



## Medication Safety Infrastructure and Strategy

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## Objectives

- Understand the need for strong patient safety culture in an organization (UPMC example)
- Understand the need for “blame-free” reporting system and culture
- Describe need for essential department and hospital data to determine patient safety priorities

## Objectives

- Understand how establishing pharmacy medication safety manager helps support patient safety infrastructure
- Outline steps to establish medication safety strategic plan
- Understand the UPMC medication safety infrastructure
- Understand UPMC medication safety strategic plan

## University of Pittsburgh Medical Center (UPMC)


**Cost of Total Operations FY07: \$7 Billion**  
 Located in Western Pennsylvania

|   |  |  |
|---|--|--|
| <p><b>UPMC Hospitals</b></p> <p>Bedford Memorial<br/>Braddock<br/>Children's Hospital<br/>Horizon: Greenville and Shenango Valley<br/>Magee-Women's Hospital<br/>McKeesport<br/>Northwest<br/>Mercy</p> | <p><b>UPMC Hospitals</b></p> <p>Passavant/Cranberry<br/><b>Presbyterian/ Montefiore- 650 beds</b><br/>Eye and Ear Institute<br/>Shadyside<br/>St. Margaret's<br/>South Side<br/>Rehabilitation Hospital<br/>Western Psychiatric Institute &amp; Clinic</p> | <p><b>Ambulatory Care</b></p> <p>Doctor offices &gt;400<br/>Surgical centers &gt;25<br/>Rehab facilities &gt;50<br/>Elder care facilities &gt;16</p> <p><b>International</b></p> <p>Ismett (Palermo, Sicily),<br/>Qatar, Ireland</p> |
|---|--|--|

|            |         |                   |               |               |           |
|------------|---------|-------------------|---------------|---------------|-----------|
| Employees  | >48,000 | Outpatient visits | >4.5 million  | Service area: |           |
| Physicians | >4,700  | ER visits         | >0.46 million | Counties      | 29        |
| Beds       | >4,000  | Inpatients        | >190,000      | Population    | 3 million |
|            |         | Surgeries         | >190,000      |               |           |

## UPMC Presbyterian


- Adult medical/surgical referral hospital
- Affiliated with University Of Pittsburgh Schools of the Health Sciences
- Center for organ transplantation, cardiology/cardiothoracic surgery, critical care medicine, trauma services, rehab, psychiatry, geriatrics and neurosurgery
- Level I Regional Resource Trauma Center

## Call to Action

- IOM report, *Preventing Medication Errors* and commentary by Drs. Leape and Berwick challenged hospitals and health care organizations to:
  - Establish agenda to prevent medication errors, based on collaboration among caregivers
  - Develop effective organizational culture of patient safety

Aspden P, Wolcott J, et al. Committee on identifying and preventing medication errors. In: *Preventing Medication Errors: Quality Chasm Series*. Washington, DC: IOM of National Academies, National Academies Press; 2007. <http://www.nap.edu/catalog/11623.html>.  
 Leape LL, Berwick DM. Five years after to err is human: what have we learned? *JAMA*. 2005;293:2384-2390.

## Culture of Patient Safety: Why Needed?



Patient safety infrastructure:

- Prevent medication errors (ME) via continuous improvements in quality of care
- Most hospitals do not have sufficient infrastructure and clear strategy for preventing ME

Manasse HR Jr, Eturbull J, Diamond LH. Patient safety: a review of the contemporary American experience. *Singapore Med J.* 2002;43:254-262.

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## Culture of Patient Safety




- Everyone in organization responsible for patient safety
- Important to develop an organizational strategic plan for medication safety
- Patient-centered approach needed for collaborative and comprehensive program

Mark SM, Weber RJ. Developing a medication patient safety program – infrastructure and strategy. *Hospital Pharmacy.* 2007;42:149-156.

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## Culture of Patient Safety



- Collective learning process of working together over long period of time
- Product of individual and group values, attitudes, perceptions, competencies, and hospital staff and leadership's patterns of behavior

National Quality Forum. *Safe Practices for Better Health care: A Consensus Report.* Washington, DC: National Quality Forum; 2003.

Schein E. *Organizational Culture and Leadership.* 2nd ed. San Francisco, CA: Jossey-Bass; 1992.

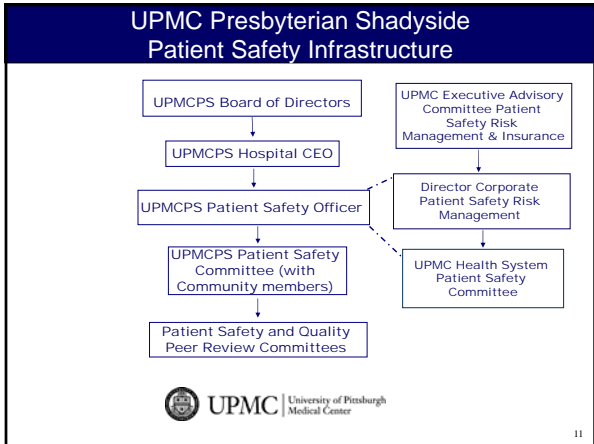
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## UPMC Culture of Patient Safety

- Focuses on importance of collaborative clinical partnerships in patient safety
- Physicians, nurses, pharmacists, other staff, and patients must be able to communicate their issues or concerns



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## Pennsylvania MCARE Act 13

- Established to promote patient safety and reduce soaring malpractice rates in 2002
- Required hospitals and related facilities to report medical errors to Patient Safety Authority (PSA) and Department of Health (DOH) to identify preventable trends and problems

<http://www.mcare.state.pa.us/mcfl/lib/mcfl/hb1802.pdf> Accessed 3/20/2008

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## Pennsylvania MCARE Act 13

Required hospitals to:

- Develop patient safety plan
- Designate patient safety officer
- Establish patient safety committee
- Establish system for health care workers to report medical errors

<http://www.mcare.state.pa.us/mcclif/lib/mcclif/hb1802.pdf> . Accessed 3/20/2008

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## Pennsylvania PSA

- Independent state agency under MCARE Act
- Charged to take steps to reduce and eliminate medical errors
- Identifies problems and recommend solutions to promote patient safety in hospitals and related facilities

<http://www.psa.state.pa.us/psa/site/default.asp> Accessed 3/20/2008

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## Pennsylvania PSA

- Implemented Pennsylvania Patient Safety Reporting (PA-PSRS), mandatory statewide System in June 2004
- More than 400 healthcare facilities subject to reporting requirements via PA-PSRS secure web- based system

<http://www.psa.state.pa.us/psa/site/default.asp> Accessed 3/20/2008

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## UPMC Patient Safety Program

### Key Elements:

- Internal reporting system
- Determination of serious events and incidents
- Peer review investigations
- Peer review analyses
- Corrective actions



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## UPMC Patient Safety Program

### Key Elements:

- Patient safety education
- Communications with patients and patient families
- External reporting (ISMP, FDA, CDC,...)
- Anonymous reporting to PA PSA



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Blame-Free  
Error  
Reporting  
System and  
Culture

## Blame-Free Reporting System and Culture

- Perception and actions taken on individual's involvement in an error
- Key cultural paradigm centers on blame-free reporting of errors
- De-personalize and be non-judgmental when discussing errors
- Hospital board, physicians and administrators must be personally involved and educated on importance of safety culture
- Ensure significant place for patient safety initiatives in the budget

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## Blame-Free Reporting System and Culture

- Culturally acceptable to question other health care professionals, orders, or situations
- Well-established process to question a medication order
- Pharmacy director plays important role in establishing “blame-free” and open environment in dealing with errors

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## Strategies to Promote Blame-Free Culture

- Educate hospital governance on concept of establishing “no blame” patient safety culture
- Remove reference to punitive consequences for making MEs from performance appraisals
- Add performance standard to promote ME reporting
- Develop statement promoting open and honest discussion of MEs

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## Strategies to Promote Blame-Free Culture

- Empower pharmacists to refuse to dispense unsafe orders via escalation process
- Review ME sentinel events with focus on systems-based factors contributing to error
- Publish quarterly ME review for hospital and medical staff
- Participate in national ME reporting system that provides additional information on errors to help establish organization's safety priorities

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## UPMC Blame-Free Culture

- Focus on systems and processes instead of staff initiating error
- “I Need Some Clarity” initiative
- Unsafe medication order escalation process
- Hospital board, administrators, and medical staff involved with patient safety
- Key physician safety leaders educate their peers
- Encourage staff to report errors and part of performance evaluation and competency

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## UPMC Escalation Process: Dangerous Orders

- Pharmacist invokes call sequence to clarify:



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## UPMC Blame-Free Culture

- Present error cases to educate clinical staff at meetings
- Share medication safety initiative results with staff
- Report MEs and Adverse Drug Events (ADE) externally to ISMP, USP and FDA to share nationally
- Reward top ME/ADE reporters at annual Quality and Innovation Fair

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## UPMC Presbyterian Key Safety Leaders



- Physician Director Patient Safety
- Key Critical Care Medicine attending physicians
- Physician co-chairs of Pharmacy and Therapeutics (P&T) Committee
- Physician and Nursing co-chairs of Total Quality and Patient Safety Council
- Patient Safety Risk Management Department
- Nursing Administrators
- Pharmacy Manager Medication Safety and Pharmacy Leadership
- Pharmacy Drug Use and Disease State Management Program

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## UPMC Medication Error (ME) Detection Methods



- Voluntary reporting via ME/ADE hotline or web reporting
- Direct communication to Patient Safety Committee members
- MD review hospital codes/deaths
- Review of ICD-9 codes
- Triggers: naloxone use, HIT rule, amiodarone lab rule, protamine use, hypoglycemic events..
- Pharmacy Inventory Team daily review high cost and restricted use medications
- Automated medstation inspections by Pharmacy Medication Safety Technicians

*\*Exclusions to UPMCP ME/ADE Data: 1) Bar-code medication administration intercepted errors; 2) Pharmacist daily prescribing review and interventions on patient orders*

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## UPMC Voluntary Reporting System

- Patient Safety Risk Management event reporting database
  - Emphasis on blame free, real-time reporting
  - Via hospital intranet, web based tool
    - Easy access by all staff
    - MEs, ADEs and other incidents reported in this manner
  - Alternate reporting method via pharmacy ADE/ME telephone hotline

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## UPMC Voluntary Reporting System

- Peer-protected, follow-up review form for MEs to capture USP® MEDMARX data fields
- Data repository tracks event from point of occurrence through investigation to conclusion
- Direct data interface from Risk Management database to USP® MEDMARX database for upload all MEs, after investigation, analysis and data validation


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## UPMC Web Based Reporting Tool

### UPMCP Medication Error Review

| Types of Review   | Frequency                        | Who Is Involved?   |
|---|----------------------------------|--|
| Daily initial review of 100% MEs reported, "A" to "I" severity  | Within 24-48 hrs of event report | Risk Management Specialist; Clinical Director; and Pharmacy Manger Medication Safety   |
| Weekly expert panel review of significant serious or adverse events: Patient Safety Quality Peer Review Subcommittee  | Weekly                           | Risk Management; Pharmacy Manger, Medication Safety; VP Patient Care; Patient Safety Officer; Medical Director Patient Safety; Key Physicians, Legal |
| Adhoc review of significant/sentinel events requiring action via Patient Care Conference                              | Scheduled on an as needed basis  | Medical Director Patient Safety and multidisciplinary clinician panel with knowledge of event  |
| Error case presentations at various hospital committees (P&T, Patient Safety, Safe Med QI, Diabetes Patient Safety..) | Monthly or as requested          | Pharmacy Manger Medication Safety and others (physicians, nurses, pharmacists..)   |

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## Essential Hospital Data for Medication Safety

### Essential Hospital Data and Medication Safety

- Understand nature of MEs and ADEs is critical to implement interventions to improve safety
- Determine ME causes and assess error severity
- Concentrate efforts on eliminating causes of MEs with greater levels of severity or potential for severity

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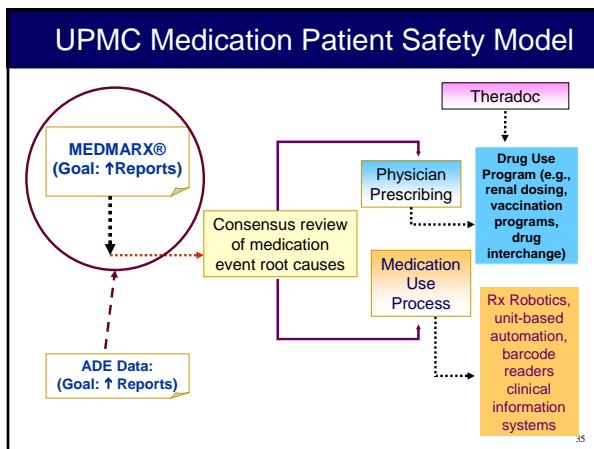
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### Essential Hospital Data and Medication Safety

- Establish mechanisms to track drugs or drug classes involved in MEs
- Review correlations between MEs and methods of drug distribution and dispensing
- Establish list of targeted drugs/drug classes commonly associated with serious MEs
- Concentrated effort across all disciplines to eliminate common root causes, for errors involving targeted drugs

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### UPMC Medication Safety Interventions

- Based on UPMC MEDMARX® data from Risk Management reporting system
- Also based on PAPSRS, USP, or ISMP alerts or combination of both (i.e. propofol safety)
- National MEDMARX® data also used as evidence to support and develop UPMC medication safety initiatives and to confirm/validate UPMC data

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### UPMC Top Harmful Drug Classes and Drugs 2007

- Insulin
- Blood coagulation modifiers
- Opioid analgesics
- Sedative/Hypnotics/Anxiolytics
- Hydromorphone
- Regular Insulin
- Insulin Glargine
- Lorazepam
- Warfarin

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### UPMC Patient Safety Committees

- Patient safety committees and actions are focused on our top harmful MEs
- Multidisciplinary medication patient safety committees enact change with P&T approval

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## Infrastructure for Medication Patient Safety

### Infrastructure for Medication Patient Safety

- Hospital leaders should create infrastructure to provide patient safety and communicate and evaluate medication safety concerns
  - Quality Councils or Patient Safety Steering Committees
- P&T Committee and/or its subcommittees have primary role for this in hospitals as it relates to medication use

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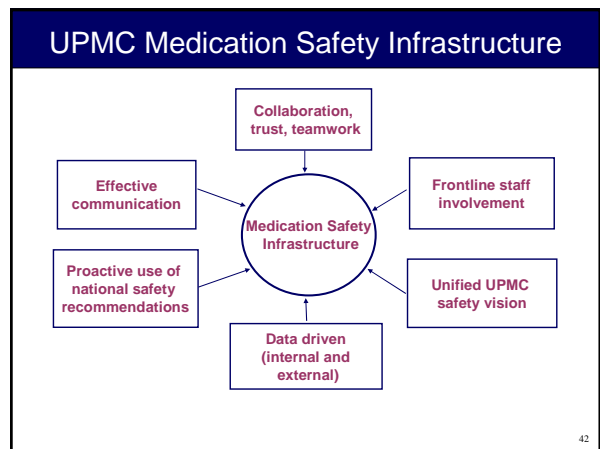
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### Infrastructure for Medication Patient Safety

- Form multidisciplinary groups to discuss frontline medication safety concerns
- Hold patient safety dialogues to define issues and develop common goal
- Involve frontline staff to increase level of support and knowledge

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## UPMC Medication Safety Infrastructure

- Not always easy to get all departments to work together
- High level safety leadership is key to working together
- Pharmacy leadership is very important as must establish structure that allows them to be leaders in medication safety programs throughout organization



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## Pharmacist Leadership Key to Implementing Medication Safety Changes

Pharmacists must:

- Lead and be involved in all medication safety changes as are held responsible by regulatory bodies for safe medication use
- Be recognized in the hospital culture as experts on safe medication use
- Demonstrate and showcase success of pharmacy led medication use safety initiatives in various forums
- Requires data and outcome measures



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## Pharmacists Must Build Collaborative Relationships to Ensure Acceptance

Pharmacy leadership should engage:

- Physician Champion(s) supporting medication safety
- Key nurse leaders who respect and support pharmacists
- Hospital Administrators, VPs and President
- Patient Safety Officer
- Hospital Director Accreditation/Regulatory Compliance
- Risk Management/Patient Safety Department leadership
- QI Department leadership

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Safety  
Manager

## UPMC Pharmacy Medication Safety Manager

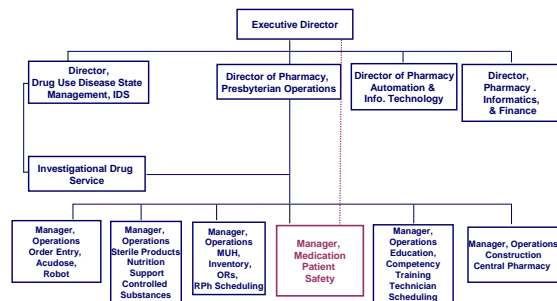
- Established position in 2001 to address organization's need for direct pharmacist involvement in patient safety
- Integral part of UPMC's medication patient safety program
- Positively impacted ME reporting rates and implementation of medication safety initiatives<sup>7</sup>



Kowiatek JG, Weber RJ, Skledar SJ, Sirio CA. Medication safety manager in an academic medical center. *Am J Health Syst Pharm.* 2004;61:58-64.

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## UPMC Presbyterian Pharmacy Department



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## UPMC Pharmacy Medication Safety Manager

- Integral part of UPMC Presbyterian medication safety teams:
  - Health System Patient Safety Committee
  - Patient Safety Quality Peer Review Subcommittee (Risk Management)
  - P&T Committee and Safe Medication Practices QI Subcommittee
  - Diabetes Patient Safety Committee
  - PCA Task Force
  - Pain Management Council
  - Patient Safety Committee
  - ADE Subcommittee
  - MERTI QI Committee (medical emergency response improvement team)

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## Job Functions of UPMC Medication Safety Pharmacist

- Identify and implement best practices
- Analyze current practices and take proactive steps to prevent error
- Facilitate process and system changes to reduce likelihood of errors
- Manage ME reporting and investigation
- Review reports and determine root cause
- Manage ME data entry to provide reports to clinical staff and committees

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## Job Functions of UPMC Medication Safety Pharmacist

- Educate health care professionals on safe medication practices
- Participate in department, hospital, system, and regional committees on MEs, safe medication use, and patient safety
- Develop and review medication use policies and adapt to current practice
- Address issues of non-compliance and recommend corrective actions
- Monitor compliance with medication control and security in pharmacy and hospital patient care areas

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## UPMC Pharmacy Medication Safety Team

### Medication Safety Team

- Full time pharmacy manager medication safety (1.0 FTE)
- Two full-time medication safety pharmacy technicians (2.0 FTE)
- Part-time medication safety pharmacist working ~20 hours per week (0.5 FTE)
- Pharmacy Practice Management residents to total 20 hours per week (0.5 FTE)
- Pharmacy student working 6-8 hours per week (0.1 FTE)

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## Medication Safety Strategic Plan

## Developing Medication Safety Strategic Plan

- Collaboration of various departments
- Championed by pharmacy director and P & T Committee chair
- Use standard approaches per ISMP to address patient safety initiatives (e.g. forcing functions and constraints, automation and computerization)
- Gain sense of safety needs and prioritization of risk associated with each approach

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Cohen MR, Levine SR, Mandrack MM. *Confronting the Challenges of Neonatal and Pediatric Medication Safety*. Huntingdon Valley, PA: ISMP; 2003.

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## Developing Medication Safety Strategic Plan

- Multidisciplinary team identifies solutions to reduce or minimize identified risks
- Consolidate and map proposals on timeline to create Medication Safety Strategic Plan
  - Guide for decisions and sets vision for upcoming years
  - Integrates ways to improve medication safety



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## Medication Safety Strategic Plan

### Goal:

- Intervention:
- Cost:
- Champion:
- Measurement of success:
- Evaluation:



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## UPMC Pharmacy Medication Safety Strategic Plan Example

|   |
|---|
| <b>Goal:</b> Prevent Medication Errors from PCA Prescribing and Administration  |
| <b>Intervention:</b> Design and Implement PCA Standard Order Sheet  |
| <b>Cost:</b> Low – staff time for form development and education  |
| <b>Champion(s):</b> Dr. Simmons and C. Dunwoody and PCA Task Force  |
| <b>Measurement of Success:</b> All PCA orders must be written on PCA order form to be accepted by pharmacy after designated start date.                                     |
| <b>Evaluation:</b> Track all PCA orders by calendar year for several years and reports back to P&T Committee and to Medical Director of each service as to use of new form. |
| <b>Intervention:</b> Establish a Hospital-Wide Policy for PCA Prescribing and Administration  |
| <b>Cost:</b> Low - time for staff drafting policy   |
| <b>Champion(s):</b> Dr. Simmons and C. Dunwoody and PCA Task Force  |
| <b>Measurement of Success:</b> Approval and use of policy   |
| <b>Evaluation:</b> Verify approval of policy by appropriate committees and document. Audit prescribing and administration practices.  |
| <b>Intervention:</b> Evaluate and Purchase New PCA Pumps With Bar-Code Reading Technology   |
| <b>Cost:</b> High, with purchase of new pumps though timed with expiration of UPMC PCA pump contract  |
| <b>Champion:</b> UPMC Health System Task Force  |
| <b>Measurement of Success:</b> Tracking of all PCA medication administration errors for 2 years   |
| <b>Evaluation:</b> Reduction in number of PCA pump administration medication errors by 50%  |

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## UPMC Pharmacy Medication Safety Strategic Plan

- Collaboration of patient safety committees with P&T and pharmacy leadership
  - Forcing functions and constraints along with use of technology
- Types of interventions:
- Drug use initiatives
  - New or revised P&P
  - Technology (bar-code, automation)
  - Staff education
  - Standard preprinted order sets/protocols
  - Computer alerts
  - Restricting, controlling or changing drug availability or access
  - E- record

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## UPMC - Evaluating Effects of Interventions

- Monitor errors and data trends via Risk Management reporting system and MEDMARX® database
- Accountability via required reports from various groups to the Risk Management Patient Safety Quality Peer Review Subcommittee
- Data and compliance/outcome monitoring by Pharmacy Drug Use and Disease State Management Program for safety initiatives
- Tracking of “CMS Core Quality Measures”

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UPMC  
Sharing  
Lessons  
Learned

## UPMC System Sharing Lessons Learned



### Share via:

- UPMC Health System Patient Safety Committee meetings and via e-mail notices
- UPMC Patient Safety Officer meetings
- UPMC Pharmacy Directors Integration Council Meetings
- UPMC Health System Pharmacy & Therapeutics Committee meetings

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## UPMC Safety Dissemination Practices

- Share reports of serious events with UPMC board, Presidents, VPs, Patient Safety Officers
- UPMCP Patient Safety Quality Peer Review Subcommittee initiates change and sets expectations
- Multidisciplinary patient safety committees enact change
- Spread via shared learning through specific hospital and system safety committees and patient safety officers
- UPMC Newsletters, electronic mail, and web-based physician CME articles
- Share externally via publications and presentations at national meetings



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## Summary

- Developing systematic, strategic, and collaborative approach to preventing MEs must be organizational imperative for hospitals
- Successful medication safety strategic plan must incorporate:
  - Effective use of hospital and departmental data
  - Supported by an adequate safety infrastructure
  - Embrace culture of “no blame” in reporting and analyzing medication errors

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## Summary

- Pharmacy director plays key role in medication safety strategic plan by
  - Providing expert advice on medication errors
  - Supporting open environment in pharmacy department
- Pharmacist position dedicated to medication patient safety activities can provide focus and resource to make significant improvements in organization’s patient safety outcomes

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## References

1. Aspden P, Wolcott J, Bootman JL, Cronewelt LR, eds. Committee on identifying and preventing medication errors. In: *Preventing Medication Errors: Quality Chasm Series*. Washington, DC: Institute of Medicine of National Academies, the National Academies Press; Anticipated 2007 publication. Available at: <http://www.nap.edu/catalog/11623.html>. Accessed January 8, 2007.
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## Questions ?



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