



# Bar Coding Implementation: Hospitals

Michele Weizer, Pharm.D, BCPS

**JFK** MEDICAL  
CENTER





# Objectives

- Design principles
- Intended benefits
- Process
- Interdepartmental considerations
- Pre-implementation considerations
- Interfaces and integration
- Testing, deployment, evaluation



- JFK is a 454-acute care bed major medical center specializing in cardiac care, orthopedics, oncology, and adult (geriatric) medicine; 52 ICU beds
- Average daily census=380
- Average 25,000 admissions and 60,000 ER visits annually
- Perform up to 600 open-heart surgeries and 7000 cardiac catheterization procedures annually



# Bedside Scanning Goals

- HCA corporate initiative
- Avoid potential system errors
- Prevent Medication Errors
- Assure 5 rights of Medication Administration
- Improve documentation/accountability
- Charge capture
- Eliminate omissions



# Multidisciplinary Committee

- Steering Committee

- Leadership: nursing, pharmacy, respiratory, IS, risk management, education, medical records, quality
- Monthly (or less)
- Support

- Core Team

- eMAR worker bees
- Project implementation and maintenance
- Nursing, pharmacy, respiratory, IS, education



# Pre-implementation Considerations

- Software integration
- Bar Coding solutions
- Nursing/RT equipment
- wLAN
- Dictionary edits (nursing/pharmacy)
- Develop workplans and timelines



# Interfaces and Integration Issues

- Decisions must be based on compatibility with current systems or be willing to convert



# Equipment Selection

- Bar Coding Equipment
- End user equipment
  - Equipment Fair (rating surveys)
  - Involve staff nurses and RTs
  - Evaluate for durability, ergonomics, replacing current equipment?, measurements, storage/re-charging





# Bar Coding Equipment

- Facility delivery system (profile dispense, 24 hr cart fill, nurse servers)
  - Cart fill (automation examples)
  - Unit based cabinets
  - Manual bar coding
    - Projected Volume
    - Real estate in the pharmacy department
    - Lease verses purchase



# Robot-Rx Cart Fill



- 24 cart fill and first doses
- Size implications
- Automated returns
- Cassette or envelop delivery system



# Pharmacy Operations

- Facility has been using AcuDose™ Profile Dispense since 1999 as a result of inefficiency of cart fill system
- Staffing Shortages
- Medication Security Issues
- Patient Safety
- Dispense 9000 doses/day (280,000 doses per month)



# AcuDose-Rx Dispensing Machine

- Unit based
- High capacity drawers, matrix drawers, steel locked lidded drawers
- Profile Dispense verses Inventory





# AcuDose-Rx



- High capacity drawers



# Vendor Selection Process

- Reviewed contracted vendors product offerings
  - Integration with current systems
  - Cost analysis
  - Workload analysis
  - Physical attributes and space requirements
  - Software issues/compatibility with interfaces
  - Customer service/timeliness



# Bar-Coding Solutions Evaluated

- PakPlus-Rx- McKesson packaging solution where staff and equipment are provided to bar code medications
- Robot-Rx
- Current System of manual repackaging- Southwest medical equipment
- Highspeed packaging system (HIS vs PacMed)



### Additional Considerations

- Needed most efficient way to bar code medications and refill AcuDose-Rx unit based cabinets
- Lease verses purchase
- FTEs needed to run equipment
- Packaging material expense





# PacMed

- Automated bulk packager
- Various sizes (canister storage)
- Interfaced with unit based cabinets
- Tadpole labeler





HCA

PATIENT  
SAFETY

# PacMed





### PacMed Benefits

- Bar-coding system is closed-loop so virtually error-proof
- Fill time with high-speed packager decreased significantly
- Cabinet par levels are exact (prevents overfilling)
- Below Par list assists with ordering bulk medications
- Cost savings using bulk verses unit dose



# Bulk Packager

- Manual feed
- Smaller package size
- Storage of packaged medications





# Eltron Printer

- Bar code labeler



# Overwrapper

- Plastic bag overwrapper for injectables, suppositories, etc





# JFK's Complete Bar-Coding System

- PacMed for top 270 oral solids (used >30 doses/month)
- Tadpole labeler for multi-use items
- Avery labels for single-use injectables, IV's, topical patches, etc
- Continue to use Southwest medical packager for slow user items
- Datamax thermal printers for IV labels



# Quality Assurance

- Must design safety and log system for checking and documenting unit dose was bar coded correctly. Documentation is influenced by state regulations.
- Scan bar code into pharmacy information system and confirm bar code attached correctly





# Bar code verification of canister fill

- Scan bulk bottle and canister before refilling



# PacMed canister refill

- Weight confirmation





# End User Equipment Decisions

- Include staff from nursing and pharmacy as well as IS, Biomed, and engineering
- Evaluate drug delivery system
- Equipment demonstrations- size, portability, battery life, storage (re-charging), durability; Use a survey tool for evaluating equipment
- Deploy equipment to end users 30 days before implementation



# Rubbermaid Cart



- Laptop
- Metrologic scanner
- Drawer space
- Ergonomic design
  - Height adjustment
  - Lightweight



# Stinger



- Outpatient choice
- Not optimal storage bins
- Easy roll



# Ergotron





### Wireless Network

- If wireless not installed, will need survey to evaluate needs
- Must install in all areas where eMAR is planned
- IS department should be responsible for this piece
- Signal strength issues





# Dictionary Edits

- Pharmacy:
  - Drug description edits (admin form, routes, etc)
  - Attach bar codes
  - Design and attach customer defined screens
  - MAR formats
  - Reports
  - Nurse view access





# Dictionary Edits

- Nursing
  - Access changes
  - Electronic signature feature for co-signatures



# Work Plans and Timelines

- Central database for implementation (core team)



# Policies and Procedures

- Downtime procedures
  - MAR back-up system
- Equipment Cleaning
- Medication Administration (and record)
- Pharmacy QA
- Trouble-shooting



# Training

- End Users

- Nursing
- Respiratory Therapy
- Manual
- Classroom and hands-on
- Timeframe for training
- Super User/ roll-out plan

- Pharmacy

- Order entry changes
- Verification of emergency administrations from nursing and respiratory
- Outstanding request reports
- Trouble-shooting with end users



# Monitoring Efficacy

- Increase in med error reports (near misses)
- System reporting
- Scanning Rates
- Re-education
- Rewarding



# Go Live

- Pilot unit
  - Cohesive, small, general medicine floor (least amount of transfers to other floors)
  - Conduct parallel 2 weeks prior to Go Live
  - 24 hour Super user staffing
  - Spend 2 weeks on pilot floor
  - Monitor reports



# Successful Statistics

### eMAR SCAN RATES -- 2006 -- 2nd Quarter

	Count	Percent
<b>Total Doses Administered</b>	<b>628,359</b>	
Non-warned doses not administered (sliding scale, off floor, NPO, etc.)	113,410	
<b>Total Doses Scanned (Corporate requirement -- 95%)</b>	<b>616,198</b>	<b>97.40%</b>
Warnings on Scanned Doses	295,441	47.9%
Warned Doses Not Administered	120,904	40.9%
<b>Reasons for non-administration on scanned warnings:</b>		
Lab results abnormal	27,666	22.9%
Lab results normal	16,959	14.0%
Administration date/time variance	50,922	42.1%
Wrong dose (too much or too little)	9,210	7.6%
Wrong patient	4,463	3.7%
Other	15,255	12.6%
<b>Total Arm Bands Scanned</b>	<b>292,453</b>	<b>97.70%</b>



- Involve nursing from the beginning
- Include a full-time nurse in eMAR planning, training, implementation, and follow-up
- Recognize and educate that bar-coding and bedside scanning is NOT designed to save time or money--- but is a Patient Safety Initiative
- Premium credits (malpractice insurance)
- Medication error reduction





# Bar Coding: Flourish or Fail?

- Premium credits
- Equipment Expense
- Software integration
- Education/Training
- Unit dose packaging direct from manufacturer
- Medications are onetime use



# Bar Coding Documentation

- **Assessing Bedside Bar-Coding Readiness** (AHA, HRET, ISMP). [www.ismp.org/PDF/PathwaySection3.pdf](http://www.ismp.org/PDF/PathwaySection3.pdf)
- **Bar Coding: A Practical Approach to Improving Medication Safety** (ASHP). [www.ashp.org/emplibrary/BarCodingMonograph.pdf](http://www.ashp.org/emplibrary/BarCodingMonograph.pdf)
- **Implementation Guide for the Use of Bar Code Technology in Healthcare** (HIMSS). [www.himss.org/content/files/Implementation\\_guide.pdf](http://www.himss.org/content/files/Implementation_guide.pdf)



# Bar Coding Documentation

- **Implementing a Bar Coded Medication Safety Program: Pharmacist's Toolkit (ASHP).**

[www.ashpfoundation.org/BarCoded.pdf](http://www.ashpfoundation.org/BarCoded.pdf)

- [www.IHI.org/IHI/Topics/PatientSafety/MedicationSystems](http://www.IHI.org/IHI/Topics/PatientSafety/MedicationSystems) (IHI)



# Industry Resources

- ASHP: [www.ashp.org](http://www.ashp.org)
- HIMSS: [www.himss.org](http://www.himss.org)
- Pathways to Medication Safety: [www.medpathways.com](http://www.medpathways.com) (Readiness Assessment)
- ISMP: [www.ismp.org](http://www.ismp.org)
- GS1 US: [www.uc-council.org](http://www.uc-council.org) ) (Auto-ID standards)
- HIBCC: [www.hibcc.org](http://www.hibcc.org) (Auto-ID standards)
- ISBT: [www.isbt.org](http://www.isbt.org) (Blood transfusion)
- AABB: [www.aabb.org](http://www.aabb.org) (Blood bank)
- AHA: [www.aha.org](http://www.aha.org) (Beyond Blame video)
- Terra Pharma Project: [www.unsummit.com](http://www.unsummit.com)
- Hospitalbarcoding.com



HCA

PATIENT  
SAFETY

QUESTIONS?