The Emergency Pharmacist (EPh): A Safety Measure in Emergency Medicine

Part I: Justification

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The Ideal Emergency Department

- No patient feels forgotten
- Every nurse and every doctor has adequate support
- Every resident and student receives appropriate supervision
- All patients rest secured that there are no adverse medication events….

Trout et al. Academic Emergency Medicine, June 2000; 7(6)
In reality, the Ideal Does Not Exist

- Unique Environment - the ED is Vulnerable
  - High volume and diversity of patients
  - Patient history often not readily available
  - More frequent interruptions/distractions for all staff compared to other areas of hospital
  - Medication ordering, dispensing, and administering at point of care
  - High risk intravenous medication usage
- Fast paced environment
  - Frequent verbal orders
  - No routine pharmacy review

Chisholm C et al, Academic Emergency Medicine, Nov 2000; 7(11)
Leape LL et al, JAMA 1999; 282(3)

Patient Safety is at Risk

- Established safety mechanisms are normally not available in the ED
  - Pharmacy review for ED medications
  - Pharmacy oversight for verbal orders
  - Pharmacy preparation of medications
  - Pharmacist involvement in clinical decision making

- Medication Error in the Emergency Department
  - A higher prevalence of preventable adverse events
  - Medication-related events
    - 3.6% of ED patients receiving inappropriate medication
    - 5.6% receiving inappropriate discharge prescription

Leape LL et al, JAMA, 1995; 274(1).
Structure and Function of the Medication Use System (Chasm)

Prescribing (physician, nurse practitioner, pharmacist)
- Clinical decision making
- Drug choice
- Drug regimen determination
- Medical record documentation
- Order (written, verbal, electronic)

Dispensing (pharmacist)
- Data entry and screening
- Preparing, mixing, compounding
- Pharmacist double check
- Dispensing to unit

Transcribing (Pharmacist, nurse, unit clerk)
- Receive order or retrieve from MAR
- Check if correct

Administering (nurse)
- Drug preparation for administering
- Nurse verifies orders
- Drug administered
- Documentation in MAR

Monitoring (Nurse, physician, pharmacist)
- Assess for therapeutic effect and adverse affect
- Review laboratory results if necessary
- Treat adverse drug event if occurring
- Medical record documentation


Pediatric Safety is at Risk

- ED’s are not well equipped to manage pediatric care
  - Nationwide, only 6% of ED’s are prepared for pediatric patients
  - Pediatric patients make up 27% of ED visits
  - Pediatric patients are not just small adults
    - All children need weight based dosing, which increases the risk of an adverse event.

Pediatric ADE’s in the ED

- Estimated 100 prescribing errors and 39 administration errors per 1000 pediatric visits.
- 22% of APAP doses ordered incorrectly according to therapeutic standards


Risks are Preventable

- The ED has the highest rate of preventable adverse events in the US
  - 110 million people visit the ED per year in the US
  - 5% of patients experience potential events
    - This equals 550,000 potential events per year
  - 70% of these are PREVENTABLE
    - Equaling 38,500 preventable events
At the Breaking Point

- **ED Crowding**
  - Over the past decade, ED visits increased 26%
  - The number of EDs declined 9% and hospitals closed 198,000 beds
  - As space decreases and volume increases, the capacity to deliver safe care declines

- **Boarding of inpatients**
  - Patients board for long periods of time in ED
  - Contribute to an overcrowded, high risk environment

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Safety Benefits of EPh Program

- EPh adds extra layer of protection
  - Available to immediately review high risk medication orders
    - Pediatric orders < 1 year of age and/or less than 10 kg
  - Responds to all traumas, resuscitations, and critical patients
  - Consults with physicians regarding medication choice
  - Educates medical staff
  - Focuses coverage on high volume periods
  - Provides immediate accessibility to healthcare team

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Derlet R et al. Acad Emerg Med. 2001; 8
Joint Commission Compliance

- EPh Improves JC compliance
  - High yield medication orders and prescriptions are reviewed
  - The effects of medication(s) on patients are monitored
  - High degree of communication with nurses and physicians [1]
  - The hospital develops processes for managing high risk or high alert medications [2]


Valued Staff Member

- It has been shown that staff value the EPh
  - 26 item survey to random ED staff with 82% responding.
    - 99% felt EPh improves quality of care.
    - 96% felt EPh was an integral part of ED team.
    - 95% indicated they had consulted with EPh at least a few times during last 5 shifts.

ICU Success with Dedicated Pharmacist

- The ICU study concluded that participation of the pharmacist on medical rounds can be a powerful means of reducing the risk of ADE’s.
- In the ICU 99% of pharmacist recommendations to medical staff were well accepted.
- An existing pharmacist participated in rounds as a member of the patient care team.
- The cost of pharmacist intervention required no additional resources; instead it represented a different use of existing pharmacists’ time.

Leape L et al, JAMA, 1999; 282(3)

Clinical and cost-saving Pharmacy Intervention in the Emergency Room: A Four Month Study

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>No. Interventions</th>
<th>Average Cost Avoidance per Intervention ($)</th>
<th>Cost Avoidance ($)</th>
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<tr>
<td>Drug-drug or drug disease interactions or drug incompatibilities identified</td>
<td>334</td>
<td>1,647</td>
<td>297,053</td>
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<td>Therapeutic recommendation</td>
<td>523</td>
<td>1,188</td>
<td>273,383</td>
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<td>Adverse drug event prevented</td>
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<td>Medication error prevented</td>
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<td>1,375</td>
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<tr>
<td>Total</td>
<td>1393</td>
<td>5,308</td>
<td>1,029,776</td>
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</tbody>
</table>

Lada P et al, Am J Health-Syst Pharm, Jan. 2007; 64(1)
The EPh – A Safe Measure in Emergency Medicine

- Presence in the ED improves process measures such as:
  - Time to cath lab, abx in pna, pain management, etc [1]
- Ensures a needed layer of safety in a vulnerable ED environment [2]
- Is a cost saving benefit to the ED [3]