PREVENTING MEDICATION ERRORS IN PHARMACY PRACTICE

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DISCLOSURE

The speakers have nothing to disclose concerning possible financial or personal relationships with commercial entities (or their competitors) that may be referenced in this presentation.

LEARNING OBJECTIVES

At the conclusion of this activity, participants should be able to:
• Discuss the national medication error data and trends
• Understand the medication error analysis process
• Explain the importance of transitions of care in improving patient safety and reducing medication errors.
• Describe the role of the pharmacist and technician in transitions of care

DEFINITION

“A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.”

NCCMERP.

About Medication Errors 2015

Exhibit 4. Change in HACs, 2011-2015 (Total = 2,979,490)

The Joint Commission. Sentinel Event Data – Event Type by Year 2017

“THE MAJORITY OF EVENTS HAVE MULTIPLE ROOT CAUSES”

Case 1:
- Patient not responding to amiodarone, lidocaine loading dose/infusion ordered.
- Physician’s previous facility uses bolus from the premixed bag
- Nurse questions the order, physician affirms.
- Nurse sets the pump to run the loading dose, but forgets to set a time limit

“KEY ELEMENTS” OF THE MEDICATION-USE SYSTEM

- Patient information
- Drug information
- Communication of drug information
- Drug labeling, packaging and nomenclature
- Drug storage, stock, standardization, and distribution
- Drug device acquisition, use and monitoring
- Environmental factors
- Staff competency and education
- Patient education
- Quality processes and risk management


HIGH-ALERT MEDICATIONS – ACUTE CARE
- Adrenergic agonists, IV
- Adrenergic antagonists, IV
- Anesthetic agents, general, inhaled and IV
- Anesthetic agents, IV
- Antithrombotic agents
- Cardioprotective solutions
- Chemotherapeutic agents
- Dextrose, hypertonic
- Dialysis solutions
- Episoral or intrathecal medications
- Hypoglycemics, oral
- Inotropic medications, IV

HIGH-ALERT MEDICATIONS – ACUTE CARE (CONT)
- Insulin, subcutaneous and IV
- Liposomal forms of drugs
- Moderate sedation agents, IV
- Moderate sedation agents, oral, for children
- Narcotics/opioids IV, transdermal, oral
- Neuromuscular blocking agents
- Parenteral nutrition preparations
- Radiographic agents, IV
- Sterile water for injection, inhalation, and irrigation
- Sodium chloride for injection, hypertonic
HIGH-ALERT MEDICATIONS – AMBULATORY

<table>
<thead>
<tr>
<th>Specific Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>lidocaine (parenteral)</td>
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<tr>
<td>methotrexate (tablet, oral)</td>
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<tr>
<td>potassium chloride (oral)</td>
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<tr>
<td>procainamide (oral)</td>
</tr>
<tr>
<td>statins (oral)</td>
</tr>
<tr>
<td>warfarin (oral)</td>
</tr>
<tr>
<td>lidocaine (parenteral)</td>
</tr>
</tbody>
</table>

PACKAGING AND LABELING

Lack of Prominence of Vital Information

MEDICATION SHORTAGES

• SALAD creation (similar packaging)
• Unfamiliarity with substitute product
• Substitute is less effective
• Substitute not in BCMA database, warnings not built, etc.
• Treatment delays
• No alternative treatment available

DISTRACTION

Case 2
• 56 yo male admitted for replacement of PEG tube, on warfarin PTA 5mg/day for intracardiac mural thrombus. Admission INR 1.4 – dose increased to 10mg per day.
• Day 2, decision to stop the warfarin and do an echo to confirm anticoagulation still needed. Resident started to d/c the order via smartphone, but in the interim received a text about a party.
• Warfarin was not d/c’d, but the team thought it was, so they didn’t check INR.

Day 4, pt developed SOB, tachycardia and hypotension. Echo revealed cardiac tamponade; INR found to be 8.5

WHY DON’T SAFETY MECHANISMS WORK?

• Most of the time, they do
• Human nature
• Confirmation bias
• Safety mechanisms defeated due to time priority
• Intimidation
• Alert fatigue
• GIGO (garbage in, garbage out)
Case 3: 16 yo male with NEMO deficiency syndrome for an elective colonoscopy.

- Patient taking Septra DS 1 tablet BID
- Order entered for Septra DS 38 ½ tablets
- The full dose was administered

The patient had a grand mal seizure, stopped breathing and required resuscitation.

Alert Fatigue

Methods
Prescribers were observed for 102 hours in situ as they ordered medications for patients and resolved alerts, then interviewed.

Results
Prescribers: n= 30
Patients: n=146
Alerts: n=320 (2.2/pt)
Alert fatigue: 37/320 (11.6%)

Problems:
- Lack of specificity
- No indication of level of risk
- Poor credibility
- Redundancy

Intimidation

Survey: 4,884 respondents.
Nurses (68%), pharmacists (14%), > 200 physicians.
Most (66%) staff-level practitioners.

At Least Once (%) Often (%)  
Assume order is safe because of the stellar reputation of the prescriber 30 2
Felt pressure to accept an order, dispense a product, or administer a drug despite concerns about safety 39 3
“...missing special characters such as decimal point, forward slash, or percentage in some records”

Ex: the strength of a drug previously dispensed may be reported as “ramipril 25 mg capsules,” when it should have been reported as “ramipril 2.5 mg capsules.”

**FAILURE MODES IN THE BCMA PROCESS**

- Medication does not come packaged as bar-coded unit-dose product
- Pharmacy does not scan products arriving in pharmacy for readability
- Pharmacy applies correct label with bar code to wrong product
- Drugs not available in ready-to-use unit-doses for nurse (e.g., tablets not broken in half)
- Nurse fails to scan patient
- Nurse fails to scan medication
- Bar code on patient and/or medication is unreadable
- Patient wristbands are not on patients but other locations (e.g., clipboards, med rooms)
- Nurse overlooks alert displayed on computer screen
- Nurse overrides alert without investigating its cause

**SAFETY MEASURES**

- Electronic medical record
- Tallman lettering/SALAD warnings
- Bar coded medication administration (BCMA)
- Bar coded/RFI medication dispensing
- "Smart" infusion pumps
- Medication Reconciliation
- Standardizing concentrations
- Error reporting

**Case 4**

Patient weighed 95 lb, but 95 kg entered into the “smart pump”

Order for heparin infusion 15 units/kg/hr

Patient received 1425 units/hr instead of 648 units/hr

Pump is programmed to detect doses over 20 units/kg/hr

**BUT it doesn’t know how much the patient weighs**

**JOINT COMMISSION NATIONAL PATIENT SAFETY GOALS RELATED TO MEDICATIONS**

https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2017.pdf
MEDICATION SAFETY RESOURCES

Institute for Safe Medication Practices (ISMP)  
www.ismp.org
The Joint Commission  
www.jointcommission.org
United States Food and Drug Administration  
www.fda.gov
Institute for Healthcare Improvement (IHI)  
www.ihi.org
Agency for Healthcare Research and Quality (AHRQ)  
www.psnet.ahrq.gov
American Society of Medication Safety Officers  
www.asmso.org
Hospital quality of care  
www.hospitalcompare.hhs.gov
National Guideline Clearinghouse  
www.guideline.gov
The Cochrane Collaboration  
www.cochrane.org
Centers for Disease Control and Prevention (CDC)  
www.cdc.gov

SUMMARY – MEDICATION ERROR TRENDS

Medication use process: complex and many opportunities for errors
The majority of events have multiple root causes

Medication safety tips:
• Double check as much as possible
• Do not rely on the computer system to catch all errors
• Ask questions, and encourage others to ask questions
• Assist with workflow/alert improvement efforts
• Report near misses and errors

ASSESSMENT QUESTION 1

Which of the following statements is FALSE?

A. The majority of events have multiple root causes
B. Known causes of medication errors include: confusing labeling and nomenclature, human and environmental factors and medication shortages
C. Medication safety measures include barcoding, smart pumps, medication reconciliation and pharmacists
D. Medication errors are the most common sentinel event reported.
E. None of the above

LEARNING OBJECTIVES

At the conclusion of this activity, participants should be able to:
• Discuss the national medication error data and trends
• Understand the medication error analysis process
• Explain the importance of transitions of care in improving patient safety and reducing medication errors.
• Describe the role of the pharmacist and technician in transitions of care

INCIDENT REPORTING SYSTEMS

Automated reporting system built for ADRs, errors, falls, quality incidents
Needs to provide “a big picture” of events reported with categories
Needs to explain the event for tracking and trending, but most importantly to prevent recurrence
REPORTING

Is not a tool for getting someone in trouble
Is not a once and done chore
For medication errors include quantity if known, exactly where occurred (which dispensing cabinet etc.), and any other medications associated with error
Does not have to include a specific patient
Can be anonymous, but hard to follow up with if needed

REPORTING

• Initial review and assessment by Risk Department
• Task assigned to individual reviewers (usually more than one)
• Inpatient vs outpatient vs North campus vs Oncology satellites
• Tasks are different levels or response
• Risk can amend some elements

REPORTING

• Where do issues “go” based on HIPPA regulations?
• If needed- Manager
• If applicable- to pharmacist reporting or managing the patient
• If applicable to prescriber’s service reviewer, Nursing, Radiology, etc.
• Department QI meetings
• Medication Safety Team
• APIT and IPIT
• MUA
• P&T

REPORTING

• Departments may look for trends or just a singular event for resolution
• Many events have a “rest of the story” that require analysis
• Difficult to make comparisons for trending
• Some issues have too many moving parts
• May trigger a RCA
• May involve the institution’s SIP

NEW RCA

\[ \text{RC}_3A^2 \]
Root Cause(s) Analysis and Action
COMPONENTS OF RCSA 2

- Should occur as soon as possible after discovery
- Staff directly involved may or may not be included
- Risk staff and reviewers
- Legal
- Administration of departments involved
- Sometimes an unattached observer may be utilized

Managers gather statements from all parties with corroboration if possible
- Review of how event occurred in time-line fashion based on statements
- Review procedures for correct process
- Look for gaps in what actually occurred and what should have occurred

- Gaps may involve communication problem-human error (SALADS)
- Gaps may involve procedure not followed-risk (BCMA override or Epic override of significant allergy)
- Gaps don’t usually involve frank disregard-reckless

- Human errors are coached to correct
- Procedures are examined for completeness and accuracy
- Procedures may be modified based on review with other departments to promote cohesive action
- Expectations of follow through for each department are set with time limit

December 24, 2014
- Significant Decline in ADEs Bolsters Safety in Hospitals; 50,000 Deaths Averted
- Washington, D.C.—An estimated 50,000 fewer patients died in U.S. hospitals and about $12 billion in healthcare costs was saved due to the reduction in hospital-acquired conditions from 2010 to 2013, according to a report released by the Department of Health and Human Services (HHS).
CHANGE IN HACs, 2011-2015 (TOTAL = 3,097,400)

JUST CULTURE

- Idea fostered by Dr. Lucian Leape in the late 1990's
- Designed after other accident conscious businesses-airlines for example
- "To make no mistakes is not in the power of man, but from their errors and mistakes the wise and good learn wisdom for the future." - Plutarch

JUST CULTURE

- Where does “Just Culture” fit into medication safety?
  - Blame game-who is at fault
  - Nobody’s fault- It’s the system at fault
  - Action taken is commensurate with outcome
  - Nobody was hurt vs. poor patient response

JUST CULTURE

- Just Culture is none of these
  - System to evaluate whether the error was a result of human error vs. risky behavior vs. reckless behavior and apply corrective action to match type of error
  - Designed to encourage safety by reporting related event regardless of outcome

THREE HUMAN BEHAVIORS

- Human error
- Risky
- Reckless

HUMAN ERROR

- Inadvertent action- slip, lapse, mistake
  - Delay
  - Misplaced decimal point
  - Forgot to renal adjust dose
  - Minimize through training, systems, processes
  - Console offender
AT RISK BEHAVIOR

- Choice of action when risk is not recognized or is considered justified
- Procedural rules not followed
- Incentivize following rules/increase redundancy
- Coach offender

AT RISK BEHAVIOR?

- At risk is usually a result of "drift" from usual process
- Too busy, too comfortable, or find a short cut
- Happens with more experienced staff
- Multi-tasking
- What if there is no procedure to follow?
- There is a "Reasonable Person" Standard

JUST CULTURE

- Evaluation follows an algorithm of yes/no questions
- Duty to produce outcome
- Duty to follow procedure
- Duty to not act with reckless disregard
DUTY TO PRODUCE AN OUTCOME

• Duty to get to work on time (produce an outcome)
• If outcome not met and yes/no algorithm finds event as human error-Console
• Evaluate system and employee for opportunity to correct
• If repetitive and no system improvement possible-consider punishment

DUTY TO FOLLOW PROCEDURAL RULE

• Is there a rule to keep children away while feeding a crocodile?
• What if Steve didn’t know procedural rule=human error
• Reasonable person standard

RECKLESS BEHAVIOR

• Did the offender’s behavior put a patient or the institution in harm’s way?
• Two key questions- Was the behavior justified and was it the choice of the offender to make?
• Action includes-support, console, coach if reasonable answers.
• May require corrective/punitive action if reckless disregard.

ASSESSMENT QUESTION 2

A. A series of analytical questions and steps to determine degree of punishment for perpetrator of a medical error.
B. A term that describes formal attempts for prevention of medical errors by focusing on as many opportunities as possible, including misses and near misses in a case-by-case algorithm to find and remedy the ultimate cause.
C. A process in which attempts to blame the human responsible for a medical error.
D. A system that attempts to prevent errors by providing “just-in-time” education to health care workers.
LEARNING OBJECTIVES

At the conclusion of this activity, participants should be able to:

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TOC DEFINITION: THE NATIONAL TRANSITIONS OF CARE COALITION

“The movement of patients between health care locations, providers, or different levels of care within the same location as their conditions and care needs change, and frequently involves multiple persons, including the patient, the family member or other caregiver(s), nurse(s), social worker(s), case manager(s), pharmacist(s), physician(s), and other providers.”

CAN YOU COUNT HOW MANY?

An 84 yo M is transferred from the LTCF to the ED for AMS. After initial assessment, he is admitted to the ICU. Three days later, he leaves the ICU and spends 4 days in IM unit. Pt is discharged back to the LTCF today.

A. Two
B. Three
C. Four
D. Five

MEDICATION ERRORS

• Inadequate TOC
  – ~60% of all med errors happen during TOC
  – Increased readmissions, increased costs, poor patient outcomes
• Poor communication during TOC
  – ~50% of all med errors in hospitals
  – ~20% of all ADEs
• Medication reconciliation
  – ~1 TOC and 1 med errors

NATIONAL PATIENT SAFETY GOALS

• Provided by The Joint Commission
• Identify health care issues, provide solutions = 1 patient safety
• Medication reconciliation declared a NPSG in 2005

PATIENT SAFETY GOALS

Hospital
• Correctly identify patients
• Use medicines safely
• Prevent infection
• Prevent surgery mistakes
• Improve staff communication
• Use alarms safely
• Identify patient safety risks

Ambulatory
• Correctly identify patients
• Use medicines safely
• Prevent infection
• Prevent surgery mistakes
USE MEDICINES SAFELY

- NPSG.03.06.01
  "Record and pass along correct information about a patient’s medicines. Find out what medicines the patient is taking. Compare those medicines to new medicines given to the patient. Make sure the patient knows which medicines to take when they are at home. Tell the patient it is important to bring their up-to-date list of medicines every time they visit a doctor."

MEDICATION RECONCILIATION - APHÁ AND ASHP

"Comprehensive evaluation of a patient’s medication regimen any time there is a change in therapy in an effort to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions, as well as to observe compliance and adherence patterns. This process should include a comparison of the existing and previous medication regimens and should occur at every transition of care in which new medications are ordered, existing orders are rewritten or adjusted, or if the patient has added nonprescription medication to his or her self-care."

MEDICATION RECONCILIATION

- Comprehensive evaluation of a patient’s medication regimen any time there is a change in therapy in an effort to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions, as well as to observe compliance and adherence patterns. This process should include a comparison of the existing and previous medication regimens and should occur at every transition of care in which new medications are ordered, existing orders are rewritten or adjusted, or if the patient has added nonprescription medication to his or her self-care.

JOINT COMMISSION – FIVE STEP PROCESS

"Process of comparing a patient’s medication orders to all of the medications that the patient has been taking."

1. Create complete list of current medications
2. Review list of medications to be prescribed
3. Compare medications on each list
4. Make clinical decisions based on results of the comparison
5. Create new list for patient, caregivers

UNINTENDED DISCREPANCIES ON ADMISSION

- Study Design
  - Prospective study
  - 1000-bed teaching hospital
  - Internal med unit admission over 3 month period
- Primary Outcome
  - Unintended discrepancies between physician admission medication orders and comprehensive medication review
- Study team:
  - Pharmacist, pharmacy student, medical student
- Types of Discrepancies
  - Class 1: Unlikely to cause discomfort or clinical deterioration
  - Class 2: Moderate discomfort or clinical deterioration
  - Class 3: Severe discomfort or clinical deterioration
- Results
  - Study Design
  - Prospective study
  - 1000-bed teaching hospital
  - Internal med unit admission over 3 month period
  - Primary Outcome
  - Unintended discrepancies between physician admission medication orders and comprehensive medication review
  - Study team:
    - Pharmacist, pharmacy student, medical student
  - Types of Discrepancies
    - Class 1: Unlikely to cause discomfort or clinical deterioration
    - Class 2: Moderate discomfort or clinical deterioration
    - Class 3: Severe discomfort or clinical deterioration
  - Results
    - 151 patients evaluated
    - Median time 24 minutes
    - 81 (53.6%) patients ≥ 1 unintended discrepancy
    - 140 unintended discrepancies identified
    - 0.93 discrepancies per patient
    - Weekend, nighttime, busy periods ≠ ↑ unintended discrepancies
UNINTENDED DISCREPANCIES ON ADMISSION

- Types and Severity of Unintended Discrepancies
  - Most discrepancies associated with CV meds (26.6%) and CNS meds (25.9%)

<table>
<thead>
<tr>
<th>Type of Discrepancy</th>
<th>No.</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug omission</td>
<td>64</td>
<td>44 (67.7%)</td>
<td>18 (27.7%)</td>
<td>3 (4.5%)</td>
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<tr>
<td>Discrepant dose</td>
<td>35</td>
<td>22 (62.9%)</td>
<td>13 (37.1%)</td>
<td>0</td>
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<tr>
<td>Discrepant Frequency</td>
<td>24</td>
<td>15 (62.5%)</td>
<td>8 (33.3%)</td>
<td>1 (4.2%)</td>
</tr>
<tr>
<td>Incorrect drug</td>
<td>16</td>
<td>5 (31.3%)</td>
<td>7 (43.8%)</td>
<td>4 (25.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>86 (61.4%)</td>
<td>46 (32.9%)</td>
<td>8 (5.7%)</td>
</tr>
</tbody>
</table>

UNINTENDED DISCONTINUATION AT DISCHARGE

- Objective
  - To assess rates of unintentionally discontinued medications after hospital or ICU admission

- Study Design
  - Population based-cohort study

- Primary Outcome
  - Medication not refilled within 90 days

- Secondary Outcome
  - Composite of death, ED visit, emergent hospitalization day 91 to 365

- Medication Groups
  - Statins
  - Antiplatelet/anticoagulants
  - Levothyroxine
  - Respiratory inhalers
  - Gastric acid-suppressors

UNINTENDED DISCONTINUATION AT DISCHARGE

<table>
<thead>
<tr>
<th>Medication Discontinued</th>
<th>Control Group</th>
<th>Hospitalized AOR (95% CI)</th>
<th>ICU Admission AOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statin</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>Levothyroxine</td>
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<tr>
<td>Gastric acid-suppressors</td>
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</table>

THE PHARMACIST INTERVENTION FOR LOW LITERACY IN CARDIOVASCULAR DISEASE (PILL-CVD) STUDY

- Objective
  - To assess impact of interventions on medication errors post hospital discharge

- Study Design
  - Randomized controlled trial
  - Two academic medical centers (Vanderbilt University Hospital, Brigham and Women’s Hospital)
  - Admission for ACS or HF

- Intervention
  - Medication reconciliation
  - Inpatient counseling
  - Low-literacy adherence aids
  - Telephone follow-up after discharge

<table>
<thead>
<tr>
<th>Type of Error</th>
<th>No. (%): Significant</th>
<th>Serious</th>
<th>Life-threatening</th>
<th>Fatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant</td>
<td>585 (75.2%)</td>
<td>14 (1.8%)</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Serious</td>
<td>178 (22.9%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-threatening</td>
<td>14 (1.8%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatal</td>
<td>0 (0.0%)</td>
<td></td>
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</tr>
</tbody>
</table>

PILL-CVD STUDY

- Primary Outcome
  - Number of clinically important med errors per patient 30 days after discharge

- Results
  - 851 patients evaluated
  - 432 (50.8%) patients ≥ 1 clinically important med errors
    - 0.87 per patient in intervention group
    - 0.95 per patient in usual care
    - Difference not significant
  - ≥ 80% had adequate health literacy
PILL-CVD STUDY

Secondary Outcome
- Number of ADEs during first 30 days after discharge

Results
- 258 (30.3%) patients experienced ADEs
- 13% of ADEs → ED visit, readmission

Medications associated with ADEs
- Cardiovascular
- Diuretics
- Opioids
- Lipid-lowering
- Nutrients (herbs, vitamins, supplements)
- Hypoglycemic agents
- Anticoagulants

<table>
<thead>
<tr>
<th>Type of ADE</th>
<th>No. (% )</th>
</tr>
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<tbody>
<tr>
<td>Significant</td>
<td>296 (83.9%)</td>
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<tr>
<td>Serious</td>
<td>48 (13.6%)</td>
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<tr>
<td>Life-threatening</td>
<td>9 (2.5%)</td>
</tr>
<tr>
<td>Fatal</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>353</td>
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</tbody>
</table>

MEDICATION RECONCILIATION CHALLENGES

Patient factors
- Age, language barriers, literacy, multiple meds, comorbidities, prolonged hospital stay

Provider factors
- Inadequate medication knowledge, insufficient time

Information quality
- GIGO (garbage in, garbage out)
- Inadequate information
- Misplaced confidence in accuracy of information

Resources
- Limited staff especially on weekends, holidays, afterhours

Information technology
- Health records not available through all spectrums of care
- Medications documented in various formats
- Duplicate medical records

GOOD CATCH #1

- 60 yo M admitted for chest pain
- PMH: T2DM, CKD, CAD, HTN, OSA, obesity
- PTA med list:
  - ASA 81mg
  - Atorvastatin 40mg
  - Farxiga 10mg
  - Fenofibrate 154 mg
  - Humulin-R U-500 20 units TID
  - Lansoprazole 40mg
  - Losartan 50mg BID
  - Nitrostat 0.4mg SL tabs
  - Oxycodone 10mg Q6H PRN PAIN

- ED medication review
  - U-500 20 units ordered
  - Patient interview during admission
  - “Taking 20 units” TID U-500
  - Using U-100 syringe, draws up to 20 unit mark (0.2 mL)
  - Patient determined insulin need by amount of food ingested and exercise that day
  - Patient did not check blood glucose regularly

- Result
  - Dose corrected in EPIC, med list updated with correct dose
  - Patient received home insulin regimen
  - BG mostly<180 during hospitalization

GOOD CATCH #2

- 44 yo M admitted for DKA, prior admission for DKA two weeks prior
- PMH: HIV, T2DM, HLD, HTN, neuropathy, splenectomy, stroke

- Admission Medication Reconciliation
  - Poor medication histories, 8 HIV meds?
  - Insurance issues
    - Patient reported having Medicare but ran out of drug coverage two months ago
    - Medicaid pending
GOOD CATCH #2

First discharge summary
- Duplicate Lantus directions
- No directions for Humalog
- Gemfibrozil + atorvastatin
- 8 HIV meds

Second discharge summary
- Appropriate insulin regimen
- Gemfibrozil was discontinued
- Current HAART regimen added to list

Pharmacists play an important role in TOC through medication reconciliation
Medication reconciliation can improve TOC and decrease medication errors

SUMMARY

Pharmacists play an important role in TOC through medication reconciliation
Medication reconciliation can improve TOC and decrease medication errors

ASSESSMENT QUESTION 3

The Joint Commission Five Step Process for medication reconciliation includes all the following except:

A. Create complete list of current medications
B. Review list of medications to be prescribed
C. Contact prescriber to verify orders
D. Make clinical decisions based on results of the comparison
E. Create new list for patient, caregivers

LEARNING OBJECTIVES

At the conclusion of this activity, participants should be able to:

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TRANSITION FROM CLINIC TO HOSPITAL AND TO HOME

ML is a 60 yo AA male with PMH: LV mural thrombus (on warfarin), left carotid artery occlusion, ischemic cardiomyopathy, s/p cervical spinal fusion, HTN. Home medications include:

- Warfarin 7.5 mg daily
- Carvedilol 12.5 mg bid
- Gabapentin 600 mg 2 tabs tid
- Lisinopril 10 mg daily
- Cyclobenzaprine 5 mg tid

He had a stroke and was admitted to an outside hospital. Upon discharge, his medications include:

- Warfarin 10 mg daily
- Gabapentin 400 mg tid
- Atorvastatin 80 mg daily
- Aspirin 81 mg EC daily

Patient was taking both strengths of gabapentin (600mg, 400mg)
Patient presented to Anticoagulation clinic complaining of severe headache that occurred post discharge
Patient stopped gabapentin 400mg, headaches went away after a few days
Patient resumed warfarin 7.5 mg daily, INR was 3.0 after 10 days
**WHAT WENT WRONG WITH ML’S CASE?**

- Patient Factors
  - Lack of understanding
  - Forgetfulness
- Lack of records
- Sooner appointment with Anticoagulation Clinic

**TOC MODELS**

- Care Transitions Intervention Program (CTI)® - patients with chronic diseases
  - Uses a “transition coach”, home visit + three telephone interactions
  - University of Colorado Denver School of Medicine
- Transitional Care Model (TCM) – elderly patients
  - Nursing-led model, home visits + telephone support for 7 days/week for average of 2 months
  - University of Pennsylvania
- Guided Care (GC) Model – patients with chronic diseases
  - Uses a trained registered nurse
  - Johns Hopkins University
- Project RED
- Patient-Centered Medical Home (PCMH)

**PROJECT RED**

- Project Re-Engineered Discharge (RED)
  - Supported by grants from various organizations
  - AHRQ, NHLBI, BCBS
  - Goal: improve patient safety and reduce admittance rate
  - Primary end point: rate of hospital utilization
  - N = 728 patients
  - Intervention group had 33.9% lower rate of readmission (within the first 30 days after discharge, p = 0.009)
  - Cost: 0.5 FTE for a nurse and 0.15 FTE Clinical Pharmacist

**OUTCOME COST ANALYSIS**

<table>
<thead>
<tr>
<th></th>
<th>Usual Care Group</th>
<th>Intervention Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of ED visits</td>
<td>$21,389</td>
<td>$11,285</td>
</tr>
<tr>
<td>Cost of hospital visits</td>
<td>$412, 544</td>
<td>$268,942</td>
</tr>
<tr>
<td>Cost of outpatient visits over 30 days</td>
<td>$8,906</td>
<td>$12,617</td>
</tr>
<tr>
<td>Cost Savings per participant</td>
<td></td>
<td>$412</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33.9% lower observed cost</td>
</tr>
</tbody>
</table>

**PROJECT RED**

- Time spent:
  - Post-discharge telephone calls median of 14 minutes (10 – 19 minutes)
  - 10 minutes of preparation
  - Attempts: median of 2 (1-3 attempts)
  - Median total time spent: 26 minutes (18-36 minutes)

- Number of participants per week:
  - 14 participants
  - 6.1 hours or about 0.15 FTE

**12 COMPONENTS PROJECT RED**

1. Ascertain need for and obtain language assistance.
2. Make appointments for follow-up medical appointments and post discharge tests/labs.
3. Plan for the follow-up of results from lab tests/studies that are pending at discharge.
4. Organize post-discharge outpatient services and medical equipment.
5. Identify the correct medicines and a plan for the patient to obtain and take them.
6. Reconcile the discharge plan with national guidelines
12 COMPONENTS PROJECT RED

7. Teach a written discharge plan the patient can understand.
8. Educate the patient about his or her discharge.
9. Assess the degree of patient’s understanding.
10. Review with the patient what to do if a problem arises.
11. Expedite transmission of the discharge summary to clinicians accepting care of the patient.
12. Provide telephone reinforcement of the discharge plan.

PROJECT RED TOOLS

- How to Begin the RED Implementation at Your Hospital
- How to Deliver the RED
- How to deliver the RED to Diverse Population
- How to Conduct a Post Discharge Follow-up Phone Call
- How to Monitor RED Implementation and Outcomes
- After Hospital Care Plan (AHCP)

Urban academic center, safety net hospital

PATIENT CENTERED MEDICAL HOME (PCMH)

Medication Management is an integral component of PCMH: Pharmacist

IMPACT OF COLLABORATIVE CARE SERVICES FOR HIGH-RISK PATIENTS AFTER DISCHARGE FROM A LARGE URBAN ACADEMIC CENTER

- UF Health Jacksonville Total Care Clinic
- N = 166 cases
- Intervention group: 137
- Control group: 29
- Primary outcome: 30 day readmission and/or ED visit rates


- Results:
  - 27.5% (8/21) patients were re-admitted to ED/hospital within 30 days with the control group
  - 10.2% (14/123) patients were re-admitted to ED/hospital within 30 days with the intervention group
  - P value of 0.0468


Patient Centered Medical Home: Pcmh.ahrq.gov

Medication Management is an integral component of PCMH: Pharmacist

- Pharmacist Developed Clinic Policies
  - Anticoagulation
  - Transitions of Care
- Pharmacist Developed Patient Registries
  - Type 2 Diabetes
  - CV high risk population
  - Anticoagulation

If the primary care practice has pharmacists in their clinic, using pharmacists for TOC would be beneficial
TOC IN THE ELDERLY – FROM HOSPITAL TO HOME

• Comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older: a randomized clinical trial
• N = 400 (201 in the control group, and 199 in the intervention group)
• Outcomes (186 in control, 182 in intervention group):
  – 16% RRR in all hospital visits
  – 47% RRR in ED visits
  – 80% RRR in drug-related admissions

Hospital based pharmacist provided med management
Patient follow up with PCP
2 month telephone follow up


• Total cost per patient in the intervention group was $230 lower as compared with the control group
• Cost of implementation
  – 0.5 FTE pharmacist

TOC IN THE ELDERLY – FROM HOSPITAL TO LTCF

• Hospital discharge to first time LTCF
• Community Pharmacist provided medication management within 2 weeks of admission to LTCF
• N = 110 older adults (mean age 82.7)
• 56 patients in the intervention group
• 54 patients in the control group
• Primary outcome: quality of prescribing (Medication Appropriateness Index, MAI)
  – MAI was significantly lower at 8 weeks follow up as compared to control group (2.5 vs. 6.5, p = .007)
  – No statistical significance with ED/hospital re-admission rates


NATIONAL INITIATIVES OR RESOURCES

• NTOCC
• BOOST program
• IHI STAAR Initiative

NATIONAL TRANSITIONS OF CARE COALITION (NTOCC)

• NTOCC
  – Established 2006, “dedicated to addressing the serious issues and concerns related with transitions of care” and to “raise awareness about transitions of care among health care professionals, government leaders, patient and care givers to increase the quality of care, reduce medication errors and enhance clinical outcomes.”
  – Online resources:
    – Improving on Transitions of Care: How to Implement and Evaluate a Plan
    – NTOCC Measures Work Group document

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BETTER OUTCOMES FOR OLDER ADULTS THROUGH SAFE TRANSITIONS (BOOST) PROGRAM

• BP’s Risk Assessment Tool
  – Problem medications
  – Psychological
  – Principal diagnosis
  – Polypharmacy
  – Poor health literacy
  – Patient support
  – Prior hospitalizations
  – Palliative care

• Usefulness
  – A tool to allow providers to assess the risk of adverse events during TOC
• Disadvantage:
  – Not validated
HOSPITAL TO HOME (H2H) INITIATIVE

• Led by American College of Cardiology (ACC) and Institute for Health Care Improvement (IHI)
• Goal: 20% relative reduction in the national CMS 30 day all cause readmission rate
• Tools are available online
• Interested participants may enroll for free online
  • Target population: HF and AMI

IHI STATE ACTION ON AVOIDABLE RE-HOSPITALIZATIONS (STAAR) INITIATIVE

• May 2009
• "How to guide" on improving transitions from hospital to clinics
  — Accessible services
  — Communication among providers
  — Communication between patients and providers
  — Medication reconciliation
  — Online materials available (hospital to HHC, SNF, home)

TRANSITIONS OF CARE AT UF HEALTH JACKSONVILLE

Inpatient
Admission: Technician medication history by consult
Changes in levels of care: patient counseling, pharmacy hand off
Discharge: Education and reconciliation (high risk list), LEAP, facilitated discharge Rx

Ambulatory Pharmacy
Facilitated discharge Rx process
LEAP Process
EMMI – medication related calls
Post-discharge follow up calls

TRANSITIONS OF CARE AT UF HEALTH JACKSONVILLE

• Transitions of Care: CFM Clinic
  — Prevent 30 day re-admissions for Medicare patients
  — Contact must be initiated within 48 hours of discharge
    • By licensed clinical staff under supervision of physician
    • Medication Reconciliation
    • Face to Face with provider
      • Within 7 or 14 days (CPT 99496 $220 or CP 99495 $157)
      • Billable after 30 day with no hospital admissions

SUMMARY

• Pharmacists play a vital role in transitions of care
• There are numerous resources available

QUESTION

Which of the following is considered a transition of care model?
A. Project RED
B. Guided Care Model
C. Patient Centered Medical Home
D. All of the above
REFERENCES


• Project RED: https://www.bu.edu/famed/project/red/index.html

• Patient Centered Medical Home: Pcmh.ahrq.gov


• Crotty M, Rowett D, Spurling L, et al. Does the Addition of Pharmacist Transition Coordinator Improve Evidence-Based Medication Management and Health Outcomes in Older Adults Moving from the Hospital to a Longer Term Care Facility? Results of a Randomized Clinical Trial. Am J Geriatr Pharmacother 2004; 2:257-64

• Project BOOST: Better Outcomes for Older Adults Through Safe Transitions: www.hospitalmedicine.org/boost.

• National Transitions of Care Coalition (NTOCC): www.ntocc.org

• Hospital to Home Initiative: https://cvquality.acc.org/InitiativeH2H.aspx

• STAAR Initiative: www.ihi.org

• Medications at Transitions and Clinical Handoffs (MATCH) Tool: https://www.ahrq.gov/sites/default/files/publications/files/match.pdf

REFERENCES

• Crotty M, Rowett D, Spurling L, et al. Does the Addition of Pharmacist Transition Coordinator Improve Evidence-Based Medication Management and Health Outcomes in Older Adults Moving from the Hospital to a Longer Term Care Facility? Results of a Randomized Clinical Trial. Am J Geriatr Pharmacother 2004; 2:257-64

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• Courtesy of UF Health Jacksonville Department of Pharmacy Transitions of Care Pharmacy Collaborative