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LUXURY OR NECESSITY?
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Clinical Pharmacy Accountability Measures: preventable harm linked to medications

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Pharmacy Impact on Safety & Quality

• Pharmacists as members of the healthcare team:
  • Improve the quality of patient care by preventing medication errors (MEs)$^{1,2}$
  • Contribute to achieving high quality patient outcomes $^3$

• Current challenges: what is the best way to quantify the impact of pharmacy contribution to patient care?
  • Interventions
  • Medication error reports according to NCCMERP
  • Variable definitions of what was considered a medication error in the literature (ex. Wrong dose? Renal dose adjustment? Giving a vitamin K antagonist in the presence of high INR?)

Pharmacy Impact on Safety & Quality

- **Pharmacy interventions**: defined as any recommendation to a healthcare provider by pharmacists that aim to change patient management or therapy.\(^6\)
  - Definition well understood by pharmacist vernacular
  - However the scope of interpretation may be ambiguous to other healthcare providers and hospital administrators.\(^6\)

- **Medication errors (ME)**: any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is within the control of the healthcare professional, patient, or consumer.\(^1,2\)
  - Any error in the medication use process (whether an injury or the potential for an injury occurred)\(^3\)
  - At any stage of the drug-use process including prescribing, dispensing, administering, monitoring, and documenting.\(^4\)

Identify the measures that address preventable harm linked to medications that reflect pharmacy accountability.

Encourage health-system pharmacists to adopt accountability metrics in an effort to contribute to benchmarking results with other healthcare organizations and highlight the importance of pharmacists’ contribution to patient safety.

Share the experience of Clinical Pharmacy at LAUMC-RH in terms of pharmacy interventions and what type of medication errors were prospectively prevented during interdisciplinary collaboration.
Clinical Pharmacy Practice at LAU & LAUMC-RH

• The school of pharmacy (SOP) at the Lebanese American University is accredited by the ACPE (Accreditation Council for Pharmacy Education)

• In 2012, implemented a faculty-based clinical pharmacy practice model at LAUMC-RH
  • LAU SOP Faculty
  • Full time hospital based clinical pharmacists
  • PharmD Students (2 students/faculty)
Clinical Pharmacy Practice at LAU& LAUMC-RH

Participate on rounds
In collaboration with physicians

Collaborate with RNs, MDs and Staff on policy writing

Collaborate with IT in order to improve pharmacy technology

Collaborate on developing standardized treatment guidelines

Engage in interdisciplinary education of pharmacy, medicine & nursing

Collaborate with the Quality Department

Collaborate on developing order forms

PATIENT SAFETY & CARE
Important Papers published in 2014 on Clinical Pharmacy, Quality and Patient Care

**American Society of Health System Pharmacists (ASHP)**

A suite of inpatient and outpatient clinical measures for pharmacy accountability: Recommendations from the Pharmacy Accountability Measures Work Group

**American College of Clinical Pharmacy (ACCP)**

ACCP WHITE PAPER

Clinical Pharmacy Should Adopt a Consistent Process of Direct Patient Care


Harris et al. Pharmacotherapy 2014;34(8):2133-e148
ASHP: A suite of inpatient and outpatient clinical measures for pharmacy accountability: Recommendations from the Pharmacy Accountability Measures Work Group

• The main goals:
  • Identify **measures that address preventable harm linked to medications** in the inpatient and outpatient settings (e.g., adverse drug events, drug-related hospital admissions) that can be adopted universally on pharmacy dashboards to **reflect pharmacy accountability**.

  • Encourage health-system pharmacists to adopt these metrics in an effort to:
    • Contribute to the assessment of the impact of pharmacy
    • **Benchmark results** with other healthcare partners and organizations

*Am J Health-Syst Pharm. 2014; 71:1669-78*
ASHP: Pharmacy Accountability Measures Work Group

• National quality metrics were reviewed to evaluate which of the existing measures reflect the quality of pharmacy services

• Highlight best practices that have demonstrated to significantly improve patient outcomes and reduce hospital-acquired conditions and hospital admissions
ASHP: Pharmacy Accountability Measures Work Group

- Identified four clinical topics for pharmacy metrics:
  - anticoagulant therapy
  - glycemic control
  - antibiotic stewardship
  - pain management
Sample Recommendations by the Pharmacy Accountability Measures Work Group: Anticoagulant Safety

Appendix A—Accountability measures recommended by the ASHP Pharmacy Accountability Measures (PAM) Work Group

<table>
<thead>
<tr>
<th>Measure Title/Description</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Implementation Guidance</th>
<th>Measure Developer/Endorsement Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient venous thromboembolism (VTE) measures</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>VTE-1 Venous Thromboembolism Prophylaxis</td>
<td>Patients who receive VTE prophylaxis or have documentation why no VTE prophylaxis was given</td>
<td>All patients</td>
<td>Centers for Medicare and Medicaid Services (CMS) core measure: aligns with the National Quality Strategy (NQS)</td>
<td>Joint Commission/NQF endorsed: NQF# 371</td>
</tr>
<tr>
<td>VTE-2 Intensive Care Unit Venous Thromboembolism Prophylaxis</td>
<td>Patients who receive VTE prophylaxis or have documentation why no VTE prophylaxis was given: 1. The day of or the day after ICU admission (or transfer) 2. The day of or the day after surgery end date for surgeries that start the day of or the day after ICU admission (or transfer)</td>
<td>Patients directly admitted or transferred to the ICU</td>
<td>CMS core measure: aligns with the NQS</td>
<td>Joint Commission/NQF endorsed: NQF# 372</td>
</tr>
<tr>
<td>VTE-3 Venous Thromboembolism Patients with Anticoagulation Overlap Therapy</td>
<td>Patients who received overlap therapy</td>
<td>Patients with confirmed VTE who received warfarin</td>
<td>CMS core measure: aligns with the NQS</td>
<td>Joint Commission/NQF endorsed: NQF# 373</td>
</tr>
<tr>
<td>VTE-5 Venous Thromboembolism Warfarin Therapy Discharge Instructions</td>
<td>Patients with documentation that they or their caregivers were given written discharge instructions or other educational material about warfarin that addressed all of the following: 1. Compliance issues 2. Dietary advice 3. Follow-up monitoring 4. Potential for adverse drug reactions and interactions</td>
<td>Patients with confirmed VTE discharged on warfarin therapy</td>
<td>CMS core measure: aligns with the NQS</td>
<td>Joint Commission/No longer endorsed (previously NQF# 375)</td>
</tr>
<tr>
<td>VTE-6 Hospital Acquired Potentially Preventable Venous Thromboembolism</td>
<td>Patients who receive no VTE prophylaxis before the VTE diagnostic test order date</td>
<td>Patients who developed confirmed VTE during hospitalization</td>
<td>CMS core measure: aligns with the NQS</td>
<td>Joint Commission/No longer endorsed (previously NQF# 376)</td>
</tr>
<tr>
<td>Measure Title/Description</td>
<td>Numerator</td>
<td>Denominator</td>
<td></td>
<td></td>
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<tr>
<td>--------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCIP-Inf-2a Prophylactic Antibiotic Selection for Surgical Patients</td>
<td>Number of surgical patients who received prophylactic antibiotics recommended for their specific surgical procedure</td>
<td>All selected surgical patients with no evidence of prior infection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VTE-5 Venous Thromboembolism Warfarin Therapy Discharge Instructions</td>
<td>Patients with documentation that they or their caregivers were given written discharge instructions or other educational material about warfarin that addressed all of the following: 1. Compliance issues 2. Dietary advice 3. Follow-up monitoring 4. Potential for adverse drug reactions and interactions</td>
<td>Patients with confirmed VTE discharged on warfarin therapy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Glycemic Control & Pain Management

<table>
<thead>
<tr>
<th>Measure Title/Description</th>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia</td>
<td>Total number of hypoglycemic events (&lt;40 mg/dL) that were preceded by administration of short-acting insulin within 12 hours or an antidiabetic agent other than short acting insulin within 24 hours, were not followed by another glucose value greater than 80 mg/dL within five minutes, and were at least 20 hours apart</td>
<td>Total number of hospital days with at least one antidiabetic agent administered</td>
</tr>
<tr>
<td>Second-level review by pharmacist or pain specialist for patient’s prescribed high risk opioids</td>
<td>Number of patients with documentation of a second-level review by a pharmacist or pain specialist</td>
<td>Patients prescribed a high-risk opioid (methadone, fentanyl i.v. and patches, hydromorphone i.v., meperidine)</td>
</tr>
</tbody>
</table>
Sample Metrics:  
ASHP Section of Pharmacy Practice Managers’ Advisory Group on Patient Care Quality

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Why is this outcome important to track and report?</th>
<th>How is the outcome measured?</th>
<th>Ideas on how to obtain the data</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication reconciliation completed within 24 hours of admission, completed at discharge</td>
<td>Joint Commission National Patient Safety Goal</td>
<td>Number of inpatients that had a home medication history list reviewed by a pharmacist</td>
<td>EMR-specific report</td>
<td>Medication reconciliation completed within 24 hours of admission for ≥ 90% of patients</td>
</tr>
<tr>
<td>Inpatient counseling</td>
<td>CMS Core Measures HCAHPS question about transitions of care</td>
<td>Tracking through EMR, pharmacy clinical information system, or external IT system</td>
<td>Report or manual capture</td>
<td>Certain percentage of patients educated by a pharmacist prior to discharge</td>
</tr>
<tr>
<td>Specific clinical interventions</td>
<td>Literature supporting cost savings, cost avoidance, and/or reduced adverse events</td>
<td>Tracking through EMR, pharmacy clinical information system, or external IT system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimicrobial stewardship</td>
<td>Antibiotic stewardship as a condition of CMS participation by FY 2017</td>
<td>EMR-specific report (days of therapy, compliance with order sets)</td>
<td>Manual abstraction</td>
<td></td>
</tr>
<tr>
<td>Medication Safety</td>
<td>ISMP guidelines support as a patient safety metric</td>
<td>% of patients having IVs run through library</td>
<td>Smart pump software report</td>
<td>Carefusion benchmark: 90% use of guardrails</td>
</tr>
<tr>
<td>Near Misses / Good Catches</td>
<td>Tracking of near miss reports placed into error reporting system to encourage potential error reports</td>
<td>Calculation from software or looking at NCCMERP category A and B coded errors</td>
<td>Software report or manual tallying of data each month</td>
<td></td>
</tr>
<tr>
<td>Barcode scanning % (patient and medication)</td>
<td>HIMSS stage criteria for Medicare/Medicaid meaningful use incentive program; ISMP guidelines for patient safety</td>
<td>% of patients that have armband scanned and medication scanned during administration</td>
<td>EMR-specific report or scanning software report</td>
<td>Goal to have medication scanning ≥ 95% for month house-wide</td>
</tr>
</tbody>
</table>

How can we establish Clinical Pharmacy Accountability Measures in Lebanon?

<table>
<thead>
<tr>
<th>What did ASHP do?</th>
<th>What can we do in Lebanon?</th>
</tr>
</thead>
<tbody>
<tr>
<td>National quality metrics were reviewed to evaluate which of the existing measures reflect the quality of pharmacy services</td>
<td>What’s important to your hospital?</td>
</tr>
<tr>
<td></td>
<td>- Joint Commission International?</td>
</tr>
<tr>
<td></td>
<td>- Lebanese Hospital Accreditation?</td>
</tr>
<tr>
<td></td>
<td>- Identify common goals across all hospitals?</td>
</tr>
<tr>
<td>Developed a suite of inpatient and outpatient measures to benchmark</td>
<td>Agree on a phase approach of metrics?</td>
</tr>
<tr>
<td>BENCHMARK</td>
<td>BENCHMARK</td>
</tr>
</tbody>
</table>
ACCP WHITE PAPER: Clinical Pharmacy Should Adopt a Consistent Process of Direct Patient Care

• In 2014 the ACCP recognized that the pharmacy practice lacks a consistent process for direct patient care and discussed several options for a pharmaceutical care plan

• Pharmaceutical care plan includes:
  • assessment of medication therapy
  • development and implementation of a pharmaceutical care plan
  • evaluation of the outcome

• Proposed pharmaceutical care plan examples published in the literature:
  • Patient Centered Primary Care Collaborative’s (PCPCC’s), comprehensive medication management (CMM) in the PCMH, MTM, individualized Medication, Assessment and Planning (iMAP), and the Society of Hospital Pharmacists of Australia (SHPA) Standards of Practice for Clinical Pharmacy Services
Preliminary Results from our Experience at LAUMC-RH
Process for Documenting Pharmacy’s Impact on Patient Care

1. Quantify Pharmacy Interventions
2. Analyze them as Medication Errors
After the ACCP White Paper:
We started thinking in a more process oriented manner

Medication related problem recognized during assessment

Prompts the pharmacist to make an intervention

Preventing or identifying a medication error

Medication related problems (MRP): defined as negative consequences of medications that can harm or potentially harm patients.
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

Clinical Pharmacy Intervention Categories
- Allergy/disease state contraindication
- Alternate route
- Drug information
- Interactions/incompatibility
- Order clarification
- Patient care
- Pharmacotherapeutic recommendation

Medication Related Problem Categories
- Drug therapy needed
- Suboptimal dosing
- Medication monitoring needed
- Suboptimal drug
- Documentation problems
- Suboptimal duration, frequency, or administration
- Fear of non-adherence

ME NODES (Medication use process)
### Medication Related Problems grouped into Medication Error Nodes

<table>
<thead>
<tr>
<th>Medication Related Problems (reasons for the medication error)</th>
<th>Medication Error Node (Where the initial error occurred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Drug therapy needed including prescription omissions</td>
<td>Prescribing</td>
</tr>
<tr>
<td>• Suboptimal dosing</td>
<td></td>
</tr>
<tr>
<td>• Suboptimal drug</td>
<td></td>
</tr>
<tr>
<td>• Suboptimal duration, frequency or administration when related to the prescribing process such as a physician prescribed a suboptimal duration, frequency or administration.</td>
<td></td>
</tr>
<tr>
<td>• Suboptimal duration, frequency or administration when related to the administering process such as a nurse administered the medication with a suboptimal duration, frequency or administration despite having an appropriate physician prescription.</td>
<td>Administration</td>
</tr>
<tr>
<td>• Medication monitoring needed</td>
<td>Monitoring</td>
</tr>
<tr>
<td>• Documentation error including incomplete orders, medication discrepancy due to lack of reconciliation and transcription errors</td>
<td>Documenting</td>
</tr>
<tr>
<td>• Suboptimal drug</td>
<td>Dispensing</td>
</tr>
</tbody>
</table>

Note: Drug information and medication counseling were not classified into medication error nodes.
Impact of Clinical Pharmacy Interventions on Medication Error
Nodes

• **Design:**
  • Retrospective descriptive analysis of pharmacy interventions

• **Setting:**
  • Cardiology and Infectious diseases services at the Lebanese American University Medical Center period of September 2012 - May 2013

• **Objective**
  • Attempt to document and quantify pharmacy interventions in terms of medication error preventions might result in a greater appreciation of pharmacists by hospital administrators and risk management
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

• **Methods:**
  • Developed a new reporting sheet:
    • prompt the user to focus on assessing the medication regimen for MRPs and then to road map a plan, via an intervention.
    • group interventions within 7 MRP categories.
  • Classified the MRPs into 5 nodes of MEs based on where they originate in the drug-use process.

• **Outcome:**
  • Quantify the reduction in medication related problems across ME nodes
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

• Results
  • A total of n=1174 interventions were documented
  • N=1091 interventions were classified as MRPs
  • The most common MRPs:
    • suboptimal dosing, suboptimal drug and suboptimal duration, frequency or administration.
  • The most common origins for error (ME nodes):
    • prescribing, followed by documentation errors, then monitoring errors. This is also in line with the MEDAP study where prescribing administering and monitoring were in the top three common origins for error.
  • Analysis of interventions accepted per ME nodes:
    • prescribing (68.30%)
    • monitoring (77.7%)
    • documenting(79.36%)
  • Overall reduction of 72% in MRP across all ME nodes was seen.
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

Pharmacy Interventions classified according to Medication Error Nodes (MEN)

<table>
<thead>
<tr>
<th></th>
<th>Prescribing</th>
<th>Monitoring</th>
<th>Documenting</th>
<th>Dispensing</th>
<th>Administering</th>
</tr>
</thead>
<tbody>
<tr>
<td>total number of interventions</td>
<td>834</td>
<td>54</td>
<td>126</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>number of accepted interventions</td>
<td>570</td>
<td>42</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- The role of pharmacists in reducing preventable MRPs can be shown when pharmacy interventions are analyzed according to corresponding MRP and ME nodes.
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

• Strengths
  • Interventions analyzed per medication error node
  • It facilitates the identification of performance improvement projects and helps advocate for optimal patient care.
  • Pharmacists were intervening on medications associated with important, well documented clinical outcome measures related to antibiotic stewardship and anticoagulation dosing.\(^1\)
  • Serves as an educational tool train student pharmacists on how to use a stepwise approach in identifying MRPs, developing care plans and quantifying medication error nodes to target improvement projects.

Am J Health-Syst Pharm. 2014; 71:1669-78
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

• Limitation

  • Did not report on the severity of the interventions or the associated cost
  • Analyzed the interventions are medication error preventions & didn’t consider “optimization of therapy” as an outcome
  • Retrospective documentation, we didn’t know if the problem has reached the patient or was intercepted prior to reaching the patient
Impact of Clinical Pharmacy Interventions on Medication Error Nodes

• Conclusion:

• These findings further emphasize the:
  • Need to promote documentation and analysis of interventions according to a medication related problem assessment approach
  • Support the presence of a clinical pharmacist on rounds to decrease medication related problems & potential medication errors
  • Potentially decrease the reluctance of hospital administrators to recruit clinical pharmacists
A Consistent Patient Care Process & Clinical Accountability Measures

Medication related problem recognized during assessment

Prompts the pharmacist to make an intervention

Optimization of therapy
Preventing or identifying a medication error

Clinical accountability measure

Group these problems into medication error nodes
Take Home Message

• As the country is in the process of developing clinical pharmacy, there should be a national effort to agree on a consistent form of documentation

• As we document interventions we need to keep in mind how this data will allow us to assess pharmacy’s contribution to clinical accountability measures
Thank You

• Acknowledgement:
  • Rony Zeenny, PharmD, BCPS (AQ-ID)
  • Hanine Mansour, PharmD, BCPS (AQ-ID)
  • The Pharmacists & Physicians at LAUMCRH
  • PharmD students
Questions?