Pharmacy Automation

Multiple Choices and Options
Which one works best is a question for your situation?

Medication Use Process

Prescribing/Medication Determination ➔ Medication Preparation, Dispensing, & Documentation ➔ Medication Administration ➔ Clinical Monitoring

Why Errors Occur

- Wrong Drug
- Similar names
- Wrong dose
- Similar labeling/packaging
- Transcription error
- Omission error
- Inadequate safeguards
- Right drug, wrong strength
- Faulty drug distribution system
- Procedure not followed

U.S. Pharmacopeial Convention data from June 1, 1997 to May 31, 1998
"The biggest challenge is to get people in hospitals ... physicians, pharmacists, nurses, and administrators ... to recognize that errors are system problems and not people problems."

Lucian Leape, MD
Adjunct Professor of Health Policy
Harvard School of Public Health

Medication Use Process

Medication Errors Occur

Incidence of Adverse Drug Events and Potential Adverse Drug Events, JAMA 1995
For the Management of Prescriptions . . .

Electronic Physician Order Entry

- Physician Order Management Solution
- Benefits, nursing, pharmacy, and patient
- Digital scanner/fax, e-prescribing
- Reduces transcribing

Physician Order Processing

Information Flow
Product Flow

Order Entry
MD Order
Nursing
Pharmacist
Central Pharmacy
Nursing Unit
Bedside

Medication Use Process

Prescribing/ Medication Determination ➔ Medication Preparation, Dispensing, & Documentation ➔ Medication Administration ➔ Clinical Monitoring
Where are Pharmacies Devoting Resources?

- Typical Hospital Pharmacy Devotes 90% of its Human Resources to Distribution and Order Entry Activities

Automation Devices

“Formulary Reach”

Unit Dose Packaging
Bar Code Packaging Solution

- Automated bar code packaging
- Integrated cabinet restocking
- Patient-specific cart fill capability

Centralized Automation Bulk to U/D Packaging

Centralized Automation

Medication Dispensing

Carousel Robotics
Medication Safety Starts in the Pharmacy

Bar Code Unit Dose Packaging

Information Flow

Product Flow

Order Entry

Nursing Unit

Bedside

Automated Carousel Inventory

Automated Packaging

Improved Utilization of Pharmacy Space

Medication Use Process

Prescribing/Medication Determination

Medication Preparation, Dispensing, & Documentation

Medication Administration

Clinical Monitoring
Medication Safety
...continues on the Nursing Unit

Information Flow
Product Flow

Decentralized
Pharmacy Systems

MD Order
Electronic Scan or Fax
Distributor

Automated Carousels
Centralized Automation

Nursing Unit
Bedside
"Point of Care"

Automated Wick to UD Packaging
"Central Automation"

Pharmacy System Dispensing Innovations

"Pick-to-Light" or "Guiding Lights"
Sensing Lids
Single-Dose Drawers

Pharmacy Systems: Patient Medication Profiling
Where Medication Errors Occur - Hospitals

- Prescribing 39%
- Oral 12%
- IV 23% *
- Transcribing 12%
- Elevator 12%
- Dispensing 11%
- Administering 38%
- Other 3%

* IV errors represent 61% of bedside administration errors.

Point of Care – I.V. Therapy

 Integrates bedside scanning with IV safety technology
 Automates safety parameters
 Reduces errors

Results – The Eastern Kansas Health Care System

- 75% reduction in the wrong medication being administered
- 62% reduction in the wrong dose being administered
- 93% reduction in wrong patient errors
- 87% reduction in wrong time errors
- 70% reduction in missed medication errors
Technology in Outpatient Pharmacy

- Priority queuing
- Automated technician filling stations
- Labeling
- Bar code technology
- Efficient pharmacist review
- Structured workflow
Automation Impact on Pharmacy

Inpatient and Retail
- Procurement practices
- Pharmacy information system compatibility
- Re-packaging standards
- Insuring bar code print quality
- Conformance to order interpretation standards
- Responsiveness/Timeliness
- Integrated systems require integrated efforts and integrated communications

Medication Safety Starts in the Pharmacy

Bar Code Unit Dose Packaging

Software Considerations
- 80% of medication orders fit into standard process models for order entry, packaging, delivery, and administration
- It’s the remaining 20% that will occupy 90% of your time after implementation if you don’t ask the hard questions first
- Are inpatient and outpatient the same software
- On to the hard questions..........
Automated Medication Use Process

Results…

- Improved response time
- Reduced interruptions for pharmacy and nursing
- Improved efficiency of dispensing, delivery, and administration process
- Improved patient care
- Improved acceptance of the new technology

C. L. Tucker, National BCMA Project Manager, Veterans Health Administration/Eastern Kansas Healthcare System

Pharmacy Automation Outcomes

- Enhanced workflow through improved availability to dispensing, administration, and monitoring data
- Enhanced inter-service communications through integrated processes
- Improved efficiency through multi-disciplinary coordination of the medication management process
- Improved accountability
- Improved patient safety