

Successful Bedside Scanning Begins in the Pharmacy



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About Riverside Methodist Hospital

- ▶ 1,058 Licensed Beds, Tertiary Care Facility
 - National Recognition for Cancer, Cardiology, and Neurosciences
 - Flagship Hospital of OhioHealth
- ▶ Pharmacy Services – Service Model
 - Hybrid distribution – highly automated
 - ROBOT-Rx
 - 2 – MedCarousels
 - IntelliShelf Rx
 - PROmanager-Rx
 - Decentralized cabinets
 - 6 million doses dispensed annually



Bar-code Medication Administration(BCMA)

- Successful bar code medication administration (BCMA) processes can be achieved only with a meticulously managed bar-code medication-use infrastructure.
- Creates an opportunity that places hospital pharmacies in a unique position to be proactive in driving out process impediments to patient safety, process efficiency, and cost containment.

Introduction

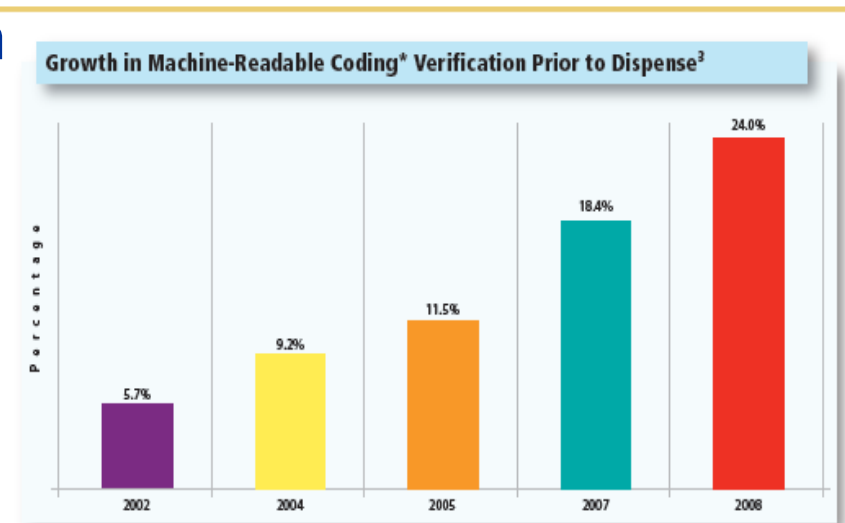
- ▶ Hospital pharmacy practice is becoming increasingly integrated, and the lines between medication distribution roles and clinical roles are blurring.
- ▶ Virtually all hospitals (97.3%) have pharmacists regularly monitor medication therapy in some capacity; nearly half monitor 75% or more of their patients.

Trends

- ▶ Nearly 28% of U.S. hospitals were live on BCMA systems in 2009, compared to just 1.5% in 2002
- ▶ 233% growth in central pharmacy automation systems, 1999-2006
- ▶ 500% growth in “machine-readable coding”* used to verify doses before dispensing, 2002-2008
- ▶ 61% growth in hospitals outsourcing unit-dose bar-code packaging, 2002-2008
- ▶ 83% of the 500 most frequently prescribed oral solid medications are available in manufacturer unit-dose, bar-coded packaging

Methods and Materials

- ▶ Pharmacy was performing 1,000 manual picks per day, prompting growing concern from both safety and efficiency standpoints.
- ▶ Pharmacy leadership entered a beta agreement with McKesson to implement the new PROmanager-Rx automated medication dispensing system.



* Robots, carousel systems, and sometimes manual unit dose pick stations use machine-readable coding to verify removal and replenishment of medications.

Medication Distribution Situation Pre PROmanager-Rx

- ROBOT-Rx dispensing 7,500 doses/day – maximum capacity
- Manual picks in excess of 1,000 doses per day
 - All dispensing errors associated with manual picks
- Barcode Medication Administration (Horizon Admin-Rx), live 4 years
- Challenges faced:
 - Resource and cost constraints, especially Pharmacist time
 - Dispensing errors drawing attention on quality scorecard

Why PROmanager-Rx?

Goals:

1. Reduces the number of manual picks and Pharmacist time to check those medications.
2. Supports organizational goal of >95% bar code scan rate for all meds leaving pharmacy.
3. Limits outsourced packaging, and reduce packaging checks by the Pharmacist.
4. Integrates with existing Pharmacy automation footprint and bar code medication administration solution (“Bedside-Back”).

Why PROmanager-Rx?

Obstacles

- ▶ Spatial constraints of the Pharmacy (with multiple automation)
- ▶ State Board of Pharmacy waiver
SBOP waiver

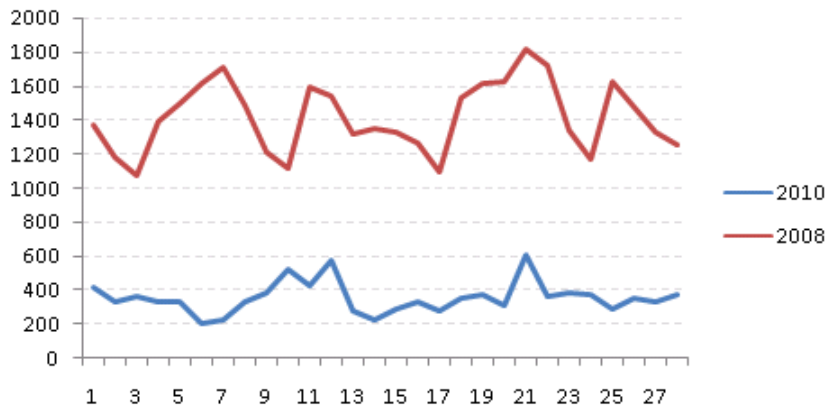


Current Situation

- ▶ PROmanager-Rx has dispensed 520,000+ doses
 - Using PROmanager-Rx for cart fill (with ROBOT-Rx) and first doses
- ▶ Obtained Ohio State Board of Pharmacy approval for reduced R.Ph check of PROmanager-Rx dispenses along with ROBOT-Rx
- ▶ Dispensing model optimized to increase robotic picks and reduce carousel and manual picks

Manual Picks & Automation Efficiency

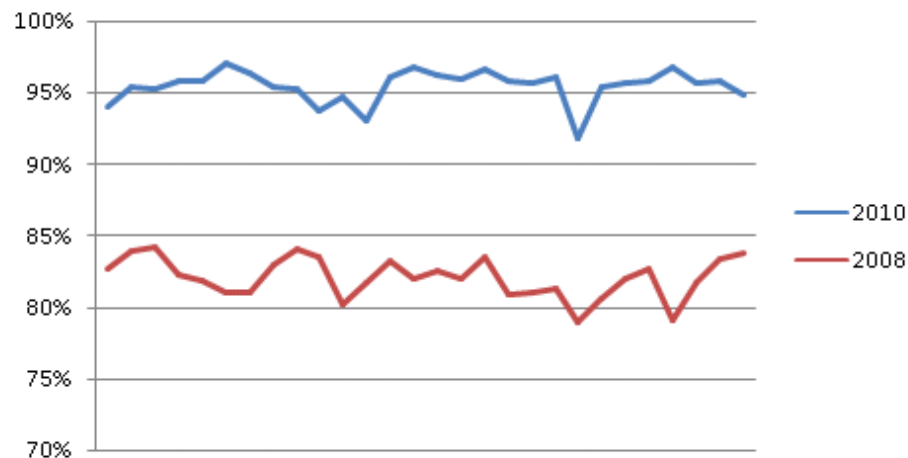
Manual Picks



**Manual Picks:
75% reduction in manual
picks... or 75% increase
in automated dispenses**

**Automated Dispenses:
15% increase in total
doses dispensed using
barcode technology...
95% now dispensed
using barcode scanning**

% Automated Doses Dispensed



Key Insights/Developments

- ▶ **Formulary improvements/balance**
 - 253 ROBOT-Rx line items in 2004; now: ROBOT-Rx 183
 - 363 line items now assigned to PROmanager-Rx...no packaging required

- ▶ **Returns/restock management**
 - Must establish philosophy for stock management for greatest optimization.
 - Riverside adopted single source option (utilize highlighter as communication tool)

- ▶ **Dynamic inventory optimization of PAR/MAX**
 - Allows for greater optimization of automation
 - Still requires the “human-factor” thinking to prevent overloading of specific meds

Key Insights/Developments

▶ Packaging Requirements

- Significant reduction in packaging for the department – hard savings realized
- Manufacturers/Repackagers are taking note of the composite barcode requirements
 - Anticipate that by Oct 1st 82% of meds within PROmanager-Rx will have a composite barcode
- Not all manufacturer packages work; would like to have knowledge prior to purchasing medication

▶ Expiration Tracking

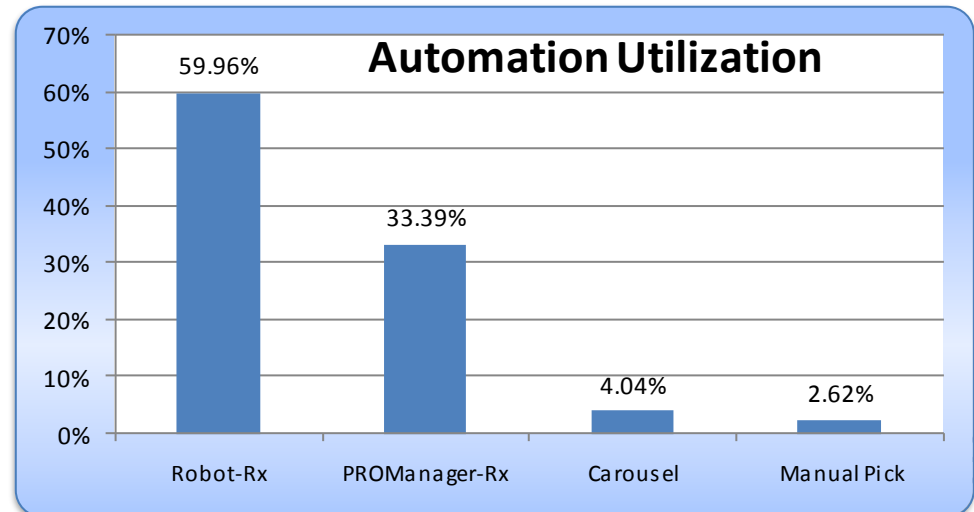
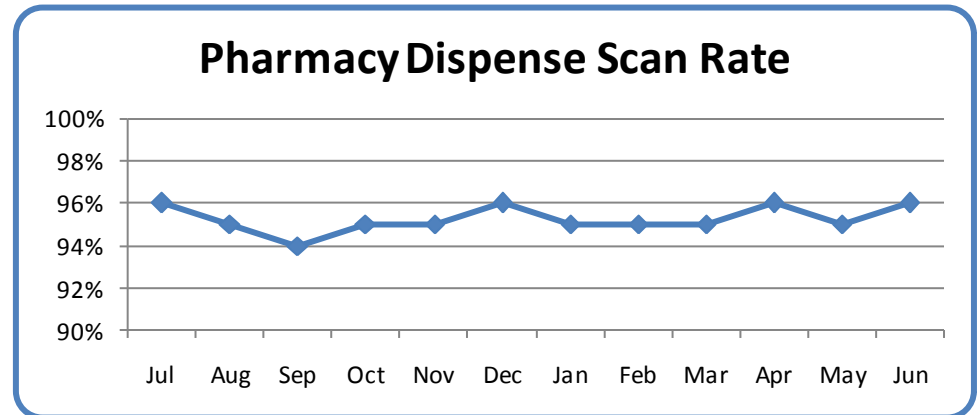
- Addition of composite barcodes has greatly improved expiration accuracy (known issue when PROmanager-Rx was installed)

▶ Impact cart fill productivity and completion times

- Addition of PROmanager-Rx (500 picks/hour) to Robot-Rx (650 picks/hr) offers an increase of 77%
- Manual picks decreased by 75%
- Consistently complete cart fill prior to target timeline with fewer pharmacist resources

Key Insights/Developments

- ▶ Medication Barcode Scans Prior to Pharmacy Dispense
 - Target established: 95%
 - Only missed one month in last 12 months
 - PROManager-Rx now dispensing 33% of our doses
 - Additional capacity exists within our current environment



Key Insights/Developments

▶ Medication “singulation”

- Added the Singulator in Jan-Feb 2010
 - 90% of meds are singulated without the singulator (only used for packages that do not tear easily)
-
- Workflow improvements/balance with techs assigned to specific automation
 - Pharmacy Leadership & Staff must be willing to adopt to new processes and workflow to have the greatest impact on throughput and efficiency
 - Offline inventory better served NOT in a carousel (allows for quicker access, especially during downtimes)



PROmanager-Rx

- Automate the storage and dispensing of nearly 3,000 oral solid doses daily—approximately 300 different medications.
- Leverage manufacturer unit-dose bar-coded packaging, with its inherent safety features that freed pharmacists from packaging verification and dispensing checks.



PROmanager-Rx

- Optimize medication storage locations across all automated systems.
- Accommodate PROmanager-Rx in a compact space—able to store 12,000 doses in less than 80 square feet—and integrate the system into existing pharmacy workflow.

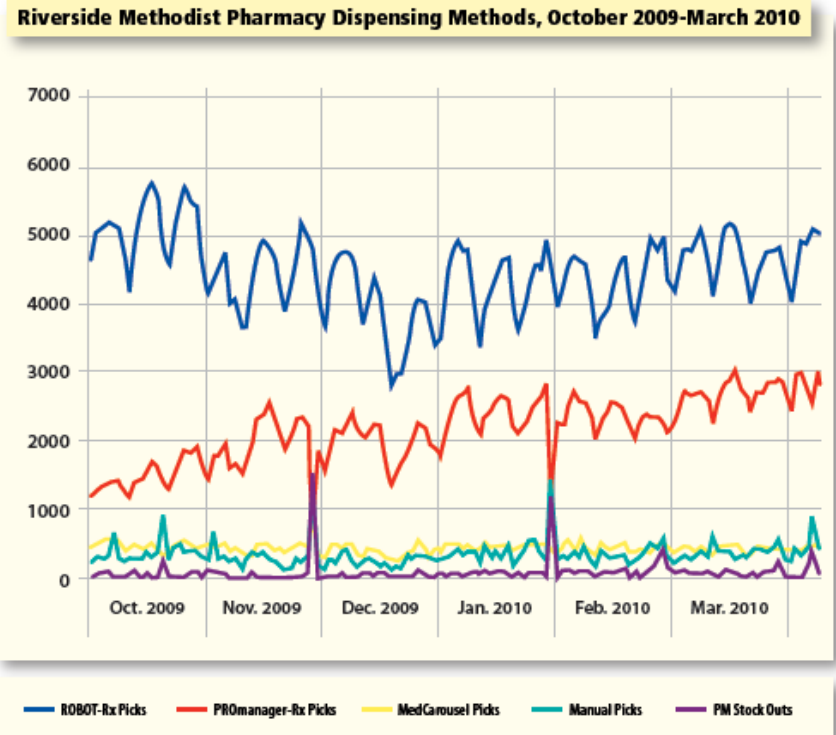


Results

- ▶ Drove down the number of daily manual picks to 250/day.
- ▶ Reduced pharmacist package checking labor by .5 FTE, enabling redeployment to order entry and patient-centric roles.
- ▶ Received a check waiver from Ohio's State Board of Pharmacy to conduct a 10% QA check in lieu of a full pharmacist check for medications dispensed by PROmanager-Rx.

Results

- Achieved 95%+ scan rate for all medications leaving pharmacy.
- Limited dependence on outsourced medication packaging services.
- Achieved 95% rate for charge capture on medication administration.



Next Steps/Challenges

- ▶ Increase medications within inventory with NDC and Expiration Date within barcode – August –September 2010
- ▶ Further integrate PROmanager-Rx and ROBOT-Rx into ONE “dispensing pathway” - TBD

Advice to Non BCMA Pharmacies

- ▶ Establish process for barcoding medications
 - Manufacturer
 - In-House Packaging/Outsourcing
- ▶ Establish barcode symbology hospital standards
 - Highly recommend a system that accommodate both linear AND non-linear solutions
 - Non-linear (Data Matrix, Composite, RSS, etc) will allow for LOT/EXP utilization
 - Account for both software AND hardware
- ▶ Don't underestimate database management
 - Utilize systems based on current infrasture where possible to eliminate duplication of resources



Questions

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