UNIVERSITY OF ROCHESTER MEDICAL CENTER

Emergency Pharmacists: Tools and Measures

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Acknowledgments

- AHRQ—Partnerships in Patient Safety (1U18HS015818)
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- Advisory Board
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  - Daniel Hays, PharmD and Jillian Szczesiul, PharmD (Resident)
  - (previously Sarah Kelly-Pisciotti, PharmD)

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

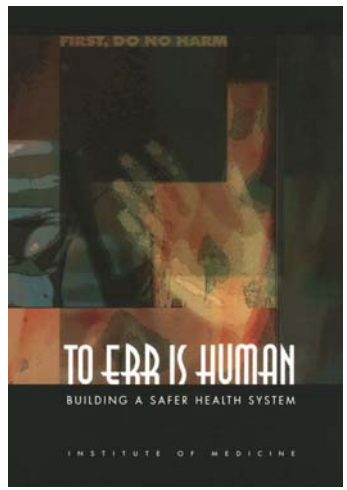
Leape LL, Cullen DJ, Clapp MD, et al. JAMA 1999;282(3):267-70

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

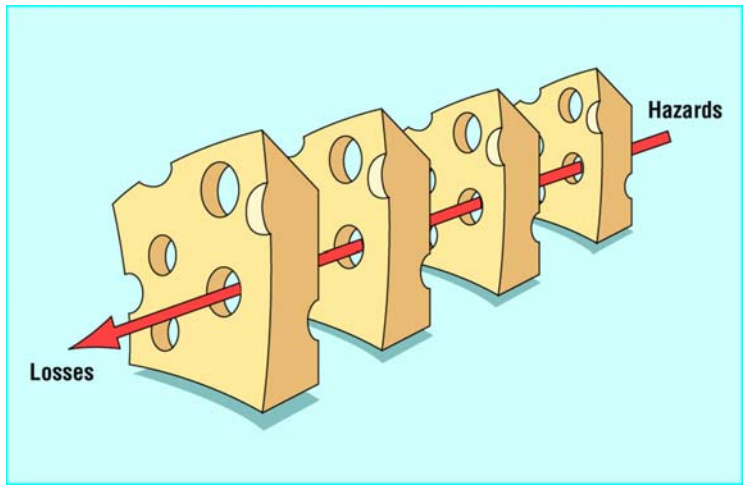
Background

- 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



Fairbanks, Hays, Webster, Spillane, *Clinical Pharmacy Services in an Emergency Department*, Am J Health Syst Pharm, May 2004; 61:934-7.

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
- See www.EmergencyPharmacist.org for further reference to other programs.

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

ASHP Best Practices Award In Health-System Pharmacy

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
  - www.EmergencyPharmacist.org

Breakout Groups– Interactive Exercise

Interactive Exercise: Assessing the Barriers

- Breakout groups: implementation challenges
  - Generate list of barriers (15 minutes)
    - Choose top 5 barriers
  - For ANY THREE of top 5 barriers:
    - Brainstorm for all possible solutions
    - Be detailed
- Groups reconvene
  - 10 most common top barriers will be listed

Interactive Exercise: Assessing the Barriers

- Audience Response System (ARS)
  - Assessment of participant characteristics
  - All participants vote to rank top barriers
- Interactive discussion-- potential solutions
- Question and Answer Session

(note: next slide shows results from audience response system)

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?---

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