Pharmacy Posters - 2019

Adam Pesaturo
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
Inconsistent response to downtime events
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.

METHODS

METHODS

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>
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<tbody>
<tr>
<td>1</td>
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Average: 1 8 8

Table 2: Reassessment scores and analysis of training

<table>
<thead>
<tr>
<th>No Training</th>
<th>Score After</th>
<th>Total Score</th>
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<tbody>
<tr>
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<td>3</td>
<td>7</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Average</td>
<td>5.67</td>
<td>8.00</td>
<td>15.33</td>
</tr>
</tbody>
</table>

% Successful: 70.83

Training Score After Total Score Time (m)

| 1 | 8 | 8 | 6 |
| 2 | 8 | 8 | 5.5 |
| Average | 8 | 8 | 5.75 |

% Successful: 100

% Increase in Score: 41.18 % Faster Response: 66.67

RESULTS

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

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Table 1: Scores before and after initial training
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.


5. Decision between cost-containment strategies: Consignment vs. 340B

   a. Nolvadex® cost difference: $2.12/unit x 45,000 units = $95,400.

   b. Femara® cost difference: $3.24/unit x 34,000 units = $111,160.

   c. Femara® cost difference: $3.62/unit x 36,000 units = $130,320.

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

OUTCOMES

- Lost charges to 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

FUTURE CONSIDERATIONS

- 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


DISCLOSURE

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.
Vancomycin is often considered the drug of choice for serious methicillin-resistant Staphylococcus aureus (MRSA) infections, including bacteremias. Area under the curve/minimum 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.

## Background

### Objectives

**Primary:**
- Correlation between empiric AUC calculations and patient-specific AUCs

**Secondary:**
- Percent of patients who met the AUC goal of >2400 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 vancomyk.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

#### Comparison of Population-Based vs. Calculated AUC

**Demographics & Clinical Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>25 (29.5)</td>
</tr>
<tr>
<td>CKD**</td>
<td>5 (11.9)</td>
</tr>
<tr>
<td>Active IDU**</td>
<td>20 (47.6)</td>
</tr>
</tbody>
</table>

**Source of Infection:**
- Skin and soft tissue
- Endovascular
- Intravenous catheter
- Bone and joint
- Respiratory
- Other/unknown

**Mean (± SD)**
- Age (yr): 56 (± 20)
- Height (cm): 173.5 (± 10.2)
- Total body weight (kg): 76.2 (± 18.6)
- Ideal body weight (kg): 65.6 (± 11.3)
- Adjusted body weight (kg): 69.3 (± 12.2)

**Vancomycin-induced nephrotoxicity:**
- 14-day mortality: 2 (4.8)
- In-hospital mortality: 3 (7.1)

**AUC Distribution following Empiric Calculations:**

<table>
<thead>
<tr>
<th>AUC Distribution following Empiric Calculations;</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUC &lt;200</td>
<td>12 (28.5)</td>
</tr>
<tr>
<td>AUC 200-399</td>
<td>23 (54.8)</td>
</tr>
<tr>
<td>AUC &gt;600</td>
<td>7 (16.7)</td>
</tr>
</tbody>
</table>

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

| Initial Trough Concentration | N (%)
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cmin &lt;10 mg/L</td>
<td>5 (36)</td>
</tr>
<tr>
<td>Cmin 10-14.9 mg/L</td>
<td>16 (84)</td>
</tr>
<tr>
<td>Cmin 15-19.9 mg/L</td>
<td>7 (100)</td>
</tr>
<tr>
<td>Cmin &gt;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 (13.9 mg/L ± 4.6 vs. 8.5 mg/L ± 2.4, p < 0.001)**

- 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 >2400 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 ≥20 mg/L.

### Discussion

Given these findings, it is recommended to use an AUC/MIC-based empirical dosing strategy for patients with presumed MRSA infection. The AUC/MIC is calculated as the area under the curve (AUC) divided by the minimum inhibitory concentration (MIC) of the MRSA strain, using the following formula:

\[
\text{AUC/MIC} = \frac{\text{AUC}}{\text{MIC}}
\]

AUC is calculated by integrating the concentration over time, typically from the start of therapy until steady state is achieved. MIC is determined by a clinical laboratory using broth microdilution or agar dilution methods. The goal AUC/MIC ratio is typically set at >400, as this has been associated with better clinical outcomes. However, it is important to note that individual patient factors, such as renal function and concomitant nephrotoxic agents, can influence the AUC and affect the risk of nephrotoxicity.

- **Limitations:**
  - Small sample size, inability to assess patient outcomes
  - Future Directions: Continue to collect data to increase sample size

Data regarding the use of concomitant nephrotoxic agents and attainment of source control were not collected.

**MICs were assumed to be 1 mg/L.**

### References


Disclosures: Authors of this presentation have nothing to disclose.
Identifying discrepancies within the discharge summary in the Acute Care for the Elderly (ACE) Unit

Kelly Sawyer, PharmD; Megan Carr, PharmD, BCPS, BCGP; Erica Housman, PharmD, BCPS (AQ-ID); Shawn Roggie, PharmD, MBA

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 Objectives:
• 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:

Secondary Outcome Results:

METHODS
Statistics:
Discrepancies Per Patient: # of discrepancies (total) / # of patients (total)
Discrepancies Incidence: # patients with discrepancies / # patients in group
Discrepancy Ratio: # discrepancies in group / # patients with discrepancies in group

Data Collection Period: January 2019 to March 2019

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
Impact of antibiotic review during transition from hospital to community

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 antibiotic 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 the potential for reduced antibiotic prescriptions upon hospital discharge with an estimated 70% of antibiotics prescribed inappropriately

Methods

- Single center, retrospective, quality improvement initiative
- Interventional group: January 2019 – February 2019
- Control group: January 2018 – February 2018
- 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

Secondary Endpoints:

- Number of interventions made
- Type of intervention made

Types of Intervention and Number:

- Change in Duration
- Change in Antibiotic
- Change in Dose
- De-escalation of Therapy

Pre-intervention Group

- Change in Duration: 8 interventions
- Change in Antibiotic: 1 intervention
- Change in Dose: 7 interventions
- De-escalation of Therapy: 1 intervention

Post-intervention Group

- Change in Duration: 11 interventions
- Change in Antibiotic: 2 interventions
- Change in Dose: 4 interventions
- De-escalation of Therapy: 1 intervention

2018 Days of Outpatient Therapy

Median: 4
IQR: 2-7
Range: 0-42

2019 Days of Outpatient Therapy

Median: 4
IQR: 3-7
Range: 0-43

Primary Endpoint

- Percentage of Patients
  - Pre-intervention: 15% (n=15)
  - Post-intervention: 20% (n=22)
- Infection-related Re-admission
  - Pre-intervention: 26.7% (4/15)
  - Post-intervention: 59.1% (13/22)
- Adverse Event-related Re-admission
  - Pre-intervention: 1 severe diarrhea, C. difficile negative
  - Post-intervention: 1 patient possible allergic reaction to cephalexin

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 PGY2 ID TOC elective rotation

Limitations

- Single medical unit in single institution
- Sustainability
  - AMS pharmacists have many other tasks throughout the day
  - Time frame from discharge ordered to patient being discharged is variable
  - Weekend and evening discharges
  - Discharge unit open January and February

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: n = 23 (44%)
- Education & Counseling: n = 40 (77%)
- Pharmacists Clinical Interventions: n = 46 (90%)
- Medication Reconciliation: n = 55 (100%)

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
- 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

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### Results

#### Characteristics of Patients

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<thead>
<tr>
<th>Characteristic</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, yr. mean ± SD</td>
<td>63 ±13</td>
<td>51 ±15</td>
</tr>
<tr>
<td>Male (%)</td>
<td>112 (52)</td>
<td>61 (62)</td>
</tr>
<tr>
<td>Race (%)</td>
<td>24 (11)</td>
<td>6 (9)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19 (06)</td>
<td>7 (11)</td>
</tr>
<tr>
<td>White</td>
<td>142 (75)</td>
<td>49 (78)</td>
</tr>
<tr>
<td>Not specified/Diagnosed</td>
<td>17 (09)</td>
<td>8 (08)</td>
</tr>
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</table>

#### Indicators for mechanical ventilation (%)

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<tr>
<th>Indicator</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol withdrawal</td>
<td>19 (09)</td>
<td>5 (07)</td>
</tr>
<tr>
<td>Cardiac Arrest/PA</td>
<td>23 (11)</td>
<td>9 (13)</td>
</tr>
<tr>
<td>CHF/pulmonary edema</td>
<td>10 (05)</td>
<td>3 (04)</td>
</tr>
<tr>
<td>COPD asthma</td>
<td>11 (05)</td>
<td>5 (07)</td>
</tr>
<tr>
<td>Gastrointestinal bleed</td>
<td>9 (04)</td>
<td>4 (06)</td>
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<td>Pneumonia and/or ARDS</td>
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<td>15 (29)</td>
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<td>Seizure</td>
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<td>3 (04)</td>
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<td>Trauma</td>
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<td>0 (00)</td>
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<tr>
<td>Other</td>
<td>82 (42)</td>
<td>25 (42)</td>
</tr>
</tbody>
</table>

#### Length of mechanical ventilation, hr (mean ± IQR)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-ventilated</td>
<td>16 (12–113)</td>
<td>43 (23–304)</td>
</tr>
<tr>
<td>Ventilated</td>
<td>66 (28–134)</td>
<td>85 (47–131)</td>
</tr>
</tbody>
</table>

#### Patients with recorded GIM – ICU guidelines (%)

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<thead>
<tr>
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<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precedent</td>
<td>116 (27)</td>
<td>38 (46)</td>
</tr>
<tr>
<td>Qualifying</td>
<td>23 (10)</td>
<td>5 (02)</td>
</tr>
<tr>
<td>Chainme</td>
<td>2 (09)</td>
<td>1 (02)</td>
</tr>
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#### Pain control

<table>
<thead>
<tr>
<th>Pain Control Method</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous epidural infusion</td>
<td>14 (24)</td>
<td>5 (11)</td>
</tr>
<tr>
<td>Decrease incidence rate of opioid</td>
<td>2 (03)</td>
<td>3 (05)</td>
</tr>
<tr>
<td>Add intermittent opioid (i/p)</td>
<td>20 (32)</td>
<td>17 (34)</td>
</tr>
<tr>
<td>Add non/semi/non-epidural agent</td>
<td>1 (02)</td>
<td>3 (05)</td>
</tr>
<tr>
<td>Start opioid infusion of opioid</td>
<td>9 (15)</td>
<td>15 (22)</td>
</tr>
<tr>
<td>Decrease incidence rate of sedative</td>
<td>3 (05)</td>
<td>5 (08)</td>
</tr>
<tr>
<td>Add sedative agent</td>
<td>2 (03)</td>
<td>2 (03)</td>
</tr>
<tr>
<td>Non-intubation (administration of typical analgesic agent/patient)</td>
<td>2 (03)</td>
<td>4 (06)</td>
</tr>
<tr>
<td>Continuous anti-psychotic</td>
<td>4 (07)</td>
<td>6 (09)</td>
</tr>
</tbody>
</table>

### 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

BACKGROUND

- 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

OBJECTIVES

- 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

METHODS

- 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
  - Naloxone orders: inpatient + discharge

RESULTS

Admission: Hospital Location

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geriatric</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Oncology</td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td></td>
</tr>
<tr>
<td>Surgical</td>
<td></td>
</tr>
</tbody>
</table>

PATIENT SELECTION

- 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

- Rules for Data Extraction Tool

<table>
<thead>
<tr>
<th>Drug</th>
<th>Oral (mg/day)</th>
<th>IV (mg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>≥90</td>
<td>≥30</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>≥22.5</td>
<td>≥4.5</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>≥90</td>
<td></td>
</tr>
<tr>
<td>Oxycodone</td>
<td>≥60</td>
<td></td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
<td>≥500</td>
</tr>
<tr>
<td>Fentanyl transdermal</td>
<td>≥50 mcg/hr*</td>
<td></td>
</tr>
</tbody>
</table>

- Medications Administered with Opioids

<table>
<thead>
<tr>
<th>Medication</th>
<th>Number of Patients (%)</th>
<th>Outpatient Prescription (%)</th>
</tr>
</thead>
</table>
| &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&n

DISCUSSION

- Identifying 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.

LIMITATIONS

- Data extraction tool cannot detect drug administrations or MME/Day
- No BMC Opioid Calculator: MME/Day
- May not be capturing all patients on the eMAR
- Operating rooms use different eMAR

FUTURE DIRECTIONS

- Build a BMC Opioid Calculator: MME/Day
- Add a rule for opioid-use + benzodiazepines
- Focus on surgical inpatient floors
- Evaluate surgical power-plans that allow for high MME/Day

REFERENCES:

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 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

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of therapy</td>
<td>• Identify gaps of therapy</td>
</tr>
<tr>
<td>Discontinuation of therapy</td>
<td>• Identify inappropriate medications or medications no longer needed</td>
</tr>
<tr>
<td>Dose change or change of medication</td>
<td>• Optimize therapy by decreasing all burden with combination medications; determine appropriateness of dosage forms; identify subtherapeutic or supra-therapeutic dosing</td>
</tr>
<tr>
<td>Chronic disease education</td>
<td>• Diabetes, Hypertension, Asthma</td>
</tr>
<tr>
<td>Recommend laboratory testing</td>
<td>• Recommend labs based on medication guidelines (A1C, liver function tests, lipid panel, TSH, etc.)</td>
</tr>
<tr>
<td>Nutrition education</td>
<td>• Demonstration of proper portion sizes and carbohydrate counting</td>
</tr>
<tr>
<td>Referred provider</td>
<td>• Identify patients that need to be seen in clinic for an urgent visit</td>
</tr>
<tr>
<td>Smoking cessation education</td>
<td>• Assess readiness to quit, treatment options and continued support</td>
</tr>
<tr>
<td>Obtain prescription refills</td>
<td>• Refill prescriptions per clinic protocol and obtain refills from provider</td>
</tr>
<tr>
<td>Medication Reconciliation</td>
<td>• Obtain patient history, identify duplicate prescriptions, determine adherence, and update CIS medication list</td>
</tr>
</tbody>
</table>

METHODS

Chronic Disease Education
• 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

BASELINE CHARACTERISTICS

<table>
<thead>
<tr>
<th>n = 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean years ± SD: 61.6 ± 13.7</td>
</tr>
<tr>
<td>Sex</td>
</tr>
<tr>
<td>Male: 33 (44)</td>
</tr>
<tr>
<td>Female: 42 (56)</td>
</tr>
<tr>
<td>A1C</td>
</tr>
<tr>
<td>&lt; 7.0: 27 (36)</td>
</tr>
<tr>
<td>7.0–9.9: 27 (36)</td>
</tr>
<tr>
<td>≥ 10: 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 successful able to decrease each patient A1C by an average of 0.81% after just one pharmacy consult visit.

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%.

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.
BACKGROUND

The transition 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.

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

METHODS

Inclusion Criteria
- Admitted patients: 2 weeks prior to running the MIDAS report
- Brightwood Health Center (BWHC) or High Street Health Center (HSHC) patients
- Patients still admitted to the hospital; plans for discharge home

Exclusion Criteria
- Patients with planned discharge to a rehabilitation facility
- Patients already discharged from the hospital

RESULTS

Hospital Readmission Rate

**Total Population**
- n = 45

**Medication Access**
- n = 17 (38%)

**Counseling & Education**
- n = 41 (91%)

**Clinical Pharmacists Interventions**
- n = 26 (58%)

**Medication Reconciliation**
- n = 45 (100%)

Hospital Readmission Rate

- **Total Patients:** 45
- **BWHC Follow Up Patients:** 14
- **HSHC Follow Up Patients:** 17
- **Non-Follow Up Patients:** 14

**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 & 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.)
- TOC Pharmacist follow up = billable clinical services

**Future Directions**
- TOC services to all units
- FTE approval for TOC Pharmacists
- Code 99495 & Code 99496 utilization