Facilitating Medication Reconciliation in the Emergency Department: A Tale of Two Cities

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Learning Objectives

- List the various responsibilities of emergency medicine pharmacists
- Describe the role of emergency medicine pharmacists in facilitating medication reconciliation
- Examine the utility of pharmacy student and pharmacy technician involvement in home medication list retrieval in the emergency department (ED)
- Discuss improved patient safety outcomes and practice model successes with the inclusion of pharmacy students and pharmacy technicians in ED home medication list retrieval

ED Pharmacist Roles

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Scope of the Medication Reconciliation Problem

- Up to almost 70% of admitted patients experience a medication discrepancy.1,2
- 20-30% of patients experience an error with potential to harm.
  - Leading to increased length of stay, ED visit, Readmissions and more.
- 2005 The Joint Commission released National Patient Safety Goal 8.3

Medication Safety Review

- 74% patients contained at least 1 error with 32% having 2 or more discrepancies.
- More than 50% of patients reported a medication not charted largely being OTC products.
- Patient medication knowledge plays a large role in discrepancies.

Identifying Discrepancies

- Patients medication recall and self-reporting of medication use vs. pharmacist interview and chart review.4
- 74% patients contained at least 1 error with 32% having 2 or more discrepancies.
- More than 50% of patients reported a medication not charted largely being OTC products.
- Patient medication knowledge plays a large role in discrepancies.
Impact of Pharmacy

- Effect of medication reconciliation at hospital admission.5
  - Physician acquired medication history – 81.9% of patients had at least 1 discrepancy at admission.
    - 72.3% corrected by pharmacist intervention during admission.
  - 50.2% medication discrepancy at discharge.
    - Mostly from discrepancy carried through from admission.
  - Every additional drug on medication history increase chances of discrepancy by 47%.

Impact of Pharmacy

- Pharmacist-conducted medication reconciliation in an emergency department.6
  - 117 errors out of 601 medications (59%) recorded by non-pharmacist compared to 2 (3%) in the pharmacist group.
  - Types of errors identified included: incompleteness and inaccuracy consisting of missing dose, missing route, missing allergy information, missing schedule.
  - Allergy information was completed only 79% vs. 100% in the non-pharmacist vs. pharmacist.

Utilizing Pharmacist and Technicians

- Pilot study utilized 2 pharmacy technicians and 1 pharmacist to obtain and check medication histories on admission.7
  - Goal was to reach 90% for both accuracy and reconciliation rate.
    - 45.8% of accuracy and 44.2% reconciliation prior
    - 95% and 92.8% respectively with pharmacy intervention.
  - Average of 33min for Tech to complete history and 5min for RPh to review.

The Columbus Experience

Technician-Based Program

Riverside Methodist Hospital

- Private not-for-profit, teaching hospital with the OhioHealth Healthcare system.
- Over 1000 licensed beds
- 96 Emergency Department beds
- Approximately 90,000 ED visits
- Resulting in about 30,000 admissions annually

RMH History

- Clinical ED Pharmacist position started - Jan. 2008
- Satellite Pharmacy in ED opened - June 2008
- Position approved for ED medication reconciliation (EDMR) tech - Aug 2010
- First ED EDMR CPhT hired and trained - Oct 2010
- Weekend EDMR coverage added and covered by pharmacy interns - Dec 2010
- Increased EDMR coverage Mon-Fri of 13hr with CPhT - Apr 2011
- Approval to increase EDMR and satellite coverage to 24/7 - Jan 2013

ED RPH Roles

- Primary Role is a two-sided approach
  - Front End
    - Primary resource to the ED team
    - Respond to all traumas, Code blues, STEMI, stroke, etc
    - Answer drug information questions
    - Assist in therapeutic drug selection and dosage
    - Dose, procure, and assist in drug admixture
  - Back End
    - Review and assist with boarded and admitted patients
    - Assist with medication reconciliation
    - Round on boarded patients

Current EDMR coverage

- Mon - Fri
  - 2 FTEs with 13hr of CPhT coverage
  - 11am - 12am with 2 CPhT from 3:30 – 7:30
- Sat – Sun and Holidays
  - 0.4 FTEs
  - 8hr of coverage with pharmacy intern
  - 11am – 7:30pm

EDMR Expansion

- EDMR CPhT coverage Sun-Sat 24hr a day
- Total FTEs – 3.9 daily
- Overlap of 2 CPhT 8.5 hours per day
- ED Satellite open and staffed with RPh Sun-Sat 24hr
- Target to have all positions filled and trained by summer 2013

EDMR Responsibilities

- The EDMR obtains medication history for all patients pending admission from ED.
  - Allergy Info – including reactions
  - Home medications – including time of last dose
  - OTC, Herbs, supplements – including time of last dose
  - Retail/Mail order pharmacy info
  - Input and update all above data in the electronic medical record

EDMR Competency

- CPhT must be trained, reviewed, observed and approved by completion of role-specific competency
  - Written and performance assessment
  - CPhT to complete “mock” patient interview
  - Assess skill level and communication abilities
- Activities monitored and evaluated frequently for accuracy and completeness
  - Evaluations at 30, 60 and 90 days and then as needed.
- Documentation reviewed by manager and performance feedback provided
EDMR Documentation

- All interventions to be documented
  - # of patients interviewed
  - Time with patient
  - Order clarifications
    - Specify dose and/or frequency clarifications
  - Outside calls made
  - Clarified Allergies
  - Clarified last dose taken
  - Missed Opportunities

EDMR Outcomes

- 93% of patients were able to be seen.
- 31.5 Patients seen per day
- 5.68 Interventions per patients
- 178 Interventions per day
- Approx. 70% of interviews took less than 10 min
- # of interventions consistent during various shift coverage

EDMR Outcomes

Number of Outside Interventions (June 29, 2011 to October 16, 2011)

EDMR Outcomes

Clarifications, by 'Type' (June 29, 2011 to October 16, 2011)

EDMR Outcomes

Time Spent to Complete Patient Activities (June 29, 2011 to October 16, 2011)

EDMR Challenges

- Timely notification of admissions
- Workflow
  - Seeing patient before admitting physician
  - Patient being asked medication history multiple times
- CPhT unique role in ED with patient interaction and member of multidisciplinary team
CPhT MR future
- Expansion of EDMR to 24/7 coverage
- Evaluate potential of CPhT MR in over areas
  - Surgery and outpatient procedure areas
  - Level of care transfer
  - Discharge reconciliation
- More active role with Pharmacist on discharge reconciliation especially in high risk patient populations

Pharmacy APPE Students
Role in Reconciliation Efforts

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Utility of APPE Students
Multicenter Reconciliation Project
- Student-led patient interviews from 6/2005 to 3/2006
  - Total of 3 institutional sites
  - Interview target of ≥ 5 interviews / week
  - Medical or surgical patients > 18yo
  - Secondary sources contacted as needed
  - Interview findings discussed with pharmacist preceptor
  - Recommendations communicated to medical staff
- Interview Results
  - 11 students interviewed 330 patients over 10 months

Utility of APPE Students
Single-Center Prospective Study
  - 424-bed community teaching hospital
  - Each student randomly assigned 1-2 patients daily
  - Patients admitted to an internal medicine service
  - All interview findings compared to community pharmacy prescription records
  - Findings discussed with pharmacist preceptor
  - Quality assurance via random observation of student interviews

Utility of APPE Students
Multicenter Reconciliation Project (cont)
- Total of 922 discrepancies among 330 patients
  - Average # of discrepancies per patient: 2.8
  - Average # of medications per patient: 7.2
  - Percentage of patients with ≥ 1 discrepancy: 75%
- Total of 59 drug-related problems
  - Interventions for 57 patients (17%)
  - Intervention acceptance rate of 48%

Utility of APPE Students
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Utility of APPE Students

Single-Center Prospective Study (cont)

Interview Results
- Seven students and 326 patient interviews
- Only prescription medications analyzed
- Average # of medications per patient: 7.39
- Total # of medication discrepancies: 768
- 67% of patients with medication and/or dosage omitted
- 30% of patients with incorrect dosage information


The Cleveland Experience
Utilizing Pharmacy APPE Students

- Nonprofit, multispecialty academic medical center
- 1,450 licensed inpatient beds
- Emergency Department consisting of 5 nursing units with 78 beds
- 58,000 ED visits annually

Cleveland Clinic

ED Pharmacy Practice Overview
- Total of 4 ED Pharmacists
- 1st Shift: 0700-1530 Monday through Friday
- 2nd Shift: 1230-2300 Monday through Sunday
  - Rotating 7-day stretch for 2nd shift coverage
  - Allows weekday shift overlap
- ED Pharmacy Students: 0900-1700 Monday through Friday
- Scheduling Goal: Maximize physical presence within ED

Cleveland Clinic ED Pharmacist

Daily Activities
- Care of critically ill patients
  - Resuscitations, arrests, CVA alerts, AMI alerts
  - Drug therapy recommendations to procurement
- Clinical pharmacy support for ED staff
- Profile review of boarded ED patients
- Pharmacy APPE student education
- Prospective order verification (2nd shift)
- Home medication list retrieval
  - 23-hour ED observation pts (CDU pts)
  - Per MD request
- Administrative functions
Clinical Decision Unit (CDU)
- 23-Hour Observation Unit
- Staffed by Emergency Medicine Physicians
- Target patient population for student-facilitated home medication list retrieval

ED APPE Students
Role in Medication List Retrieval
- Pilot initiated 8/2011
  - Two-month APPE student
  - Interviewed CDU patients
  - Data findings prompted pilot expansion
- Student service developed
  - Continuous APPE students since 1/2012
  - Prospective pt interviews for CDU referrals
  - Continuous data tracking

ED Student Workflow
ED Student Training
Training Checklist
- Completed during 1st week of rotation
  - Part 1: review of EMR functionality
  - Part 2: review of ED Patient Interview Guidelines
  - Part 3: direct student observation
- Sign-off by student and 2 ED pharmacists

Data Tracking Guidelines
- Standardized discrepancy tracking

ED Student Outcomes
2012 Interview Results
- 12 APPE students over 11 months
- 991 patient interviews
  - Total # of interview days: 204
  - Average # of interviews per day: 4.9
  - Total # of home medications reviewed: 9216
  - Average # of medications per pt: 9.3
  - Total # of discrepancies: 2899
  - Average # of discrepancies per pt: 2.9
  - % of pts with ≥ 1 discrepancy: 81.6%

ED Student Outcomes
Home Medication List Discrepancies by Type (2012)
- Missing Medication
- Obsolete Medication
- Incorrect Dose
- Incorrect Frequency
- Incorrect Formulation
- Missing Dose Information
- Other
ED Student Outcomes

Interview Results: 1/1/13 to 2/28/13
- Increased data collection requirements
- 2 APPE students
- 129 patient interviews
  - Average # of medications per pt: 10.7
  - Average # of discrepancies per pt: 4.4
  - Total time commitment: 2540 minutes
  - Average time per pt: 19.7 minutes
  - % of interviews requiring contact with secondary sources: 29.5%

ED Student Outcomes

Discrepancies by Therapeutic Class (January 2013)

Utilization of APPE Students

Additional Considerations
- Clinical context
- Opportunity for student growth
- Pharmacist extender
- Recurring training required
- Inter-student variability
- Balancing service activity with educational opportunities

Cleveland Clinic Future Directions

Facilitating Reconciliation
- Continued use of APPE students
  - Online training modules
  - Expanding target patient population
  - Continuous data tracking
- Exploring use of dedicated technicians
  - Target ED patients to be admitted?
  - Consider hybrid approach (student + technician)

Conclusions

- Scope of the medication reconciliation problem is exceptionally large
- Pharmacists strategically positioned to help optimize reconciliation efforts
- Utility of dedicated pharmacy technicians and APPE students well documented
- Unique benefits and challenges with using technicians and APPE students

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