Optimizing Medication Administration in a Pediatric ER

ER Pharmacist Review of First Dose Non-Emergent Medications

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Objectives

• Discuss the variables associated with medication errors in a pediatric emergency department

• Describe the process improvement strategies for reengineering a medication administration system

• Discuss solutions for meeting regulatory requirements for pharmacist review of all medication orders
Children’s Medical Center
Dallas ER

- Regional Pediatric Trauma Center
- Tertiary Referral Center for Complex Pediatric Care
- 19 counties in Primary Service Area
- Approximately 100,000 Patient Visits a Year
  - 300+ visits per day
  - About 8-10% are admitted
  - 65 – 70% of all inpatient admissions come through the ER
  - About 300 intubations performed per year
- Approximately 46 ER “beds” – 312 Housewide
- Primary Teach Facility for University of Texas Southwestern Medical Center of Dallas
Why the Focus on Medication Errors?

- Medication errors are a common cause of inadvertent adverse events
- 44,000 Americans a year are injured or die due to medical errors
- Pediatric patients are at particular risk of medication errors
What effect does this have on a Pediatric ER?

- Pediatrics 10-2002:
  - First study to look at the Pediatric ER
  - Found that 10% of charts have error
    - 10% have prescribing errors
    - 48% were significant or severe
    - 4% have drug administration errors
  - Many other inpatient peds studies
    - Same or similar outcomes
So What is Being Done?

• National attention regarding medication errors
• Federal regulations mandate system changes
• Regulatory agencies establish standards for quality patient outcomes
• Hospitals charged with establishing systems that decrease risk of error
2004 JCAHO Standard

Section 1: Patient Focused Functions

Function: Medication Management

Process: Preparing and Dispensing

Standard: MM4.10

Rationale: All prescriptions or medication order are reviewed for appropriateness.
“Before dispensing, removal from floor stock, or removal from an automated storage and distribution device, a pharmacist reviews all prescription or medication orders unless an LIP controls the ordering, preparation, and administration of the medication; or in urgent situations when the resulting delay would harm the patient, including situations in which the patient experiences a sudden change in clinical status.”
Patient Safety Initiatives at Children’s

• Review of errors in hospital revealed several high-risk areas:
  – ICU
  – Cardiology
  – Transplant
  – Heme-Onc
  – EMERGENCY ROOM
Patient Safety Initiatives at Children’s

- Decentralized clinical pharmacists
  - PICU, Oncology, Surgery Satellites
- Technology advancements
  - AcuScan, Barcoding, IV Robot
- Distribution of Ready to Administer medications
- Standardized dosing of Ready to Administer medications
- Standard drip dosing
- Clinical Pharmacists to round with each Care Team
Med Error Prevention Strategy
The current standard

• Retrospective Error Prevention
  – Sentinel Event Committee
  – Root Cause Analysis
  – Chart Reviews
  – Quality Improvement Committee

• Changing the “usual” approach
  – Want more proactive way of med error prevention, before the error occurs
Variables Associated with Medication Errors

- Stage of Error - Physician Ordering
- Error Type - Dosing
- Drug Route - IV
- Drug Category - Anti-Infective drugs
Children’s Emergency Room from a Pharmacist Perspective

- ER brings in about 9000 admissions per year.
- Second only to ICU in revenue generation to hospital.
- 140,000+ medications are processed through the ER every year.
- As with most emergency rooms, there was no on-site clinical pharmacy services. Use of the Omnicell system results in no pharmacy 2nd check system.
More challenges…

• High turnover of staff means young, inexperienced staff members are common
• Unpredictable patient load and acuity
• New residents (often with no ER experience) every month
• Physicians often have no prior relationship with patient
More challenges…

- High patient volume and acuity means more critical meds
- Patient severity demands rapid decision making and preparation of meds at bedside
- Often baffling and complex diagnoses
- Anything may happen before lab or diagnostic study results are available
Summary of Challenge

Medication orders are written by a first or second year resident, filled by a nurse just out of an internship from a medication Omnicell, and not reviewed in between by anybody.
The New Approach in the ER

- Focus on Prospective Prevention of Risk
- 1 position created for a “Clinical Pharmacist – Emergency Services”
- Objective to design and implement pharmacy services in the ER to make it a safer place, and to provide compliance with upcoming JCAHO rules about first-dose review
Pharmacist’s Role in ER

- Interaction and teaching with prescriber for incorrect/suboptimal orders
- Intake interview for all patients
- Discharge prescription review and patient counseling
- Critical Care Team Member
Top Priority: Pharmacist Review of All Medication Orders

How we began:

• Surveyed other pediatric emergency departments regarding medication delivery process
• Formed a multidisciplinary committee
• Analyzed our current system of medication delivery in the ER
• Determined desired outcomes
Multidisciplinary Committee

- ER Nurses
- ER Team Leaders
- ER Department Director
- ER Attending Physicians
- ER Pharmacists
- Central Hospital Pharmacists
- Central Hospital Pharmacy Management
- ER Health Unit Coordinator
- Hospital Information System Representative
- ER Information System Administrator
- Health Information Management Director
- Facilitated By: ER Clinical Program Manager
ER Medication Process Redesign Objectives

- Decrease risk of error
- Increase efficiency in delivery of care
- No increase in patient care delays
Goals of ER Med Redesign

- Pharmacist review and order entry of all first doses of non-emergent medications within 15 minutes of order written.
- Distribution of all non-emergent medications from Central Pharmacy within 30 minutes of order entry.
What is Considered Non-Emergent?

• The quality characteristic for non-emergent medication administration is accuracy over timeliness.

• The quality characteristic for emergent medication administration is timeliness over accuracy.
What is “Emergent?” The patient or the medication?

- Status Epilepticus
- Status Asthmaticus
- Diabetic Ketoacidosis
- Neonates <5kg or <28 days
- Ingestions
- Sickle Cell w/Fever
- Heme-Onc Emergencies (incl. neutropenia)
- All Traumas, CPRs, Medical Emergencies
- Any intubation
Analysis of Current Process

• Ordering
• Transcribing
• Preparing
• Administering
Major Challenges Identified in Process

• Physician Order Documentation
• Notification process that order has been written
• Pharmacist availability to review orders 24/7
• Medication delivery to the bedside
Process Changes that Occurred

- New ER Physician Order Form
- Team HUC model
- Utilization of electronic patient tracking system to facilitate communication regarding medication orders and status
- 24/7 ER Pharmacist coverage
- Pharmacist review of first dose, non-emergent medications
- Distribution of Ready to Administer medications from Central Pharmacy
- Enhanced medication storage system
And all Without a Satellite!

- ER Pharmacist does order entry and label is generated in Central Pharmacy
- Central pharmacy processes medication labels
- Medications are delivered via tube to ER, and to locked cart by HUC
- Emergent medications remain in Omnicell for use only when situation requires it
- Length of stay in ER has not increased
Implementation Strategies

• Trialed new processes prior to full implementation
• Implemented solutions to problems that would provide immediate benefit
• Held ongoing forums with staff during the redesign period to discuss their concerns and ideas
Barriers Encountered in Redesign

• Nurses concern that their competence to practice was being questioned
• Physicians lack of awareness that there were problems with improper medication orders
• Resistance to conform to a new process
Results of Implementation

• Decreased written and transcribed med errors by providing point-of-care clinical services
• Significantly decreased medication errors that reach patient
• No significant delays in patient care
• Within 1 year, allotted 9 FTE’s
• Pharmacist coverage 24/7/365
• Increased communication between staff members (RF phone)
• Improved training experience of residents and interns
• More complete admission histories
Continuing Improvements

- Decrease Omnicell use to <5% of all meds in ER
- Develop Clinical Practice Guidelines or Standing Orders to guide medication orders
- Improve management of conscious sedations
- Provide better pain management
- Reach impeccable narcotic control
- Continue to decrease turnaround time
Continuing Improvements

- Continue training of residents
- Increase support to novice nurses
- Disseminate med errors to Pharmacy and Quality Committees
- Discuss medication misadventures with all staff, to learn from one another
- Maintain tight formulary control
- Standardize process for tracking potential and actual adverse drug events
- Optimize medication administration through unit based pharmacist involvement.
Emergency Pharmacist Team
Excellence Above All

- ER Clinical Pharmacy Services are necessary and beneficial
- Medication error is reduced in the ER with 24-hour clinical pharmacy services with no increase in length of stay
- Patient care quality is improved
- Overall patient safety is improved
- Better learning experience for residents and interns
Questions?

Children’s Medical Center – Getting children safely to the other side of childhood.