

Closing the Black Hole of Pharmacy with Medication Tracking



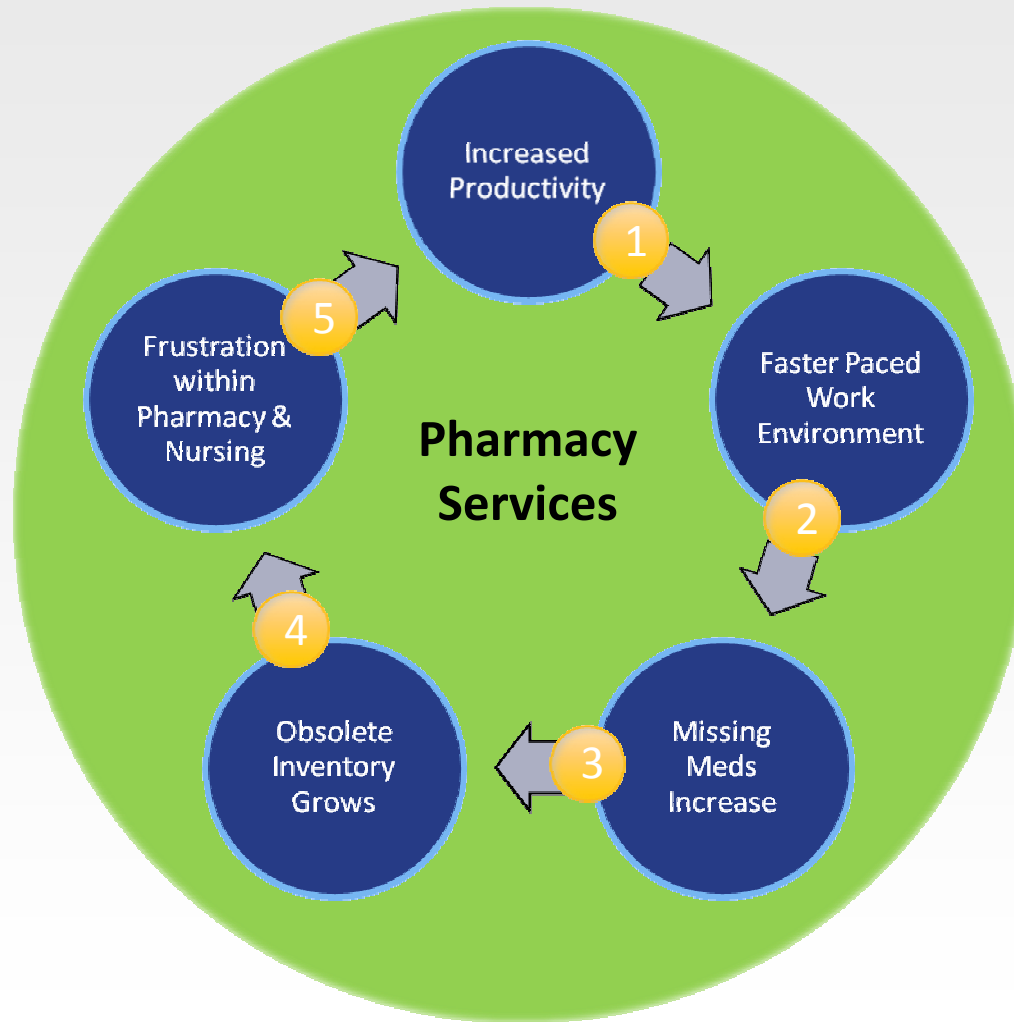
Charles McCluskey, Pharm.D.
Director of Pharmacy and Pulmonary Services
Riverside Methodist Hospital
Columbus, OH

About Riverside Methodist Hospital

- 1058 Licensed Bed, Tertiary Care Facility
 - Staffed @ 859 Beds
 - All Services except transplant/burn
- Pharmacy Services – Service Model
 - Hybrid distribution – highly automated
 - Decentralized Pharmacists
 - 6 million doses dispensed annually
 - Average 5500 new orders/day
 - Pharmacists/Technician Ratio = 1:1.4



The Common Pharmacy Challenge



The writing was on the wall...

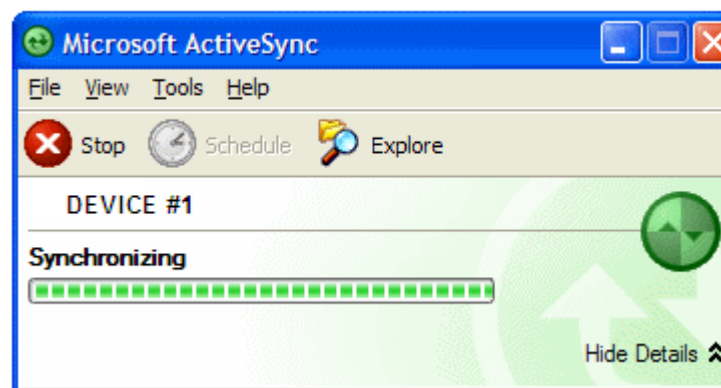
- Nursing Phone Calls
 - >400 calls received daily from nursing
- Missing Medication Requests
 - 150 – 175 Requests Daily
- Obsolete Inventory
 - In excess of \$250,000 annually
- Staff Frustration
 - Negative phone conversations leading to tension

Evolution to Current State

- Round #1 (Pre-2002)
 - Medication TurnAround Time Studies
- Round #2(2002-2003 w/Microsoft Access DB)
 - Medication TurnAround Tracking
- Round #3 (2005 w/3rd Party)
 - Tracking and Reporting – Not Real Time
- ... looking for something new



Patient Name: John Doe
Medication: Metoprolol
Start Time: 10/1/02 17:32
Delivered Time: 10/1/02 17:32
h: _____



The Requirements (based upon our experience)

- The process to capture information must be seamless
 - No jumping through “hoops”
- The data must be real-time
 - Serving us ... means data when we need it
- The software must be web-based
 - No extra resources to update/maintain PCs
- Reporting Capability can grow with us
- A “dashboard” to drive the throughput of work



*Building a better mouse-trap ... one that
SERVES us!*

Hospital Administration & ROI

- Current Waste:
 - Obsolete Inventory = \$250K/year
 - Lost Pharmacy & Nursing Productivity
 - Less than optimal patient service
- Proposed ROI Analysis Metrics
 - Obsolete Inventory Reductions
 - Improved Patient Service Levels (Medication TAT)



Target Saving @ \$75,000 annually

Making the Leap

- Pharmacy Team Support and Buy-In
 - Journey towards a workable “FedEx” solution on year 4
- Hospital Administration
 - Support for Funding
 - Potential Contractual Barriers



- Untapped Market, could healthcare keep pace with technology
- Availability of internal IT resources to support project

The Decision – Partner with MedBoard™

- Sought a partner with a proven record in Web Application Design and Implementation
- Handheld application development and wireless sync had proven a challenge in the past – seek expert help
- We saw MedBoard™ as a “communication tool” so it needed to be powerful enough to work with other pharmacy software applications in the market
- IT Resources were consumed with BCMA and additional software installs
- Other pharmacies could help the growth of the application



The Outcome ... MedBoard™ was Created

- We have migrated through 3 versions of MedBoard™ to our current state
 - Below is the MedBoard™ “Dashboard”

MEDBOARD Logout
Nov 07, 2009 16:21
You are logged in as: [User Name]

Main Page Search Scan Barcodes Administration My Account

Select View: default Select Nursing Unit/Group: All 17 records

Cat	Priority	Patient	Room and Bed	Nursing Unit	Drug	Location	Status	Timer	Delivered at	Order	Cancel
	Routine	Bret Kimple	63501-1	1S	ALBUMIN 25%	1S	Returned	0		009246650	✕
	Now	Marcel Uppelschoten	64201-1	1H	SODIUM BICARB 8.4%	1H	Cancelled	0		009246750	✕
	Now	Marianne Baldetti	6104-01	6T	PROMETHAZINE 25 MG TAB	Pharmacy	Order checked by	2		18696572	✕
	Now	Vito Sardella	82701-1	7T	SODIUM BICARB 8.4%	Pharmacy	Being Prepared	4		009246744	✕
	Routine	Randy Shilling	5264-01	5N	ONDANSETRON 2 MG/ML INJ	Pharmacy	Awaiting RPh Cher	4		18696564	✕
	Routine	Nathaniel Freese	53901-1	5N	CEFTRIAZONE in DILUENT	5N	Delivered at Destin	5		009246765	✕
	Stat	Stefan Kolata	83801-1	5N	ACETAZOLAMIDE SOD	Pharmacy	Awaiting RPh Cher	6		009246706	✕
	Stat	Lester Robbins	5264-01	5N	DIPHENHYDRAMINE 50 MG/ML INJ	Pharmacy	Checked/Awaiting	6		18696566	✕
	Now	Jed Leonard	64101-1	7T	CISATRACURIUM	7T	Cancelled	7		009246397	✕
	Stat	Kit Wells	54201-1	5N	HEPARIN	5N	Delivered at Destin	7		009240417	✕
	Routine	Graham Hood	54201-1	1H	EPOETIN ALFA (PROCRIT)	Pharmacy	Delivery in Proces	7		009246657	✕
	Now	Kirk Dornton	74401-1	1H	LOPERAMIDE	Pharmacy	Order checked by	7		009228217	✕
	Stat	Thomas Hurre	63501-1	1S	DEXMEDETOMINE HCL	1S	Returned	7		009246747	✕

■ = Overdue
 ■ = Approaching Overdue
 ■ = In Progress
 ■ = Delivered, Cancelled, Returned

MedKeeper Copyright 2007-2009

How MedBoard™ Works

- HL7 Message Interface is an option
- PC & Handheld software



- Barcode Scans
- Wireless Data Transmission
- Real-Time Communication

MedBoard™ – Riverside Model (CURRENT STATE)

- Focused tracking of selected IV Admixtures, STAT medications and high cost medications
- Software is NOT interfaced ... all information is provided through Pharmacy Information System generated 2-D barcodes
- Large LCD TVs serve as status boards to inform staff of current performance and throughput within Clean Room, Communications Desk & Order Processing
- Use of Motorola M70 handheld scanners (serves as the scanner AND cell phone for the delivery team)
- Tethered Scanners are used within central pharmacy for tracking

MedBoard™ – A Closer Look

- Orderview Screen “aka Dashboard”
 - High level overview of the medications being tracked
 - Allows for quick drill-down
 - Can quickly sort/filter results applicable to the end user

MEDBOARD

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MedBoard™ – A Closer Look

- **Dose Information – “aka Where has the dose been?”**
 - Provides a quick detailed snapshot of the specific dose
 - Current location
 - Associates who have “touched” the medication
 - Detailed scans providing information of potential problems

Start Time	2009-11-06 06:09:00
Source:	IV
Time Due:	2009-11-06 12:00:00

[Edit Dose](#)

Current Dose Status

Priority	Patient	Nursing Unit	Drug	Status	Location	Delivered At
Routine		7N	SODIUM BICARBONATE 8.4% S	Delivered at Destination	7Y WEST REFRIG	2009-11-06 10:13:07

History

Time	Priority	Status	Location	Delivered At	User
2009-11-06 09:30:05		Checked/Awaiting Delivery			RLM309
2009-11-06 10:01:49		Delivery in Process			CLR157
2009-11-06 10:13:07		Delivered at Destination	7Y WEST REFRIG		RXT184

MedBoard™ – A Closer Look

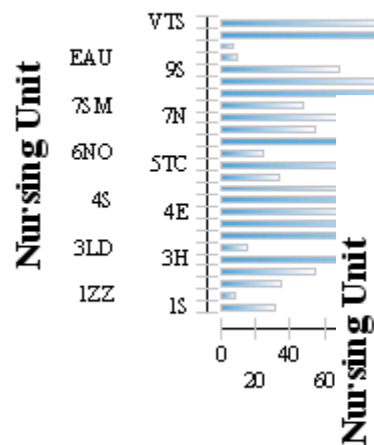
- **Reporting Capabilities**

- Snapshot reports to answer the following questions (and more):
 - What was my turnaround for the period _____?
 - Who is using MedBoard™?
 - What is the turnaround with the detailed view by medication?
 - Do I have differences in turnaround time service within the hospital?
- Pharmacy Leadership Advantage
 - Truly allows for “Managing and Measuring Work”... dynamically
 - Microscope on pharmacy operations throughput and productivity

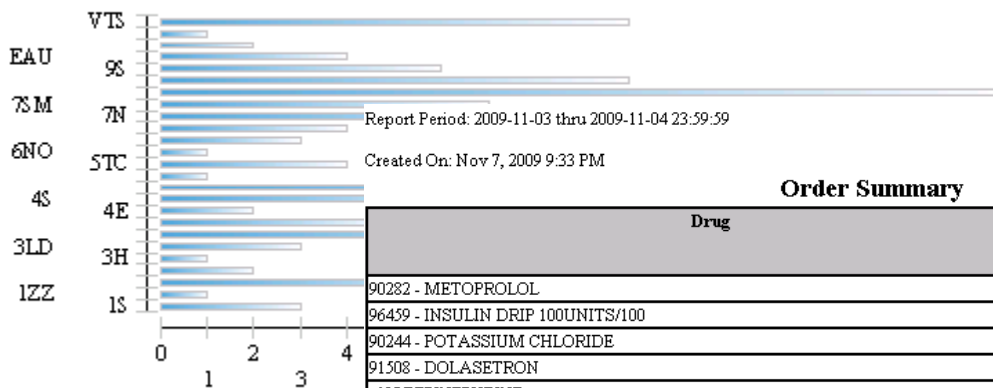


Sample Reports

Total Orders Average Time by Unit



Deliveries by Location



Report Period: 2009-11-03 thru 2009-11-04 23:59:59

Created On: Nov 7, 2009 9:33 PM

Order Summary

Drug	# of Orders	# of Scans	Avg Delivery Time (minutes)
90282 - METOPROLOL	21	39	117
96459 - INSULIN DRIP 100UNITS/100	15	15	1
90244 - POTASSIUM CHLORIDE	12	26	55
91508 - DOLASETRON	11	15	27
- NOREPINEPHRINE	10	15	28
90248 - CALCIUM CHLORIDE 10%	9	11	28
95305 - CEFAZOLIN/D5W	8	14	14
- DILTIAZEM	8	11	21
- NITROPRUSSIDE	8	9	15
90021 - SODIUM CHLORIDE 0.9% IRRI	8	9	15
90388 - VANCOMYCIN	8	13	11
93708 - SODIUM CHLORIDE 0.45%+KCL	6	12	60

MedBoard™ – Behind the Scenes

EDIT USER

Username:	<input type="text" value="cfm103"/>
Password:	<input type="password" value="••••••"/>
First Name:	<input type="text" value="Charles"/>
Last Name:	<input type="text" value="McCluskey"/>
Badge ID:	<input type="text" value="36720"/>
User is active:	<input checked="" type="checkbox"/>
Admin:	<input checked="" type="checkbox"/>
Edit:	<input checked="" type="checkbox"/>
Handheld Scanner:	<input checked="" type="checkbox"/>
Online Scanner:	<input checked="" type="checkbox"/>
View Only:	<input checked="" type="checkbox"/>
Generic User:	<input type="checkbox"/>
Password will be expired:	<input type="checkbox"/>

Full Complement of Features to Control:

1. Administrative Rights
2. Handheld Scanner Access
3. Generic User Accounts
4. Password Expiration

Measuring the Impact of MedBoard™

- Medication TurnAround Time
 - Unable to Compare to Pre-MedBoard™
 - Today, hitting STAT & Routine TAT targets ~ 80% of the time
- Obsolete Inventory
 - 32% Reduction in Waste
 - FY10 Projected Savings = \$90,000
- Medication Safety Review
 - ~\$12,000 Med Safety Pharmacist Time
- Staff Frustration
 - “The Success Story”
 - \$50,000 Gained Productivity

Individually the results are good, collectively they are GREAT!



Financially the pieces of the puzzle pay for a tracking solution

Projected Saving > \$150,000 annually

Riverside's Next Step

- More extensive nursing access to MedBoard™
 - Direct access to medication process and delivery information by nursing
 - Metric: Reduction in Pharmacy phone calls
- Rollout of MedBoard™ to all Pharmacy Satellites
 - Delay has been due to hardware reviews and selection



- Hiring of additional delivery personnel
 - The MedBoard™ data has allowed Pharmacy Leadership to pilot a new delivery program... Why? Because we have clear data to measure the impact of those resources.

Success Factors for Implementing Solution

- Requires DIRECT and FOCUSED Pharmacy Leadership
- Frontline staff leadership, the “informal leaders”
- Many are technologically challenged... so be prepared to teach
- Hardware
 - Recommend Motorola M70 – better wireless & cell phone
 - Recommend Code Corporation 2500 Bluetooth scanners
- Install large screen dashboard – AFTER implementation
- HL7 Interface OR PIS 2D Barcodes



Questions?

Main Pharmacy – Communications Desk



42" LCD MedBoard™ Dashboard