. Compliance to established criteria for rifaximin, sugammadex, and albumin were assessed through retrospective medication use evaluation(s) (MUE). Drug specific MUEs were performed to evaluate medication orders during a 3-month timeframe. Based on these findings, additional tactics were identified.

Results:
Research in progress.

Conclusions:
Research in progress.
Time to antibiotic de-escalation following a negative MRSA PCR in patients with suspected pneumonia.

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UAN: 0048-2020-145

Learning Objectives:
1. Explain when MRSA PCR testing can be used to safely de-escalate antibiotic therapy
2. Recognize the potential impact of implementing a pharmacist-driven protocol for utilizing MRSA PCRs in antibiotic de-escalation

Purpose:
Patients presenting with possible pneumonia are often started on broad-spectrum antibiotics, with at-risk patients often requiring additional methicillin-resistant staph aureus (MRSA) coverage. Nasal MRSA PCR testing has been shown to have a high negative predictive value in the context of pneumonia-- around 98% -- and can result in as little as a few hours. The objective of this study was to examine the utilization of MRSA PCR nares testing within the Kettering Health Network (KHN) by examining the time between PCR results and the discontinuation of empiric MRSA coverage for the indication of pneumonia.

Methods:
This study was a retrospective chart review of patients admitted within the KHN with suspected pneumonia who received empiric antibiotic coverage for MRSA and had a completed MRSA PCR nares test. Included patients had suspected or confirmed pneumonia as their primary infection source, received empiric MRSA coverage, and had a negative MRSA PCR result. Patients were excluded if they received antibiotics for infections other than pneumonia, had a positive or invalid PCR result, had their PCR collected &gt; 48 hours after antibiotic initiation, had MRSA coverage discontinued before receiving PCR results, or were transferred, discharged, or expired prior to receiving PCR results. The primary outcome was the time between a negative PCR result and discontinuation of MRSA coverage. Secondary outcomes were the time between order placement and PCR results, overall length of empiric MRSA coverage, number of antibiotic doses between PCR result and de-escalation and the associated costs, and patient length of stay.

Results:
Of the 735 orders evaluated, 544 met inclusion criteria. On average for the entire KHN, there were approximately 46 hours between obtaining a negative MRSA PCR result and when the empiric order for MRSA-coverage was discontinued. After receiving a negative PCR result, there were 1,346 doses of vancomycin administered, which cost an estimated total of $46,352.57. There were approximately 27 hours on average between when the MRSA PCR was ordered and when it resulted. The average total length of empiric coverage across the network was 73 hours. The average patient length of stay was 11.3 days.

Conclusions:
Within the KHN, there are 46 hours on average between receiving a negative MRSA PCR and discontinuing therapy. KHN demonstrated significant delays in de-escalating empiric antibiotics in pneumonia patients. Implementing a protocol to allow clinical pharmacists to discontinue vancomycin therapy following a negative MRSA PCR, alone or in combination with adjustments to the current PCR testing schedule, could provide a safe, cost-effective way to improve current antibiotic de-escalation practices.
Evaluation of pharmacist-led interventions on chronic obstructive pulmonary disease outcomes

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Lauryl Kristufek-Hanf, PharmD, BCPS, CACP - Mercy Health St. Charles Hospital

UAN: 0048-2020-146

Learning Objectives:
1. Review the use of the COPD Assessment Test (CAT®) for assessing patient symptoms
2. Discuss the impact of pharmacist interventions on 30-day hospital readmission rates for patients with chronic obstructive pulmonary disease (COPD)

Purpose:
Chronic obstructive pulmonary disease (COPD) exacerbations are one of the most common reasons for 30-day hospital readmissions. Although there are medications available for COPD management, they are largely misused and subsequently lead to exacerbations. Recent data suggests that interventions provided by a pharmacist are effective for improving COPD outcomes and reducing hospital readmissions. Pharmacists have the expertise, time and skills to provide comprehensive medication reviews and make interventions. Therefore, the purpose of this study is to assess the impact of pharmacist-led interventions on 30-day hospital readmission rates in COPD patients.

Methods:
This prospective study included patients 18-89 years old with COPD or presenting with an acute exacerbation of COPD (AECOPD). Patients were excluded if they did not want to have an encounter with a pharmacist while admitted, terminally ill, &gt; 90 years old, and pregnant. Upon obtaining consent from the patient, the pharmacist performed a medication reconciliation, provided disease state education, and made clinical interventions to improve patient care. The pharmacist also obtained patient demographics, past medical history, and a list of current medications. The pharmacist called each patient for 2 follow-up phone calls 2-3 days and 14-16 days post-discharge to re-enforce changes that were made and answer any patient questions. The primary objective of this study is to evaluate the impact of pharmacist-led interventions on COPD determined by 30-day hospital readmission rates. Secondary objectives include number of pharmacist interventions, CAT® scores, and treatment per the GOLD guidelines.

Results:
Data analysis is ongoing and results will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
To be presented at the 2020 Ohio Pharmacy Resident Conference.
Impact of early continuous sedation and/or analgesia in targeted temperature management

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Jordan DeWitt, PharmD, BCPS, BCCCP, Connie Yoon, PharmD, BCPS, Jessica Kynyk, MD, John Elliot, PhD, MPH

UAN: 0048-2020-147

Learning Objectives:
1. Identify patients eligible for therapeutic hypothermia
2. Describe the pathophysiology of ischemia-reperfusion injury and the mechanism of therapeutic hypothermia

Purpose:
Targeted temperature management (TTM), or induced hypothermia, is a method of organ protection initiated in patients who remain comatose following return of spontaneous circulation (ROSC) after cardiac arrest to improve neurologic outcomes. Use of sedation and/or analgesia as adjunct therapy may facilitate induction of hypothermia by preventing shivering, allowing patients to reach goal temperature more rapidly. The practice of incorporating sedation and analgesia during TTM is highly variable and available literature offers little guidance. The purpose of our study is to evaluate the impact these agents have on outcomes in patients undergoing TTM.

Methods:
This was an IRB-approved, retrospective, multicenter study across four OhioHealth hospitals between July 1, 2016 and June 30, 2019. Adult patients unresponsive to verbal commands following cardiac arrest who had undergone TTM were included. The primary endpoint was to compare discharge location among patients receiving early versus late administration of continuous sedation and/or analgesia. Secondary endpoints included various markers of neurological recovery including seizure activity, tracheostomy placement, and number of ventilated days.

Results:
A total of 257 patients were included in this analysis. There were 170 patients (66.1%) who received at least one continuous sedative or analgesic within two hours of TTM initiation. 47 patients (27.6%) receiving early administration of continuous sedation and/or analgesia survived to discharge versus 19 patients (21.8%) receiving late administration (p=0.366). There were no significant differences in markers of neurological recovery among patient groups. Patients who received late administration of continuous sedation and/or analgesia were found to have significantly higher baseline neuron specific enolase values (77.9 vs 39.2, p=0.043).

Conclusions:
Early administration of continuous sedation and/or analgesia did not have a significant impact on disposition among patients undergoing TTM. This study suggests that other variables not identified in this retrospective review may influence survival to discharge.
Impact of a pharmacist-driven methicillin-resistant Staphylococcus aureus (MRSA) nasal screening protocol on de-escalation of empiric vancomycin and linezolid

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Olivia Huprich, PharmD, BCPS - Clinical Coordinator at The Jewish Hospital - Mercy Health

UAN: 0048-2020-148

Learning Objectives:

1. Evaluate the 2019 community-acquired pneumonia guidelines and understand the purpose of the MRSA nasal screening tool.
2. Analyze the primary literature surrounding the utilization of the MRSA nasal screening.

Purpose:
Recent literature has confirmed the clinical utility of the methicillin-resistant Staphylococcus aureus (MRSA) PCR (polymerase chain reaction) nasal screening to predict MRSA pneumonia due to its negative predictive value of about 96%. Therefore, the absence of MRSA nasal colonization can be used to rule out MRSA pneumonia, providing guidance on antibiotic de-escalation of vancomycin and linezolid. Narrowing empiric antimicrobial therapy has been shown to decrease antibiotic resistance, side effects, and toxicities. The objective of this study is to determine the impact of a pharmacist-driven MRSA PCR nasal screening protocol on the duration of therapy of vancomycin and linezolid and clinical outcomes.

Methods:
This was a retrospective, single-center, cohort study. The electronic medical record was used to identify patients who received at least one dose of empiric vancomycin or linezolid for suspected pneumonia. Patients were divided into two groups. The pre-protocol group included data from July 2018 to November 2018 and the post-protocol group included data from July 2019 through November 2019. The primary outcome was the duration of vancomycin and linezolid therapy before and after protocol implementation. In addition to duration of antibiotic therapy, clinical outcomes, time to antibiotic de-escalation, length of hospital stay, and the incidence of acute kidney injury secondary to vancomycin were also assessed.

Results:
Data analysis is currently being conducted.

Conclusions:
Results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
EVALUATING ANTIBIOTIC PRESCRIBING AND OUTCOMES AFTER REMOVAL OF PENICILLIN (PCN) ALLERGY THROUGH THE UTILIZATION OF BENZYL-PENICILLOYL POLYLYSINE

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Rebecca Brothers, PharmD, BCPS, Dana Short, PharmD, BCPS

UAN: 0048-2020-149

Learning Objectives:

1. Describe the steps to confirm the removal of the penicillin allergy through administration of Pre-Pen and oral challenge.
2. Review the impact of the removal of PCN allergy in antibiotic treatments.

Purpose:
Penicillin (PCN) is the most common drug allergy recorded at hospital admissions. Patients with a misidentified PCN allergy may be subjected to broad-spectrum antibiotics or antibiotics with potential to cause significant adverse effects. Utilization of benzylpenicilloyl polylysine (Pre-Pen®) and an oral challenge that is tolerated will allow patients to receive PCN without risk of Immunoglobulin E (IgE) mediated rations. The aim of the project is to evaluate outcomes from the removal of a PCN allergy flag in the patient's electronic medical record (EMR) via the utilization of Pre-Pen®. The hypothesis is using the Pre-Pen® along with the removal of PCN allergies will lead to improved antibiotic stewardship, potentially decreasing adverse effects and cost.

Methods:
This is a retrospective chart review. Data will be retrieved by identifying patients receiving Pre-Pen® between 01/01/2012-06/30/2019. Patients are included if they had confirmed Pre-Pen® administration, along with oral challenge performed by Cincinnati V AMC Allergy Clinic providers. Exclusion criteria includes: patients with reported, anaphylactic or IgE mediated reaction to PCN; patients who exhibit a systemic or marked local reaction to previous PCN administration; patients with documentation that they took interfering medications (i.e. antihistamines and vasopressors) prior to testing. Records will be manually analyzed to ensure patients fit all inclusion and exclusion criteria. The principal and co-investigators will collaborate to confirm the retrieved patients meet the inclusion criteria. The primary outcome will be the percent reduction of documented penicillin allergy following Pre-Pen® use. After patient identification, data can be used to compare antibiotic regimens given before and after removal of the PCN allergy. The secondary outcomes will be an assessment in the percent change in fluoroquinolone (FQ), clindamycin, and azithromycin use; a cost analysis of antibiotic treatments; and an assessment of adverse events.

Results:
Results will be presented at the Ohio Pharmacy Resident Conference

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference
Pharmacist-led antimicrobial stewardship program to guide appropriate antibiotic use in patients with chronic obstructive pulmonary disease exacerbation or acute bronchitis

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Lauryl R Hanf-Kristufek, PharmD, BCPS, CACP

UAN: 0048-2020-150

Learning Objectives:

1. Discuss why procalcitonin is thought to be valuable in guiding antibiotic use in respiratory infections.
2. Identify the patient population that may benefit from a pharmacist-led antimicrobial stewardship program using procalcitonin to guide antibiotic use.

Purpose:
Many patients are hospitalized annually for a COPD exacerbation and most of them receive antibiotics. The GOLD guidelines recommend antibiotics in patients who have three cardinal symptoms, including sputum purulence. Antibiotics are over utilized because sputum purulence does not always indicate a bacterial cause. Procalcitonin may be used to guide antibiotic practices in acute respiratory infections because it is a biomarker that distinguishes between bacterial respiratory infections and other inflammatory reactions. Implementing pharmacist-led interventions that utilize procalcitonin to guide appropriate antibiotic use in patients with COPD exacerbations or acute bronchitis may help reduce the duration of antibiotics and length of stay.

Methods:
This is a retrospective, IRB-approved study conducted between December 2019 through March 2020. Patients between the ages of 18-89 diagnosed with a COPD exacerbation or acute bronchitis, who met the inclusion criteria, were collected in the computer database and evaluated. The pharmacist collected patient demographics, past medical history, vital signs, labs, and antibiotic related information. This information was used by the pharmacist to evaluate the primary and secondary outcomes. The primary outcome was to measure the impact of the pharmacist intervention on antibiotic duration in patients with either COPD exacerbation or acute bronchitis. Inpatient duration of antibiotics was evaluated along with the total duration of antibiotics which included both inpatient and discharged prescriptions. The secondary outcome was to analyze the impact of the pharmacist intervention on length of stay, all-cause 30-day readmission rates, and COPD-related 30-day readmission rates.

Results:
Data analysis is ongoing, and results will be presented at the 2020 Ohio Pharmacy Resident Conference.

Conclusions:
Will be presented at the 2020 Ohio Pharmacy Resident Conference.
Tailored Interdisciplinary Education and Prescribing Patterns in Outpatient Oncology

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Kristi Ziegenbusch, PharmD, BCPS and Kendall Germann, PharmD Candidate 2020

UAN: 0048-2020-151

Learning Objectives:

1. Recognize the benefit of interdisciplinary education targeting care team concerns on biosimilar prescribing patterns.
2. Identify the impact of choice of therapy (reference product vs. biosimilar) on drug acquisition cost for biologic products with available biosimilars.

Purpose:
Biosimilars have the potential to reduce cost while maintaining disease state control and without increasing risk of adverse events. The purpose of this prospective, descriptive study is to describe the impact of tailored interdisciplinary education on biosimilar prescribing patterns in the practice of oncology. The study will focus on interdisciplinary education and prescribing habits specific to bevacizumab-awwb, trastuzumab-anns, and their respective reference products. The study will also examine the relationship between the choice of therapy (reference product vs. biosimilar) and cost of acquisition to determine the overall benefit of interdisciplinary education and the associated impact on prescribing patterns.

Methods:
This study was submitted to and approved by the Institutional Review Board. This descriptive, prospective study will consist of at least two meetings with willing interdisciplinary team members from Mercy Health St. Rita’s Cancer Center and Mercy Health Celina Medical Oncology. During the first session, an open forum will be held to discuss the addition of biosimilar products bevacizumab-awwb and trastuzumab-anns to available order sets in 1st quarter of 2019 (delayed) and to identify any prescribing/administration concerns related to the new products. The information gathered from this session will be used to create tailored education for the oncology care teams. The tailored education session will include a 15-minute verbal presentation and discussion addressing the concerns voiced during the open forum. A hard copy educational flyer of the material will be made available for those in attendance and for other members of the oncology team. After the tailored education and education of pharmacists on workflow of biosimilar substitutions (with provider approval), no study interventions will occur for 6 weeks. At the end of 6 weeks, investigators will evaluate the usage rate of each reference product (bevacizumab and trastuzumab) and associated biosimilars (bevacizumab-awwb and trastuzumab-anns respectively). Based on biosimilar use at this point, an additional open forum and education session may be considered. A convenience sample will be used, and results will be reported in a descriptive manner without statistical significance.

Results:
Unavailable at this time. Anticipate presentation of results at OPRC.

Conclusions:
Unavailable at this time. Anticipate presentation of conclusions at OPRC.
Cost Reduction Strategies for the Department of Pharmacy at a Community Hospital

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UAN: 0048-2020-152

Learning Objectives:

1. Educate on the importance of formulary stewardship in a healthcare system and how it affects medication prescribing as well as cost
2. Provide ways to decrease inappropriate utilization of IV acetaminophen, bupivacaine liposomal, and alvimopan at a community hospital

Purpose:
Formulary Stewardship maintenance is important for hospitals to ensure medications are properly prescribed. When medications are properly prescribed, a facility may observe a decrease in unnecessary costs as well as medication-related adverse events. The purpose of this review is to evaluate the appropriate use of IV acetaminophen, alvimopan, and bupivacaine liposomal at St. Elizabeth Healthcare based on the indications approved by the Pharmacy and Therapeutics/Infection Control Committee (PTIC), then provide recommendations to further reduce healthcare costs.

Methods:
This is a retrospective study done to evaluate proper medication utilization of alvimopan, IV acetaminophen, and bupivacaine liposomal at 3 hospitals within the St. Elizabeth Healthcare according to the protocols approved by the PTIC. IV acetaminophen was reviewed for proper verification, appropriate order duration, and the ordering facility. Bupivacaine liposomal was reviewed for appropriate indication, proper discontinuation based on ordering parameters, and the ordering facility. Lastly, bupivacaine liposomal was reviewed for appropriate procedural indication, proper quantity administered, the ordering provider, and the ordering facility. 50 orders were randomly selected from the month of January for each medication to be assessed in the areas stated previously. Bupivacaine liposomal and alvimopan were assessed for the month of February as well due to an increase in spending. Future methods may include providing education, adding formulary restrictions, and removing medications in areas of high misuse. Additional analyses may be warranted if implementations are made.

Results:
Research is still ongoing.

Conclusions:
Research is still ongoing.
Direct Oral Anticoagulation (DOAC) Use in the Obese Population

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UAN: 0048-2020-153

Learning Objectives:

1. Review current literature regarding DOAC use in the obese population
2. Discuss the effect on patient outcomes when using DOAC in obese patients

Purpose:
The purpose of this study is to identify the rates of DVT, PE, and/or stroke in patients initiated on any DOAC therapy. Outcomes of this study include assessing the incidence of stroke or trans-ischemic attack (TIA) in patients diagnosed with atrial fibrillation and the incidence of recurrent DVT or PE in patients diagnosed with DVT or PE. The safety outcome includes the incidence of major bleeding.

Methods:
A retrospective chart review of patients at Mercy Medical Center who are initiated on a DOAC. Patients initiated on DOAC therapy for non-valvular atrial fibrillation, DVT and/or PE treatment will be included. Investigators will assess rehospitalization within 1 year in these patients.

Results:
We reviewed 1,103 patient charts from April 1st, 2018 to September 1st, 2018. From these patients, 103 met our inclusion criteria. 94 patients did not have DVT, PE and/or stroke events within 1 year. Using ROC analysis, we found that BMI was unrelated to DVT, PE and/or stroke risk.

Conclusions:
Obesity did not correlate to an increased risk of DVT, PE, and/or stroke event.
Evaluation of the total duration of therapy in patients discharged with antimicrobials at a community teaching hospital

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UAN: 0048-2020-154

Learning Objectives:

1. Classify durations of antimicrobial therapy in chronic obstructive pulmonary disease (COPD) exacerbations at a community teaching hospital based on guideline recommendations
2. Describe a retrospective review of antibiotic duration of therapy for COPD exacerbation at a community teaching hospital

Purpose:
The use of prolonged durations of antimicrobial therapy is a global problem. Current literature demonstrates that 38-60% of antimicrobial durations of therapy (DOT) for hospitalized patients are completed on an outpatient basis and greater than 50% of prescriptions are in excess of guideline-recommended durations. The study aimed to characterize the total duration of antimicrobial therapy for patients discharged with an antimicrobial prescription.

Methods:
This retrospective observational study evaluated adult patients receiving ≥1 antimicrobial doses at discharge from South Pointe Hospital inpatient admission for an exacerbation of chronic obstructive pulmonary disease from July 1, 2017 to June 30, 2019. The primary outcome evaluated proportion of discharge antimicrobial prescriptions with guideline-concordant DOT. We collected inpatient and outpatient antibiotic data, patient demographics, and pharmacy interventions. Descriptive statistics were utilized including mean and standard deviation, median and interquartile range, and rates. Guideline-concordant DOT was defined as total therapy not exceeding 7 days, unless co-infection requiring a prolonged duration was present.

Results:
101 patients were screened for inclusion and 66 patients were enrolled. Of those encounters, 54.5% were guideline-concordant and 45.5% were guideline-discordant. Total median DOT was 7 days (IQR 6-8.8), while total median inpatient DOT was 4 days (IQR 2.3-5), and total median outpatient DOT was 4 days (IQR 3-5). 48.5% of the patients were male and the median patient age was 64.5 years old. Median hospital length of stay was 4 days (IQR 3-5). 10.6% of total patients received a pharmacist medication reconciliation. 13.3% of the guideline-discordant group of patients received a pharmacy discharge reconciliation.

Conclusions:
Antibiotic DOT for COPD exacerbation treatment exceeded guideline recommended DOT in half of patients discharged, with the duration of outpatient antibiotics leading to excessive days. Ample opportunity remains for pharmacist involvement at transitions of care to address antibiotic duration of therapy.
Utilization of an Electronic Health Record System as a Formulary Alignment Catalyst

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UAN: 0048-2020-155

Learning Objectives:

1. Outline the financial, operational, and clinical impact of formulary misalignment within a highly integrated pharmacy service line at the time of an electronic health record system conversion.
2. Discuss potential interventions surrounding an electronic health record conversion to ensure formulary alignment.

Purpose:
On average, pharmacy expenses comprise 20 percent of a health system’s overall budget, with drugs and supplies making up 80 percent of those expenses. The American Society of Health-System Pharmacists (ASHP) has created a minimum standard for hospitals to develop a formulary to manage this drug inventory and promote safe and cost-effective medication use. According to ASHP’s definition, a formulary consists of medications, guidelines, resources, and policies that have been approved for use and reviewed on a regular cadence by a multi-disciplinary pharmacy and therapeutics (P&T) committee. Formulary management consists of three cyclic phases: creation, implementation, and maintenance. Additionally, compliance with standardized drug formularies becomes increasingly complex as hospitals merge and health-systems expand. The objective of this project is to determine the ability of an electronic health record (EHR) system conversion to align Mansfield Hospital, a 326-bed community hospital, to the standard formulary at OhioHealth, a 12-hospital community health-system.

Methods:
This quality improvement study will compare pre- and post-EHR conversion data to determine the costs and utilization of medications at OhioHealth Mansfield Hospital before and following the EHR conversion. Data is compiled from wholesaler purchasing information, physical inventory barcode scans, and EHR medication utilization history. OhioHealth formulary designations will determine formulary classifications for each medication. Potential formulary classifications include nonformulary based on medication name, nonformulary based on dosage form, nonformulary based on strength, items supplied by supply chain, and medications restricted to central stock.

Results:
Data collection and analysis is currently in progress and will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
N/A
Impact of initial fluid resuscitation in septic patients with heart failure or end-stage renal disease

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UAN: 0048-2020-156

Learning Objectives:

1. Describe the pathophysiologic changes that occur during sepsis leading to hypoperfusion and explain the importance of initial fluid resuscitation.
2. Discuss current literature assessing the impact of initial guideline-directed fluid resuscitation in septic patients at risk for fluid overload.

Purpose:
The purpose of this study was to assess the impact of initial guideline-directed fluid resuscitation in patients with heart failure (HF) or end-stage renal disease (ESRD) presenting with sepsis-induced hypoperfusion.

Methods:
A single-center, retrospective cohort study was performed between November 2016 and November 2019 at an academic, tertiary care medical center. Patients ≥18 years of age presenting to the emergency department with sepsis, a history of HF or ESRD, and hypotension or lactate ≥4 mmol/L were eligible. Patients were divided into two groups: those who received ≥30 mL/kg versus

Results:
This study included 47 patients, of which 9 received ≥30 mL/kg while 38 received

Conclusions:
There was no significant difference in the rate of intubation in septic patients with HF or ESRD who received guideline-directed fluid resuscitation with ≥30 mL/kg compared with patients who received
Evaluation of a pharmacist driven initiative to increase naloxone at discharge

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UAN: 0048-2020-157

Learning Objectives:
1. Identify factors that increase a patient’s risk of opioid overdose
2. Discuss current evidence regarding the benefit of take home naloxone

Purpose:
Opioid overdose has become one of the most prevalent causes of death worldwide. Naloxone is an opioid antagonist intended to be used for the reversal of an opioid overdose and the prevention of opioid overdose related death. Take home naloxone programs are one of many methods implemented to reduce deaths caused by opioid overdoses. This study aimed to evaluate an initiative to increase discharge naloxone prescribing for high risk patients.

Methods:
This was a retrospective chart review assessing the outcomes of a pharmacist driven initiative to increase naloxone prescribing at discharge. Potential naloxone candidates were flagged on a daily report if they had an overdose risk score \( \geq 400 \) documented on Ohio’s prescription drug monitoring program, active order for buprenorphine or methadone, or an opioid related diagnosis. Patient profiles were then reviewed by a pharmacist utilizing predefined criteria to determine if patients were true candidates.

Results:
A total of 232 potential naloxone candidates were identified by the daily report during the 90 day time period and 21 patients were excluded. Of the 211 patients, 57 were determined to be true naloxone candidates after pharmacist review. Of all the potential naloxone candidates that flagged on the report, 2.8% received naloxone from the bedside delivery pharmacy prior to discharge. Of the true naloxone candidates following pharmacist review, 14% received a discharge prescription for naloxone, 10.5 % through bedside delivery and 3.5% sent to an outside pharmacy.

Conclusions:
The report generated captured a significant number of patients who were not true candidates for naloxone, but 14% of screened patients did receive a prescription for discharge naloxone, with 75% of those prescriptions dispensed through bedside delivery.
Implementation and Evaluation of a Certified Technician Training Program for Advanced Technician Services in a Large Community Pharmacy Chain

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UAN: 0048-2020-158

Learning Objectives:
1. Discuss the role of the certified pharmacy technician in advancing clinical and operational tasks within the community pharmacy setting
2. Describe the feasibility of and barriers to implementing a standardized advanced technician service training program

Purpose:
The purpose of this project is to advance the role of certified pharmacy technicians (CPhTs) in a large community pharmacy chain. The primary objective is to determine the impact of a standardized advanced technician service training program on technician involvement in comprehensive medication reviews (CMRs). The secondary objectives include completion of CPhT operational tasks approved by the Ohio Board of Pharmacy, CMR quality, and pharmacist and technician satisfaction and confidence with technician participation in advanced pharmacy services.

Methods:
This study took place at five pharmacies within a large community pharmacy chain. CPhTs attended an off-site training session and an individual training at their site as needed. Technician involvement in CMRs was documented in the electronic dispensing system, defined by completion of the medication history update (MHU) and vaccination assessment (VA). Completion of operational tasks was determined by the number of new verbal and voicemail non-controlled orders and transfer prescriptions completed by CPhTs. CMR quality was evaluated by the percentage of completed CMRs with drug therapy problems (DTPs) documented in the medication therapy management platform utilized by the pharmacy. Pre-training and post-implementation paper surveys were administered to participating technicians and pharmacists.

Results:
In preliminary results, CPhTs from three research pharmacies participated in 24 CMRs, 75% with DTPs identified. Confidence survey pre-results indicated that technicians were more confident than pharmacists in their abilities to perform the research tasks. CPhTs from five research pharmacies recorded a total of 445 new verbal and voicemail orders, 208 transfer in prescriptions, and 77 transfer out prescriptions.

Conclusions:
CPhTs excelled in performing operational tasks, while also demonstrating that they can effectively assist with CMR completion. Future research is needed to determine the most effective way to incorporate pharmacy technicians into the CMR process.
Efficacy and safety of low-dose versus high-dose aspirin for venous thromboembolism prophylaxis following total joint arthroplasty

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UAN: 0048-2020-159

Learning Objectives:

1. Describe the benefits and drawbacks of aspirin therapy for venous thromboembolism prophylaxis following total joint arthroplasty
2. Discuss differences in efficacy and safety between aspirin 81 mg and 325 mg twice daily

Purpose:
The American College of Chest Physicians and the American Academy of Orthopedic Surgeons recognize aspirin as a potential antithrombotic agent for patients undergoing total joint arthroplasty (TJA). The optimal dose of aspirin for this indication has not been established. Aspirin is inexpensive and well tolerated, however it can increase bleeding risk and gastrointestinal complications when used at higher doses. The objective of this study was to assess the efficacy and safety of aspirin 81 mg versus 325 mg twice daily for venous thromboembolism (VTE) prophylaxis following total hip or knee arthroplasty.

Methods:
This was a single-center retrospective chart review performed at Cleveland Clinic Avon Hospital between September 1, 2018 and August 31, 2019. Patients at least 18 years of age transferred to a medical ward after total knee or hip arthroplasty and prescribed aspirin 81 mg or 325 mg twice daily were eligible. Patients prescribed other antithrombotic agents upon discharge or who underwent joint revision were excluded. Data collected from the hospital’s electronic medical record included: patient demographics, body mass index, type of surgery, pertinent comorbidities, select medications, pharmacist discharge education, and discharge disposition. The primary outcome was the first occurrence of VTE 90 days post-operation. Secondary outcomes included a major bleeding event or gastrointestinal complication 90 days post-operation. Primary and secondary endpoints were identified using ICD-10 and CPT codes.

Results:
Of the 583 patients included, 340 received aspirin 325 mg and 243 received aspirin 81 mg twice daily. The overall incidence rate of the primary outcome of was 0.51% (n = 3). Specifically, the incidence of VTE 90 days post-operation was 0.88% vs. 0% in the 325 mg vs. 81 mg dose groups (p=0.27). There were no reported major bleeding events nor gastrointestinal complications 90 days post-operation.

Conclusions:
This study did not find an association between aspirin dosing and risk of VTE.
Utility of Nasal Methicillin Resistant Staphylococcus Aureus (MRSA) Screening for MRSA Intra-Abdominal Infections in Critically Ill Adult Patients: A multicenter cohort

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UAN: 0048-2020-160

Learning Objectives:

1. Describe the most common pathogens associated with intra-abdominal infections.
2. Recall the negative predictive value of nasal MRSA screening for MRSA IAIIs calculated in the presented study.

Purpose:
Intra-abdominal infections (IAIs) are a common reason for intensive care unit (ICU) admissions and are associated with significant morbidity and mortality. Methicillin-resistant Staphylococcus aureus (MRSA) is an uncommon pathogen in IAIIs, and empiric coverage is not recommended unless other risk factors are present. The primary objective of this study was to evaluate the performance of nasal MRSA screening for MRSA IAIIs in critically ill adult patients.

Methods:
This was a retrospective, multi-center, cohort study within the Cleveland Clinic Health System between January 1st, 2014 and January 1st, 2019. Adults admitted to ICUs for at least 24 hours with a diagnosis code for an IAI, a nasal MRSA screen, and an intra-abdominal culture were eligible for inclusion. The primary outcome was the performance of nasal MRSA screening for MRSA IAIIs by calculating the accuracy, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results:
Out of 863 patients screened, a total of 192 patients were included. Patients had a mean age of 60 years old (SD ±15) and 53% were male. Six (3%) patients were positive for a MRSA IAI, of which four (2%) were nasal MRSA positive. A total of 186 (97%) patients were negative for a MRSA IAI, of which 19 (10%) were nasal MRSA positive and 167 (87%) were nasal MRSA negative. The test demonstrated the following performance: accuracy 89.1%, sensitivity 66.7%, specificity 89.8%, PPV 17.4%, and NPV 98.8%. There were no significant differences in secondary outcomes, including the time from the MRSA screen to discontinuation of anti-MRSA antibiotics, duration of anti-MRSA antibiotic therapy, renal replacement-free days, in-hospital mortality, ICU length of stay, and hospital length of stay.

Conclusions:
Nasal MRSA screening can be utilized to help exclude MRSA as the cause of an IAI. Future utilization of this test may help de-escalate from anti-MRSA antibiotics more rapidly.
Impact of Clinical Pharmacy Consultation on Pain Management for Hospitalized Patients

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UAN: 0048-2020-161

Learning Objectives:
1. Address importance of pain management in hospitalized patients
2. Discuss the roles of pharmacists in pain management and its impact on patient outcomes

Purpose:
Providing appropriate pain management for hospitalized patients has been an important concern over decades. While inadequately treated pain can contribute to increased morbidity and reduced quality of life, overly treated pain may pose an increased risk to patient safety. Pharmacists’ expertise in pharmacotherapy can optimize pain management by refining ineffective or potentially harmful medications in complex patient cases. The purpose of the study is to determine the impact of inpatient pharmacy consultation on pain management for patients who are hospitalized.

Methods:
This study is a retrospective, single-center, cohort study assessing clinical pharmacy pain consultations of adult patients admitted from September 2016 to September 2019. Eligible patients with pharmacy pain consults were identified with the electronic medical record system. Of the list, up to 100 randomly selected patients who met the inclusion criteria were assessed. Patients who were younger than 18 years old, unable to rate pain score verbally due to intubation, consulted from pre-admission testing or discharged before pharmacists’ initial encounter or within 8 hours after the pharmacy consult were excluded. The primary objective is to describe the difference between the median pain score within 24 hours before the initial pharmacy pain consults and the median pain score within 24 hours after the pain consults and 24 hours prior to discharge. The secondary objectives include acceptance of recommendations by prescribers, types of recommendations made by pharmacists, adverse effects related to analgesics, and 30-day readmission rate secondary to pain. Change in average pain scores from pre-consult to post-consult will be analyzed by using a paired Wilcoxon signed-rank test. Secondary outcomes will be described as percentiles of the total cohort using descriptive statistics.

Results:
Data analysis is currently being conducted and will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Results and conclusion will be presented at the Ohio Pharmacy Residency Conference.
Evaluation of a perioperative multi-modal analgesia approach in regards to enhanced recovery after surgery

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UAN: 0048-2020-162

Learning Objectives:
1. Describe Multi-Modal Analgesia (MMA) and the proposed benefits for patients.
2. Review the impact MMA has on a small, community hospital.

Purpose:
Enhanced Recovery After Surgery (ERAS) is a comprehensive approach to surgical management. The goal is to provide the optimal surgical experience by alleviating surgical stress, while shortening recovery and maintaining patients’ functional capacities. Multi-Modal Anesthesia uses a variety of analgesics that target different mechanisms of action in the peripheral and central nervous system. The benefit of MMA in perioperative pain management includes decreasing post-operative parenteral analgesia, decreasing the occurrences of post-surgical gastrointestinal dysfunction, and decreasing the instances of post-procedure immobility. The primary aim is to evaluate the impact of MMA in a newly implemented ERAS protocol in a community hospital.

Methods:
This study sought Institutional Review Board approval prior to initiation. A review of the existing MMA protocol was completed by a clinical pharmacist and the resident prior to data collection. The clinical pharmacist and the resident provided departmental education to the anesthesiologist, the pharmacy department and the nursing staff. After departmental education was performed, the revised MMA protocol was implemented, allowing data collection to begin. The primary outcome is morphine equivalent dose (MED) scores of opioids given 24 hours post-procedure. Secondary outcomes include post-op opioid doses documented in the electronic medical record and length of stay. A retrospective chart review of the primary and secondary outcomes was performed on patients who received intravenous acetaminophen or liposomal bupivacaine for perioperative pain management. A comparative statistical analysis will be performed to determine statistical significance of prospective MMA perioperative pain management versus that in retrospective patients who received intravenous acetaminophen or liposomal bupivacaine.

Results:
Data analysis in progress. Results will be presented at the 2020 Ohio Pharmacy Residency Conference.

Conclusions:
Results will be presented at the 2020 Ohio Pharmacy Residency Conference.
Stress Ulcer Prophylaxis for Selected Medications at St. Elizabeth Healthcare
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UAN: 0048-2020-163

Learning Objectives:
1. Recognize inappropriate medication use for stress ulcer prophylaxis
2. Discuss appropriate use of stress ulcer prophylaxis at St. Elizabeth Healthcare

Purpose:
Stress ulcer prophylaxis (SUP) is commonly given to patients in critical care settings who are at a high risk for stress ulcer-related bleeding. Patient specific criteria is outlined per American Society of Health-System Pharmacists (ASHP) guidelines. While there has been an initiative to ensure patients in critical care environments are not at stress ulcer-related bleeding risk, this has led to overprescribing and inappropriate use. The focus of this cost management project is to assess appropriate stress ulcer prophylaxis use in intensive care units for pantoprazole (Protonix) and famotidine (Pepcid). The goal is to reduce the rate of inappropriate use, which will decrease healthcare costs.

Methods:
The primary methodology of this study was a retrospective review of pantoprazole (Protonix) and famotidine (Pepcid) on appropriateness of stress ulcer prophylaxis. The retrospective review consisted of a three-month sample across St. Elizabeth Healthcare facilities (Edgewood, Florence and Fort Thomas) and evaluating 100 total patients at random. These medications were assessed in each patient for appropriate usage based on guideline driven criteria or as a prior to admission medication. Each retrospective data collection reviewed appropriateness, prescribing frequency and number of administration times while the patient was in the intensive care unit. Based on this information, additional methods were created for cost-saving measures. Potential tactics include, but are not limited to, staff education, order set creation, and order set modification.

Results:
Research in progress

Conclusions:
Research in progress
Implementation of Pharmacy Education on Documentation of Penicillin Allergies and Antibiotics Prescribing at OhioHealth Mansfield Hospital

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UAN: 0048-2020-164

Learning Objectives:

1. Identify impact of education on penicillin allergy documentation
2. Describe impact of penicillin allergy labels on patient outcomes

Purpose:
Penicillin-allergic patients hospitalized for infections experience longer stays and are more likely to develop C. difficile, MRSA, and vancomycin-resistant Enterococcus. Of the 10% of patients who self-report this allergy, it is estimated that 90% of them lack the immunogenic origin of true hypersensitivity and are considered inappropriately labeled. The primary objective of this project was to determine the effect of allergy assessments performed by medication reconciliation technicians on the number of ‘unknown’ reaction types to penicillin documented in the electronic medical record. The secondary objective was to evaluate the use of beta-lactam antibiotics among patients for whom an allergy assessment was completed using our medication reconciliation technicians.

Methods:
A retrospective chart review was conducted on adult patients with a penicillin allergy admitted to OhioHealth Mansfield hospital through the emergency department and whose medication reconciliation was performed by a trained pharmacy technician. Education was provided to medication reconciliation technicians, prescribing clinicians, and pharmacists on the project rationale. Technicians were provided with new patient interview questions, and pharmacists and clinicians were directed to changes made by technicians to the allergy history. Data was compared from 3 month time periods before and after implementation of the educational intervention.

Results:
There was no statistically significant difference between groups for any outcome measure, though the data trend favored a slight increase in known reaction types and beta-lactam antibiotic use. A slight decrease in 30 day infection-related readmissions and unknown reaction types in proportions of 9.9% to 4.9% and 49.3% to 51.2%, respectively. Beta-lactam usage increased from 49.3% to 51.2%.

Conclusions:
A wide-scale impact on reaction type documentation, beta-lactam usage, and readmissions was not demonstrated in the study population, but the clinical impact on individual patients whose antibiotic therapies may have been more appropriately targeted may not be fully realized. Patient-level antimicrobial stewardship efforts in the face of penicillin allergies are often enacted by consulting cross-reactivity data of beta-lactam antibiotics. The ability to perform this risk assessment and choose a therapy relies on the accuracy and completeness of the allergy history taking. A more pronounced impact may be detectable in future iterations of this project with larger sample sizes and adjustments to educational methods.
Medication Use Evaluation of Vancomycin for Methicillin-Resistant Staphylococcus aureus Coverage in Pneumonia at a Rural Community Hospital

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Wendy Nagy, RPh; Jordan Vosburg, PharmD, BCCCP; Amanda Kobylinski, PharmD, BCGP

UAN: 0048-2020-165

Learning Objectives:

1. Explain how MRSA PCR testing has led to the reduction of empiric antimicrobial utilization of vancomycin without harmful effects on patient outcomes
2. Discuss how pharmacists have the potential of improving antimicrobial stewardship and expanding clinical services with the use of MRSA nasal PCR assay results to recommend de-escalation of antimicrobial therapy in lower respiratory tract infections

Purpose:
MRSA polymerase chain reaction (PCR) assays offer a rapid technique for detecting MRSA colonization of the nares with a negative predictive value between 95.2%- 99.2%. This testing has led to the reduction of empiric antimicrobial utilization of vancomycin without harmful effects on patient outcomes. The purpose of this study is to evaluate the cost-benefit of initiating the Cleveland Clinic S. aureus Nasal PCR for Stewardship of Vancomycin in Adult Patients with Pneumonia (SNAP) Program at Ashtabula County Medical Center (ACMC) to promote antimicrobial stewardship of vancomycin therapy for MRSA pneumonia.

Methods:
A retrospective chart review of patients who received vancomycin from January 1, 2019 through December 31, 2019 at Ashtabula County Medical Center (ACMC) will be conducted to determine if the use of S.aureus nasal swab PCR testing would lead to earlier discontinuation of vancomycin therapy, cost-savings, and decrease in adverse events, such as acute kidney injury (AKI), while improving antimicrobial stewardship and pharmacist efficiency. The following factors will be taken into consideration to develop a cost-analysis to determine the benefit of initiating S.aureus nasal swab PCR testing: start-up costs of initiating PCR testing and cost of subsequent testing compared to the cost of MRSA colonization nasal swabs, number of vancomycin doses received after negative MRSA culture screen (including the cost of drug, IV bag, cost of pharmacy time to mix and cost of nursing time to administer), number of unnecessary levels ordered (including cost of lab time to collect and run test) and cost of pharmacist time for the consult.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Residency Conference.
Impact of a pharmacist-led post-discharge transitions of care (TOC) clinic

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UAN: 0048-2020-166

Learning Objectives:

1. Outline the process for which a referral can be made to the transitions of care clinic
2. Discuss the steps involved in a transitions of care clinic appointment

Purpose:
Patient readmissions can cost a healthcare system nearly 20 billion dollars per year and effect reimbursement rates. Available literature states that a portion of these readmissions may be medication related and could be the result of inadequate transition in care. Increased risk for medication errors can occur in patients with complex medication regimens, the elderly, or those who have poor health literacy. A greater emphasis on transitions of care could prevent these medication errors. Pharmacist-led transitions of care teams have shown benefit in addressing medication discrepancies and potentially lowering readmissions. At Aultman Alliance Community Hospital, a pharmacy-led medication reconciliation program is already being utilized and discharge counseling is provided to high risk patients. The addition of a TOC clinic would further provide the final step in assessing medication therapies. Therefore, the purpose of this study is to assess the impact of a pharmacist-led post-discharge clinic in reducing 30-day readmission rates while identifying medication issues, improving medication understanding, and adherence.

Methods:
The pharmacist scheduled patients discharged from Aultman Alliance Community Hospital that met inclusion criteria from November 1, 2019 to March 31, 2020 for a post-discharge medication review. Transitions of care appointments occurred between 3 to 6 days after hospital discharge. During these appointments, a patient’s medications were reviewed for the purpose, directions, adverse drug reactions, and adherence. The primary outcome measured was 30-day hospital readmission. Secondary outcomes assessed were proper discharge follow-up, adherence to discharge medications, and patient issues with medication therapy. At the completion of the visit, follow-up reports were assembled and sent to the patient’s provider office.

Results:
Final results will be presented at the Ohio Pharmacy Residency Conference

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Residency Conference
Specialty Pharmacy Expansion in a Community Health-System

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UAN: 0048-2020-167

Learning Objectives:
1. Discuss a potential timeline for ensuring regulatory compliance for a new specialty pharmacy location.
2. Identify potential barriers to successful opening of a specialty pharmacy.

Purpose:
Specialty pharmacies assist patients with management of high-cost, high-risk medications used for treatment of complex disease states. Benefits of in-house specialty pharmacy services to health-systems include improved continuity of care and readmission prevention as well as revenue from prescription dispensing. St. Elizabeth Healthcare opened a specialty pharmacy in 2018 and quickly began to outgrow its limited space. A new location was opened in March 2020 to accommodate a growing patient population managed by specialty pharmacists in collaborative care agreements with specialty physician practices. In addition to medication and adherence counseling, services provided by the specialty pharmacy include tracking of patient outcomes and prior authorization management and follow up. Previous literature has detailed establishment of new specialty pharmacies but is lacking on the challenges and considerations posed by transitioning existing services to new locations.

Methods:
This was a systemwide quality improvement initiative focused on expanding specialty pharmacy services to patients in the northern Kentucky region. A new specialty pharmacy was constructed to allow for provision of higher quality care. Multiple time-sensitive regulatory and compliance requirements were met, and a Quality Management Committee was organized to continuously monitor patient outcomes and satisfaction in preparation for accreditation. Success of the transition process was defined as the percentage of prescriptions successfully transferred to be filled at the new location, which fluctuated due to payer contracts and requirements, and was measured weekly throughout the first month of business.

Results:
To be presented at the Ohio Pharmacy Residency Conference

Conclusions:
To be presented at the Ohio Pharmacy Residency Conference
Glucocorticoid use in the acute management of chronic obstructive pulmonary disease exacerbation in a community hospital

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Michelle Poole, PharmD, BCPS, BCCCP; Samantha Loutzenheiser, PharmD, BCPS;

UAN: 0048-2020-168

Learning Objectives:

1. Review guideline recommendations for glucocorticoids in the management of acute exacerbations of chronic obstructive pulmonary disease (AECOPD)
2. Discuss glucocorticoid dosing patterns for acute exacerbations of COPD at a community hospital

Purpose:
Systemic glucocorticoids are a mainstay of AECOPD treatment with data to support improved outcomes. The current GOLD Guidelines recommend oral prednisone 40mg once daily for five days as recent studies have shown no difference in outcomes for longer durations of therapy or varying routes of administration. Despite this, retrospective studies have demonstrated discordant prescribing. The aim of this study is to evaluate glucocorticoid use for AECOPD in patients admitted to Cleveland Clinic Medina Hospital.

Methods:
This retrospective study included patients ≥ 40 years old who received systemic glucocorticoids for AECOPD in 2018. Exclusion criteria included: diagnosis of asthma or pneumonia, pregnancy, systemic glucocorticoids within seven days prior to admission, or Infectious Diseases consult for concurrent lung infection. The primary objective characterized the initial glucocorticoid choice, dose, route, and duration. Secondary outcomes evaluating length of stay, 30-day readmission rate to a Cleveland Clinic facility, time to baseline oxygen requirement, ICU admission, and adverse reactions were compared between two groups: subjects who were prescribed guideline-concordant glucocorticoid therapy within 48 hours of admission versus after 48 hours into admission.

Results:
Out of 105 patients included (mean age 72 years), 60% were former smokers, and 36% were current smokers. Intravenous methylprednisolone was initially ordered for 72.4% of patients. The median initial daily glucocorticoid dose ordered was 150mg prednisone equivalents. The average inpatient duration of glucocorticoids was 4 days (median admission length of 4 days), however, 48.6% of patients were prescribed outpatient a glucocorticoid taper for an average total duration of 17 days. No differences were found in secondary outcomes between the two groups. However, more patients experienced hyperglycemia in the group that did not receive a guideline-concordant glucocorticoid dose until after 48 hours into admission.

Conclusions:
Glucocorticoid dosing and duration at our institution exceeded guideline recommendations.
Capturing pharmacy technician productivity within an infusion center

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UAN: 0048-2020-169

Learning Objectives:

1. Discuss current productive workload of pharmacy technicians in a large volume community hospital infusion center
2. Describe the impact of implementing new USP guidelines
3. Determine effectiveness of a time-motion analysis study

Purpose:
Within the coming year, health systems across the country will implement new USP requirements. There is a lack of literature quantifying the impact of these regulations on standard workflow involving handling and compounding hazardous drug products. Additionally, the effect of these new guidelines on pharmacy productivity globally is unclear. In June 2019, OhioHealth Grant Medical Center opened an outpatient (OP) infusion center allowing oncology services to be provided in one centralized location. With this new location, a brand new USP compliant clean room and pharmacy was built to support inpatient (IP) and OP infusion services. Since time of opening, the pharmacy workload within the infusion center has exponentially increased both in patient volume and USP related processes. The purpose of this study is to understand the current productive workload of pharmacy technicians through the implementation of a time-motion analysis in an infusion center environment.

Methods:
This single-center, time-motion analysis is designed to manually collect data prospectively for all pharmacy technicians who work in the infusion center. Observing the technicians for a minimum of two weeks within the November 2019 – December 2019 time period. In order to document the time involved, Ocularis surveillance software will be utilized. Data will be collected using a project-specific collection tool. Variables that will be timed include: personal protective equipment (PPE) donning and doffing, intravenous (IV) line priming, validation of product selection within electronic health record, compounding products in both negative and positive pressure clean rooms, restocking products throughout the day, daily and weekly cleanings, and other various responsibilities that contribute to their productive workload.
The primary outcome of this study is to define pharmacy technician productivity by outlining the global workflow of the technicians and the time associated with individual tasks. The secondary outcome is to determine the effects of the implementation of new USP standards in infusion pharmacy technician workflow. We hope to validate the need for additional pharmacy technician resources in the infusion center. Conducting the time analysis will provide additional understanding of the current workload and potentially lead to financial and clinical outcomes at the infusion center.

Results:
Final results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Final results and conclusions will be presented at the Ohio Pharmacy Resident Conference.
Effect of implementing a multifactorial approach to pharmacy operations and pharmacist education to managing outpatient pending prescriptions

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UAN: 0048-2020-170

Learning Objectives:

1. Identify the most common flagged pending prescriptions at the Cincinnati VA Medical Center.
2. Discuss pharmacists role in the management of outpatient pending prescriptions.

Purpose:
This quality improvement initiative serves to evaluate the effects of implementing a multifactorial approach on managing pending prescriptions within the Cincinnati Veterans Affairs Medical Center (CVAMC) Outpatient Pharmacy department. The primary objective is to evaluate the effect of pharmacy staff education, implementation of standard operating procedures, standardized note templates and a pending prescription database (PPD) on improving the overall pending file by decreasing the number of prescriptions in the file and overall relative age.

Methods:
Prior to initiating the data collection process, the project protocol was submitted to the University of Cincinnati Institutional Review Board and the VA Research and Development Committee and approved. This will be an observational quality improvement review of computerized outpatient prescription data. Data for this project will be obtained from two national VA analytics reports maintained by the VA Pharmacy Benefits Manager (PBM). Outpatient pharmacy prescriptions from 7/1/18 to 6/31/19 have been assessed as part of normal operations quality assurance, number of prescriptions in the pending file and most frequently flagged medications and supplies. Based upon this baseline data, education and training of pharmacy staff through implementation of new note templates will occur with the goal of targeting the top medications and recurrent issues seen. In addition, pharmacists will be trained on the new pending prescription database (PPD) and how to effectively use it. Data will be analyzed to identify the number of orders flagged, the count of each specific medication flagged, and the reason for flag. Post-implementation data will be collected in two phases from the time the database was implemented (9/1/2019-11/31/2019) and the time the note templates were implemented (12/1/2019-2/29/2020)

Results:
Results will be presented at the Ohio Pharmacy Resident Conference.

Conclusions:
Conclusions will be presented at the Ohio Pharmacy Resident Conference.
Post-Operative Clevidipine Use in Isolated Coronary Artery Bypass Graft Patients and Association With Respiratory Insufficiency at an Academic Medical Center

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UAN: 0048-2020-171

Learning Objectives:
1. Define the proposed pathophysiology of clevidipine-induced respiratory insufficiency
2. Identify pharmacokinetic characteristics that make clevidipine ideal for blood pressure management post-CABG

Purpose:
Clevidipine (CLV) is a rapid acting intravenous calcium channel blocker used for blood pressure management. Since approval, safety results from two randomized controlled trials and one case report regarding the use of CLV in this setting have suggested a possible association with CLV use and respiratory insufficiency possibly through intrapulmonary shunting. This retrospective cohort sought to determine if CLV use was associated with respiratory insufficiency post-CABG.

Methods:
Adult patients were included if they underwent an isolated CABG procedure and were allocated into the CLV arm if there was receipt of CLV for at least 30 minutes within and up to 48 hours of surgery. The primary outcome was respiratory insufficiency defined as an increase in FiO2 (>10%) or an increase in PEEP (>5cm H2O) while intubated, or oxygen delivery modality advancement (nasal cannula to high-flow (HFNC), HFNC to noninvasive positive pressure ventilation, and re-intubation). Secondary outcomes included patient disposition, intensive care unit length of stay (days), hours on ventilation, and percentage of patients changed from CLV to another intravenous antihypertensive agent or discontinuation of CLV within six hours.

Results:
A total of 235 patient encounters were included (164 in the CLV cohort, and 71 in the non-CLV cohort). Respiratory insufficiency occurred in 32 CLV participants compared to two non-CLV participants (19.5% vs 2.8% respectively,

Conclusions:
Based on our study CLV use was associated with an increased risk of respiratory insufficiency. Additional studies are warranted to assess the association of clevidipine and respiratory insufficiency.
The role of transesophageal echocardiography in the management of non-Staphylococcus aureus gram-positive bacteremia

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UAN: 0048-2020-172

Learning Objectives:

1. Identify which variables correlate with an increased risk for endocarditis in the setting of non-Staphylococcus aureus gram-positive bacteremia.
2. Discuss the evidence supporting the use of transesophageal echocardiography in non-Staphylococcus aureus gram-positive bacteremia.

Purpose:
Evaluate practices in obtaining transesophageal echocardiography (TEE) for the management of non-Staphylococcus aureus gram-positive bacteremia (non-SAB).

Methods:
A retrospective, observational study examined the utilization of TEE in patients with non-SAB in conjunction with published scoring systems for Enterococcus spp. (DENOVA) and Streptococcus spp. (HANDOC). These scoring systems include risk factors for endocarditis, with 1 point assigned for each factor and a score \( \geq 3 \) resulting in a recommendation for TEE. Adults admitted to two tertiary care hospitals with \( \geq 1 \) positive blood culture for Enterococcus spp. or Streptococcus spp., or \( \geq 2 \) positive blood cultures for coagulase-negative Staphylococcus (CoNS) with matching susceptibilities were included. The primary outcome was DENOVA and HANDOC scores. Secondary outcomes included subgroup evaluations based on organism, patient outcomes, and treatment characteristics.

Results:
Of the 310 patient encounters included, majority of patients had streptococcal bacteremia, \( n = 184 \) (59.3%). Less than one-third of patients (\( n = 96, 31\% \)) underwent TEE. In patients with enterococcal bacteremia, TEE was utilized in 66.7% of patients with a DENOVA score \( \geq 3 \) vs 47.5% with a score \( \leq 2 \) (\( p = 0.11 \)). In patients with streptococcal bacteremia, TEE was utilized in 34.0% of patients with a HANDOC score \( \geq 3 \) vs 11.5% with a score \( \leq 2 \) (\( p \leq 0.001 \)). The TEE group more commonly had valvular disease, auscultation of murmur, prosthetic valves or a cardiovascular device. DENOVA and HANDOC scores were significantly higher in patients who underwent TEE (\( p \leq 0.001 \)). This difference was seen in Enterococcus and Streptococcus spp. groups, but not CoNS.

Conclusions:
Despite DENOVA and HANDOC recommendations, TEEs were inappropriately obtained for many patients and even more patients did not receive TEE when indicated, based on HANDOC or DENOVA score. Proper steps should be taken to improve echocardiography prescribing practices. Further prospective research is necessary to explore the benefit of a reliable scoring system for CoNS.
Pharmacist Role in Medication Reconciliation within Inpatient Internal Medicine Teams to Improve Transitions of Care at Summa Health System - Akron Campus

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UAN: 0048-2020-173

Learning Objectives:

1. Describe the importance of adequate medication reconciliation during transitions of care
2. Recognize the importance of adequate discharge medication counseling during transitions of care
3. Be able to summarize the results of this quality improvement project

Purpose:
In 2019, The Joint Commission cited medication reconciliation as a factor to improve communications in transitions of care. The Summa Transitions Excellence Program (STEP) utilizes a pharmacy team to perform medication reconciliation and discharge medication counseling. STEP has reduced readmission rates and length of stay when implemented on a medical floor. The goal of this quality improvement project is to assess the feasibility of extending STEP to inpatient internal medicine teams.

Methods:
Pre and post-implementation data were collected. A pharmacy resident performed medication reconciliations and discharge counseling, while the pharmacists on the medicine teams continued to facilitate transitions of care communication. Patients admitted to a STEP-established unit or who were not scheduled for a follow-up visit in the internal medicine center (IMC) within 30-days of discharge were excluded.
The primary outcome was rate of readmission or emergency department (ED) visits within 30 days. Secondary outcomes included the outpatient follow-up visit attendance rate and the number of interventions made by a pharmacist during the admission and at the follow-up visit.
For numeric variables, a two-factor ANOVA model with fixed effect for epoch and previous IMC status was determined. For categorical data, the homogeneity of the odds ratio across the IMC strata was tested for equality via Breslow Day tests. Mantel-Haenszel tests were employed to test for epoch level differences.

Results:
The rate of readmission/ED visits was similar between the two groups (33.3% vs 42.4%, P=0.551). The attendance rate to IMC appointments (37.5% vs 36.4%, P=0.878) and number of pharmacist-made interventions during each month were also similar (0.4 ± 0.92 vs 0.7 ± 1.05, P=0.204).

Conclusions:
These results demonstrate that additional resources did not improve outcomes in this patient population. Given the high readmission rate and low follow-up rate, further study and intervention is needed to improve these outcomes.
Increased utilization of adherence tools and its impact on proportions of days covered to antiretroviral therapy for persons living with HIV

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UAN: 0048-2020-174

Learning Objectives:

1. Define the goal PDC for persons living with HIV
2. Compare and contrast how different adherence tools can impact adherence as measured by PDC
3. Determine the effect of pharmacist intervention on adherence to antiretroviral therapy in persons living with HIV

Purpose:
The purpose of this study is to determine if utilization of adherence tools such as automatic refill, medication synchronization, text message alerts, and 90 day refills impacts proportion of days covered (PDC) in persons living with HIV.

Methods:
Adult patients who filled prescriptions for antiretroviral therapy at least 3 times in 2019 from study stores were eligible for this study. This excludes patients on pre-exposure prophylaxis, post-exposure prophylaxis. Patients with CareSource managed Medicaid were additionally excluded due to changes in insurance contracting between 2019 and 2020.
Patient records were reviewed by Walgreen Co. corporate via automated review and by the principle investigator via manual review to determine patient eligibility. The data collected at baseline is as follows: patient demographics including date of birth, age, gender, address, and phone number; baseline utilization of adherence tools indicated by Y/N indicators in patient profile within the patient’s electronic medical record; PDC for 2019.
Eligible patients were mailed a letter explaining the study along with a one-page document explaining the offered adherence tools. One week after the letter was mailed, patients were contacted via telephone. Three attempts were made to connect with each patient. Contacted patients were offered enrollment in adherence tools that they were not enrolled in at baseline. Verbal consent was obtained upon initial contact with each patient. Enrollment began February 5, 2020 and ended on February 17, 2020.

Results:
PDC from the start of intervention to 2 months post-enrollment and 6 months post-enrollment will be collected to determine results of the study.

Conclusions:
Research in progress.
Impact of continuous infusion opioids on discharge opioid prescriptions

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UAN: 0048-2020-175

Learning Objectives:
1. Identify the impact of implementing the ABCDEF Bundle on providing care to critically ill patients.
2. Recognize the severity of the opioid epidemic and its implications on providing analgesia and sedation in the ICU.

Purpose:
The 2018 Pain, Agitation/Sedation, Delirium, Immobility, and Sleep (PADIS) Guidelines recommend opioids as a first-line treatment option for non-neuropathic pain in critically ill adults and prioritization of pain management before administration of sedatives. Although analgesia-first sedation is recommended, the downstream effects, such as ICU-acquired opioid dependence, are not well described. The purpose of this study is to determine the impact of continuous infusion opioids for mechanically ventilated patients on discharge opioid prescriptions.

Methods:
This was a single-center, retrospective chart review conducted on mechanically ventilated patients who were admitted to the medical ICU at a tertiary medical center from July 1, 2018 to June 30, 2019. The primary aim of this study is to compare the incidence of discharge opioid prescriptions between those receiving opioid infusions versus intermittent administrations during mechanical ventilation. Secondary aims include determining risk factors for opioid discharge prescribing and readmission within 90 days with either an active opioid prescription or diagnosis of opioid use disorder.

Results:
A total of 100 patients were included. There was no statistically significant difference in the incidence of discharge opioid prescriptions between the groups (opioid infusion 8 patients, intermittent opioids 7 patients; p=0.933). Only one patient was readmitted within 90 days with documented opioid use disorder and 11 patients with prescription opioids on their home medication list. A best-fit logistic regression model including type of opioid administration (p=0.275), length of stay (p=0.018), and opioid dose (p=0.137) showed that length of stay was the only significant predictor of discharge opioid prescribing.

Conclusions:
The incidence of discharge opioid prescriptions for critically ill mechanically ventilated patients did not differ based on opioid administration strategy. ICU length of stay appears to be a predictive factor of whether a patient was discharged with an opioid prescription.
Screening and Treatment of Asymptomatic Bacteriuria in the Emergency Department

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UAN: 0048-2020-176

Learning Objectives:
1. Recognize the problem of treating asymptomatic bacteriuria (ASB) with antimicrobial therapy
2. Identify guideline-based recommendations for screening and treatment of ASB

Purpose:
Asymptomatic bacteriuria (ASB) is the presence of bacteria in the urine at counts qualifying for infection without urinary tract infection (UTI) symptoms. Randomized trials show no reduction in mortality, morbidity, or UTI recurrence from antimicrobial treatment in absence of UTI symptoms. Infectious Diseases Society of America guidelines recommend that most patients without UTI symptoms do not undergo screening or treatment for ASB. To increase awareness of the difference between ASB and clinical UTIs, Summa Health’s antimicrobial stewardship team developed a screening algorithm implemented by infection control services as screensavers on all computers in patient care areas. The objective of this quality improvement project was to determine the effect of screensaver education on screening and treatment of ASB in the Emergency Department (ED).

Methods:
Medical records of patients with a urine culture ordered before and after screensaver implementation were retrospectively reviewed. Patients ≥ 18 years admitted and discharged from the ED with a urine culture order were included. One-hundred patients in each group were sequentially reviewed by their date of ED admission. Primary outcomes were the percentage of patients with urine cultures ordered who had no documented UTI symptoms and the percentage of patients with ASB treated with antibiotics before and after algorithm posting, and as a total group.

Results:
Overall 25% of patients did not have UTI symptoms. There was no significant difference in cultures ordered for those without UTI symptoms between groups (22% vs. 28%, p=0.327). There was also no significant difference between the percentage of patients with ASB treated with antibiotics before and after screensaver implementation (0% vs 2%).

Conclusions:
Screensaver education was not sufficient to change screening and prescribing practices for ASB, although few patients with ASB were treated in either group. Additional educational efforts are warranted to modify screening for UTI in those without symptoms.
Assessment of the use of procalcitonin in hospitalized, non-critically ill patients with chronic obstructive pulmonary disease exacerbations

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UAN: 0048-2020-177

Learning Objectives:
1. Describe current GOLD guideline recommendations regarding antibiotic use in COPD exacerbations
2. Explain the impact of the appropriate use of procalcitonin to guide antibiotic therapy in COPD exacerbations

Purpose:
The use of antibiotics in chronic obstructive pulmonary disease (COPD) exacerbation is controversial. Current guidelines indicate appropriate antibiotic prescription may improve clinical outcomes. Previous studies found procalcitonin (PCT)-guided algorithms are potentially superior to standard protocols for COPD exacerbations; however, the optimal PCT cut-off is unknown. The purpose of this study is to assess the use of PCT in hospitalized, non-critically ill patients with COPD exacerbation who have an initial PCT serum concentration ≤ 0.5 µg/L.

Methods:
This retrospective, cohort, multicenter study included patients with a primary diagnosis of COPD exacerbation with a documented initial PCT of ≤ 0.5 µg/L admitted from January 1, 2017 through September 30, 2019. PCT use was considered appropriate if antibiotics were never initiated or if antibiotics were discontinued within a defined time period based on antibiotic frequency (24 hours if frequency ≥ 24 hours and 12 hours if frequency < 24 hours). The primary outcome was difference in hospital LOS for patients with appropriate PCT use versus inappropriate PCT use. Secondary outcomes included antibiotic days of therapy (DOT), 30-day all-cause and COPD-related readmission rates.

Results:
One hundred fifty-nine patients [appropriate PCT use (n=50) and inappropriate PCT use (n=109)] were included in this study. The median LOS (2.7 days vs. 3.0 days; p=0.02) and median DOT (1 day vs. 9 days; p

Conclusions:
Appropriate antibiotic discontinuation or not initiating antibiotics in patients with COPD exacerbation and an initial serum PCT level < 0.5 µg/L resulted in a statistically significant shorter hospital LOS. While there is evidence that supports using a PCT-driven protocol in COPD exacerbation, further research is needed.
The impact of post-hospital discharge transitional care management and pharmacist intervention on medication-related problems in family medicine patients

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UAN: 0048-2020-178

Learning Objectives:

1. Describe available literature regarding the impact of pharmacist intervention in post-hospital discharge patients
2. Define the pharmacist’s role in transitional care management and transitions of care billing

Purpose:
Pharmacist intervention encompassing medication reconciliation (MR), education, and medication therapy adjustments, in post-hospital discharge patients has been shown to decrease hospital readmission rates. The objective of this study is to evaluate if pharmacist intervention in patients post-hospital discharge can decrease unresolved MR discrepancies and increase reimbursement through transitional care management (TCM) billing.

Methods:
This single center, retrospective study was completed at an academic-affiliated community hospital. In conjunction with an onsite primary care physician (PCP) office, the transitions of care (TOC) team implemented pharmacist-led post-discharge follow-up phone calls. Patients received a call to review their medication history and provide medication education within 2 business days of discharge. The pharmacist triaged identified MR discrepancies based on severity and contacted the PCP for clarification and recommendations, as needed. The primary outcome was to compare pre- and post-service line expansion rates of unresolved severe/significant and life (SS&L) threatening MR discrepancies at time of PCP appointment. Secondary outcomes include comparing time to and rate of readmission within 30 days of discharge, time to PCP follow up, dollar amount reimbursed, pharmacist interventions, and time spent per patient.

Results:
One-hundred patients were included in this study, 50 patients per group. In total, 53 MR discrepancies were found in the pre-group, and 26 in the post-group, of which nine in the pre-group and five in the post group were SS&L. Pharmacist intervention in the post group resolved four SS&L MR discrepancies, compared to zero resolved in the pre-group where pharmacist intervention did not occur (p= 0.005). No significant differences were observed between groups in readmission rates or time to readmission. The number patients with completed TCM billing increased in the post group, but was not significant (p = 0.317).

Conclusions:
Pharmacist intervention had a significant impact on the number of unresolved SS&L MR discrepancies prior to PCP follow-up appointment and resulted in a higher number of patients with completed TCM billing.