Pharmacist Involvement in the Emergency Department: A closer look at two sites

Craig McCammon, Pharm.D., BCPS
Barnes-Jewish Hospital
St. Louis, MO

Rolla T. Sweis, Pharm.D., M.A.
Advocate Christ Medical Center
Oak Lawn, IL

Disclosure

• Nothing to disclose

Objectives

• Describe the operational benefits of clinical pharmacy services in the ED.
• Explain the impact of clinical pharmacy services on clinical outcomes and patient safety.
• Identify areas in which an ER clinical pharmacist could make a difference.

Overview of Barnes-Jewish Hospital

• 1200 bed urban teaching hospital
• Affiliated with Washington University School of Medicine
• Tertiary referral center
• Level I Trauma Center (ACS Verified)
• Primary Stroke Center

Charles F. Knight Emergency and Trauma Center

• Approximately 86,000 visits (2008)
  – Essentially adult only
• 63 Beds – 5 distinct “pods”
  – 6 Trauma / Critical Care
  – 45 Emergency Medicine (EM 1, 2, 3)
  – 12 Observation
• CPOE / EMR
• 16 Automated Dispensing Cabinets

Emergency Pharmacy Services

• ED clinical services began in 1999
• Current hours of coverage
  – Monday – Friday: 8am – 6pm
  – Available off-hours by pager
Primary Responsibilities

Safety Initiatives

- ADC Modifications
  - Limited formulary/inventory
  - Clinical prompts
    - Sound alike medications
    - Dosage restrictions
    - Allergy warnings
    - Blood culture reminder
- CPOE / EMR
  - Standard order-sets
  - Dosing and consultation reminders

Sepsis Initiative

- Order set implementation: 2004
- Initial (60 patient pre/post)
  - Improved metrics
  - Improved mortality
  - Decrease cost
- Maintenance (18 month pre/post)
  - Mortality: 55% v 39.5% (p <0.01)
  - Hospital LOS: 28.7 vs. 22.4 days (p = 0.02)

Acute Ischemic Stroke

- Active participant in stroke team
- 20-30 patients per year receive alteplase
- Mean door-to-needle time: 54 minutes
- Intranet based alteplase dosing calculator
  - Standardized dosing
  - Detailed instructions
  - Monitoring reminder

Pneumonia...
  it’s not just CAP anymore

- New institution wide order-set
  - Risk stratification for HCAP vs. CAP
  - Standardizes initial antimicrobial regimens
  - Educational and documentation tool
- Goals:
  - Launch by May 1
Rabies Prophylaxis

- Establishing systematic follow-up
- Creation of new order-set
- Updating discharge instructions
- Staff education
- Goal
  - Fully operational by June 1, 2009

Summary

- Operational benefits
  - Visible pharmacy liaison
- Clinical and Safety benefits
  - Multiple opportunities exist
  - Site and practice specific

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Christ Medical Center

- Christ Medical Center is a 662-bed, not-for-profit teaching, and research and referral medical center.
- It is also home to a children’s hospital, one of the most comprehensive providers of pediatric care in the state.
- Our medical center belongs to one of the nation’s leading integrated health care systems.
- Medical staff of more than 900 physicians, representing more than 60 specialties and subspecialties.

Emergency Department

- Level I Trauma Center and more trauma patients are seen here than any other hospital in the state.
- The Emergency Department treats more than 88,000 emergency patients a year.
- 120 beds
- Critical Care
- General Care
- Pediatric Emergency Center
- Fast Track
- Admission/Holding Area – May 2009

Pharmacy Services in the ED

- The ED Clinical Pharmacist position began in January 2005 and expanded to its second clinical pharmacist in May 2007.
- ED pharmacists are present from Monday-Friday 8-11:30pm.
- Currently recruiting for 24/7 coverage
• Cost Avoidance
• Medication Errors
• Patient safety
• Therapeutic Outcomes

Cost avoidance

- Any program needs to prove its success by some type of cost savings, especially if it is a new program.
- Cost containment allows the program to grow and solidifies the program.
- In 2005 and 2006 the cost avoidance was over one million dollars.
- However, once the second pharmacist started in 2007 the cost avoidance increased to over 3 million dollars.
  – Six months of interventions for 2008 were extrapolated for the year.

Medication Errors

- Patient safety is promoted by identifying medication errors in the department on a monthly basis.
- The cause of the errors or near misses is investigated. Potential system improvements are researched and implemented to avoid future errors.
- The errors have almost decreased by one-half and there is a downward trend.

Safety Initiatives

- Standardization of all parenteral products through the use of smart pump technology
  – Enforces standard concentrations
  – Serves as double check for nurse
  – High and Low dose limits for drips
  – Dose modes are already preset (mcg/kg/min, mcg/min, etc) to prevent errors
- Modification of Automated Dispensing Cabinets
  – Unwanted concentrations removed
  – Alerts set up with various drugs to prevent errors
  – Allergies for antibiotics
  – Appropriate tubing for certain drugs (nitroglycerin)
- Improve labeling
  – Use of tall man lettering
  – Use of look alike sound alike alerts
- Elimination of Heparin flushes and substituting saline flushes
Pneumonia

- Patients with a diagnosis of pneumonia need to have the appropriate antibiotics ordered and given within 4 hours of their stay. Also, antibiotics need to be administered before blood cultures are drawn.
- Both PharmDs keep a close watch on potential patients in the ER to ensure antibiotics are ordered.
- They also assure the drugs chosen are appropriate based on specific hospital protocols.
- Finally, they work with the nurses to have the drugs ready and remind them to draw the cultures first.

Development of Sepsis Protocol

- October 2004
  - Multidisciplinary meeting to discuss the epidemiology of severe sepsis at ACMC
  - Solicit initial buy-in of program from impacted units/services
    - Emergency Department
    - MICU, SICU
    - Pulmonary/Critical Care, Trauma/Surgery, Infectious Diseases

Sepsis

- The pharmacists were involved from the first day of designing the protocol.
- They serve as the reminders to the team to utilize the order sets and assure the best drug regimens are followed, thus providing better care to patients.
- Early identification, starting therapy early and titrating drips appropriately helped improved the mortality rate at our hospital.
Other areas…

- Ischemic Stroke
- Acute MI
- CHF

Questions or Comments
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Post Test Questions

1. Clinical pharmacist activities in the emergency department encompass
   a. Clinical decision making
   b. Medication storage and selection
   c. Guideline development
   d. All of the above
   e. None of the above

2. Severe sepsis is an extremely complex disease state, thus treatment is not amenable to standardized treatment guidelines
   a. True
   b. False

3. The benefits of an emergency medicine pharmacist can be demonstrated beyond their hours of presence in the ED.
   a. True
   b. False

4. Removing medication from automated dispensing cabinets in the emergency department has been shown to alter prescribing practices. Which of the following medications would you consider removing to improve patient safety?
   a. Aspirin 81mg tablets
   b. Epinephrine 1:1000 1ml ampules
   c. Heparin 10 unit/ml flush solution
   d. Normal Saline (0.9% sodium chloride)

5. Emergency medicine clinical pharmacy services are difficult to justify since the salary usually exceeds the cost savings return
   a. True
   b. False