Development and implementation of technology downtime simulations at Baystate Medical Center
A. Rock; A. Pesaturo; S. Illig; Baystate Medical Center, Springfield, MA

BACKGROUND

Advancing hospital technology

Improvements in safety and patient care

Reliance on technology for daily workflow

Technology

Inconsistent response to downtime events

Delays in care

Increased dispensing errors

Research Question: Do mock simulation based trainings in addition to creation of new protocols increase the self-sufficiency of frontline pharmacy staff during downtime events more so than new protocols alone?

METHODS

A gap analysis was performed to identify areas with and without downtime protocols in place. BD Pyxis™ Logistics Carousel was identified as an area without comprehensive downtime standard operating procedures.

B - Point Assessment

Describe
• Where to find resources, to help triage carousel down time problems.

Explain
• How to forward labels from this carousel printer A to carousel printer B or C.
• What order you would begin to manually enter a batch fill in the event of an extended time without the batch fill dropping?
• How many hours would you wait till manually entering the fill?

Identify
• Who to contact and in what order for a mechanical obstruction.
• Where the carousel drill, clamp, downtime binder and paper inventory are.
• Where replacement batteries are for the scanners, and explain how to reset them.
• Where the key is to open drill access panel.

Demonstrate
• How to open drill access panel, and explain how the drill is attached and functions.

RESULTS

Table 1: Scores before and after initial training

<table>
<thead>
<tr>
<th>Training</th>
<th>Score Before</th>
<th>Score After</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
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<tr>
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<td>3</td>
<td>8</td>
<td>8</td>
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<td>8</td>
<td>3</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>8</td>
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</tr>
<tr>
<td>10</td>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Average 1 8 8

Table 2: Reassessment scores and analysis of training

<table>
<thead>
<tr>
<th>Training</th>
<th>Score After</th>
<th>Total Score</th>
<th>Time (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>8</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Average: 8 8 5.75

% Successful: 100

% Increase in Score: 41.18

% Faster Response: 66.67

DISCUSSION

Limitations
• Number of staff trained and assessed (small numbers for analysis)
• Training causes interruptions in workflow
• Difficulty in capturing entire staff

Future Implications
• Downtime protocols should be implemented for all complex technology.
• The initial mock simulation based training of these protocols should occur during pharmacist and pharmacy technician training/orientation.
• Periodic planned mock simulations should be planned and additional staff scheduled to prevent workflow interruptions should be provided to accommodate these trainings.

CONCLUSIONS

• Simulated based training increases response rates and accuracy in response

• The results of this project could be extrapolated to other complex technology or operational systems

CITATIONS

1. State of Pharmacy Automation 2016 - Vol. 13 No. 8 - Page #18
With the continued rise in pharmaceutical drug costs, stabilizing pharmacy spend with cost-containment initiatives remain a strategic focus. Pharmacy leaders are guiding collaborative efforts to buy, manage, and use medications as cost-effectively as possible.

Clinical pharmacy services are able to provide an important foundation for a successful high-cost medication-utilization management program.

Baystate Medical Center (BMC) participates in the 340B Program as well as group purchasing organizations (GPO).

Three of the top ten drug expenses at BMC are hemostatic agents.

- Humate® (recombinant factor VIII)
- Benefix® (factor prothrombin complex concentrate)
- FEIBA® (activated prothrombin complex concentrate)

Understanding the workflow of high cost medications, such as hemostatic agents, is important operationally and financially.

**Objectives**

- Identify and address areas of improvement in the process of drug procurement through administration and charging for hemostatic agents

**Methods**

- A gap analysis was created and performed to identify areas of sufficient and areas of improvement for high-cost medications
- Initial target medications:
  - Humate P®
  - FEIBA®

**Date range:** Retrospective chart review of historical order data

- FEIBA®: Jun. 2016 - Jul. 2018

**Data collected:**

- Least amount of drugs purchased from wholesale acquisition (WAC) account
- Drugs purchased from 340B in 340B eligible patients
- Proper stock available on shelves
- Expiration dating done correctly
- Restrictions/ criteria for initiation
- Appropriate medication verification
- Pharmacist aware of patients on the high-cost medications to determine if still meet criteria
- Charted on the medical administration record (MAR)
- Amount of medications charged-amount of medications re-purchased

**Outcomes**

- Gap analysis results: Humate P® → n=20 patients
  - FEIBA® → n=16 patients

**Areas of improvement identified:**

1. Lack of awareness of predefined criteria related to ordering, verifying, and dispensing
2. Lack of standardized process for documenting hemostatic agents dispensed
3. Inconsistent documentation and dispensing
4. Inaccurate medication charting, resulting in lost charges and missed tracking for medications ordered
5. Decision between cost-containment strategies: Consignment

**Lost charges from high-cost medications, such as hemostatic agents, can be costly to the department and institution**

- Lack of awareness of clear criteria for ordering, verifying and dispensing hemostatic agents increases risk for medication errors
- Cost-containment can be complex and requires high-level strategic planning and extensive collaboration

†Successful drug cost management requires systematic attention to and integration of both clinical and operational approaches

Total financial opportunity over 2 years= $408,533

- Cost savings using 340B: $24,655
- Revenue gained from accurate charge capture: $383,878

**Discussion**

- Repeat gap analysis for hemostatic agents in 6 months to assess compliance with SOP
- Consider implementing additional drugs into the high-cost medication SOP

**References**

Baystate Health

Evaluation of AUC-based Vancomycin Dosing Practices in Patients with Bloodstream Infections Caused by Methicillin-Resistant Staphylococcus aureus

Rebecca R. Marcink, PharmD; Seth T. Housman, PharmD, MPA; Lydia J. D’Agostino, PharmD, BCPS; Erica L. Housman, PharmD, BCPS (AQ-ID)

1. Baystate Medical Center; 2. Western New England University CoPHS – Springfield, Massachusetts

BACKGROUND

- Vancomycin is often considered the drug of choice for serious methicillin-resistant Staphylococcus aureus (MRSA) infections, including bacteremias.
- Area under the curve/mid inhibitory concentration (AUC/MIC) ratio is the pharmacodynamic parameter best associated with vancomycin’s effectiveness in treating such infections.
- Current guidelines advocate for an AUC/MIC target of at least 400 to achieve optimal bactericidal effect against S. aureus.
- High trough levels have been associated with an increased risk of nephrotoxicity.
- Recent literature suggests:
  - Single trough levels offer little prediction of the AUC.
  - The goal AUC/MIC of >400 can be achieved with trough levels much lower than the recommended 15-20 mg/L.
- At Baystate Medical Center (BMC), vancomycin AUC-based monitoring is performed for patients with identified MRSA bacteremia.
- On initiation of therapy, empiric AUC calculations are performed using population-based kinetics.
- Once the patient is at steady state, a peak and trough level are obtained and patient-specific AUC is calculated.

OBJECTIVES

Primary:

- Comparison between empiric AUC calculations and patient-specific AUCs

Secondary:

- Percent of patients who met the AUC goal of ≥400 mg/L•hr⁻¹
- Mean initial trough concentration in those that met goal versus those that did not

METHODS

- All adult patients with bloodstream infections caused by MRSA treated with AUC-based vancomycin regimens from Jan 2018 to Feb 2019 were reviewed.
- Exclusion criteria:
  - Pregnant
  - Receipt of renal-replacement therapy while on vancomycin
  - Lack of two steady-state vancomycin concentrations
  - Institutional review board approval was granted prior to data collection.
- Empiric vancomycin AUC and pharmacokinetic data, as calculated via Vancomycin Initial Dosing Calculator on vancopk.com, were collected.
- Patient-specific AUC and pharmacokinetic data were calculated using the trapezoidal equation-based approach.
- Vancomycin MICs were assumed to be 1 mg/L.

RESULTS

- 76 adult patients treated with vancomycin for MRSA bacteremia:
  - Patients Excluded:
    - Pregnant: 3
    - Received renal-replacement therapy: 9
    - Did not have two levels collected: 22
  - 42 patients included for review

- Demographics & Clinical Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (± SD)</th>
<th>N (%)</th>
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<tbody>
<tr>
<td>Male</td>
<td>25 (25.5)</td>
<td>5 (21.9)</td>
</tr>
<tr>
<td>CKD**</td>
<td>20 (47.6)</td>
<td></td>
</tr>
<tr>
<td>Source of Infection:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Skin and soft tissue</td>
<td>11 (26.2)</td>
<td></td>
</tr>
<tr>
<td>- Endovascular</td>
<td>10 (23.8)</td>
<td></td>
</tr>
<tr>
<td>- Intravenous catheter</td>
<td>6 (14.3)</td>
<td></td>
</tr>
<tr>
<td>- Bone and joint</td>
<td>5 (11.9)</td>
<td></td>
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<tr>
<td>- Respiratory</td>
<td>2 (4.8)</td>
<td></td>
</tr>
<tr>
<td>- Other/unknown</td>
<td>8 (18.6)</td>
<td></td>
</tr>
<tr>
<td>Age (yr)</td>
<td>56 (± 20)</td>
<td></td>
</tr>
<tr>
<td>Height (cm)</td>
<td>173.5 (± 10.2)</td>
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</tr>
<tr>
<td>Body weight (kg)</td>
<td>76.2 (± 18.6)</td>
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<tr>
<td>Ideal body weight (kg)</td>
<td>65.6 (± 11.3)</td>
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<tr>
<td>Adjusted body weight (kg)</td>
<td>69.3 (± 12.2)</td>
<td></td>
</tr>
<tr>
<td>Ccr (mL/min)</td>
<td>103 (± 54.4)</td>
<td></td>
</tr>
<tr>
<td>Total Daily Dose (mg/kg)</td>
<td>29.1 (± 13.3)</td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
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<td></td>
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</table>

- AUC Distribution following Empiric Calculations;

<table>
<thead>
<tr>
<th>AUC</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200</td>
<td>12 (28.5)</td>
</tr>
<tr>
<td>200-399</td>
<td>23 (54.8)</td>
</tr>
<tr>
<td>≥400</td>
<td>7 (16.7)</td>
</tr>
</tbody>
</table>

- Patients who met AUC Goal Stratified by Initial Trough Concentration; N (%)

<table>
<thead>
<tr>
<th>Trough Concentration</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 mg/L</td>
<td>5 (36)</td>
</tr>
<tr>
<td>10-14.9 mg/L</td>
<td>16 (84)</td>
</tr>
<tr>
<td>15-19.9 mg/L</td>
<td>7 (100)</td>
</tr>
<tr>
<td>≥20 mg/L</td>
<td>2 (100)</td>
</tr>
</tbody>
</table>

- Significant difference in the mean initial trough concentration in patients who met the AUC goal vs. those who did not (13.8 mg/L ± 4.6 vs. 8.5 mg/L ± 2.4, p < 0.001)

DISCUSSION

- Empiric AUC calculations through population-based kinetics did not produce a strong correlation to patient-specific AUCs.
- Regardless, following the AUC-based empiric dosing strategy, most patients met the AUC goal of ≥400 mg/L•hr⁻¹.
- These findings are consistent with prior data that suggest the AUC goal of ≥400 mg/L•hr⁻¹ can be attained in most patients that achieve a vancomycin trough concentration of ≥40 mg/L.

LIMITATIONS

- Small sample size, inability to assess patient outcomes
- Data regarding the use of concomitant nephropathic agents and attainment of source control were not collected
- Future Directions

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Future Directions</th>
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</thead>
<tbody>
<tr>
<td>Small sample size, inability to assess patient outcomes</td>
<td>Continue to collect data to increase sample size</td>
</tr>
<tr>
<td>Data regarding the use of concomitant nephropathic agents and attainment of source control were not collected</td>
<td>Assess patient-specific factors that may account for differences in predicted vs. observed AUCs</td>
</tr>
<tr>
<td>MICs were assumed to be 1 mg/L</td>
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</tbody>
</table>

REFERENCES


DISCLOSURES: Authors of this presentation have nothing to disclose.
INTRODUCTION

It is estimated that approximately 29%\(^2\) of American adults take five medications or more.

At our institution, a pharmacist has been incorporated into the Acute Care for the Elderly (ACE) Unit since July of 2018.

• ACE is an evidence-based model of care with the goal to minimize stress and prevent functional decline in older adults (≥ 65 years) during hospitalization.

• There is currently no standardized process for pharmacist-review of discharge medications at our institution, yet studies have demonstrated reduced errors when pharmacists are involved in the medication reconciliation process.\(^3\)

METHODS

The physical discharge medication list was compared to the provider notes within the discharge summary to identify discrepancies.

OBJECTIVES

Primary Objective:
Identify the prevalence of medication discrepancies within discharge medication notes for patients located on the Acute Care for the Elderly Unit

Secondary Objective:
• Determine whether or not the implementation of a pilot project for pharmacist-led service is warranted to review medication lists prior to discharge

• Identify which patient populations may benefit from a pharmacist-led discharge service

RESULTS

Primary Outcome Results: 27/50 (54%) patients had discrepancies

Secondary Outcome Results:
- Total number of discrepancies = 47
- Discrepancies per patient = 0.94
- Discrepancy Ratio = 1.7

Types of Discrepancies

- Therapeutic classes involved in discrepancies
- Frequency of discrepancy type
- Stratification of prevalence by subgroup
- Number of discharge medications
- Medication reconciliation status
- Chronological Age

Top Therapeutic Classes Involved
- Respiratory Tract Agents (15%)
- Anti-infective Agents (13%)
- Gastrointestinal Agents (11%)
- Opioid Analgesics (9%)
- Antidiabetic Agents (9%)
- Antihypertensive Agents (9%)

FUTURE DIRECTIONS

STEP 1:
• This research has identified that our current discharge reconciliation process is insufficient at preventing discrepancies and potential medication errors

STEP 2:
• Design and implement a pharmacy-led initiative to review medication lists prior to discharge within the ACE Unit

STEP 3:
• Collect post-intervention data to assess impact and consider implementation on a larger scale.

REFERENCES


BACKGROUND

- Antimicrobial stewardship (AMS) programs have largely focused on inpatient care.
- The transition from hospital to community may be another opportunity for AMS services when antimicrobial regimens need to be completed in the outpatient setting.
- According to the Center for Disease Control (CDC), about 30% of antibiotics prescribed in both inpatient and outpatient settings are unnecessary or prescribed incorrectly.
- Inappropriate antibiotic use leads to antimicrobial resistance, adverse drug effects, and increased costs.
- Several retrospective studies have shown that antibiotic review on hospital discharge has shown that up to 70% of antibiotics are prescribed inappropriately.
- In an additional study, 70% of pharmacist recommendations were accepted, and prevented potential errors in 68% of patients.
- Common errors include duration, dose, and choice of antibiotics.

OBSERVATIONAL STUDIES: RETROSPECTIVE ANALYSIS OF ANTIBiotic PRESCRIPTIONS UPON TRANSITIONS OF CARE

METHODS

- Single center, retrospective, quality improvement initiative.
- Inclusion criteria:
  - Patients at least 18 years of age
  - Admitted to general medicine floor
  - Plan for continuation of antibiotic after discharge.

OBJECTIVE

- To evaluate the impact of antimicrobial stewardship review of antibiotic prescriptions upon transitions of care from hospital to community.

INTERVENTION

- AMS team to utilize discharge tracking board to identify patients potentially being discharged in the next 24-48 hours.
- The pharmacist will review the patients and assess for antimicrobials being prescribed at discharge.
- The pharmacist will make any interventions pertaining to the antibiotic when necessary (i.e., choice, dose, duration), prior to patient discharge.

Primary Endpoint:

- Number of days of antibiotic therapy prescribed upon hospital discharge.
- Type of intervention made.

Secondary Endpoints:

- Type of intervention.
- Change in antibiotic for inpatient and outpatient setting.
- 30-day readmission.

DEMOGRAPHICS

- Inpatient: 2018 Days of Outpatient Therapy: Median: 4 (IQR: 2-7) Range: 0.5-42

SECONDARY ENDPOINTS

- 14 interventions were made on 11 patients.
- Intervention acceptance rate: 71.4%.
- 3 interventions were not accepted due to patient already being discharged.

Any 30-day readmission:

- Pre-intervention: 15% (n=15) Post-intervention: 20% (n=22)

- Any 30-day readmission due to adverse event:
  - Pre-intervention: 26.7% (4/15) Post-intervention: 59.1% (13/22)

DISCUSSION

- Clinical impact:
  - AMS pharmacists can have a positive impact on the transitions of care (TOC) process as seen by the 71.4% intervention acceptance rate.

FUTURE DIRECTIONS:

- Continuation of AMS TOC interventions as time permits.
- Potential role for care team pharmacists outside of AMS team to have an impact in this initiative with appropriate training.
- Develop better strategy to identify patients.
- Continue to offer PGY-2 TOC elective rotation.

REFERENCES

Based on studies looking at emergency department (ED) prescription noncompliance, the need for a transitions of care (TOC) pharmacist within this specialized area has been identified as a means to help address gaps in medication therapy and patient knowledge. The results are as follows:

• New medications are prescribed for 2 out of every 3 patients discharged from the ED.
• Up to 35% of patients are noncompliant with their ED discharge medications.
• Medication noncompliance has been shown to be the major contributing factor for as many as 22% of return ED visits.

METHODS

• The TOC pharmacist spent a total of **37 hours** in fast track
• During this time, **138 patients** were seen by the fast track team
• **55 patients** (40%) out of these total patients received an intervention by the TOC pharmacist

RESULTS

• Access & Insurance
  - Lack of PCP; RX refill/request
  - Employee needle stick
  - New anticoagulant; financial assistance

• Education & Counseling
  - Device training
  - Disease state counseling
  - Adherence counseling

• Pharmacist Clinical Interventions
  - Medication selection
  - Prescription directions; drug-drug interactions
  - Therapy appropriateness

• Medication Reconciliation
  - n = 55 (100%)

**Access & Insurance Interventions (n = 23)**

- New Anticoagulant; Financial Assistance
  - n = 13
  - Lack PCP; RX Refill/Request
  - Employee Needle Stick

**EDUCATION & COUNSELING INTERVENTIONS (n = 40)**

- Adherence Counseling
  - 53%

- Disease State Counseling
  - 22%

- Access & Insurance
  - 53%

- Education & Counseling (n = 40)
  - 77%

- Pharmacists Clinical Interventions (n = 46)
  - 90%

- Medication Reconciliation
  - 100%

**Fast track prescriptions (n = 55)**

- Baystate Pharmacy compliance: 100% (n = 26)
- Outside pharmacy compliance: 76% (n = 22)
- Overall compliance: 87% (n = 48)

**30-Day fast track revisit rate = 18% (n = 10)**

- Return for prescription refill = 2 patients

DISCUSSION

Addition of the TOC pharmacy resident to the patient care team within the fast track area of the ED lead to:

- Increased access to care
- Increased medication compliance
- Decreased fast track revisits

**LIMITATIONS**

- High patient turnover
- Application of TOC services in the ED

**FUTURE IMPLICATIONS**

- Single pharmacist operation
- Expand TOC services in fast track
- Medical team rotation
- Retail ED dispensing pharmacy
- Sustainability of TOC services
- Mandated d/c prescription review

DISCLOSURES

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.
Pharmacist-driven Implementation of Guidelines for Management of Pain, Sedation, and Delirium in a Medical Intensive Care Unit

Mehrnaz Sadrolshahri, PharmD; Hannah Spinner, PharmD, BCPPC; Adam Pesaturo, PharmD, BCPS, BCPPC

**INTRODUCTION**

- Pain, agitation, and delirium (PAD) stewardship could be considered a coordinated program aimed at promoting evidence-based prescribing of opioids and sedatives.
- Critical care pharmacists in a stewardship-type role can optimize an appropriate level of sedation and pain control in critically ill patients.
- Retrospective evaluation of patients admitted to MICU from February 2018 to June 2018 (n=879).

**METHODS**

**Primary Endpoint:** To study the impact of the pharmacist’s intervention on DOT/1000 Patient Days and unique administration of opioids and sedatives in mechanically intubated patients.

**Development of an institutional practice guidelines in line with SCCM PADIS guidelines**

- Expansion to other ICUs within the institution (surgical, neuro, cardiac)

**RESULTS**

**Cognitive Predictors of Student Success:**

- Mechanically intubated patients and unique administration of opioids and sedatives in pharmacist’s intervention on DOT/1000 Patient Days

**Primary Endpoint:**

**M ETH O DS**

- Critical care pharmacists in a stewardship-type role can optimize an appropriate level of sedation and pain control in critically ill patients.
- Pain, agitation, and delirium (PAD) stewardship at promoting evidence-based prescribing of opioids and sedatives could be considered a coordinated program aimed.

**DOT/1000 Patient Days**

- Pre: 2763
- Post: 2510

**Unique Administrations**

- Pre: 3497
- Post: 2001

**DISCUSSION**

- Daily interventions by a critical care pharmacy resident who implemented the institutional PADIS guideline led to a 50% reduction in the number of unique doses of fentanyl administered over the duration of this study.

**Future Directions**

- Complete the second phase of the study until May 2019 and conduct the secondary data analysis.
- Addition of the management of PADIS to an onboarding training for all incoming PGY1 and PGY2 residents in order to offer this service 7 days a week.
- Expand this practice guideline to other ICUs within the institution (surgical, neuro, cardiac).
Pharmacists Defining High-Risk Opioid Use Patient Populations at Baystate Medical Center
Catherine Chatowsky, PharmD; Melanie Conboy, PharmD; Evan Horton PharmD, BCPPS; Shawn Roggie, PharmD, MBA

2016: MA ↑ Drug Overdose Death Rate
- Driven by heroin and synthetic opioids
- Deaths: 23.5 per 100,000 population
- 2017: 24.5 per 100,000 (4.3% change)

BMC Pharmacy New FTE Approved
- Pain Management Pharmacist
- Anticipated to start September 2019

CDC Guidelines: Prescribing Opioids for Chronic Pain
- Clinicians should avoid increasing dosage, or carefully justify a decision to titrate dosage, to ≥90 Morphine Milligram Equivalents (MME/day)
- High Risk: May increase risk for overdose

BACKGROUND

RESULTS

OBJECTIVES

METHODS

DCUSION

Identification of opioid dependence is dependent on medical coding

Identification of high-risk opioid users is difficult with the current electronic system and data extraction tool. This tool will need to be adapted and refined in the near future.

An essential responsibility of the new pain management pharmacist will be to identify high-risk opioid using patients during periods of transitions of care to enhance pain care plans.

Define BMC’s High-Risk Opioid-Using Patient Population:

BMC IRB Approval to Develop a Data Extraction Tool

Identify areas for BMC Pharmacy Pain Management Interventions

50 Adult Inpatients

Eligibility: • Adult inpatients administered opioids ≥ 90 MME/day

Exclusion Criteria: • PCA pumps or continuous infusions
• ED or any ICU patients per day
• Cancer diagnosis
• Comfort Measures Only (CMO) Status

Identify 50 high-risk opioid using patients using data extraction tool
- Check tool daily for eligible patients
- Check eMAR to determine administration of ≥ 90 MME/Day
- Recheck patients the next day

Retrospective Chart Review: 50 Patients ≥ 90 MME/Day
- Baseline Characteristics (age, sex)
- Prior opioid use + selected medications
- Diagnosis or history of substance abuse
- Pain + primary discharge diagnosis
- MME/Day: first 24 hrs, admission high, discharge
- Inpatient selected medications
- Inpatient naloxone orders: inpatient + discharge

PATIENT SELECTION

METHODS

RESULTS

Opioid Use

Pre-Admission Prescription History

For 3 Months Number of patients (%)
- Opioid 18 (36)

In the Past 3 Months Number of patients (%)
- Benzodiazepine 9 (18)
- Gabapentin or pregabalin 12 (24)
- Muscle Relaxants 6 (12)

In the Past Year Number of patients (%)
- Naloxone 0 (0)

Opioids Administered with Opioids

Number of Patients (%)
- Outpatient prescription (%)

Benzodiazepine 20 (40) 9 (18)
- Gabapentinoids 16 (32) 12 (24)
- Muscle Relaxants 7 (14) 6 (12)

Discharge Naloxone Prescription

Limitations Future Directions

Data extraction tool cannot detect drug administrations or MME/Day Build a BMC Opioid Calculator: MME/Day

No BMC Opioid Calculator: MME/Day Add a rule for opioid-use + benzodiazepines

May not be capturing all patients on the eMAR Focus on surgical inpatient floors
- Operating rooms use different eMAR
- Evaluate surgical power-plans that allow for high MME/Day

Identification of opioid dependence is dependent on medical coding Increase awareness and access to naloxone at discharge

Disclosures: Authors of this presentation have nothing to disclose.

BACKGROUND
According to the Association of American Medical College, there is expected to be a physician shortage 121,300 physicians by 2030 in the US. Coupled with the current nursing shortage, it is becoming increasingly difficult for Primary Care to manage patients disease states effectively and provide access to care in a timely manner. About 157 million Americans (48% of the total U.S. population) live with a chronic condition. We established a clinical pharmacy presence within Baystate High Street Health Center – Adult Medicine (BHSHC-AM) to accommodate medication related needs of both patients and providers. The Pharmacy Consult Clinic is available 3 days per week and assists in bridging the provider shortage gap. By providing patients with access to our Pharmacy Consult Clinic, we have been able to show great benefits while obtaining positive outcomes of chronic disease states.

PHARMACIST INTERVENTIONS

- **Addition of therapy**: Identify gaps of therapy
- **Discontinuation of therapy**: Identify inappropriate medications or medications no longer needed
- **Dose change or change of medication**: Optimize therapy by decreasing all burden with combination medications, determine appropriate dosages for age, and identify suboptimal or supratherapeutic dosing
- **Chronic disease education**: Diabetes, Hypertension, Asthma
- **Recommend laboratory testing**: (Recommended labs based on medication guidelines (A1C, liver function tests, lipid panel, TSH, etc.)
- **Nutrition education**: Demonstrate of proper portion sizes and carbohydrate counting
- **Referred to provider**: Identify patients that need to be seen in clinic for an urgent visit
- **Smoking cessation education**: Access readiness to quit, treatment options and continued support
- **Obtain prescription refills**: ReFill prescriptions per clinic protocol and obtain refills from provider
- **Medication Reconciliation**: Obtain patient history, identify duplicate prescriptions, determine adherence, and update CIS medication lists

BASELINE CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>n = 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean years ± SD</td>
<td>61.6 ± 13.7</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>33 (44)</td>
</tr>
<tr>
<td>Female</td>
<td>42 (56)</td>
</tr>
<tr>
<td>A1C</td>
<td></td>
</tr>
<tr>
<td>&lt; 7.0</td>
<td>27 (36)</td>
</tr>
<tr>
<td>7.0 – 9.9</td>
<td>27 (36)</td>
</tr>
<tr>
<td>≥ 10</td>
<td>21 (28)</td>
</tr>
</tbody>
</table>

RESULTS
The chart shows the percentage that each intervention is performed during a pharmacy consult visit. Along with addressing interventions we are able perform a complete medication reconciliation at all visits. The medication list in CIS is updated every time.

By providing this teaching and education, our results demonstrated that we were successfully able to decrease each patient A1C by an average of 0.81% after just one pharmacy consult visit.

METHODS

- **Patients referred to Pharmacy Consult Clinic or consults during provider visit**
- **Exclusion Criteria**: Patients seen outside the Pharmacy Consult Clinic operation hours
- **Inclusion Criteria**: Patients with Chronic Disease
  - **Diabetes**: Insulin teaching, glucometer training, complications, and interpretation of glucose readings/A1C
  - **Hypertension**: complications, diet and exercise
  - **Asthma**: inhaler/spacer training, monitor use of rescue inhaler, warning signs and avoidance of triggers

ENHANCED PHARMACY SERVICES
Free prescription delivery service began in April 2018. The number of prescriptions delivered continues to grow. To date, over 4000 prescriptions have been delivered and patient and provider satisfaction has been enhanced. Due to this, prescription volume has increased in the pharmacy by 25%.

Prescriptions Delivered

DISCLOSURES
Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.
The TOC pharmacy resident plays a vital role in patient-centered care and has led to improved outcomes such as:

- Increased access to follow-up care post hospital discharge
- Increased medication adherence
- Decreased hospital readmission rates

**METHODS**

The transitions of care (TOC) pharmacy learning experience was newly re-designed to have the pharmacy resident complete patient-centered teaching and education surrounding the medication-use process. Pharmacy involvement throughout TOC helps to improve patient outcomes, reduce readmissions, and benefit patients' quality of life.

**LEARNING OBJECTIVES**

- Complete admission and discharge medication reconciliations
- Provide resources for patients to obtain prescribed medication therapy
- Work to resolve medication access issues prior to hospital discharge
- Identify language & literacy barriers and provide counseling for patients
- Follow up with patients in their assigned outpatient clinics

**RESULTS**

**Hospital Readmission Rate**

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>HSHC Follow Up</th>
<th>BWHC Follow Up</th>
<th>Non-Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>45</td>
<td>14</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>HSHC Follow Up</td>
<td>11</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BWHC Follow Up</td>
<td>14</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Follow Up</td>
<td>14</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline Characteristics (n = 45)**

- Average Age (±SD): 57.3 ± 16.3
- Male: 22 (48.8)
- Average # of Home Medications: 14.9
- Average # of Incorrect Medications*: 5.79

*Medications incorrect from home list; needed to be changed

**DISCUSSION**

The TOC pharmacy resident plays a vital role in patient-centered care and has led to improved outcomes such as:

- Increased access to follow-up care post hospital discharge
- Increased medication adherence
- Decreased hospital readmission rates

**Financial Impact**

- Cost avoidance for medical readmission (~ $1,020.00/pt.)
- Cost avoidance for cardiac readmission (~ $2,087.00/pt.)

**Future Directions**

- TOC Pharmacist follow up = billable clinical services
- Code 99495 & Code 99496 utilization

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