John McBride

Associate Director, IT Systems
Clinical Assistant Professor

University of Illinois
Medical Center

The speaker has no conflict to disclose.

Meaningful Use

and

Hospital Pharmacy

ARRA

American Recovery and Reinvestment Act (2009)

A. Have heard of this act
B. Have not heard of this act

ARRA

$787 Billion

HITECH

Health Information Technology for Economic and Clinical Health

A. Have heard of this

B. Have not heard of this

HITECH

$53.7 Billion

Meaningful Use

Final ruling
July 13, 2010
864 pages

$35 Billion

http://healthit.hhs.gov

U.S. Department of Health & Human Services

https://www.cms.gov/apps/media/press/factsheet.asp?Counter=3787&intNumPerP

Fact sheets of FAQ
For Meaningful Use

Acronyms Definitions:

ARRA	American Recovery and Reinvestment Act (2009)
AAC	Average Allowable Cost (of certified EHR technology)
AIU	Adopt, Implement, Upgrade (certified EHR technology)
CAH	Critical Access Hospital
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CCN	CMS Certification Number
CFR	Code of Federal Regulations
CHIP	Children's Health Insurance Program
CHIPRA	Children's Health Insurance Program Reauthorization Act of 2009
CCHIT	Certification Commission for Health Information Technology
CMS	Centers for Medicare & Medicaid Services

Acronyms Definitions:

CPOE	Computerized Physician Order Entry
CY	Calendar Year
EHR	Electronic Health Record
EP	Eligible Professional
EPO	Exclusive Provider Organization
FACA	Federal Advisory Committee Act
FFP	Federal Financial Participation
FFY	Federal Fiscal Year
FFS	Fee-For-Service
FQHC	Federally Qualified Health Center

Acronyms Definitions:

FTE	Full-Time Equivalent
FY	Fiscal Year
HEDIS	Healthcare Effectiveness Data and Information Set
HHS	Department of Health and Human Services
HIE	Health Information Exchange
HIT	Health Information Technology
HIPAA	Health Insurance Portability and Accountability Act of 1996
HITECH	Health Information Technology for Economic and Clinical Health
HMO	Health Maintenance Organization
HOS	Health Outcomes Survey
HPSA	Health Professional Shortage Area

Acronyms Definitions:

HRSA	Health Resource and Services Administration
IAPD	Implementation Advance Planning Document
ICR	Information Collection Requirement
IHS	Indian Health Service
IPA	Independent Practice Association
IT	Information Technology
MA	Medicare Advantage
MAC	Medicare Administrative Contractor
MAO	Medicare Advantage Organization
MCO	Managed Care Organization

Acronyms Definitions:

MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information Systems
MSA	Medical Savings Account
NAAC	Net Average Allowable Cost (of certified EHR technology)
NCQA	National Committee for Quality Assurance
NCVHS	National Committee on Vital and Health Statistics
NPI	National Provider Identifier
NPRM	Notice of Proposed Rulemaking
ONC	Office of the National Coordinator for Health Information Technology
PAHP	Prepaid Ambulatory Health Plan

Acronyms Definitions:

PAPD	Planning Advance Planning Document
PFFS	Private Fee-For-Service
PHO	Physician Hospital Organization
PHS	Public Health Service
PHSA	Public Health Service Act
PIHP	Prepaid Inpatient Health Plan
POS	Place of Service
PPO	Preferred Provider Organization
PQRI	Physician Quality Reporting Initiative
PSO	Provider Sponsored Organization

Acronyms Definitions:

RHC	Rural Health Clinic
RHQDAPU	Reporting Hospital Quality Data for Annual Payment Update
RPPO	Regional Preferred Provider Organization
SMHP	State Medicaid Health Information Technology Plan
TIN	Tax Identification Number

EHR

Electronic Health Record

A. Implemented
B. Started to implement
C. On paper

UICMC Time-lines:

11-2009
"Meaningful Use Steering Committee"
formed to meet
monthly composed of the "C" suite; physicians;
and department directors

12-2009
3 year strategic plan of defined projects to meet proposed "stimulus" stage 1 and stage 2

UICMC Time-lines:

5-2010
Meeting with CPOE/EHR vendor and benchmarked with other institutions

6-2010
Committee structure and name change: "Meaningful Use Operations Committee"

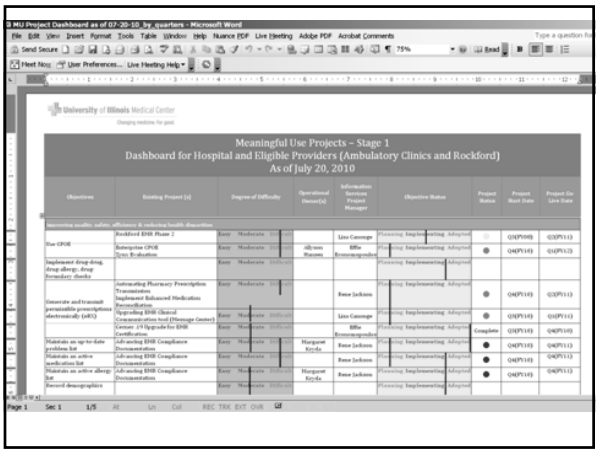
UICMC Time-lines:

7-13-2010
Final Regulations published to define Meaningful Use and set standards for EHR incentives

7-20-2010
Weekly meetings of the Meaningful Use Operations Committee

UICMC Time-lines:

Tracking of Projects:
Objective
Existing Project(s)
Degree of Difficulty
Operational Owner
IS project Manager
Objective Status
(Planning; Implementation; Adopted)
Project Status
Project Start Date
Project Go-Live Date



HITECH:

"seek to improve the health of Americans and performance of their health care system through "meaningful use" of EHR's to achieve 5 health care priorities":

1. **improve the quality, safety, and efficiency of care while reducing disparities**

HITECH:

5 health care priorities continued:

2. **engage patients and families in their care**
3. **promote public and population health**
4. **improve care coordination**
5. **promote the privacy and security of EHR's**

OBJECTIVES are divided into measure groups:

Core = 16

Menu: = 12 (choose 5)

CORE:	Target
1. CPOE for Medication orders	30%
2. Drug-Drug & Drug allergy checking	Enabled for entire EHR
3. Problem List	80% (ED included)
4. E-prescribing (eRx)	40% (ED included)
5. Medication List	80% (ED included)
6. Maintain Allergy List	80% (ED included)

CORE:	Target
7. Record Demographics	50% (ED included)
8. Record Vital Signs	50% (ED included)
9. Record Smoking Status	50% (ED included)
10. Record Quality Measures	attest (Hospital: 15)
11. Clinical Decision Support	attest 1 rule

CORE:	Target
12. Electronic copy of Health Information	50% (ED included)
13. Electronic copy of Discharge instructions	50% (ED included)
14. Clinical summary of each office visit	50% within 3 days
15. Exchange Key Clinical Information	attest 1 test
16. Security and Privacy	attest

CPOE

Computerized Physician Order Entry

A. Have physicians entering orders
B. Have pharmacists entering orders
C. A & B
D. No CPOE

Menu:	Target
1. Drug Formulary Check	attest (check against at least 1)
2. Lab Test Results	40% (ED included)
3. Generate Patient Lists by Specific Condition*	attest (1 report)
4. Identify & Provide Patient Specific Education	10%
5. Medication Reconciliation	50% (ED included)

Menu:	Target
6. Summary of Care Record	50%
7. Electronically Submit Immunization Data*	attest (1 test)
8. Electronically Syndromic Surveillance Data*	attest (1 test)
9. Electronically Submit Reportable Lab Data*	attest (1 test)

Menu:	Target
10. Record Advance Directives	50%
11. Patient Reminders	20%
12. Electronic Access to Health Information	10% (EP 4 days)

*Medicaid can have additional requirements but cannot require additional functionality

*Must be one of the 5 choices

Financial Incentives:
$27.3 billion

$2 million per hospital
+ $ for each discharge
Average $6 million
per year
for a 500 bed hospital

Payment schedule:

2011 – Stage 1 (100%)
2012 – Stage 1 (75%)
2013 – Stage 2 (50%)
2014 – Stage 2 (25%)
2015 – (0%)
Penalty schedule (TBD)

First Payment Year			Payment Year			
	2011	2012	2013	2014	2015	2016
2011	Stage 1 (100%)	Stage 1 (75%)	Stage 2 (50%	Stage 2 (25%	TBD	TBD
2012		Stage 1 (100%)	Stage 1 (75%)	Stage 2 (50%	TBD (25%)	TBD
2013			Stage 1 (100%)	Stage 1 (75%)	TBD (50%	TBD (25%)
2014				Stage 1 (75%)	TBD (50%	TBD (25%)
2015+					TBD (50%	TBD (25%)

CMS

January 2011 begins the registration

CMS 1st payment
May 2011

Must have demonstrated "Meaningful Use" of certified EHR for 90 days

Pre-certified Vendors

Cerner
Eclipsys
Epic
GE Healthcare
McKesson
MediTech
NextGen
Siemens

Take aways:

Read the HITECH Act
Calculate the financial impact
Do a gap analysis
Be apart of the governance
Ensure your vendor is certified
Develop a time-line
Workflow impact
Monitor progress

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McBride – Technology for Tomorrow Pearls: Meaningful Use and Hospital Pharmacy
121-000-10-046-L04-P
121-000-10-045-L04-T

Post Test Questions

1. How many types of objectives are for Meaningful Use?

2. How many core measures are required for Stage 1 of Meaningful Use?

3. How many menu measures are required for Stage 2 of Meaningful Use?

4. One of the priorities for Meaningful Use of EHR's is: "improve the quality, safety, and efficiency of care while reducing disparities." (True / False)

5. ARRA (American Recovery and Reinvestment Act of 2009) dollar value is $787 billion. (True / False)

Why a Clinical Rules Engine?

Michael R. McDaniel, R.Ph., MBA, FASHP
Director of Pharmacy Services
Huntsville Hospital
Huntsville, Alabama

The speaker has no conflict to disclose.

Huntsville Hospital

- 881 Licensed Beds
- Two main buildings – Main Hospital (Adult side) and the Women's and Children's Hospital
- Acute care tertiary community teaching facility
- 21% critical care beds

Department of Pharmacy

- 154 total fte's
  - 8 residents (6 PGY-1 and 2 PGY-2)
  - 18 Clinical Specialists
  - 46 Unit Base Pharmacists
  - 65 Technicians
- Cart-less distribution model – 90 Pyxis mains with 95% first dose dispense rate
- Omnicell PharmacyCentral Carousels in both facilities

Question

- What is a clinical rules engine?
  - A) A set of protocols by which a drug should be used?
  - B) The technical name for the engine in the new Chevrolet Volt
  - C) A set of criteria by which the appropriateness or inappropriateness of a particular situation can be evaluated

What is a “rules” engine

- Simply put, a “rules” engine is a product or process that uses (evaluates) available data against an algorithm (a set of criteria) to identify those sets of data that either meet the specified criteria or does not meet the specified criteria

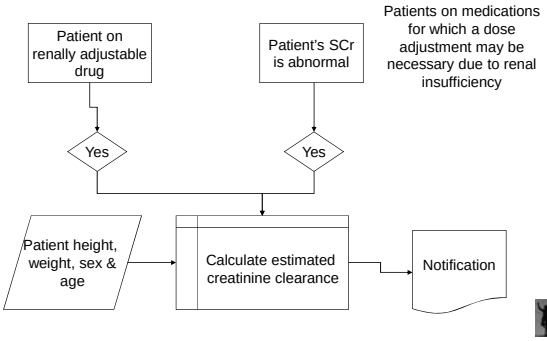
Why a Rules Engine?

- We average over 14,500 active orders daily
- Daily an average of 6,300 new orders are generated
- Over 700 physicians are involved and more than 2,000 nurses
- Over 42,000 discharges, 700 DRG’s and uncountable co-morbidities
- Our formulary encompasses over 3,500 different products
- How else to keep patient medication issues from slipping between the cracks?

Why a Rules Engine

- A rules engine does not get tired
- It never gets bored
- It never misses anything
- It documents EVERYTHING it does
- It offers no opinions
- It is consistent
- It does not forget, and always follows up
- It frees up pharmacist time to focus on the true task of a professional, evaluation and decision making

How does it work?



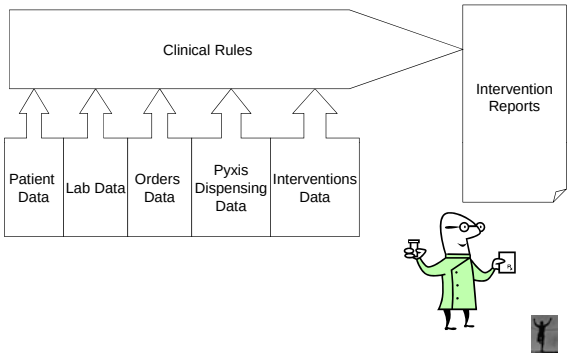
A History Lesson

- And in the beginning
  - Compounding and dispensing
  - 1960's-70's – Beginning of clinical training and practice
  - Paper profiles – Looking for problems
  - Electronic profiles – Looking for problems
  - It was possible to spend more time out of your day looking for clinical issues than dealing with them
  - Who has time for that!

The Evolution of PhRED

- PhRED – Pharmacy Rules Evaluation Database
  - 1.0 - Started out in Dallas as an extract of data from our Cerner Classic system with data fed into a Paradox database
    - IV to PO
    - Duration of Therapy
  - 2.0 – In Tulsa moved to MS Access using data extracted from our PerSE clinical system, included lab data for the first time
    - Same as above
    - Drug Toxicity (Acetaminophen)
    - Drugs given too close in time
    - Renal dose adjustments
  - 3.0 – In Huntsville, using data extracted from our GE Centricity Enterprise system. 20 rules in all.
    - Enhanced to include workload data tracking
    - Included Pyxis Override report

PhRED Data Sources



Time for a Change

- PhRED is homegrown and limited (albeit, pretty powerful too)
- PhRED runs in batch mode – Printing out 500 pages of reports at 7:30am
- Always out of date!
- Hard to get clinical workload accurately documented
- Needed a real time strategy

What to do?

- I was aware of several vendors of clinical rules engines
  - Vigilanz Dynamic Monitoring System – Vigilanz
  - Clinical Xpert - Thomson Reuters
  - MedMined – CareFusion
  - TheraDoc - Hospira
  - Sentri7 – Pharmacy One Source
- We already had several PharmacyOne Source products installed
- Our staff was doing a great job using Quantifi for miscellaneous clinical documentation
- So we evaluated Sentri7 and felt it was a good fit

Current State

Overall Clinical Rules Structure				
GE Centricity Blaze Rules	• GE rules used for concurrent checking of desired circumstances – Presence of INR for new warfarin order – Presence in potassium level WNL for new potassium order – Automatic ordering of labs with orders for certain drugs	PhRED	• Sentri7 used for those items needing a more "real time" approach – Renal alerts – IV to PO – Many of the current PhRED reports • PhRED is reserved for those clinical rules too complex or requiring data not available to the other two rules engines	Sentri7

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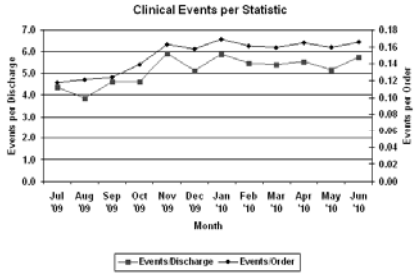

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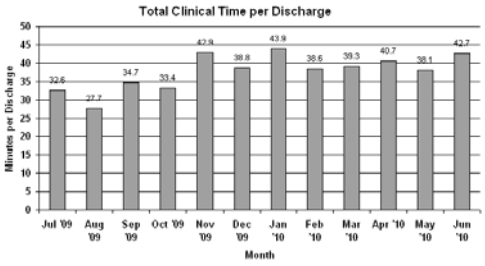

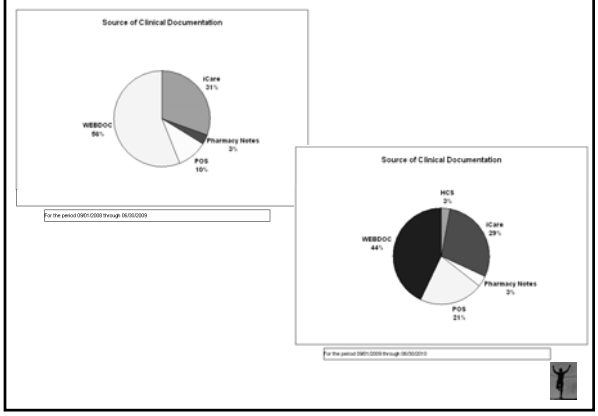

ROI Impact

Changes in Clinical Intervention Patterns

Period	Interventions	Cost Avoidance	Manhours Consumed	Interventions / Manhour
October - February 08	121,990	$ 2,096,075	19,180	6.4
October - June 09	169,174	$ 2,492,430	20,760	8.1
Delta Quanitity	**47,184**	**$ 396,355**	**1,580**	**1.8**
Delta %	**38.7%**	**18.9%**	**8.2%**	**28.1%**
October - June 09	169,174	$ 2,492,430	20,760	8.1
October - June 10	215,179	$ 3,306,353	26,170	8.2
Delta Quantity	**46,005**	**$ 813,923**	**5,410**	**0.1**
Delta %	**27.2%**	**32.7%**	**26.1%**	**0.9%**

- Staff additions have fueled performance increases in the past
- Sentri7 has increase our ability to focus on interventions of value
- Overall performance and documentation of the required effort has increased

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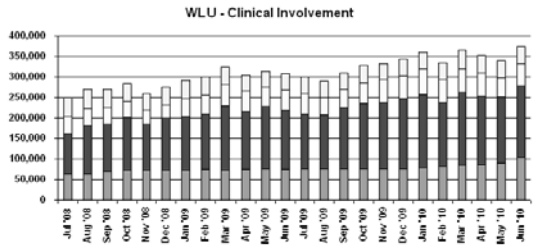

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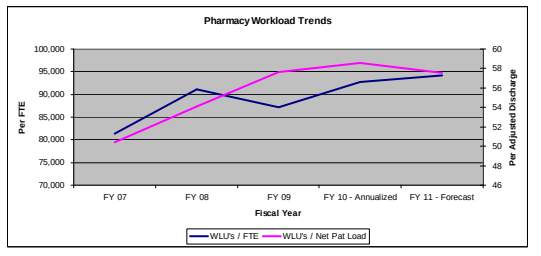

Summary

- Clinical rules are indispensable
- Wisely used they can greatly stretch the abilities of the average pharmacist to make above average “catches” and interventions
- Vastly improves medication issue detection rates
- Helps to document the work done, and the work yet to be done
- No single approach will probably capture all medication process improvement opportunities
- The tools can be used to guide medication process improvement opportunities
- Think OUTSIDE the box!
- Never, ever, leave well enough alone!

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McDaniel - Technology for Tomorrow Pearls: Why a Clinical Rules Engine?
121-000-10-046-L04-P
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Post Test Questions

1. Clinical rules systems are beneficial only for larger, more complex clinical environments.
True or False

2. Your best pharmacists don't really need a clinical rules environment to be more productive.
True or False

3. The manual mining of clinical data is an efficient use of a pharmacist's time.
True or False

4. Clinical rules engines enhance patient safety, but don't actually pay for themselves.
True or False

5. What are some reasons why a pharmacy might find a clinical rules engine application useful:

A. Saves pharmacists time in identifying potentially actionable issues
B. Might identify issues the pharmacist might otherwise fail to catch
C. Enables auto-documentation of the number of opportunities that exist for drug therapy improvement
D. All of the above

6. Which of the following approaches to building a multi-modal rules environment are viable:

A. Use of embedded rules built within your clinical environment (proactive)
B. Use of a third party rule system that instantly identifies criteria matches (reactive)
C. Custom applications that deal with issues that are more complex and require custom coding
D. All of the above

Technology for Tomorrow Pearls: Automation

Presented by:
Richard H. Ricker
Administrative Director-Pharmacy Services
Loyola University Medical Center

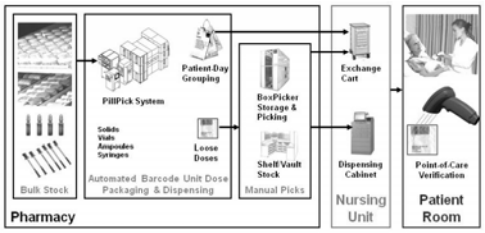
The speaker has no conflict to disclose.

- Today we'll be discussing:
  - Use of automation to process patient specific orders, first doses and cabinet replenishment
  - How automation can increase patient safety
  - A unique medication delivery system that is nursing friendly and eliminates missing meds
  - How automation will enhance throughput and optimize inventory control

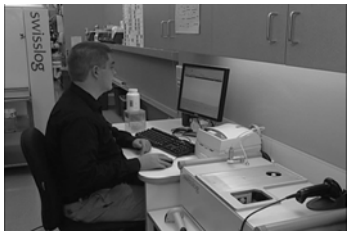
Automation to Process:
Patient Specific Orders, First Doses & Cabinet Replenishment

PillPick Overview

•Simultaneously packages , picks and dispenses unit doses for distribution to carts, dispensing cabinets, etc.



- Process
  - Orders are sent from HIS system to PillPick Manager
    - System fulfills patient specific orders and first doses simultaneously
      - Medications distributed on PickRing to patient floors or to cabinets
        - » PickRings patient or cabinet specific
          - » Tracks inventory, reduces missing meds



Preparing Pillboxes

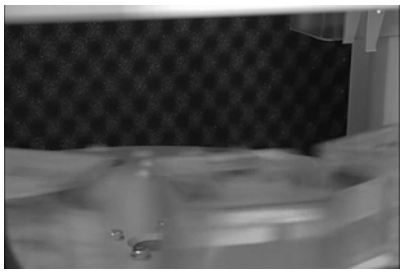
Tech scans barcode of original bulk container
- •Enters quantity
- •Verifies in PillPick Manager
- •Label is printed and applied to Pillbox
  - •Sealed shut

How Automation Increases Patient Safety

Loading

Reduces picking errors

- No human touches from bulk to administration



Loading

Barcodes all unit doses

- Scan for bedside verification

PickRing
- Holds patient specific meds for 24 hour period
- Scan for bedside verification

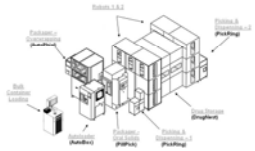
Unique/Nurses Friendly Delivery System

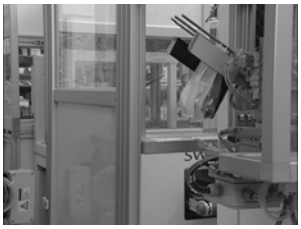
PickRing

- Holds all patient specific meds for 24 hour period
  - No Mix-up in administration
  - Provides information on when and what order patient med is to be administered
  - Barcoded for bedside verification
- Administration
  - Verify patient information via BCMA
  - Cut package off of ring
- Unused medications stay on ring for easy return to pharmacy stock

Enhancing Throughput & Optimizing Inventory Control with Automation

- PillPick Multitasks
  - Built-in redundancy
    - More tasks at the same time
  - Reduction in labor
  - More time for staff to spend on clinical tasks
  - Less time spent by pharmacists checking



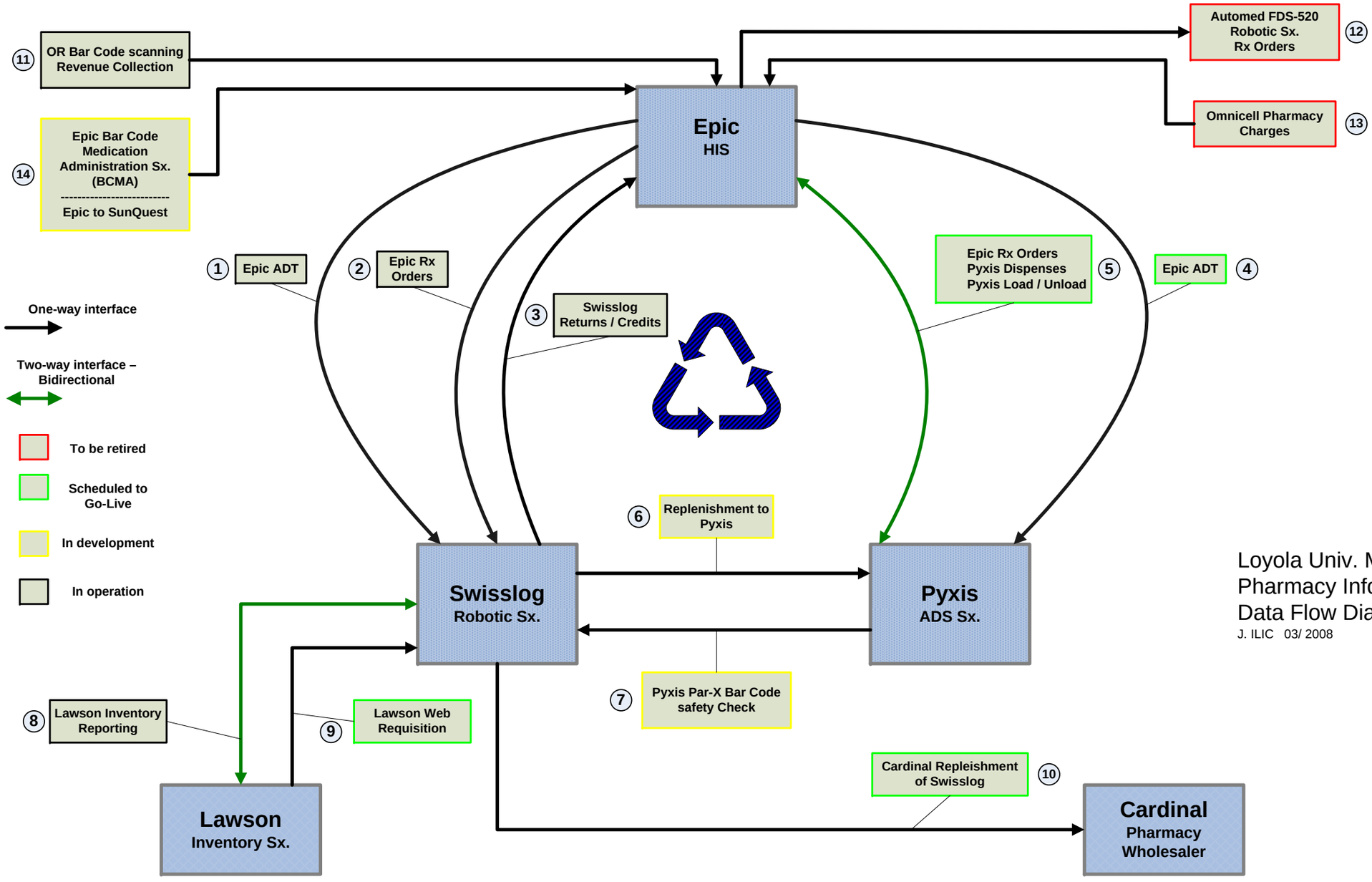


- Fully Automated
  - Fewer steps
  - No human touches between bulk and PickRing
    - More time for other tasks
    - Faster rate of packaging, picking and dispensing

- PickRing
  - Keeps meds together
    - Reduction in missing meds
    - Verify lot number for recall, expiration, etc.
    - Easy return process

- Automated Returns
  - No need to check returns
    - Barcode checked and restocked automatically
    - Checks for expired lot numbers, recalls, etc.
    - Reduction in labor

Q&A



Loyola Univ. Med. Ctr.
Pharmacy Information System
Data Flow Diagram

J. ILIC 03/ 2008

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Ricker - Technology for Tomorrow Pearls
121-000-10-046-L04-P
121-000-10-046-L04-T

Post-Test Questions

1. As presented, the robotic system can provide all of the following except:

   a. packages tablets/capsules, vials, and syringes
   b. provides 2-D barcode for bedside point of care (BPOC)
   c. design-specific packaging for automated dispensing cabinets (ADC)
   d. robotic delivered medication to nursing units

2. Which of the following are reasons that the presented robotic system enhances patient safety:

   a. provides 2-D barcodes on all packaged medication for bedside scanning
   b. “NDC Association” process eliminates packaging errors
   c. patient-specific medication orders sent directly to robotic system from hospital information system
   d. all of the above