



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)
Gattis WH, Whellan DJ. *Arch Internal Med*, 1999. 159(16): p. 1939-1945.
Kane SL, Weber RJ, Dasta JF. *Int Care Med* 2003;29(5):691-8
Leape LL, Cullen DJ, Clapp MD, et al. *JAMA* 1999;282(3):267-70



Medication Safety in EM

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

Hafner, Belknap, et al. Ann Emerg Med 2002; 39(3):

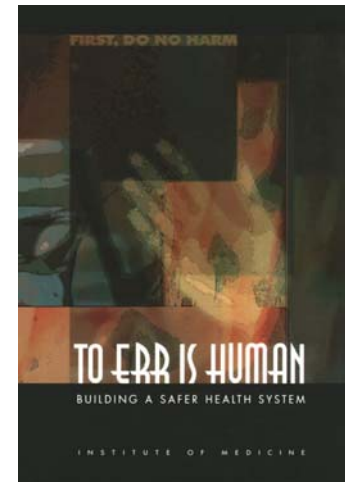
- Higher prevalence of preventable adverse events in the ED

Leape, Brennan, et al. NEJM 1991; 324 (6).

Kohn, Corrigan, Donaldson (eds), IOM, 2000.

- More common among older adults

Chutka DS, Takahashi PY, Hoel RW. Mayo Clin Proc. 2004;79:122-39





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

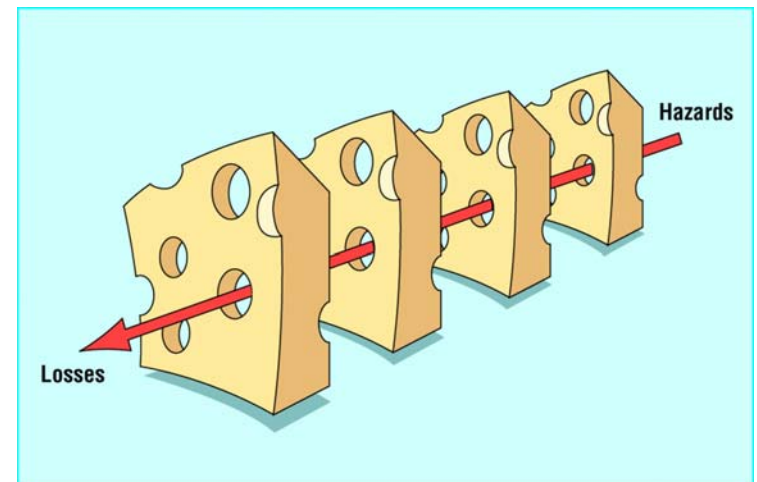


Fairbanks RJ, Hays DP, Webster DF, Spillane LL, Clinical Pharmacy Service in an Emergency Department, American Journal of Health-System Pharmacy, 2004; 61(9): 934-937.



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
 - Thomasset K, Faris R. *Am J Health-Syst Pharm.* 2003;60.
 - 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

Szczesiul JM, Hildebrand JM, Clark L, Hays DP, Kolstee KE, Shah MN, Fairbanks RJ
Use of Clinical Pharmacists in Academic EDs is Limited (abstract). Academic
Emergency Medicine, May 2007; 14(5).



EM Residency Survey

- 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

Hildebrand JM, Fairbanks RJ, Kolstee KE, Schneider SM, Shah MN. Medical and Nursing Staff Highly Value Clinical Pharmacists in the ED (abstract). *Academic Emergency Medicine*, May 2007; 14(5).
*Full manuscript is in press *Emergency Medicine Journal**



Preliminary Data: Trauma Care

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



Hays D, Kelly-Pisciotti S, O'Brien T, Fairbanks RJ, et al. American Association for the Surgery of Trauma 2006 Annual Meeting, September 28-30, 2006; New Orleans, LA.

Kelly SJ, Hays D, et al. "Pharmacists Enhancing Patient Safety During Trauma Resuscitations." 2005 ASHP Best Practices Award



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)

Fick DM, Cooper JW, Wade WE, et al. Updating the Beers criteria for potentially inappropriate medication use in older adults. Arch Intern Med. 2003; 2716-2724.

Beers MH. Explicit Criteria for Determining Potentially Inappropriate Medication Use by the Elderly; An Update. Arch Intern Med. 1997;157:1531-1536.



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





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---QUESTIONS?---