

Implementing Electronic Medication Reconciliation

in a Large Teaching Paediatric Hospital:

Approach, Workflow Design,
Lessons Learned, Adoption
and Compliance Evaluation



SickKids

THE HOSPITAL FOR
SICK CHILDREN

Carol Chan, Clinical Pharmacist

Bohdan Sadovy, Project Manager

Carol Warren, Senior Manager, Informatics Education

About SickKids



SickKids[®]

Care  Research Learning



UNIVERSITY OF
TORONTO



15,337

Inpatient
Admissions



6,668

Inpatient
Surgeries



65,705

Emergency
Visits



221,579

Clinic
Visits

SickKids[®]



681

Physicians



1,248

Residents/
Fellows



3,225

Healthcare
Professionals

SickKids[®]

Medication Reconciliation (MedRec) and the Existing CPOE



How Does MedRec Fit In?

CPOE
1993



**Admission
MedRec**
2008

**Transfer
MedRec**
2011

The Goal



The Goal

eMedRec

- Outpatient

- Order Recd

eMedRec

- Prescription



Outpatient Medication Review

Outpatient Medication Review

Chan, Roo 2532883 / I3400155 3y10m (2009-Nov-11) Male
8C Playbed-A Unreviewed Allergies Hoffman, Harold
Measured Weight: 5 kg 2013-Jul-14 PM Age: weeks

Options Panel

Home Medications Review Status for Reconciliation: **Complete** Med Status: **Patient Currently Takes Medications**
Preferred Pharmacy: **<None>**

Some patient medication may not be shown. Showing: All Meds to be reviewed for this visit.
Display Format: **Review Active Medications (Modified)** Group/Sort by: **Therapeutic Class and Drug** Items: 3

adrenal cortical steroids (hormones/hormone modifiers) (1 item)

predniSONE ✓ ? [] []
✓ 10 milligram(s) orally 2 times a day Info Source: Family Member
Comments: 5 mg/mL suspension Last Dose Taken: 10/3/2013 a.m.
Follow up Reason: []

anxiolytics, sedatives, and hypnotics (central nervous system agents) (1 item)

clonazepam ✓ ? [] []
✓ 0.2 milligram(s) orally 3 times a day Info Source: Family Member
Comments: 0.1 mg/mL suspension Last Dose Taken: 10/3/2013 a.m.
Follow up Reason: []

gastrointestinal agents (1 item)

lansoprazole ✓ ? [] []
✓ 7.5 milligram(s) orally once a day Info Source: Family Member
Comments: 15 mg ODT tablet Last Dose Taken: 10/2/2013 a.m.

Need Help? Save Complete Save Incomplete Cancel

Order Reconciliation Manager

Order Reconciliation Manager

Chan, Roo 2532883 / I3400155 3y10m (2009-Nov-11) Male
 8C Playbed-A Unreviewed Allergies Hoffman, Harold
 Measured Weight: 5 kg 2013-Jul-14 PM Age: weeks

Reconcile Orders View/Maintain History

Group /Sort By Format Layout Reconciliation Types Enter Order Entry Order Entry Requested By Enter Home Medications Outpatient Medication Review Mark All Remaining as Held on Admission More Actions

Reconciliation Type: **Admission Reconciliation** by Chan, Carol; New orders will be in session type of **Standard**

HOME MEDICATIONS (3 of 3 reconciled)	CURRENT ORDERS
adrenal cortical steroids (hormones/hormone modifiers) (1/1 reconciled) predniSONE - 10 milligram(s) orally 2 times a day Last Dose Taken: 10/3/2013 a.m. Info Source: Family Member Comment: predniSONE continued as the inpatient order predniSONE	predniSONE - - 10 mg PO, BID. Start Time: Routine. Pending
anticonvulsants (central nervous system agents) (1/1 reconciled) clonazepam - 0.2 milligram(s) orally 3 times a day Last Dose Taken: 10/3/2013 a.m. Info Source: Family Member Comment: clonazepam continued as the inpatient order cloNAZEepam	cloNAZEepam - - 0.2 mg PO, TID. Start Time: Routine. Pending
cephalosporins (anti-infectives) (no items)	ceFUroxime INJ - - 300 mg IV, Q8H. Start Time: Routine. Pending
proton pump inhibitors (gastrointestinal agents) (1/1 reconciled) lansoprazole - 7.5 milligram(s) orally once a day Last Dose Taken: 10/2/2013 a.m. Info Source: Family Member Comment: lansoprazole provisionally auto reconciled with the existing inpatient order pantoprazole INJ	pantoprazole INJ - - 15 mg IV, Daily. Start Time: Routine. Pending

Need Help? Save as Incomplete Save as Complete Cancel

Prescription Writer

Modify Prescription - Chan, Roo - predniSONE

Add to Favorites Calculate Dose Taper Dose Search Advice Manage Pharmacies Enter Health Problems Check Rx Eligibility Clear

Drug Search Full catalog Quick list Favorites Generic Name: predniSONE

predniSONE

Requested By: Me Other

Instructions: Auto Edit Clear

10 milligram(s) orally once a day x 30 days

Common Instructions: PRN

for anxiety
for constipation
for cough
for difficulty breathing
for discomfort
for fever

Dose: 10 Dosage Units: mg Route: oral Frequency: once a day Days: 30 Refills: 1


Start Date: 2013-Oct-03 Quantity: 0 Dispensed Units:

Show Days in SIG
 Continuous
 Dispense as Written
 Auto-Calculate

Multum Version: 8/2012

Need Help? Done Close

Benefits



All Points of Care




MedRec
Compliance



Consistent
Process



Automatic
Data
Collection



Accurate
Changes



Adverse
Drug
Event

Objectives

Phase 1


6 Weeks

April – June 2014

Phase 2

6 Months

June – Dec 2014

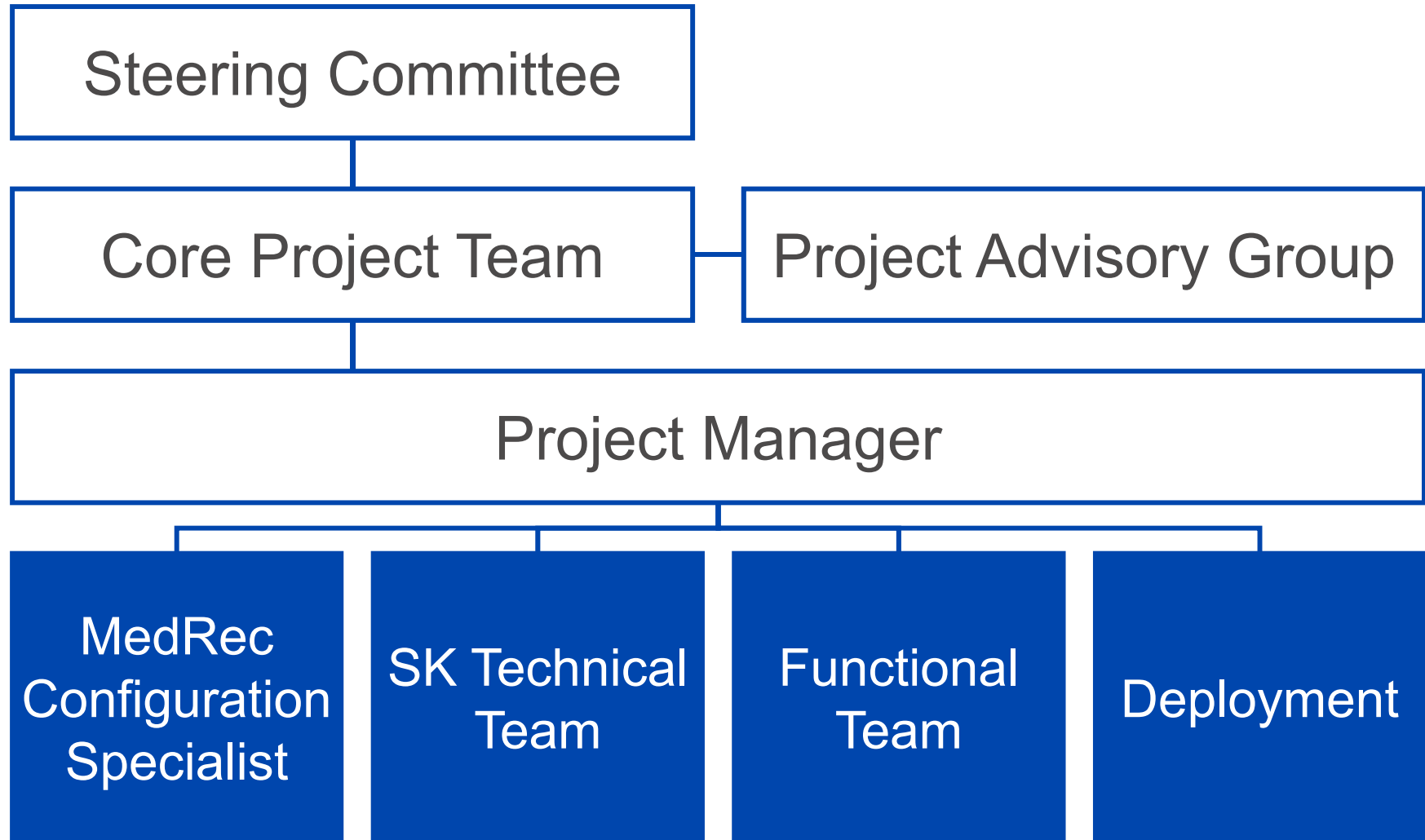
- 
1. Neurology/
Neurosurgery
 2. General Paediatrics
Streamlined Care Unit

All Other Inpatient Areas

Approach



Approach - Planning



Approach - Planning

MedRec
Configuration
Specialist

- Reporting Lead
- App. Support Analyst
- Clinical Application Support
- Support & Network Services
- Technology

SK Technical
Team

- Functional Quality Lead
- Functional Pharmacy Lead
- Informatics Nurse
- Informatics Education
- Project Analyst
- SME's

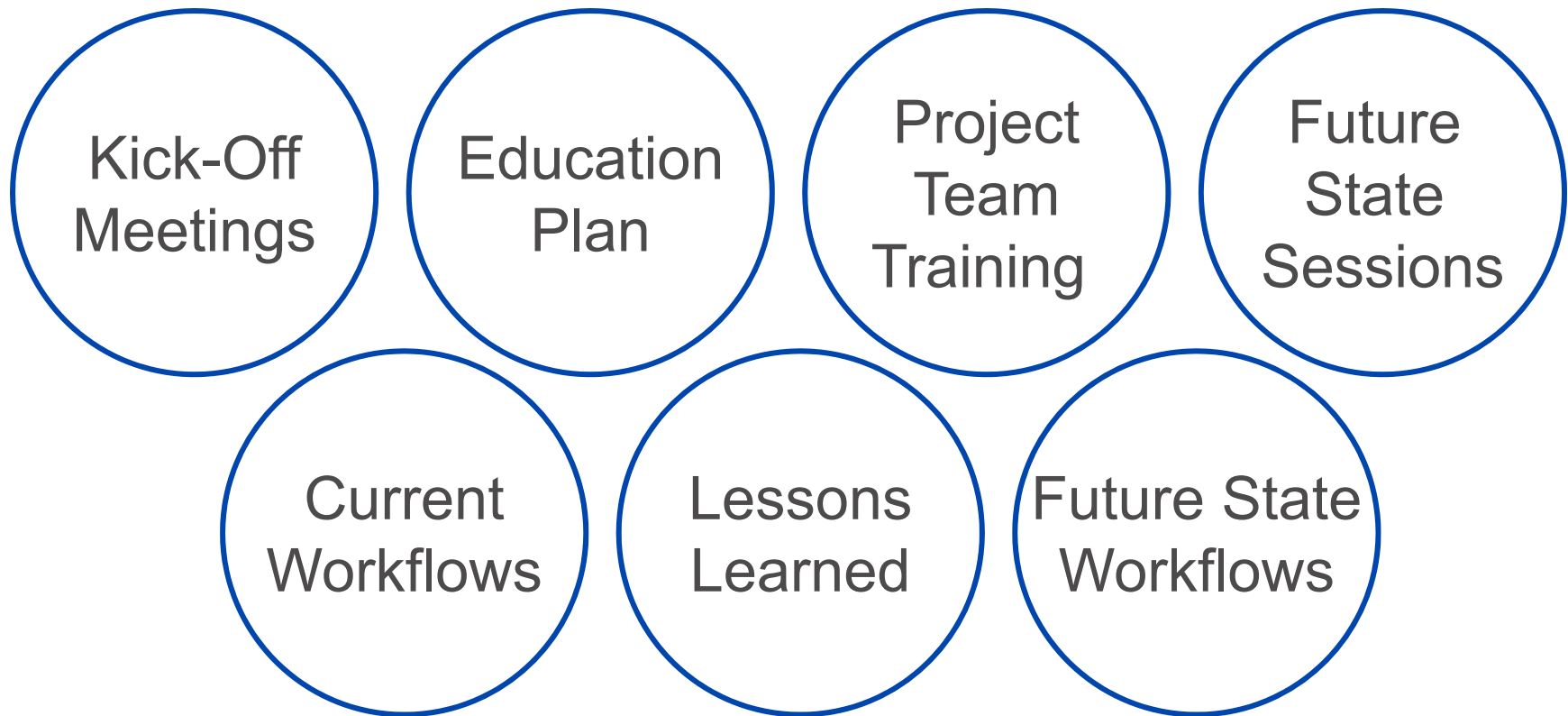
Functional
Team

Pilot Units

- Neurology/Neurosurgery
- Paediatric Medicine/Streamlined Care Unit
- Remaining Inpatient Units

Phase 2
Deployment

Approach - Planning



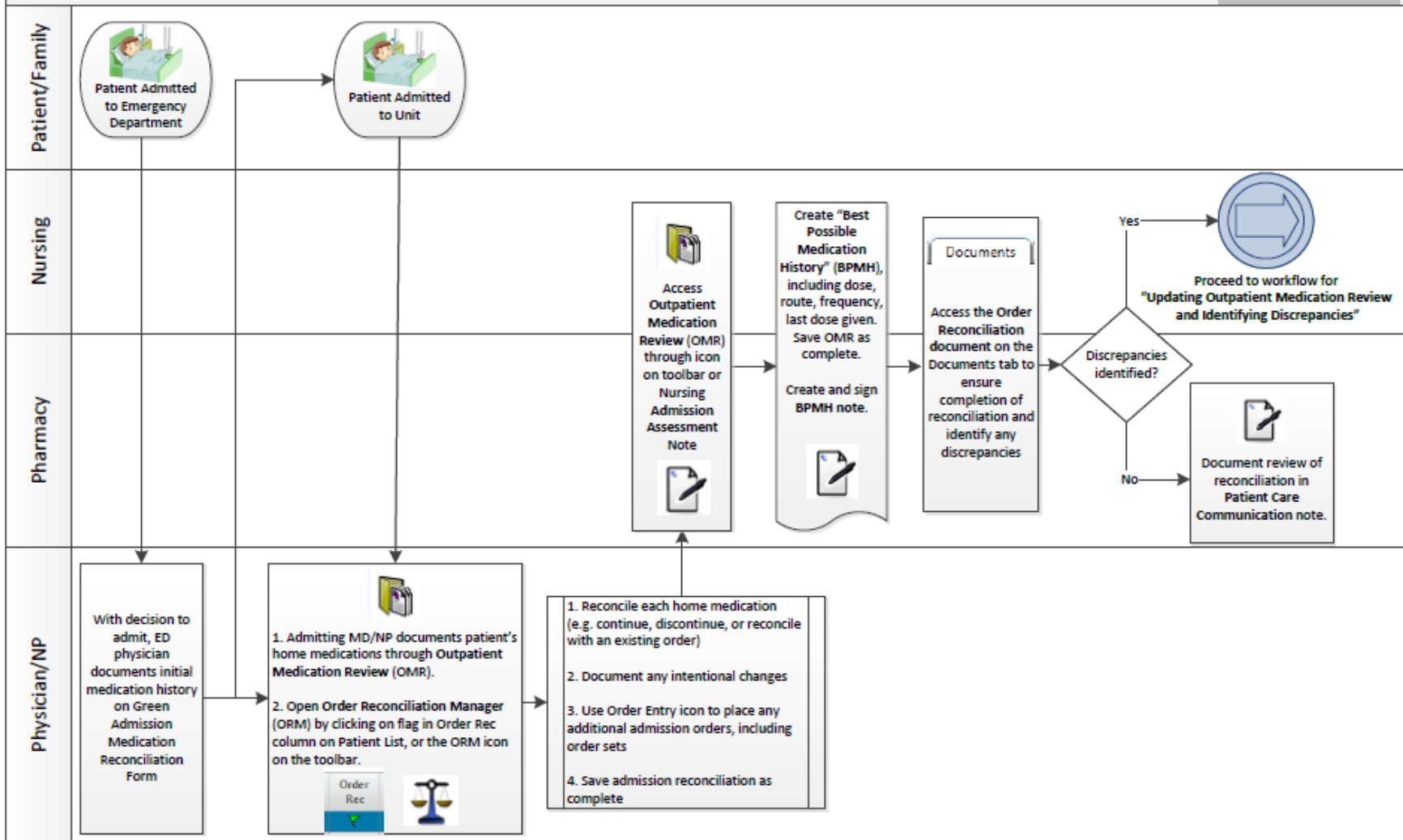
Approach - Planning

3 Sessions

- Review Current/Future Workflows
- Decisions Affect Configuration of New System
- Stakeholders from Inpatient Units and Advisory Group

Example Workflow

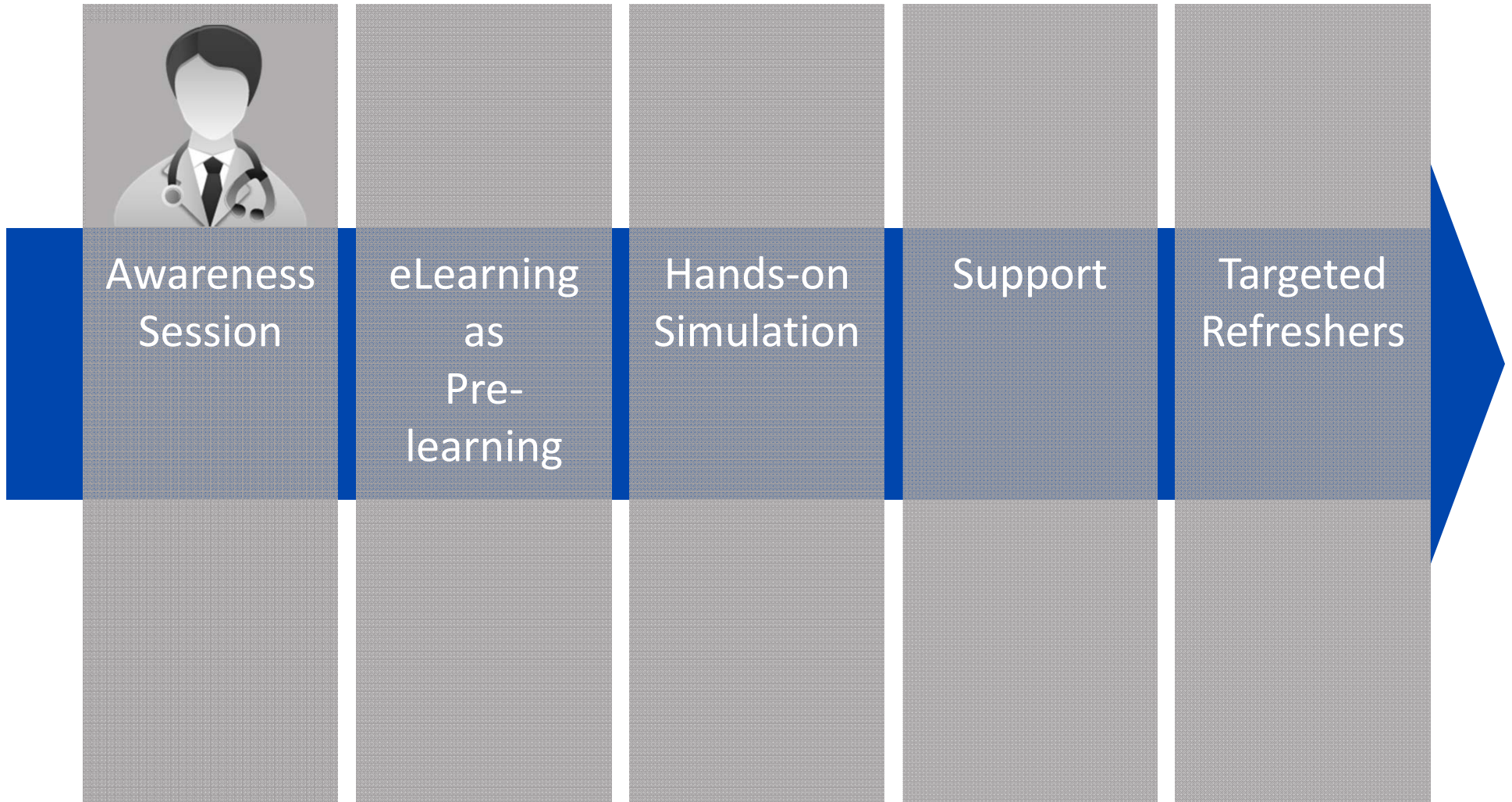
Admission Medication Reconciliation Workflow - Retroactive



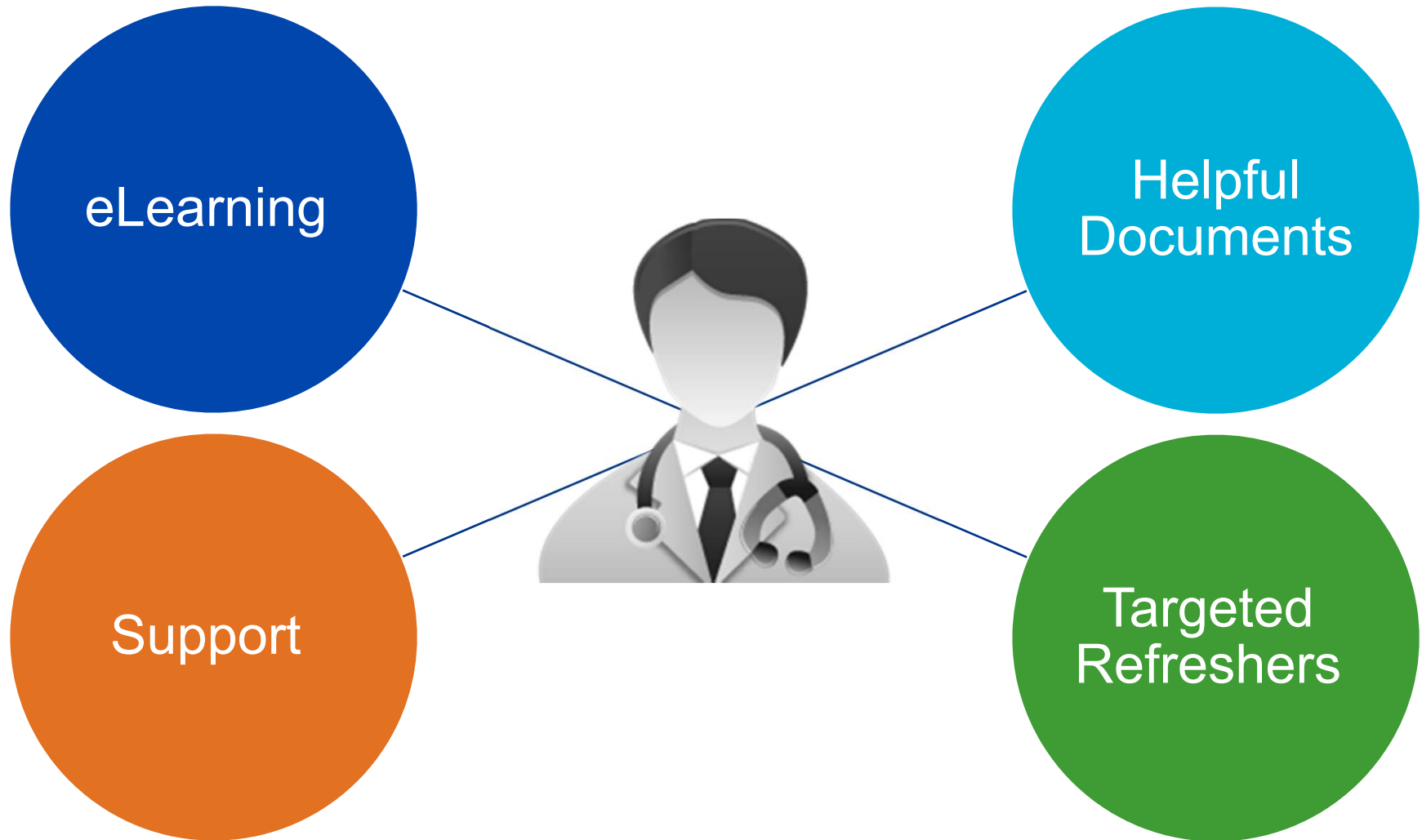
Approach – Workflow and Configuration Validation Sessions

- End User Representatives
MDs, NPs, Pharmacists, RNs, Quality
leaders, Managers
- Separate Sessions with Medical and
Surgical Group
- Exposure to MedRec Module
- Validated Electronic and Hybrid Workflows

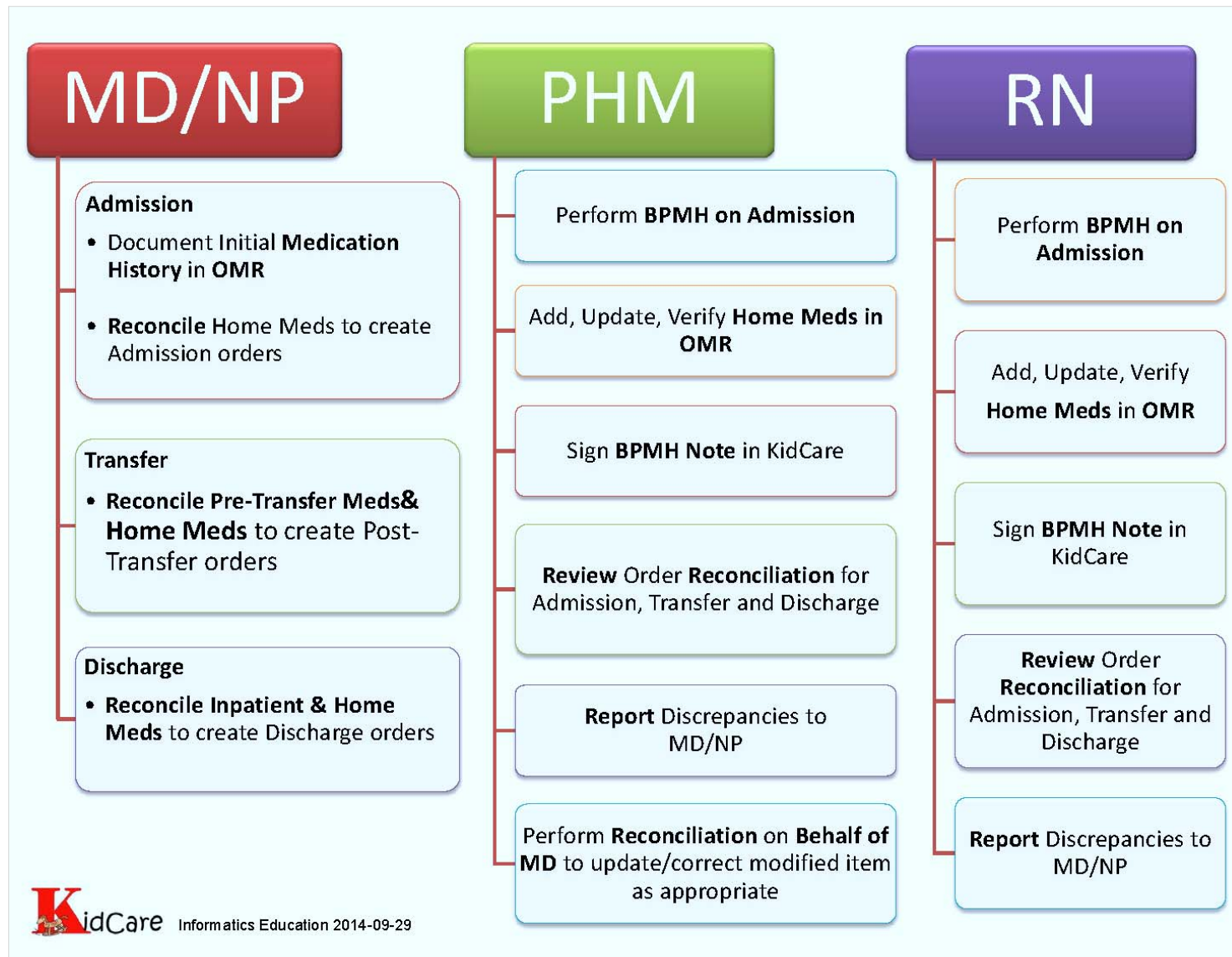
Approach - Education



Approach - Education



Example Reference Workflow



Approach – Awareness and Communication Strategies



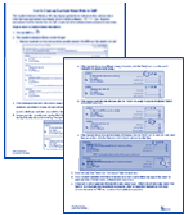
Approach – Change Management



Daily
Huddles



Medical
Rounds



Tip
Sheets



Physician
Champions



Quality
Audits

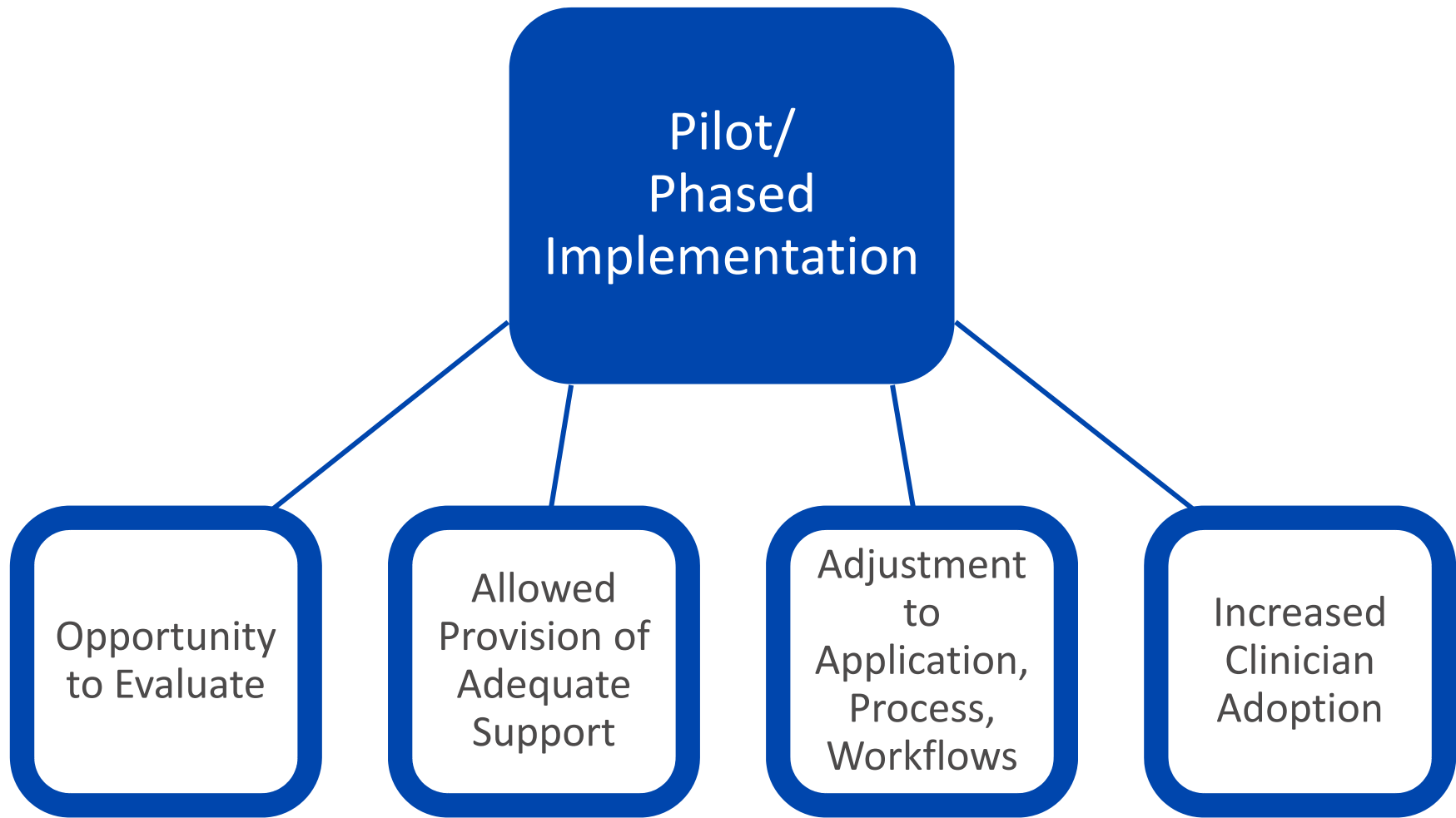


Nursing
Education
Days

Success Factors



Success Factors – Implementation



Success Factors – Education

Compact Timeline – April to December 2014



1178

Total Trained
(306 Classes)



122

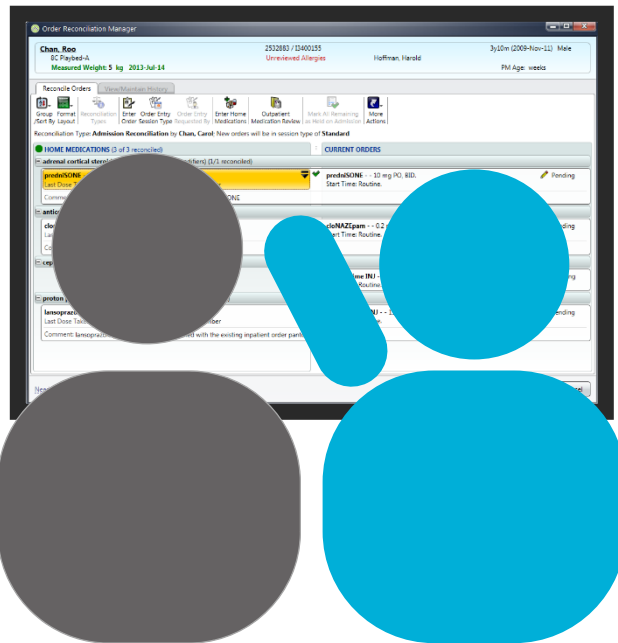
Total Super Users
Trained
(27 Classes)

Success Factors – Education

Pilot/Phased Implementation
Allowed Us to Evaluate and Adjust
Education **Iteratively**

Success Factors – Education

‘Elbow to Elbow’ Coaching



- Ensured Accuracy – Critical for Confidence and Adoption
- Reinforced Processes
- As You Need It Education and Targeted Refreshers

Lessons Learned



Lessons Learned – Feedback Sessions

- Effective Support Model
- Electronic Process Well Received
- Improved Patient Safety
- Straightforward Home/Pre-Admission Medication Entry/Reconciliation Processes
- Accurate Electronic Medication Lists
- Hybrid Workflow and Discharge MedRec Challenging

Pilot End User Feedback

Just wanted to let you know that after a week of using the system many, many times, I have to say, that despite the little issues I'm really starting to enjoy it. There are a lot of benefits to this new system that I'm appreciating.

Thanks for all your work getting us up and going!

- Neurosurgery NP

Cardiology Fellow Super MedRec Elf!



Lessons Learned – Education

- Senior Leadership Support for Sufficient Education and Adoption
- Application Needs to be More Intuitive
- Surgical Services are More Challenging
- Continual Challenge of Building Skilled Users

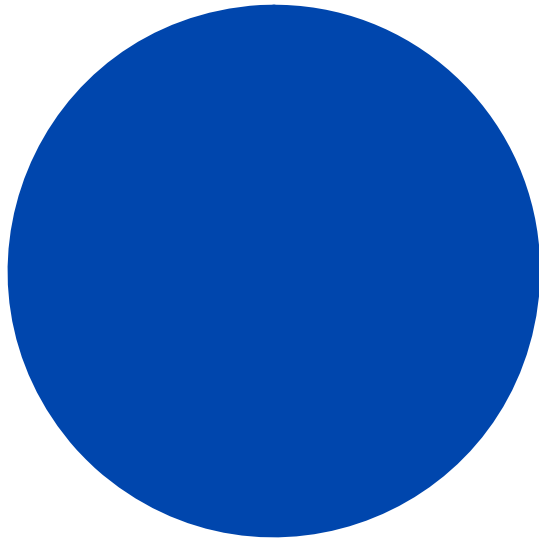
Lessons Learned – Process Change

- Process Change = More Education and Support
- Software Affects Process and Impacts Compliance
- Electronic Process Can Never be Exactly the Same as Paper Process

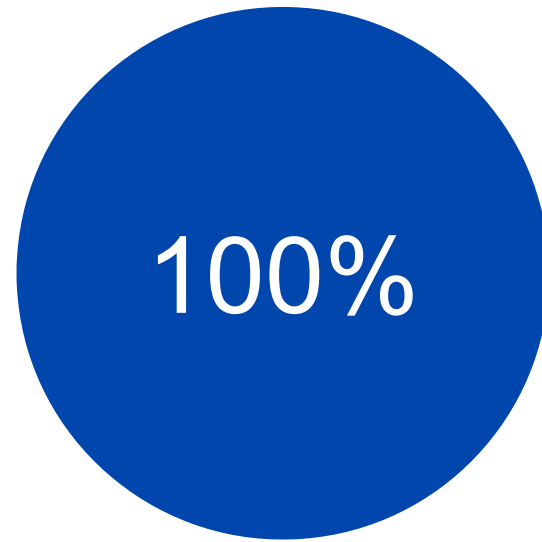
Evaluation



Evaluation – Compliance Reports

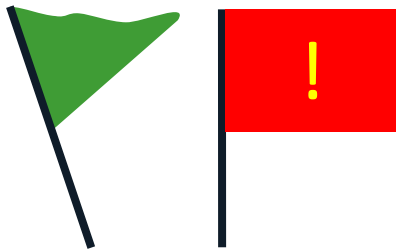


Paper Process
Reports Based on
Sampling



Electronic Process
Reports Based on
100% of Admissions

Evaluation - Compliance



Admission/Transfer Reconciliation Flags

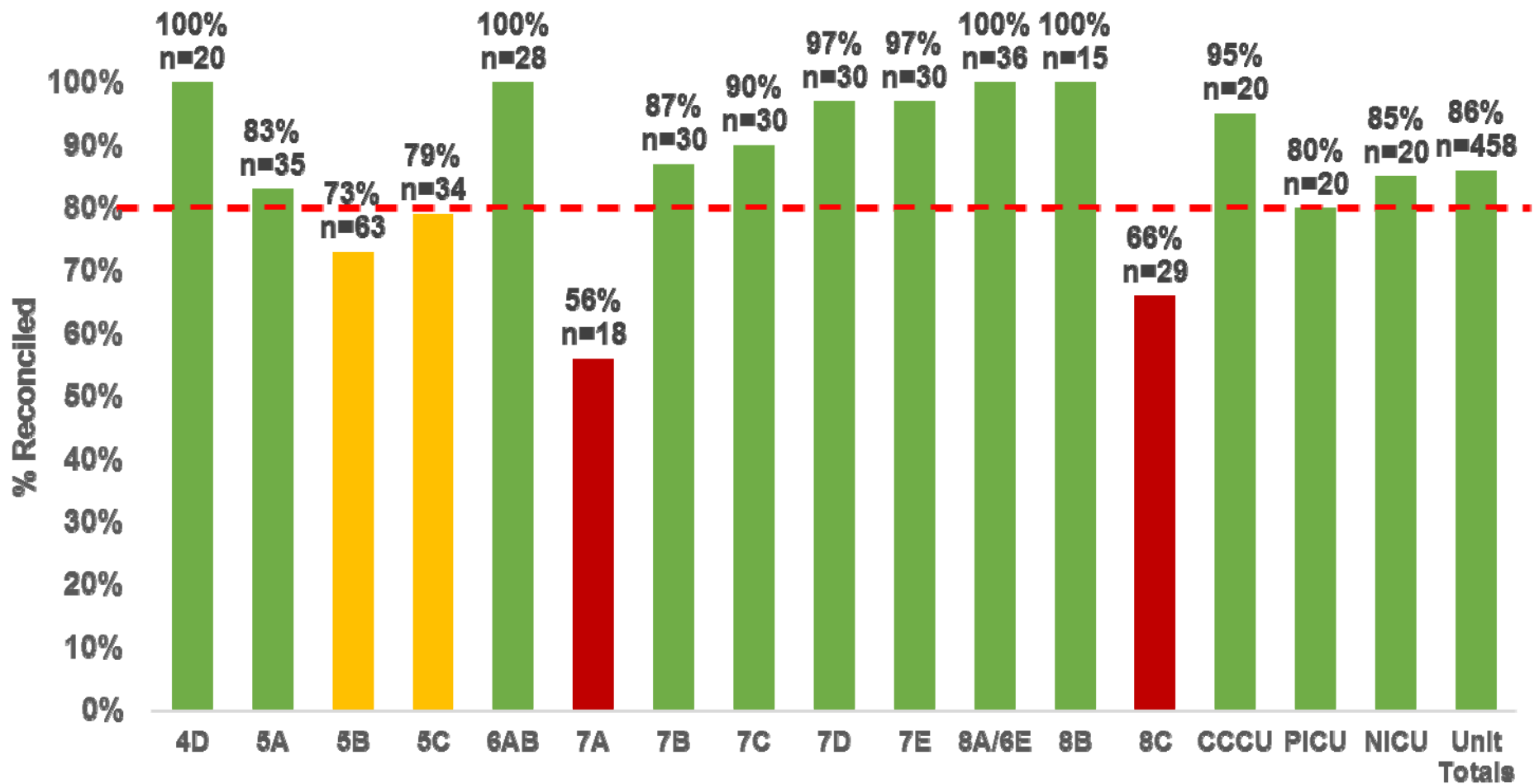
Assigned Location	Patient Name	Order Rec	Ne Doc
4D-4823-A	Testmedrec, Sveta MLMtwo		
4D-4828-A	Testmedrec, Carol Piglet		

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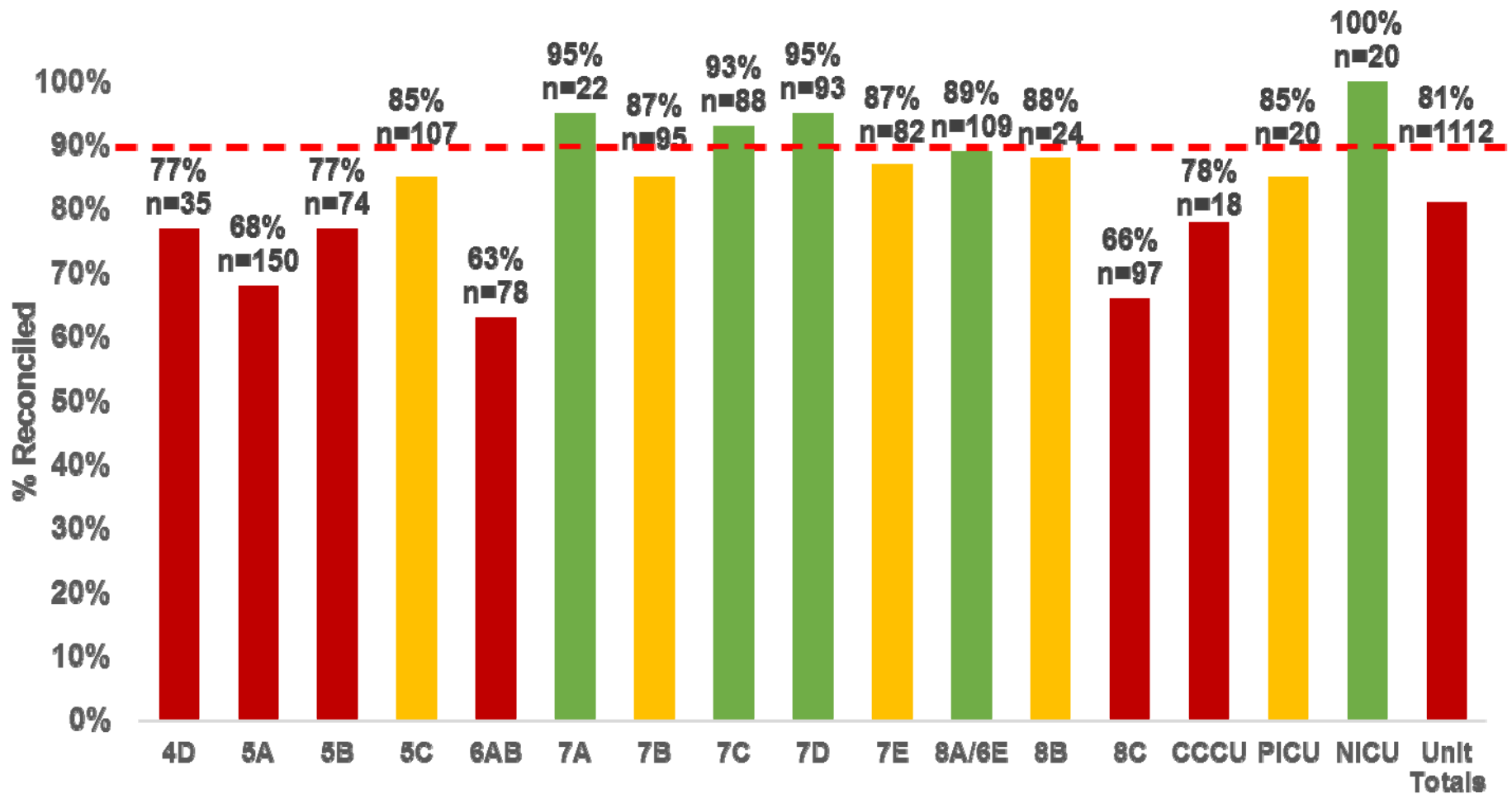
Admission Transfer Discharge Medication Reconciliation Audit Report rpt-mra-01
Unit: 7C

Current Service	MRN	Patient Name	Room	Current Provider	Admit Date	Home Medication History (OMR)	Admission Order Rec	BPMH Note	Nurse who completed Admission Assessment Note	Location From	Service From	Transfer Date	Transfer Order Rec	Discharge Order Rec
General Surgery	2533188	Incredible, Dash	7C-7883	Gerace, Rocco	2014-03-11 14:07	Complete	Outstanding	Complete		8C	Immunology	2014-09-17 11:22	Outstanding	Not Done
Cardiology	2533156	Stefanovic, Test Mpi	7C-7853	Hellmann, Jonathan	2014-02-26 14:36	Complete	Complete	Not Done					New	Complete
GI/Hepatology/Nutrition	2533154	Matharu, Pruby	7C-7853	Mclorie, Gordon	2014-02-26 11:01	Not Done	Outstanding	Not Done					New	Not Done
Allergy	2533143	Matharu, Lilly	7C-7854	Hilliard, Robert	2014-02-24 14:31	Complete	Outstanding	Complete	Chan, Carol				New	Not Done
Diag. Imaging	2438091	Smith, Joe H	7C-7871	Hoffman, Harold	2011-08-26 15:54	Incomplete	Complete	Complete	Chan, Carol				New	Incomplete

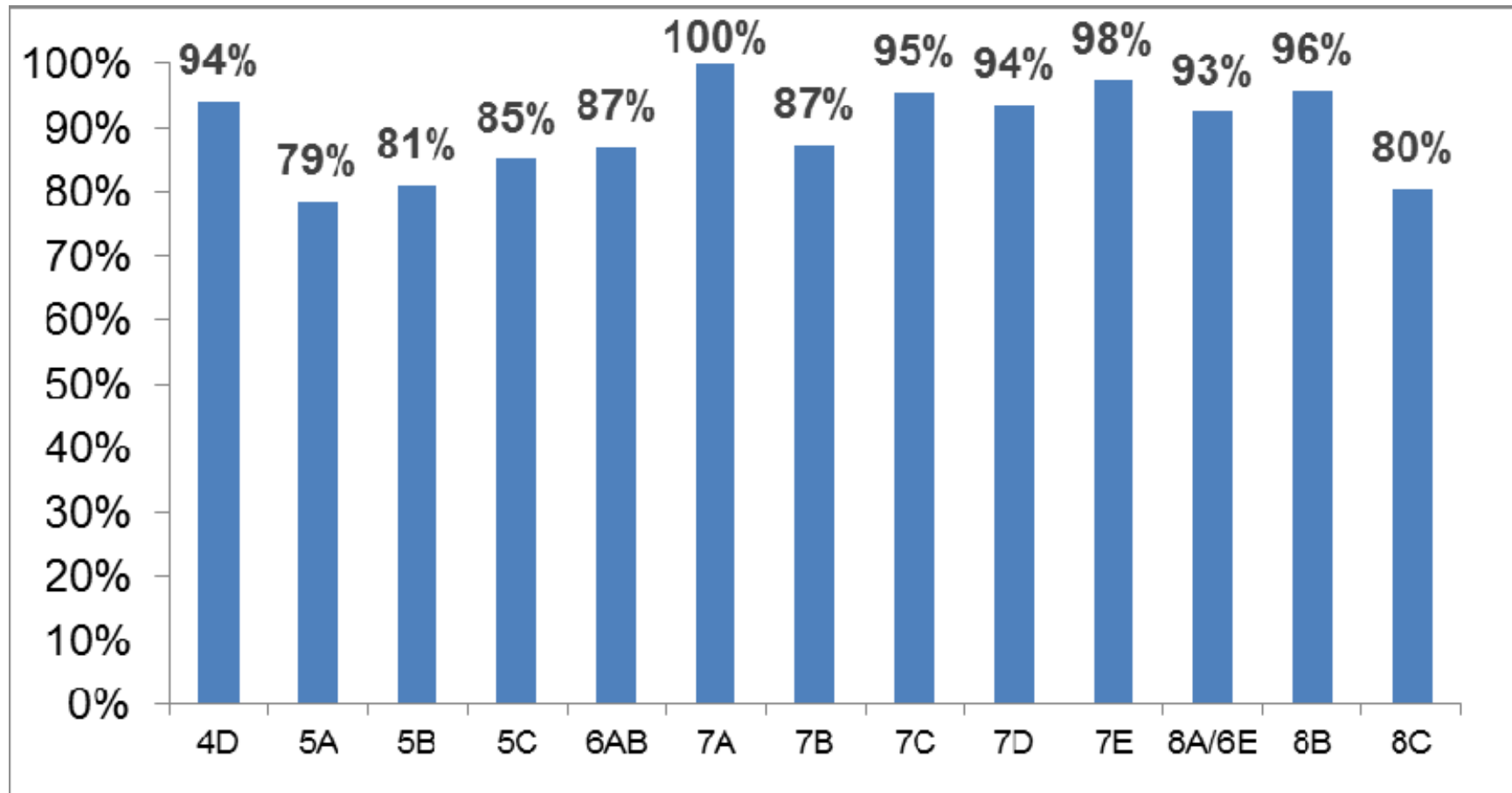
Admission Paper MedRec Compliance December 2013



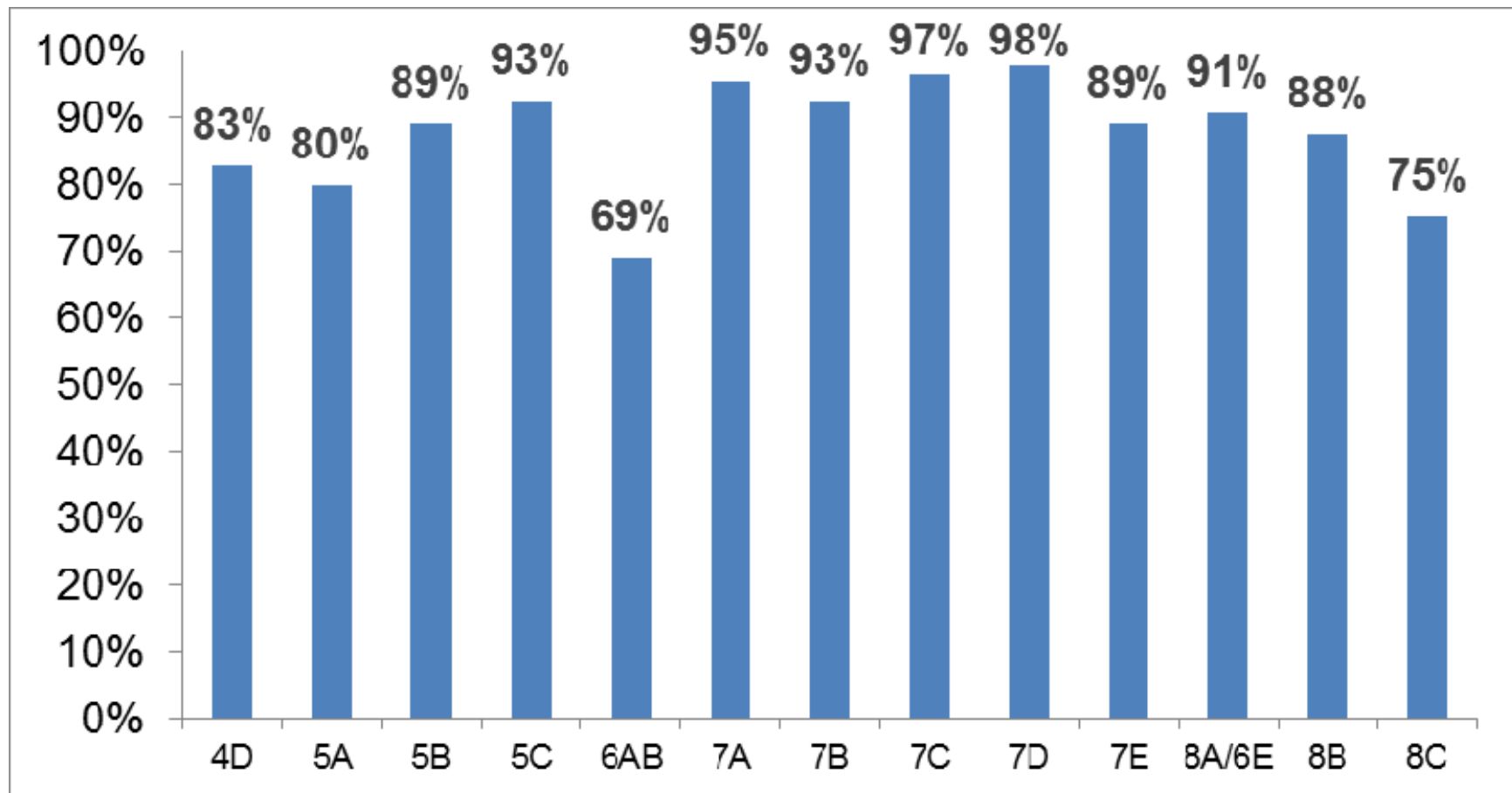
Admission Electronic MedRec Compliance December 2014



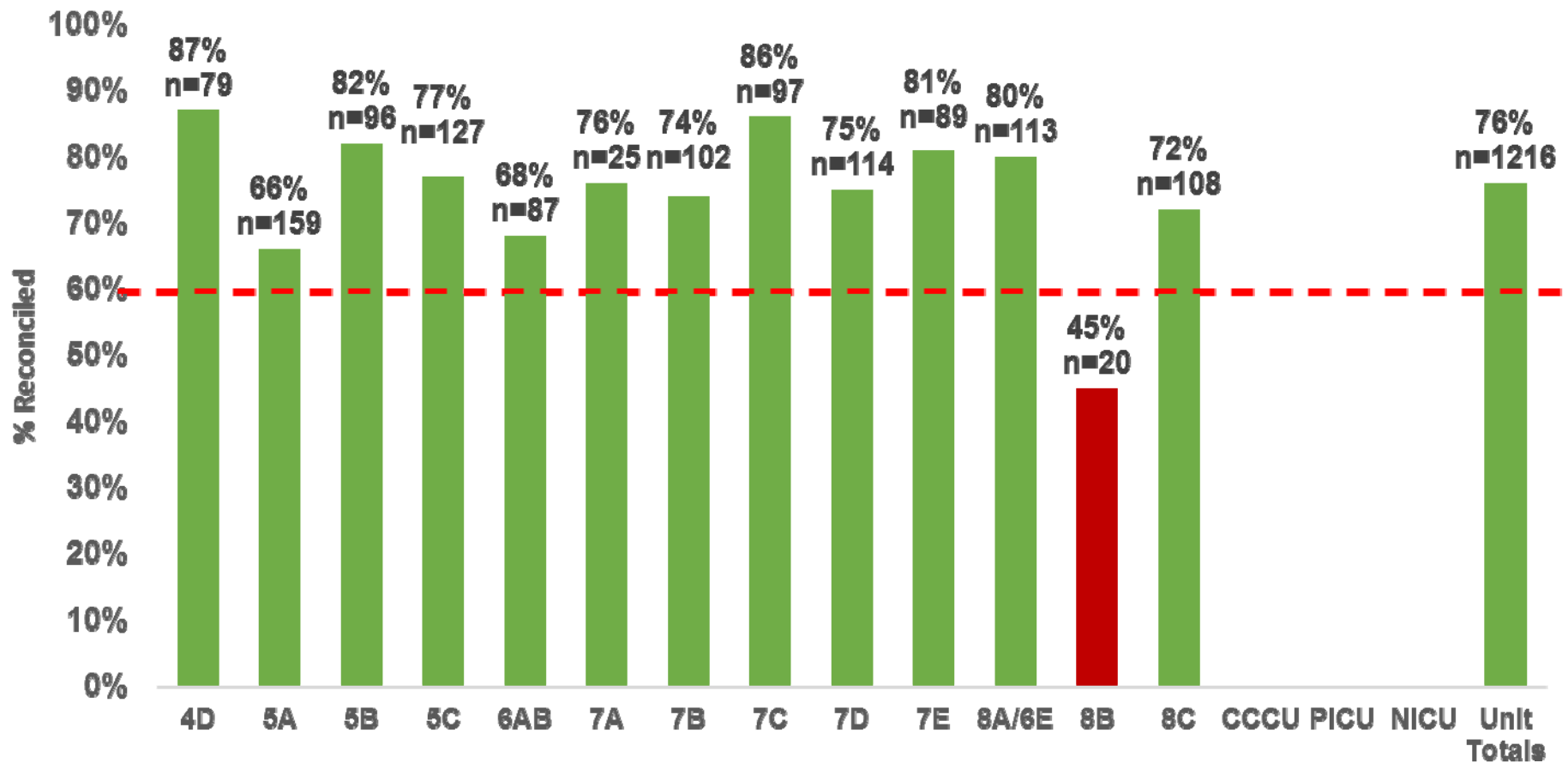
December 2014 Admission Orders Rec Compliance (MD/NP)



December 2014 BPMH Compliance (RN/Phm)



Discharge Medication Reconciliation December 2014



Evaluation – Quality Audits

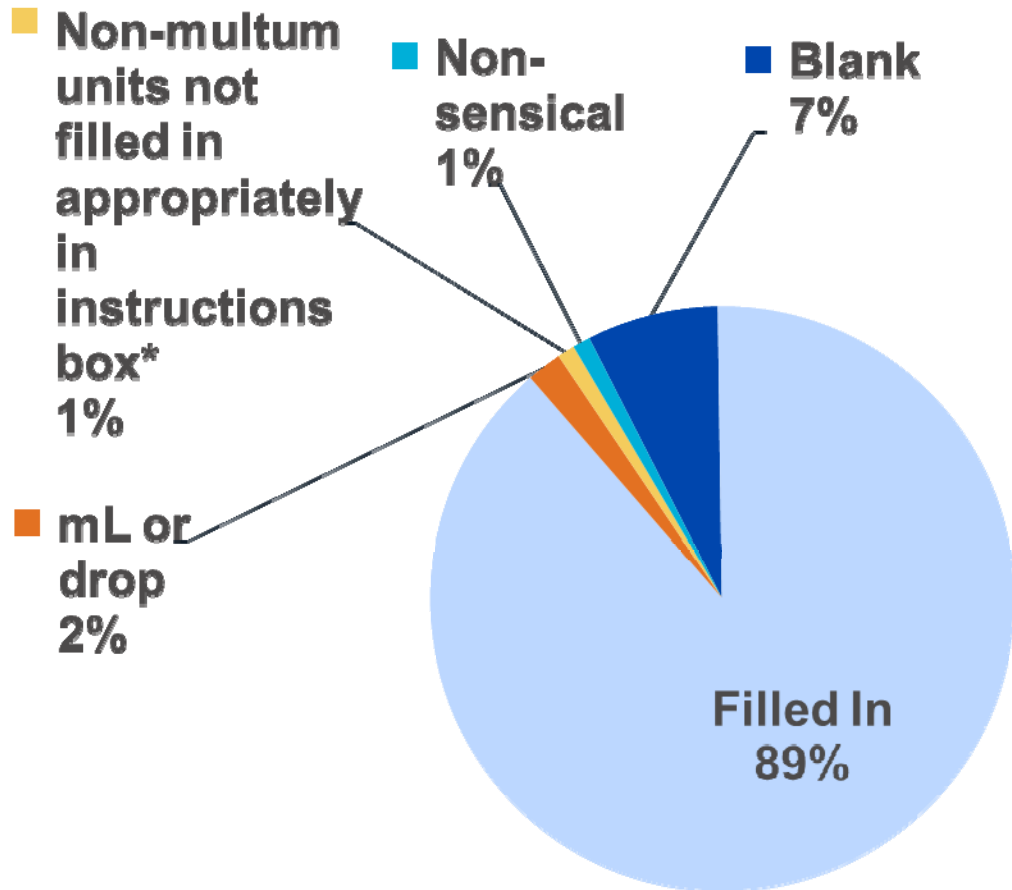


Quality Chart
Audits

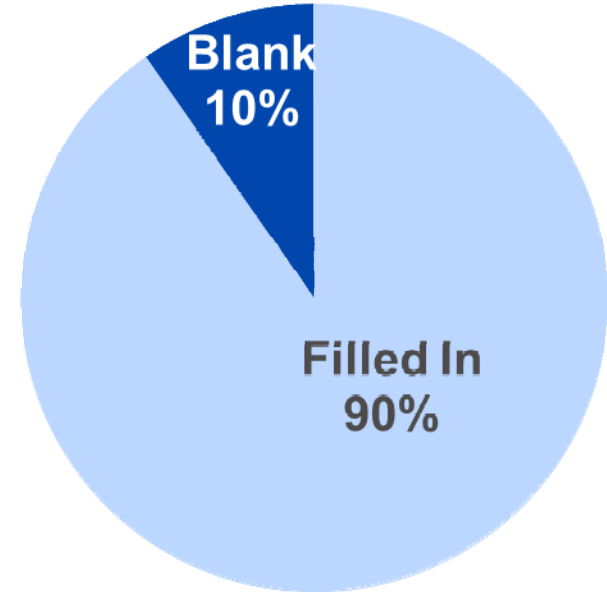
Feedback/
Refreshers



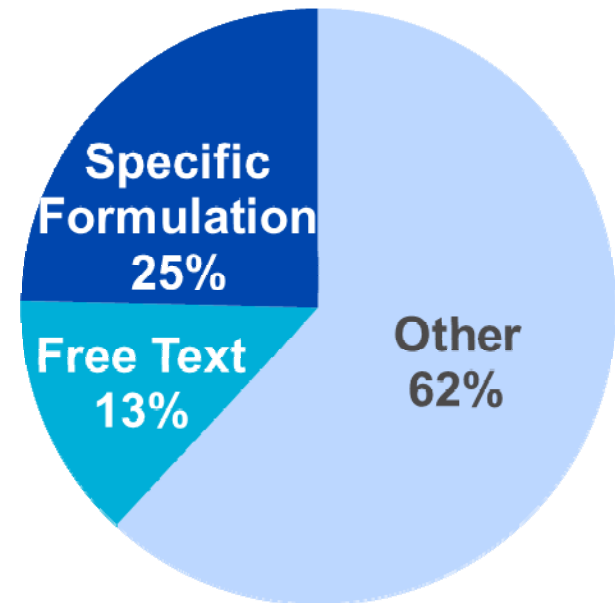
Different Types of Dosage Units Used



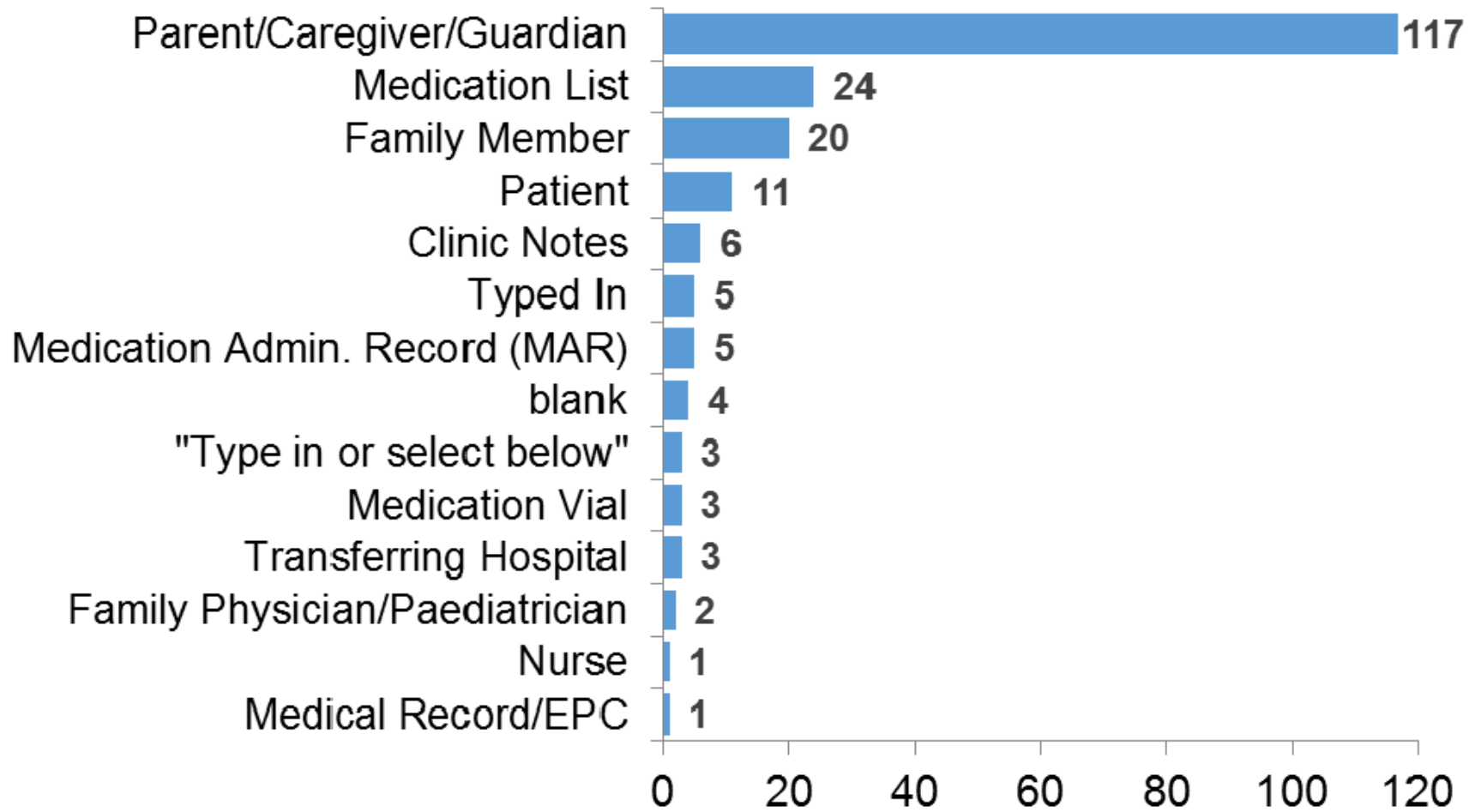
Dose



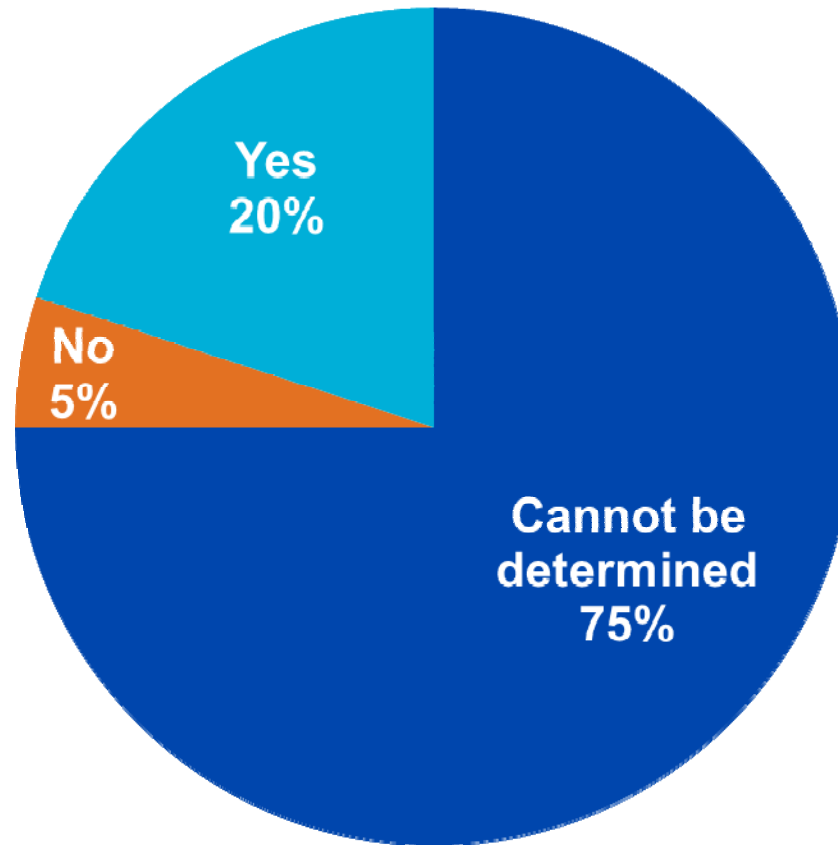
Drug Entry Type



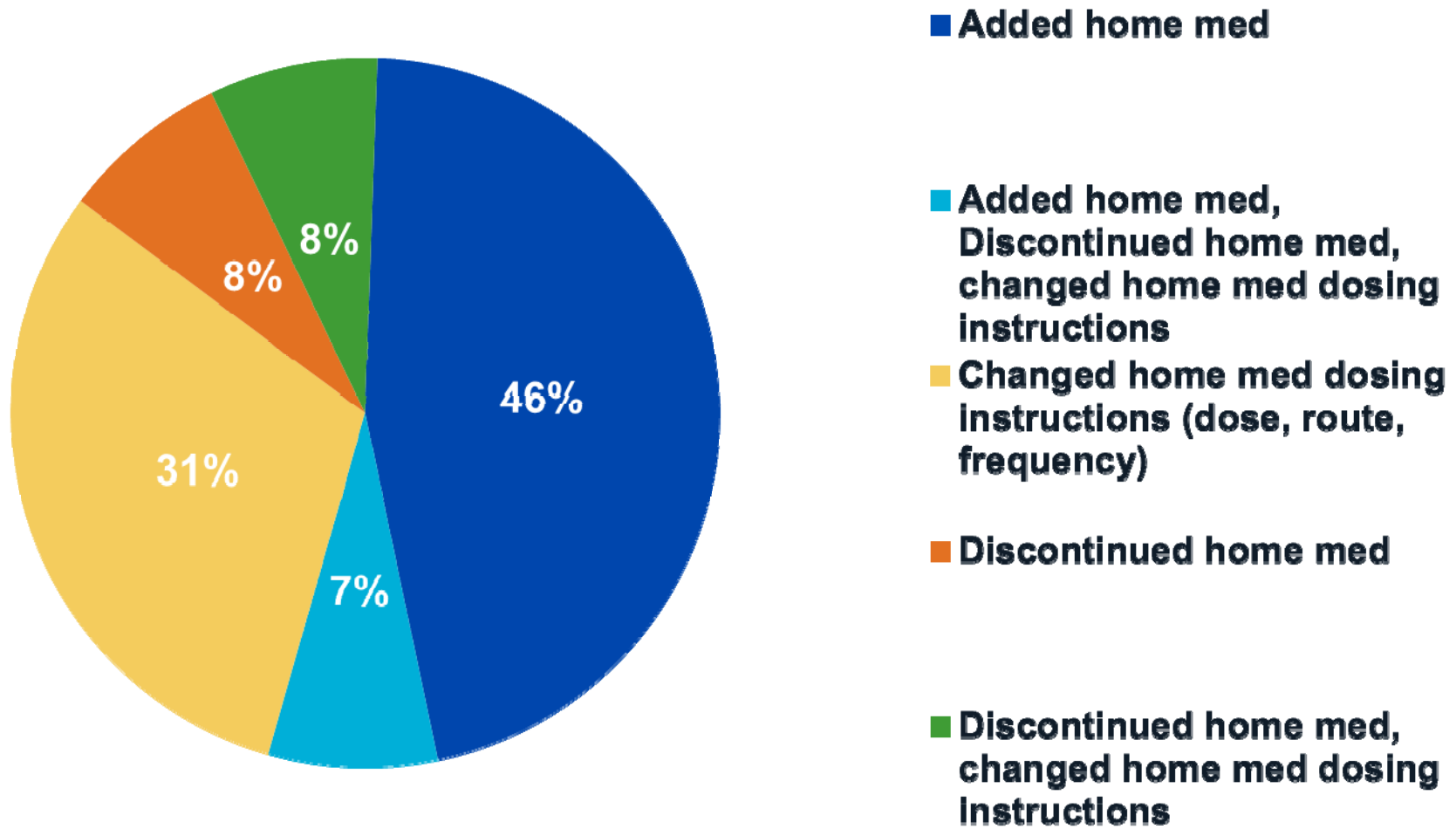
Information Source



Are Undocumented Discrepancies Resolved?



Types of Changes Made to Home Meds after Reconciliation Completion



Summary

eMedRec
Implemented
in All Inpatient
Units Except
Critical Care
Areas

Next Steps





Fall 2015

Implement
eMedRec in
NICU, PICU
and CCCU

**Perfection is not a
claim, it is an aim.**

Thank you!



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