Emergency Pharmacists: Tools and Measures

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Objectives

1. Explain the existing evidence that supports the clinical benefits of defining and implementing a pharmacist role in the emergency department.

2. Describe a model program for introducing a pharmacist role into the emergency department.

3. Summarize medication-safety related quality measures that are applicable to the emergency medicine environment.

4. Identify barriers and solutions for implementing a program to integrate clinical pharmacists into the emergency department.
Overview

- Evidence for the need
- Tools for implementation
  - Description of the optimized role
  - Evidence for integration with ED staff
- Evidence of the Impact
  - Improved measures in trauma
- Using Quality Indicators to Assess
- Methods: Evaluation of the Impact
Clinical Pharmacists Work

- Pharmacists common in inpatient setting
  - 99% of Pharm recommendations accepted by physicians in ICU
  - 66% decrease in ADEs in ICU

Leape LL, Cullen DJ, Clapp MD, et al. JAMA
1999;282(3):267-70
Clinical Pharmacists Work

- Inpatient Pharmacists reduce adverse drug event rates
  - 99% of Pharm recommendations accepted by physicians in ICU
  - 66% decrease in ADEs in ICU

Folli HL, Poole RL, Benitz WE, Russo JC. Pediatrics 1987; 79(5)
Kane SL, Weber RJ, Dasta JF. Int Care Med 2003;29(5):691-8
Medication Safety in EM

- Medication events are a significant cause of adverse events in the ED
  

- Higher prevalence of preventable adverse events in the ED
  

- More common among older adults
  
Medication Safety in EM

- ED: Less system protections
- Why is it different in the ED?
  - No pharmacy check as in rest of hospital
  - Higher prevalence of IV Medication, verbal orders
  - Urgent, high stress, multi-tasking, interruptions
  - Unfamiliar patients, limited access to medical record
  - Less opportunity for follow-up
- High Volume
  - Inpatient provider ➔ maybe 5 discharges/day
  - Emergency Medicine Provider ➔ maybe 25 discharges/shift
Background

- University of Rochester Emergency Department
  - EPh Program Since 2000
  - Accredited EPh residency
  - Anecdotally we found
    - Medication adverse events reduced
    - Staff consult the EPh often
    - Staff seem to value EPh input

Fairbanks RJ, Hays DP, Webster DF, Spillane LL, Clinical Pharmacy Service in an Emergency Department, American Journal of Health-System Pharmacy, 2004; 61(9): 934-937.
University of Rochester

- Clinical consultation
  - Nurses, physicians
  - Portable phones
- Order screening
- Critical patients
- Education- patients, nurses, physicians
  - Very well received among providers

Optimized Role Study

Objective
- Optimize Role for patient safety

Methods
- Qualitative: interviews (purposive sampling)
  - Emergency physicians, residents, nurses, inpatient providers, pharmacists, patients
  - How can we maximize the patient safety role...
- Field notes transcribed, coded, sorted
- Analysis for emerging themes
- Redundancy → 43 Interviews
Optimized Role: Results

- High visibility / easy access
  - On duty/off duty signs
  - Portable phone
  - Frequent walk-rounds
- Patient centered roles only
  - Minimal dispensing, no stocking
- Focus on ED patients
  - Admitted boarders → inpatient pharmacy
Optimized Role: Results

- Maintain surveillance of provider orders
  - mandatory review of pediatric orders
    - ex) patients <1 year or <10kg
- Respond to critically ill (traumas, codes)
- Focus coverage on peak volume periods
- Minimize administrative responsibility
  - Committees, etc
Roles in other programs

- **Emergency Departments:**
  - Only 1-3% of EDs use pharmacists
    - Delgado G, ASHP Midyear 2005

- **Survey Study of EM (MD) Residencies:**
  - 74% of 135 programs responded
  - 30% had some pharmacy service in ED
    - Of these, average 8 hours/day
  - 6% had 24/7 coverage

Use of Clinical Pharmacists in Academic EDs is Limited (abstract). Academic Emergency Medicine, May 2007; 14(5).
Of those with ED pharmacy services:

- 49% provide drug or toxicology information
- 33% screen for drug interactions
- 30% advise on cost effectiveness
- 29% dispense medications
- 19% perform patient counseling
Medication Reconciliation

- Is this the best use of EPh time?
- EM Residency survey study:
  - 51% of programs perform MedRec
  - Of these, the primarily responsible role:
    - 46% -- nurses
    - 33% -- physicians
    - 12% -- pharmacists
Do ED Staff Value them?

Yes, Yes, Yes!!

- Surveyed 92 RNs & MDs (82% response)
- 99% say EPh improves quality of care
- 96% say EPh is integral part of the team
- 93% consulted EPh during recent shift
- 93% use EPh more since they stay in ED
- 73% value EPh order screening


*Full manuscript is in press* *Emergency Medicine Journal*
Preliminary Data: Trauma Care

- Improved key measures
- Reduced costs
- Sought out by physician and nursing staff


Impact Evaluation Study

- Hypothesis: EPh improves medication safety and quality of care
- Study Design:
  - Prospective enrollment
  - Random selection for chart review
    - 85% of all critically ill
    - 20% of all pediatric (<19yo)
    - 25% of all geriatric (>64yo)
  - 2 groups: EPh absent vs. EPh Present
Definitions

- Adverse Drug Event (ADE)
  - A preventable or non-preventable injury resulting from medical intervention related to a drug.
  
  *Bates, Cullen, Laird et al. JAMA. 1995;274(1)*

- Potential ADE (PADE)
  - An incident that could have but didn’t cause injury due to intervention, chance, or special circumstances

- Problem Drug Order
  - drug order which would have minimal potential for injury if carried out
Impact Evaluation Study

- **Outcome Measures**
  - ADE, PADE
  - Quality measures: list developed
    - Specific to Emergency Medicine
    - Literature review & expert consensus

- **Methods**
  - HMPS methods (thanks to David Bates, Diane Seger)
    - Data abstracted- nurse reviewers
    - Suspicion for ADE/PADE identified by RNs
    - Confirmed and classified by MDs

*Brennan, Leape, Laird et al. NEJM. 1991; 324(6).*
Study: Evaluate the impact

- Quality Indicators
  - CMS
  - Joint Commission Core Measures
  - AHRQ Patient Safety Indicators
  - ACOVE Quality Indicators for elderly
  - RAND Quality Indicators
  - American Heart Association (ACLS, PALS)
  - National Quality Forum
  - American Hospital Association
  - Leapfrog Group
  - Other disease specific quality indicators
Quality Indicators

- **AMI**
  - ASA on arrival
  - BBL on arrival
  - Thrombolytics within 30 minutes
  - Cath within 60 minutes

- **CAP**
  - Oxygen saturation assessed
  - Blood Cx prior to ABX (if drawn)
  - Antibiotic within four hours of arrival
Quality Indicators

- **Operative Patients**
  - Received abx within one hour prior to incision
  - Antibiotic selection appropriate for condition

- **Pain/sedation**
  - Adequate treatment
  - Timely treatment
  - Adequate sedation in paralysis
  - Adequate sedation for procedures (sync, etc)
Quality Indicators

- Medication selection
  - Appropriate & timely abx
- Time intervals
  - Time to RSI
  - Time to OR or ICU
- ACLS/PALS
  - Compliance with algorithms
Quality Indicators

- Older Adult Measures--Beers and ACOVE
  - Avoid drugs with strong anticholinergic properties whenever possible (if alternatives exist)
  - Use PPI for patient with GI Bleed or ulcer
  - Avoid beta-blocker in patients with asthma
  - Use acetaminophen as first line for osteoarthritis (vs NSAIDs)


Impact Evaluation: Results

Results

- Total enrollment: 10,224
  - Pediatrics (<19) 5098
    - (Peds Critical: 144) 147
  - Geriatrics (>64): 2873
    - (Geriatric Critical: 819) 845
  - Critical: 3245
    - (2252 are not pediatric or geriatric)
    - One missing age
Impact Evaluation: Results

- Results (analysis underway)
- EPh Impact on:
  - Adverse Drug Events
  - Potential Adverse Drug Events
  - Problem Drug Orders
  - Medication Errors
  - Quality Measures
Impact Evaluation Study

- Limitations
  - One Emergency Department
  - Contamination between 2 groups
    - Staff memory/education
    - Patients who’s stay extends between 2 groups
Help for new programs

- Resources Available: Toolkit
  - Convincing others of the need
    - List of References
    - Key manuscripts and abstracts
    - Summary PowerPoint presentations
  - Designing a new program
    - Job description
    - Role and responsibilities
    - Key manuscripts and abstracts
    - Q & A section from past inquiries
What’s next?

- Primary Results: (forthcoming)
- Ongoing research
  - Further Evaluation of the EPh database
  - Time-motion study
- Future Research
  - Evaluation in smaller, non-academic EDs
  - Head-to-head: central screening vs. EPh
  - The use of tele-medicine: Remote EPh?
Summary

- The need
- Optimized role
- The evidence
- Increasing participation
- Resources available
What Barrier is/was the most significant in your institution?

1. Budget availability / Justification
2. Turf / Acceptance
3. Hours of staffing (bad shifts)
4. Need for specific training
5. Shortage of staff
6. Hospital leadership support
7. Documentation / Evidence of impact
8. Topography / Space
---QUESTIONS?---