Establishing Emergency Department Pharmacy Services and Pharmacist Impact

Glenn R. Oettinger, PharmD, BCPS
and
Robert S. Pugliese, PharmD, BCPS

The Pennsylvania Society of Health System Pharmacists
October 29th, 2015

Objectives
1) Explain justification for an Emergency Medicine Pharmacist (EMP)
2) Describe the core roles of the EMP
3) Describe strategies for implementing an EMP position
4) Identify how to encourage growth in the specialty of Emergency Medicine (EM) Pharmacy
5) Describe some ways in which EMPs can systematically improve the care of patients in ED
6) Discuss other key administrative roles of EMPs

Part 1

The Emergency Medicine Pharmacist
A Safety Measure for Hospitals

Glenn Oettinger, PharmD, BCPS
glenn.oettinger@jefferson.edu
@GlennOettinger

JUSTIFICATION
Overcoming skepticism

The Emergency Medicine Pharmacist: A Safety Measure for Hospitals

• Justification
• Role
• Implementation

The Ideal ED
The Ideal ED

• No patient is overlooked
• Adequate support for all clinical staff
• Appropriate supervision of all residents and students
• All patients rest assured medications ordered are reviewed by a pharmacist

Reality

• ED is Vulnerable
  • High volume and overcrowding
  • Wide spectrum of diseases
  • Frequent interruptions and distractions
  • Fast paced
  • Verbal orders

ED is Inherently a Patient Safety Risk\textsuperscript{2,3,4}

• Established safety mechanisms missing from most EDs
  • Pharmacy review of medications
  • Pharmacy preparation of medications
  • Pharmacist involvement in clinical decision making

• Medication-related adverse events in the ED
  • 3.6% of ED patients receive inappropriate medication
  • 5.6% of ED patients receive inappropriate discharge Rx

Gaps in the Average ED Medication Use System\textsuperscript{5}

Most ED Medication Events are Preventable!

• ED has highest rate of preventable adverse events in the US\textsuperscript{6}
  • 110 million ED visits annually in US
  • 5% experience potential events = 550,000 potential events per year
  • 70% are PREVENTABLE = 38,500 preventable events
ED Systems are Stretched\(^7,8\)
ED overcrowding = Reduced capacity to deliver safe care
- Over last decade
  - ED visits ↑ 26%
  - 9% of EDs closing nationwide
  - 198,000 hospital beds closed
  - Reduced capacity to deliver safe care
  - Boarding inpatients
    - Contributes to overcrowding and elevated risk

Safety Benefits of an ED Pharmacist Program
Providing an extra layer of protection
- Available for immediate high risk med review
- Respond to all trauma, resuscitations, and critical patients
- Pharmacotherapy consults with physicians for medication selection
- Staff education

Joint Commission Compliance\(^9,10\)
ED Pharmacist improves JC compliance
- Increased oversight of high yield medications
- Increased monitoring of drug effect
- Enhanced degree of communication with nurses and physicians
- Development of processes for managing high risk medications (i.e. TPA, sepsis antibiotics, pediatric meds)

Adding Value
It has been shown that staff value the ED Pharmacist
- 26 item survey to random ED staff with 82% response\(^11\)
  - 99% felt ED pharmacist improves quality of care
  - 96% felt ED pharmacist was an integral part of ED team
  - 95% indicated they had consulted with ED pharmacist at least a few times during last 5 shifts

The ED Pharmacist - A Safety Measure in Emergency Medicine
- ED pharmacist improves process measures such as:
  - Time to cath lab, abx in pna, pain management, etc\(^12\)
  - Adds critical layer of safety to vulnerable patients\(^13\)
  - Adds cost-saving benefit to the ED\(^14\)

Cost-savings in the Emergency Room: A Four Month Study of ED Pharmacist Interventions\(^14\)

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>No. Interventions</th>
<th>Average Cost Avoidance per Intervention ($)</th>
<th>Cost Avoidance ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-drug or drug-disease interactions or drug incompatibilities identified</td>
<td>334</td>
<td>1,647</td>
<td>297,013</td>
</tr>
<tr>
<td>Therapeutic recommendation</td>
<td>523</td>
<td>1,188</td>
<td>273,383</td>
</tr>
<tr>
<td>Adverse drug event prevented</td>
<td>48</td>
<td>1,098</td>
<td>23,190</td>
</tr>
<tr>
<td>Medication error prevented</td>
<td>448</td>
<td>1,375</td>
<td>436,150</td>
</tr>
<tr>
<td>Total</td>
<td>1393</td>
<td>5,308</td>
<td>$1,029,776</td>
</tr>
</tbody>
</table>
Role of the ED Pharmacist

- Clinical Consultation Duties
  - Responds to pharmacotherapy consultations
  - Provides drug selection and dose recommendations
  - Therapeutic substitutions
  - Recognizes disease state specific pharmacotherapy
  - Implements patient-specific pharmacokinetics

Other Clinical Duties

- Order screening
  - Focus on allergies, drug interactions, and appropriate dosing
- Selection and preparation of medications
  - High Risk Medications, RSI, codes
- Resuscitations and trauma response
- ED pharmacist at bedside actively overseeing medication use process

Pediatric ADE’s in the ED

- For every 1000 pediatric patients
  - 100 prescribing errors
  - 39 administration errors
- 22% of acetaminophen doses incorrect

Pediatric patients at risk

- Most ED’s generally not well-prepared to manage pediatrics
  - 6% “well” prepared nationwide
  - Pediatrics account for 27% of ED visits
  - All children need weight-based dosing, increasing the likelihood for errors

ED Pharmacist - An Educator

- New medications
- Drug warnings
- Drug-drug interactions
- Provides current, evidenced-based information on pharmacological therapy
- Simulation exercises
- Becomes an established authority through education
Benefits of Having an ED Pharmacist\textsuperscript{17,18,19}

- Research and educational advancements
- Vulnerable populations
  - i.e. Severe sepsis, severe trauma, patients requiring sedation, pediatrics
- Patient safety
  - Reduced rate of adverse events
- Medication selection, order screening, stat bedside preparation

IMPLEMENTATION

National Implementation\textsuperscript{20}

- 3-5% of EDs in U.S. have a dedicated clinical pharmacist
- 18.3% have attempted to gain funding for a pharmacist position
  - Primarily through pharmacy budget
- 30.1% plan to request funding
- \( \uparrow \) demand

Bottom Line

- ED’s across America are in need of dedicated pharmacy specialists
- Arrive with a plan and they will embrace you

Step I: Assess Individual ED Environment

- Size of hospital
- Academic center vs. non-academic
- Urban vs. rural
- Patient demographics
- Annual patient volume
- Trauma center
- Have potential ED pharmacist candidate shadow medical staff
- Determine needs

Step 2: Recruitment

Finding a full time dedicated ED Pharmacist

- Education
  - PharmD
  - Residency - PGY1 preferred
  - PGY2 accredited emergency pharmacist programs emerging
  - ACLS, PALS certification
Step 2: Recruitment

Experience
- Critical/acute Care
- Emergency Medicine
- Pediatrics

What to Look for

Characteristics
- Proactive - continually offers assistance
- Build relationships with all medical staff
- Actively seeks out patients that can benefit from ED pharmacist intervention
- Ability to appear helpful and not confrontational
- Ability to work well under pressure and time constraints

Step 3: Overcoming Challenges

Funding
- Grants
- EM department co-funding
- Couple implementation with a residency project

Staff Resistance
- Temporary response to change

Financial Challenges

Important to demonstrate return on investment
- ED pharmacist save money
  - Recommend lower cost meds with equal or better efficacy
  - Reduce adverse drug events
  - Waste reduction

ROI

4 month study - 2150 interventions
- 1393 directly related to ADE’s
- Cost avoidance of estimated $1,029,776

Availability, Accessibility, and Visibility

- Dedicated to the ED
- Physically located in ED (not isolated to a satellite)
- Easily accessible and visible to all staff with frequent “walk-through”
Resources

Provide ED Pharmacist with necessary equipment (laptop, cell phone, pager, computer space centrally located in ED)

References – Part One


6. USP Patient Safety
10. Thomasset and Faris, Am J Health-Syst Pharm, Aug 2003; 60

Emergency Medicine Pharmacists recognized by American College of Emergency Physicians (ACEP)

Resolution 44

“RESOLVED, That ACEP create a policy statement that supports clinical pharmacy services in emergency departments and collaboration among emergency medicine providers to promote safe, effective, and evidence-based medication practices, to conduct emergency-medicine-related clinical research, and to foster an environment supporting pharmacy residency training in emergency medicine”

Emergency Medicine Pharmacists recognized by American College of Emergency Physicians (ACEP)

“Any of us who’s ever had access to clinical pharmacy services in the [emergency room] know it’s really important”

Louise A Prince, President, ACEP New York1

The Emergency Medicine Pharmacist

Systematically improving patient care hospital wide

Robert S. Pugliese, PharmD, BCPS
robert.pugliese@jefferson.edu
@theEDpharmacist

Go Team ED!
**Surprise!?**

- Many Emergency Departments:
  - Overcrowded (primary care)
  - Understaffed (5-to-1 nursing ratio)
  - Provide ICU level care (and fix tummy aches)
  - Mixed population (inpatient/outpatient)
  - Lack common medication safety protections
- Prospective medication order review not mandated by Joint Commission

**= HIGH RISK**

---

**Do you ED Pharmacist?**

---

**First mention of EM Pharmacy service was in 1977 published in American Journal of Hospital Pharmacy**

**ER Pharmacist Survey 2000 (n=119)**

- Yes: 6%
- No: 94%

**ER Pharmacist Survey 2007 (n=99)**

- Yes: 30%
- No: 70%

**Critical Care Pharmacist Survey 2006 (n=382)**

- Yes: 14%
- No: 86%

---

**We need more Emergency Medicine Pharmacists**

<table>
<thead>
<tr>
<th>ASHP Accredited PGY2 Residency Programs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Care: 216</td>
</tr>
</tbody>
</table>

---

**Emergency Medicine Pharmacy**

A long road ahead
Emergency Medicine Pharmacists are Great Collaborators!

- ED pharmacists find themselves at the crossroads of the hospital
- ED pharmacists often must act as intermediaries and facilitators in interdepartmental collaborations
- ED pharmacists are a trusted team member and are looked to when problems arise
- ED Pharmacists in unique position to identify systematic problems and develop solutions
- Many initiatives begin in the ED and we are there at the ground floor

ASHP Guidelines on Emergency Medicine Pharmacist Services

Essential/Desirable Administrative Roles of EM Pharmacists

1. Medication and Patient Safety
2. Quality Improvement Initiatives
3. Leadership and Professional Service
4. Emergency Preparedness
5. Education
6. Research and Scholarly Activity

Emergency Medicine Pharmacist Impact

Conclusions

- A majority of interventions occurred through prospective consults where EMPs assisted in determining patient treatment.
- An average of 16 interventions occurred each day, roughly equating to one intervention per hour between 0800 and 2330.
- All EMP interventions were accepted except for 1 of 478 (0.002%)
- Due to the fast paced nature of the ED, almost 100% documentation capture was only possible with the support of students documenting all EMP interventions
2. Quality Improvement Initiatives

- Jeff FAST Program - Facilitating Anticoagulation for Safer Transitions
- Pediatric ED Workgroup - Develops and promotes evidence based protocols for pediatric ED population
- Sepsis Initiative - ED Pilot now house wide evidence based care bundle leading to mortality benefits
- Sickie Cell Workgroup - collaboration between outpatient Sickie Cell Center and ED
- Stroke Committee - decreased time-to-TPA to <60 min; TPA made centrally (not at the bedside) with average 11 min turnaround
3. Leadership and Professional Service

- LEAN Leaders - Interdepartmental LEAN ED Medication Distribution Project
  - Pharmacy Techs are content experts
- ED Medication Reconciliation Project (Coming Soon!)
  - Goal is to establish a model for technician/intern based medication reconciliation for 100% of patients coming through the ED
- LEAN Leaders - Interdepartmental LEAN ED Medication Distribution Project

Medication History

Please make sure the medication is ready to go as we must have the medication within 10 minutes of your arrival. You can call your pharmacist with any professional questions. We would love your help in making this project a success.

Patient Name: ____________________________
Date of Birth: _____/____/____
Drug and Food allergies (describe what happens when you have a reaction):

Patient’s Pharmacy (and cross street): ___________________________
Please write down the medications you take. If you do not remember your medication names, you can call your pharmacy, ask a caregiver/family member, or ask a staff member for help.

How do you take the medication:  
How Often?

<table>
<thead>
<tr>
<th>Prescription Medication Name and Dose</th>
<th>How do you take the medication</th>
<th>How Often?</th>
<th>Last dose?</th>
</tr>
</thead>
<tbody>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
<tr>
<td>By mouth: Other</td>
<td>Other daily</td>
<td>Twice daily</td>
<td>Other</td>
</tr>
</tbody>
</table>

Medication History:

- Nitrous oxide toxicity case report - AJHP
- The Jeff FAST Program - Presentation to National Anticoagulation Forum
- The Jeff FAST Program - Journal of Hospital Practice
- ED Interventions Student Poster - ASHP Midyear
- The Sepsis Initiative - Critical Care Medicine (Abstract)
- The Sepsis Initiative - Presentation to University Health System Consortium and IHI National Meetings
- The Sepsis Initiative - ASHP Foundation for Medication Use Excellence Finalist

5. Education

- Pharmacy Resident Rotation
  - ED rotation provides unique environment for resident to work on a wide range of skills
  - Always opportunities for research in the ED
  - Many residency grads are finding opportunities as ED pharmacists
- Pharmacy Student Rotations (IPPE/APPE)
  - #1 most requested rotation site at TJI
  - Students get the opportunity to apply concepts in a wide range of disease states
- Formal Lectures

6. Research and Scholarly Activity

- Nitrous oxide toxicity case report - AJHP
- The Jeff FAST Program - Presentation to National Anticoagulation Forum
- The Jeff FAST Program - Journal of Hospital Practice
- ED Interventions Student Poster - ASHP Midyear
- The Sepsis Initiative - Critical Care Medicine (Abstract)
- The Sepsis Initiative - Presentation to University Health System Consortium and IHI National Meetings
- The Sepsis Initiative - ASHP Foundation for Medication Use Excellence Finalist
6. Research and Scholarly Activity

Pharmacy Resident Research Manuscripts
• Post Intubation Sedation ED Protocol
• Establishing the Jeff FAST Program
• ED Pharmacist Effect on Sepsis Protocol Adherence
• Pharmacy Led Med Rec in ED
• Improving the Pharmacologic Management of Severe Sepsis

6. Research and Scholarly Activity

• Social Media and FOAMed?
  Free Open Access Meducation
  Blogs/Podcasts - ALIEM, EMPHarmD, LITFL
  Twitter - @PharmERToxGuy, @ASHP_EMPharm, @theEDpharmacist
  Instagram
  YouTube
  Facebook
  WikiEM

ASHP Emergency Care Section Advisory Group

References - Part Deux