Value of Pharmacy in the Emergency Department

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Disclosure

• Personal or financial relationships with commercial interests

• The authors of this presentation have no disclosures concerning possible personal or financial relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.
Objectives

• Explain how pharmacists prevent medication errors in the ED
• Illustrate how pharmacy technicians in the ED impact the medication reconciliation process
• Describe a comprehensive ED-based pharmacy program for optimizing quality of care, patient safety and financial benefits to healthcare organizations
Pharmacists as a Safety Measure in the Emergency Department
Audience Participation

• Have you ever flown on a plane?

• Have you been on 3 or more flights?

• Have you ever been in a plane crash?
Commercial Aviation

• What is the rate of an “Error-Free” Flight

• Why don’t planes fall out of the sky more often?

• How can we apply what is commonplace in the airline industry to healthcare, and the ED in particular?
Emergency Department

• Unpredictable

• Chaotic

• Variable
Emergency Department

• Goal- High quality, efficient, safe care to diverse population

• Reality?
  • 129.8 million visits (2010 data)
  • 75% have at least 1 medication administered/prescribed
    - 210 million medication encounters annually
  • 3.8 million preventable events annually (IOM)
    - 77% of ADEs occur between ordering and administration phase
A Perfect Storm- Safety in the ED

• Stressful environment
• Crowding/Boarded patients
• Fewer EDs nationally
• Rapid clinical decision making
• Verbal orders
• Incomplete medical records
• Multi-tasking with frequent interruptions/distractions
• Patient information gaps
Medication Use Process in the ED

- Exception to the medication use process as followed in most areas
- Point-of-care
  - Ordering
  - Dispensing
  - Administration
- Verbal orders
  - Urgent, high-stress situations

ED Medication Errors

• Established safety mechanisms normally NOT available in the ED:

  • Prospective Rx Review
  • Rx oversight of verbal orders
  • Pharmacy preparation of medications
  • Pharmacist involvement in clinical decision making

Emergency Medicine Pharmacist

• Proven to improve process measures:
  • Time to cardiac catheterization lab
  • Antibiotic timing in PNA
  • Pain management

• Cost savings/avoidance benefit to ED
  • Majority is avoiding costs associated with ADEs
Emergency Medicine Pharmacist

• First reported in 1970s
  • Initially inventory control and satellite development
• 1976- strictly clinical roles reported
• Growth- professional advocacy
  • Cost avoidance, increased safety
• 10.5% of Level I Trauma Centers
  • 2.7% without Level I Designation

Emergency Medicine Pharmacist

• Respond to traumas, resuscitations, critical patients
• Clinical decision making/ consultation with physicians or other prescribers
• Healthcare provider education
• Patient consultation/education

EM Pharmacist as a System-Level Safety Intervention

- Error reduction: individual → system
- Systems approach creates layers to reduce chance of errors reaching the patient
  - Make it difficult for error to occur
  - “Absorb” errors that do reach patient
- By being available in the ED, the EM pharmacist’s ability to be involved in tailoring decisions to specific patients is increased

EM Pharmacist as a System-Level Safety Intervention

• Screening for and reporting ADEs
• Preventing errors from re-occurring
  • FMEAs
  • RCAs
• Process improvements
  • Proactive and continuous monitoring of medication practices

AJHP. 2011; 68 (23): e81-95.
Medication Errors Recovered by ED Pharmacists

• 4 Academic EDs
• Primary outcome- medication errors recovered by pharmacist
  • Near miss, potential ADE
  • Mitigated ADE
  • Ameliorated ADE
• Clinical outcomes not evaluated

Medication Errors Recovered by ED Pharmacists

- 226 observation sessions; 787 hours
- 17,320 medications reviewed by pharmacist
- 6,471 patients impacted
- 504 recovered medication errors identified
  - 7.8 per 100 patients
  - 2.9 per 100 medications ordered/administered

Medication Errors Recovered by ED Pharmacists

• 90.3% errors intercepted were potential ADEs
• 3.9% mitigated ADEs
• 0.2% ameliorated ADEs
• Severity
  • Serious- 47.8%
  • Significant- 36.2%
• Medication Classes
  • Antimicrobial agents- 32.1%
  • CNS agents- 16.2%
  • Anticoagulant and thrombolytic agents- 14.1%

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• Error types
  • Dosing errors
  • Drug omission
  • Wrong frequency

Pharmacist Activities Resulting in Medication Error Interception in the ED

• 4 Medical Centers
  • Academic and Community
• Medication error interceptions recorded for 250 hours of cumulative time at each site
• Items recorded included:
  • Activities that led to interception of error
  • Types of orders
  • Phase of medication use process
  • Type of error

Pharmacist Activities Resulting in Medication Error Interception in the ED

- 16,446 patients presented to ED
- 364 confirmed medication error interceptions

Activities that led to interception:

- Consultation - 51.4%
- Order review - 34.9%
- Other - 13.7%

Pharmacist Activities Resulting in Medication Error Interception in the ED

• Types of orders:
  • Written/computerized- 54.4%
  • Verbal- 32.7%
  • Other- 12.9%
  • Prescribing phase- 82.4%
  • Wrong dose- 44.2%

• Severity:
  • Minor- 9.3%
  • Significant- 65.4%
  • Serious- 22.8%
  • Life-threatening- 2.5%

Cost of Medication Errors in the ED

- UKCMC Case Study
- Interventions in the ED
  - 353 in 6 months
- Median Cost of Medication Error: $268
- Cost Avoidance = $94,604
  - Annuitized = $189,208
- If error in ED, 3x likelihood of admission

Bowman B. The Cost of Medication Errors in the Emergency Department. UKCMC.
Cost of Medication Errors in the ED

- Detroit Receiving Hospital
- $436,150 avoidance from prevention of medication errors by pharmacist
- 4 month period

AJHP. 2007; 64: 63-68.
Take Home Points

• EM Pharmacist position is recommended by ASHP and the Institute of Medicine
• Value of physical presence of pharmacists in the ED repeatedly reported in patient-safety literature
• Significant cost avoidance
• EM Pharmacist role is highly valued by Physicians and RNs; and improves patient safety and quality of care
Pharmacy Technician-Led Medication Histories in the Emergency Department
Medication Reconciliation

- “Process of comparing the medications a patient is taking (and should be taking) with newly ordered medications”
- Resolve discrepancies or potential problems
- Prevent unintentional changes to medication at transitions in care
- National Patient Safety Goal 03.06.01
Adverse Drug Events

• Medication errors are most common health-system error
• Occur in 70% of patients at hospital admission or discharge
  • One-third have the potential to cause patient harm
• ADEs result in increases in direct costs and length of stay (LOS) per event
  • $3,420 ($2,852-$8,116) and 3.15 (2.77-5.54) days per ADE
Medication History Technicians

• MHTs introduced in April 2013
  • 24/7 MHT coverage beginning July 2013
• Goal- Complete Best Possible Medication History (BPMH) for 75% of patients admitted through Emergency Department
• All medication and allergy information entered into our electronic medical record (EMR) for provider review and action
Best Possible Medication History

• Multiple sources of information
• Allergies and reactions
• Preferred outpatient pharmacy
• Medications

<table>
<thead>
<tr>
<th>New or recently changed/stopped medications</th>
<th>Vitamins, supplements, herbal medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye drops, ear drops, nasal sprays</td>
<td>Anything taken once a week or once a month</td>
</tr>
<tr>
<td>Topical patches, creams, ointments</td>
<td>Over-the-counter medications</td>
</tr>
<tr>
<td>Inhalers/nebulizers</td>
<td>Medication samples</td>
</tr>
<tr>
<td>Insulin or other injectable medications</td>
<td>Medication pumps- internal or external</td>
</tr>
</tbody>
</table>
Medication Histories Completed

- Patients Interviewed
- Patients Admitted
Medication Reconciliation

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Medication History Program Highlights

• Comprehensive training and mentoring program
• Full-time and pool staff for 24/7 coverage
• “Right” MHT colleagues key to success of program
  • Patient interaction/customer service experience
  • Self-motivated
  • Can adjust to varied workflow (no “typical” day)
• Helps “set the stage” for discharge medication reconciliation at point of admission
Additional Benefits

• Improved allergy and reaction documentation
• Combined Physician/RN/Pharmacy time reduced
• Increase patient interaction with pharmacy
• Implementation of Pharmacy Practice Model Initiative
• Repeat ED visits/admissions that are partially or wholly a result of medication therapy can be reduced (theoretical)
Provider Perspective

• “Now that we have been working with the MHTs, I wouldn’t want to go back to the old system”
• “I was skeptical at first, but MHTs have more than proven they can benefit the patient, and the system as a whole”
• “MHTs have helped me make diagnoses with their histories on numerous occasions”
Conclusion

• MHT Program provides a vital service to our patients
• Formal medication history program is the first step in the development of a comprehensive medication reconciliation program
  • NPSG 03.06.01
• MHT program provides additional benefits to system outside of stated purpose
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