

Rome Wasn't Built in a Day

Current and Future Challenges with Medication Reconciliation

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Objectives

- * Review the current status of the Joint Commission's National Patient Safety Goal for Medication Reconciliation
- * Summarize current recommendations for implementing patient centered medication reconciliation processes
- * Examine the impact of information technology on medication reconciliation



Definitions & The Value of Medication Reconciliation

Defining Medication Reconciliation

- * Definition consistencies:
 - * A defined procedure within an organization
 - * The who, what, when, where, how and why varies
 - * This procedure identifies a complete and accurate list of medications and involves the patient
 - * The organization then uses the list to provide correct medications for the patient anywhere within the health care system

Why Medication Reconciliation?

- * Organizations, interfaces of care lack consistent procedures
 - * Verification of an accurate medication history
 - * Assessment for appropriateness of therapy
 - * Full reconciliation and documentation of changes
- * Chart reviews revealed that 56% of all hospital medication errors and 20% of adverse drug events are due to poor communication at the interfaces of care

Why Medication Reconciliation?

- * Thoughtful and methodical approach leads to improved outcomes
- * Implementation of a sound medication reconciliation program can reduce medication errors at discharge by approximately 50%

Murphy EM, Oxencis CJ, Klauck JM, Douglas A, Zimmerman J. Medication reconciliation at an academic medical center: Implementation of a comprehensive program from admission to discharge. *Am J Health Syst Pharm* 2009 66: 2126-2131

Value of Pharmacy Driven Medication Reconciliation Processes

- * Reduced mortality rates
- * Cost savings
- * Safer
- * Saves nursing and physician time
- * Improves compliance with regulatory requirements
- * Improves relationships with physicians
- * Improves pharmacist job satisfaction

① Professor Yong ^{PO} x 1 stat
② Abulata MD KID
③ Red Flow to BP
④ Nels 940 Abulata/Abulata
E. King out > 75% run

Barriers and Complicating Factors

- * No plug-and-play model, organizations must design and implement customized procedures
- * Lack of trained and knowledgeable individuals to complete medication reconciliation procedures
- * Difficult to obtain collaboration throughout the continuum of care with a fragmented health care system
- * Less than 10% of organizations own an interfaced standardized electronic health record
- * Consumes significant financial resources

Joint Commission, CMS and Medication Reconciliation

Joint Commission and the NPSG for Medication Reconciliation

- * Released in 2005, expected full implementation of NPSG in 2006
- * Revisions in 2007, 2009 intended to “simplify” processes, readily define implementation procedures
 - * When, how to document lists, communication between providers and education to patients
 - * Minimal use scenarios

Joint Commission and the NPSG for Medication Reconciliation

- * “Will not score” announcement Feb, 2009
 - * Still acknowledged as critical process
 - * Organizations struggle with implementing efficient and effective procedures
 - * Surveyor findings will not contribute to accreditation decisions and will not generate a recommendation for improvement (RFI)
- * Unintended consequences?
 - * Translation: Med Rec not required!

NPSG : Current Language

- * At the time the patient enters the organization a complete list of the medications the patient is taking at home (including dose, route, and frequency) is created and documented
- * The medications ordered for the patient while under the care of the hospital are compared to those on the list created at the time of entry to the organization

NPSG : Current Language

- * Any discrepancies (omissions, duplications, adjustments, deletions, additions) are reconciled and documented
- * When the patient's care is transferred within the hospital, the current provider informs the receiving provider about the up-to-date reconciled medication list and documents the communication

NPSG : Current Language

- * The patient's most current reconciled medication list is communicated to the next provider of service, either within or outside the hospital; the communication between providers is documented
- * At the time of transfer, the transferring hospital informs the next provider of service how to obtain clarification on the list of reconciled medications

NPSG : Current Language

- * When the patient leaves the hospital's care, the current list of reconciled medications is provided and explained to the patient and, as needed, the family and this interaction is documented



NPSG : Minimal Use Scenarios

- * When medications are used minimally, or prescribed for short durations, modified processes performed
- * Patient care settings exist in which medications are not used, are used minimally, or are prescribed for only a short duration
 - * Emergency department, office-based surgery, outpatient radiology, ambulatory care, and behavioral health care
 - * Obtaining a list of medications is important; obtaining information on the dose, route, and frequency is not



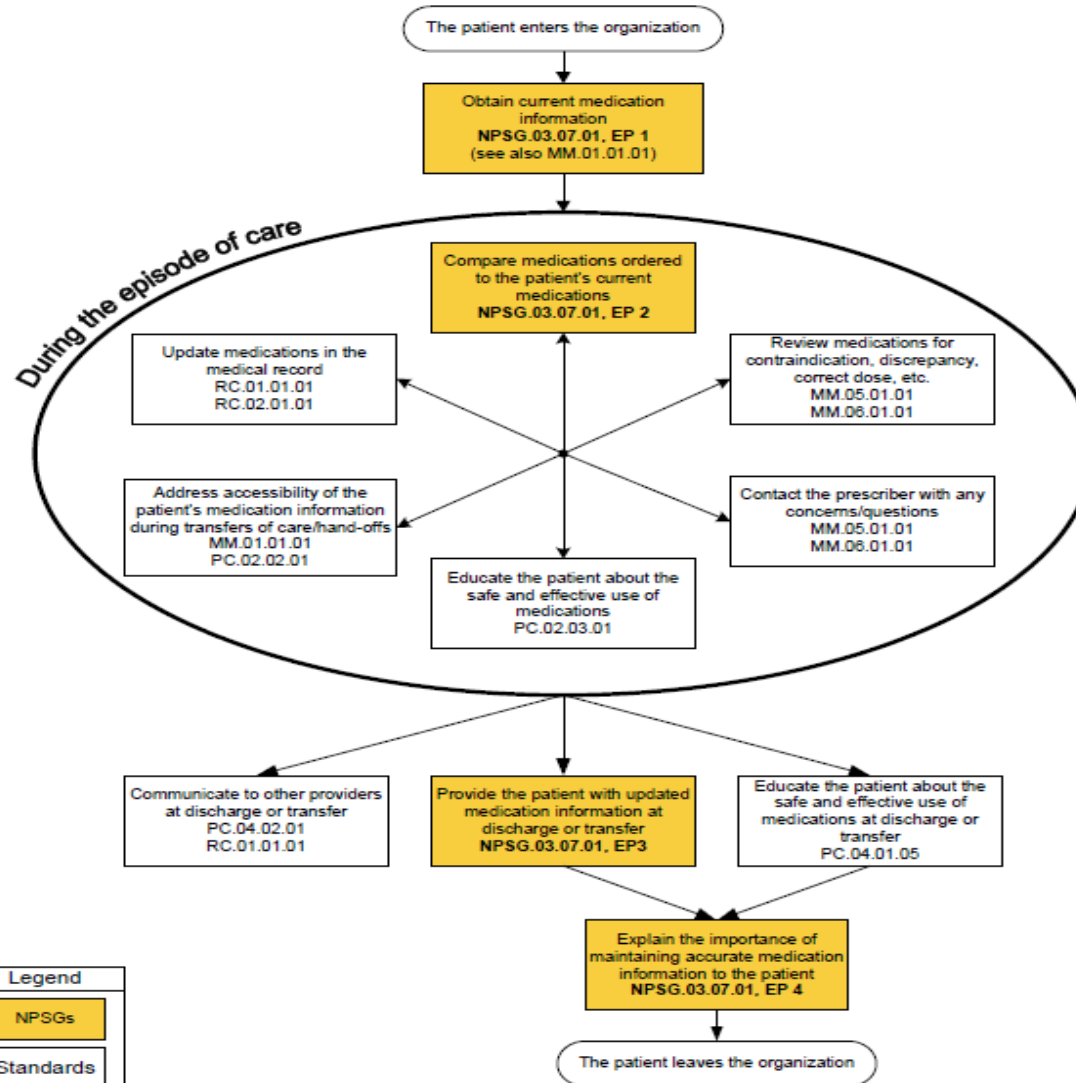
Current Joint Commission Work with Medication Reconciliation

- * Comprehensive literature review; review of data collected by survey teams
 - * Identify best practices
 - * Identify barriers to implementation
- * Focus group held in October, 2009
 - * Review revised goal, resources
- * Revised goal field review, April 2010
 - * Focus on elements most critical to patient safety
 - * Elements of performance moved to NPSG 3 Medication Safety, or Standards

FIGURE 1.



Medication Reconciliation Process within the Medication Management System



Legend
NPSGs
Standards

ASHP Response

- * In general, supported revisions, retention of goal
- * Identified critical risk points (transitions of care)
- * Simplifies requirements, gives organizations latitude to define processes, procedures
- * Performance improvement requirements endorsed

TJC Field Review Results

- * Majority of respondents agreed medication reconciliation NPSG addresses important patient safety issue
- * Very few respondents agreed that the revised goal resolved concerns which revolve around implementation
 - * Compliance challenging; involves “critical issues beyond the organization’s control”
 - * Concerns about patient reporting, reliability

TJC: Next Steps

- * Back to the drawing board!
 - * Revise requirements with “feasible” implementation expectations
 - * No longer require a list
 - * Eliminate transfer of service or care elements
 - * Recognize the role of the patient
 - * Requirements will move to standards
 - * Second field review Feb, 2011
 - * Implementation target date July, 2011
- * Current NPSG still in effect, will be evaluated at survey, but no RFI’s

Obama, CMS Get in the Medication Reconciliation Game



* HITECH Act 2009

- * Economic stimulus package; worth \$27 billion
- * Encourages adoption of electronic health record and electronic exchange of information through various incentive payments

* 3 Stages of Implementation

- * Stage 1: Data Capture and sharing (2011)
- * Stage 2: Health Information Exchange (2013)
- * Stage 3: Improved Outcomes (2015)

CMS Final Rule

- * Meaningful Use Expectations

- * Maintain an active medication and allergy list for at least 80% of patients with unique encounters
- * Perform medication reconciliation in at least 50% of relevant encounters



UWHC Meaningful Use Lessons Learned

- * Numerators, denominators as stated in final ruling are difficult to understand and define
- * Meaningful use data capture, reporting must be “certified”
 - * Customization of electronic medical records makes it difficult to pull from discrete, reportable fields (e.g., inclusion, exclusion criteria)
 - * Has led to significant revisions of current workflows that were working well until now

So....Where Do We Go
From Here?



Medication Reconciliation... Close to Consensus?

- * Society of Hospital Medicine Conference of Stakeholders
 - * March 2009
 - * Supported with a grant for the Agency for Healthcare Research and Quality
- * Participants attempted to address
 - * Barriers to implementation
 - * Opportunities to identify best practices
 - * The role of partnerships
 - * Measures of success related to medication reconciliation

Consensus Panel Recommendations: Let's Move Med Rec Forward!

- * Define medication, define reconciliation
 - * Involve clinical, quality and regulatory stakeholders
- * Define multidisciplinary roles
- * Report only clinically meaningful measures
- * Adopt processes in phases appropriate to your organization
 - * Clinical service or area
 - * Admission or discharge
 - * Patients or medication processes at highest risk for errors

Consensus Panel Recommendations: Let's Move Med Rec Forward!

- * National funding for research necessary
- * Disseminate best practices and lessons learned
- * Use an integrated, electronic health record
 - * Endorsed HL7 Continuity of Care Document and Continuity of Care Record , provide standards for structured EHR exchange (HITECH Act Final Rule)
- * Ensure allocation of adequate financial resources

Consensus Panel Recommendations: Let's Move Med Rec Forward!

- * Engage the community, develop a sense of urgency
 - * Public health announcements aimed at reporting medication errors, near misses
- * Conclusion
 - * Patient safety, patient/family centered care must be the driver
 - * Should not be an accreditation activity
 - * Goal: Provide the most appropriate medications regardless of treatment location

Greenwald JL, Halasyamani L, Greene J, LaCivita C, Stucky E, Benjamin B, Reid W, Griffin FA, Vaida AJ, Williams MV. Making inpatient medication reconciliation patient centered, clinically relevant and implementable: a consensus statement on key principles and necessary first steps. *J Hosp Med.* 2010 Oct;5(8):477-85.

Current State: UWHC and Medication Reconciliation

“Medication” Definition

- * UWHC uses current Joint Commission definition for “medication”
 - * Prescriptions, samples, herbals, vitamins, nutraceuticals, vaccines, OTC’s, diagnostic and contrast agents used to diagnose treat or prevent disease
 - * Also includes parenteral nutrition, blood derivatives
 - * Does not include enteral nutrition solutions, oxygen



UWHC Current Staffing Model

- * Decentral and centralized services
 - * Integrated staffing model, pharmacists provide distributive and clinical services
- * Nine decentral pharmacist teams
 - * Trauma, solid organ transplant, surgery, oncology, medicine, neurology, pediatrics, cardiology, ED/FDS
 - * 7am – 11pm, 365 days per year
- * Hours of service
 - * Decentral: 0700-2300 seven days per week
 - * 24 hour decentral adult ICU coverage
 - * Central: 24 hour coverage
 - * Central night operations begin at 2300

Pharmacist Roles, Responsibilities

- * Pharmacists own reconciliation processes, multidisciplinary approach at admission, transfer and discharge
- * Medication order review prior to dispensing (93%) and processing in all inpatient areas, the emergency department, most procedure areas and the OR
- * Medication distribution coordination
- * Clinical monitoring, patient care rounds participation
- * Pharmacy technician oversight

Why the Pharmacist?

- * Pharmacist patient admission histories began in early 1970's
 - * Began on units where pharmacists joined rounds
 - * Assisted the physicians and nurses while working along side them
 - * Improved continuity of care
 - * Gradually evolved from unit to unit
- * Pharmacist education role in discharge process also began in the 1970's
- * Pharmacists now accountable for reconciliation upon admission, transfer and discharge for all inpatients

Greater accuracy and avoidance of error with pharmacists

- * Compared to nurses
 - * Pharmacists intervene on a higher percentage of patients than nurses (34% versus 16%, $p < 0.001$)
 - * Pharmacists have a higher number of interventions per patient than nurses (0.6 versus 0.22, $p = 0.027$)
- * Compared to physicians
 - * Pharmacists document more medications per admission history than physicians (5.6 versus 2.4)
 - * Pharmacists document more medication interactions, drug related admissions and previous drug failure than physicians

Gleason KM, Groszek JM, Sullivan C, Rooney D, Barnard C, Noskin GA. Reconciliation of discrepancies in medication histories and admission orders of newly hospitalized patients. *Am J Health-Syst Pharm.* 2004;61:1689-1695.

Medication Histories

- * Performed by decentral pharmacists (~ 50%) or pharmacy students/pharmacy technicians with pharmacist oversight
- * All patients admitted to the hospital have a medication history and full reconciliation completed within 24 hours of admission
- * Sources of Information
 - * Patient
 - * Parent, spouse or significant other
 - * Outside hospital, nursing home or other agency MAR
 - * Local pharmacy
 - * Past discharge summary
 - * Clinic visit med list or transcription
- * Translators are used when necessary

Technician Roles

- * Only interview patients assessed as “not complex” by the pharmacist (e.g. simple regimen, no known learning barriers/compliance issues)
- * Most first day surgery patients day prior to surgery
- * Enter all data into electronic health record which is reviewed and verified by a pharmacist
- * Technician only does history on allergies, PTA meds, and immunization history
 - * Pharmacist always does medication reconciliation and immunization protocol screening assessment

Technician Validation Process

- * Attend an in-service by Senior Clinical Pharmacist
 - * includes medication history rationale, pocket card of necessary interview elements requires, interviewing tips and pitfalls
- * Pass competency test to ensure understanding of key points of in-service
- * Shadow pharmacists and other technicians performing interviews for 3 shifts (approx 10 interviews per day)
- * Perform monitored interviews of patients with a pharmacist
- * Practice interviewing via role play with pharmacist
- * Final validation is done by Senior Clinical Pharmacist via direct observation of 2 interviews
- * Revalidated every 6 months via direct observation

Zztestrx, Hospice Omega

MRN#: 2449978 Location DOB: 2/4/1923 Attending Allergies Ht: 160 cm BSA: 1.76 m²
 Admit: 01/09/2009 Hospice Unit-^c Sex: M Weston, Carl B NO ACTIVE ALLERGIES Wt: 70 kg CrCl: --

Patient Summary

- Chart Review
- Synopsis
- Results Review
- Notes
- Medications
- Allergies
- Order Entry
- Orders Management
- Imm/Injections
- MAR
- Doc Flowsheet
- Interdisc Plan
- Patient Education
- WISCR Patient Link
- WIR
- Verify Orders
- Admission**
- Transfer
- Discharge
- Rounding
- FYI

Admission (Contact Date: 1/9/2009)

- Admission**
- BestPractice
- Allergies
- Height and Weight
- Review PTA Meds
- RPH Med Admit Hx
- Imm Screening
- Signed & Held Ord...
- Review Status
- Current IP Meds
- Lab Results
- Non-Direct Admit
- Direct Admission
- Med rec
- RPh Notes

BestPractice Alerts

Refresh

Restore Close F9 Previous F7 Next F8

Allergies

No Active Allergies

Mark as Reviewed Last Reviewed by Kathy Smith RN, RN on 11/28/2008 at 2:33 PM [Allergies](#)

Height and Weight

[New Reading](#) | [Go to Doc Flowsheet](#)

Ht & Wt	01/15/2009	01/27/2009	01/27/2009
	0700	1800	1857

Height & Weight:

Height	160 cm (5' 2.99")		
Actual Weight	70 kg (154 lb 5.2 oz)	30 kg (66 lb 2.2 oz)	70 kg (154 lb 5.2 oz)
Weight Method			
Dosing/Drip Wt			
Ideal Body Wt (Calculated)	56.88 (calculated)		
Adjusted Body Wt (Calculated)	62.13 (calculated)		
BMI (Calculated)	27.4 (calculated)		
BSA (Calculated)	1.76 (calculated)		

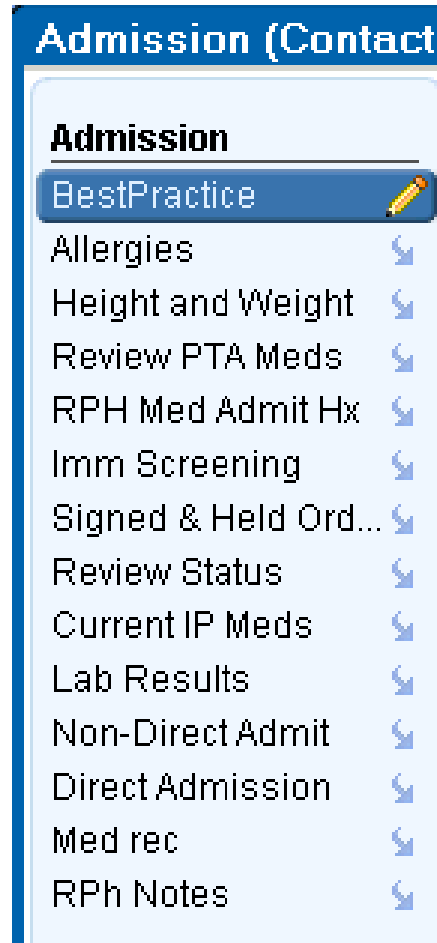
[New Reading](#) | [Go to Doc Flowsheet](#)

Review Prior to Admission Medications

Home Medications

Medications	Sig	Start Date	End DateTo	Active?	Authorizing Provider
ZOLPIDEM TARTRATE 10 MG PO TABS	asdfafd	01/26/2009		Yes	NEWCOMER, PETER D
HYDROCODONE-ACETAMINOPHEN 10-	1 Tab by mouth EVERY 4 12/15/2008			Yes	SLATER, BRUCE

Admission Navigators



- * Workflow driven by navigators
- * Helps to bring various activities within the health record to the user
- * Pharmacist owns allergies, prior to admission meds, admit history, immunization screening and med reconciliation activities

This is a list of the patient's home medications. Please verify the list and add new medications as needed.

Ongoing Comment: None Entered [\(Add Note\)](#)

New Prior to Admission Med

View by: Alphabetical Rx Class Rx/Patient Reported

Order Name	<input checked="" type="checkbox"/> Show Details	Last Dose						Taking?
Alphabetical								
ASCORBIC ACID 500 MG PO TABS Take 500mg each morning, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
atenolol (TENORMIN) 25 MG TABS Take 1 tablet by mouth daily at bedtime., Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
CALCIUM-VITAMIN D 600 MG PO TABS Take 1 tablet twice daily with meals, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
citalopram (CELEXA) 10 MG PO TABS Take 10mg daily with evening meal, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
digoxin (LANOXIN) 0.125 MG PO TABS Take 0.125mg daily at 4pm, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
docusate sodium (COLACE) 100 MG CAPS Take 1 tablet by mouth daily.		Today	Yesterday	Past Week	Past Month	> Month	Unknown	<input type="text"/> <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
FERROUS GLUCONATE 324 MG PO TABS Take 325mg daily at 4pm, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
FISH OIL 1000 MG PO CAPS Take 1000mg twice daily with meals, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
furosemide (LASIX) 20 MG TABS Take 1 tablet by mouth every morning., Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
GRAPE SEED PO Take 150mg daily at noon, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
lisinopril (PRIVIL, ZESTRIL) 10 MG TABS Take 1 tablet by mouth once daily at 4pm., Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
lovastatin (MEVACOR) 20 MG TABS Take 1 tablet by mouth once every other day.		Today	Yesterday	Past Week	Past Month	> Month	Unknown	<input type="text"/> <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
Lutein 20 MG CAPS Take 1 tablet by mouth at bedtime., Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
MULTIVITAMIN PO Take 1 tablet each morning, Informant: Family/Guardian, Last Dose: 2/19/09		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>
PENTOXIFYLLINE 400 MG PO TBCR		Today	Yesterday	Past Week	Past Month	> Month	Unknown	2/19/09 <input checked="" type="checkbox"/> <input type="button" value="Print"/> <input type="button" value="X"/> <input type="button" value="Copy"/>

Med List Status

Status Comment: None Entered [\(Add Note\)](#)

Mark as Reviewed Last reviewed by Scott Collier, RPH on 2/20/2009 2:57 PM [\(History\)](#)

Provider View

2 Reconcile Prior to Admission Medications

View by: Reviewed Alphabetical Rx Class Rx/Patient Reported

 XANAX 0.5 MG TABS 1 tab 3x daily	Order	Replace	Don't Order	Discontinue
 ZOLOFT 50 MG TABS 1 tab at night	Order	Replace	Don't Order	Discontinue

- * After medication list is updated, the provider orders, substitutes, holds or discontinues the medication from the medication reconciliation navigator

Pharmacist “Admit Review Status Report” and Documentation of Med Rec Activities

Admit Review Status

Prior to Admission Medications Needing Review

Medication	Details	Provider	Status
PROGRAF 1 MG CAPS	11 mg am and 10 mg at night	Provider Outside	Needs Review
prednisone (DELTAONE) 10 MG TABS	10 mg am and 5mg at night	Provider Outside	Needs Review
phenytoin (DILANTIN BRAND) 100 MG CAPS	3 pills at bedtime	Provider Outside	Needs Review
ZOLOFT 50 MG TABS	1 tab at night	Provider Outside	Needs Review
XANAX 0.5 MG TABS	1 tab 3x daily	Provider Outside	Needs Review
SODIUM BICARBONATE PO	1---2x day(?) dose	Provider Outside	Needs Review
lisinopril (PRINIVIL, ZESTRIL) 10 MG TABS	1 TABLET DAILY at bedtime	Provider Outside	Needs Review
ARANESP INJ	1x week--every tuesday	Provider Outside	Needs Review
IMMUNE GLOBULIN IV	1x week--every tuesday	Provider Outside	Needs Review
ranitidine (ZANTAC) 150 MG TABS	1 TABLET TWICE DAILY	Provider Outside	Needs Review

Reviewed Prior to Admission Medications

Medication	Details	Provider	Status
MYFORTIC 360 MG TBEC	2 TABLETS TWICE DAILY	Kathy Smith, MD	Not Ordered
NITROFURANTOIN PO	1 TABLET AT BEDTIME	Kathy Smith, MD	Not Ordered

Medication Reconciliation
Completed

Admission

Discharge

Transfer/Post-Op



Last Filed Value:

****No data filed****

FTE Requirements

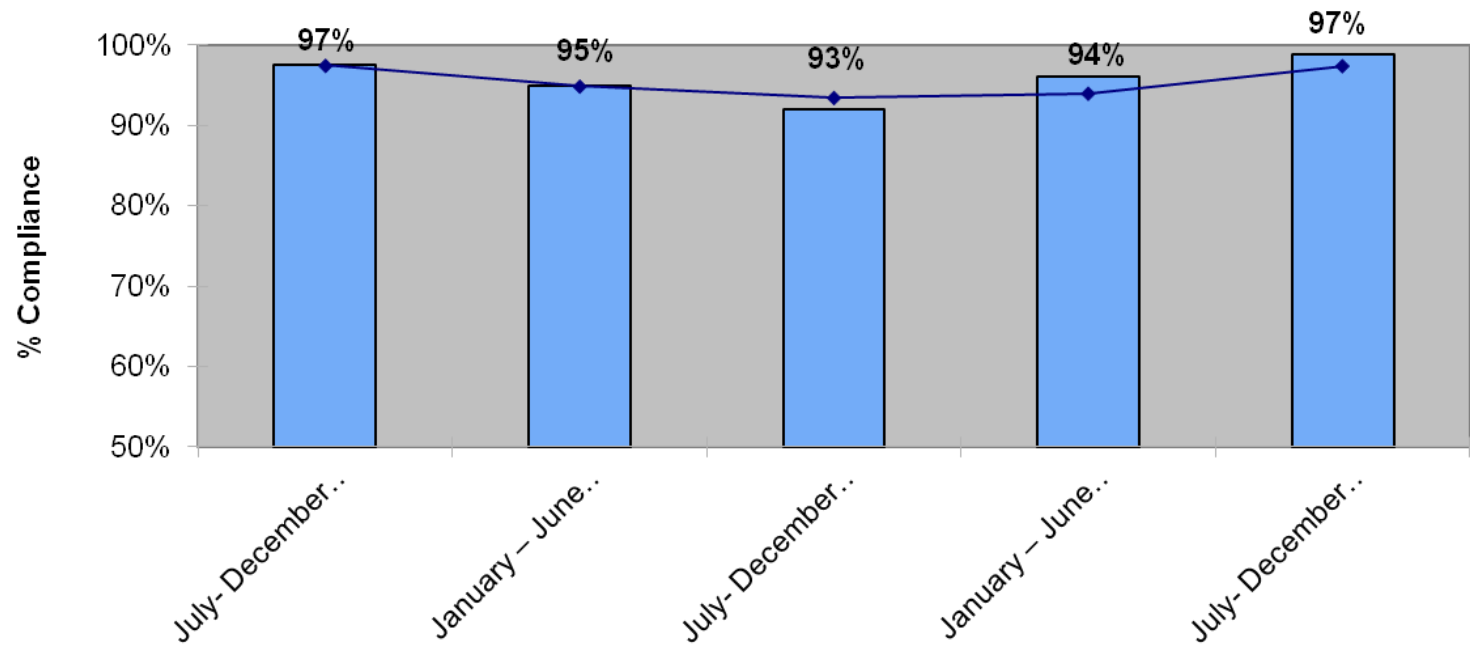
- * Estimated 3.5 pharmacists FTEs required for admission history and reconciliation activities
(~ 60 admissions per day)
- * 15-20 minutes required per admission depending on service

Admission Reconciliation Audit

- * Retrospective manual audit, 75 charts every 6 months
- * Wisconsin Hospital Association Guidelines
 - * If patient is NPO at time of admission, assumed compliant
 - * Review every medication, OTC for full reconciliation
 - * Herbals excluded
- * Compared medication history versus:
 - * Admission orders
 - * Documentation of reasons medications not continued
 - * Order clarifications and/or verbal orders
 - * Obvious contraindications

Pre CPOE Admission Medication Reconciliation Audit Results

Pharmacist Documented Medication Reconciliation (Admission)



Current Accreditation Measures for Hospital Dashboard (Post CPOE)

- * Compliance (Goal 97%)
 - * % of patients with admission medication reconciliation documented as complete within 24 hours
 - * Average 94%
- * Completion (Goal 100%)
 - * % of patients with admission medication reconciliation documented as complete prior to discharge
 - * Average 98%

Discharge Medication Reconciliation

- * Discharge process is driven via navigators
- * Prior to admission, current inpatient, and new medications are all interfaced onto the same screen
- * Prescriber does initial discharge medication reconciliation, and then prescribes discharge medication orders
- * Pharmacist performs double-check reconciliation against prescribed discharge medication orders (same view as physician)

Discharge Reconciliation









- * Pharmacist clarifies any discrepancies with prescriber
- * Pharmacist usually enters discharge medication changes as verbal orders
- * Pharmacist discusses medication needs with patient
 - * reconciles insurance/formulary issues
 - * discuss patient's pharmacy of choice
 - * *these tasks are being shifted to discharge specialists (pharmacy technicians)*

Discharge Reconciliation







- * Pharmacist provides patient teaching and shares useful documents to patient
 - * Written prescriptions (if not faxed or phoned to pharmacy)
 - * Drug information leaflets
 - * Compliance aids such as medication box
 - * Electronic medication list
- * Pharmacist documents teaching and medication reconciliation
- * Electronic list of final discharge medication orders is sent electronically to next known provider of care and documented referring

Discharge Navigators

Physician View

 calcitriol (ROCALTROL) 0.25 MCG CAPS Take 1 tablet by mouth daily	Prescribe/Refil Resume Stop Taking 
 calcitriol (ROCALTROL) cap 0.25 mcg 0.25 mcg, Oral, 1 X DAILY, First dose on Sun 2/22 at 0800, Until Discontinued OP SIG: Take 1 tablet by mouth daily	Prescribe/New Don't Prescribe 
 calcium carbonate (TUMS) chew tab 1,000 mg 1000 mg, Oral, 3 X DAILY, First dose on Sat 2/21 at 2200, Until Discontinued	Prescribe/New Don't Prescribe 
 carvedilol (COREG) 3.125 MG TABS 1 Tab PO 2 X DAILY, Disp-60, R-1, Oral, Local Printer	Prescribe/Refil Resume Stop Taking 

Pharmacist View

Signed and Held Medications	
 calcium carbonate (TUMS) 500 MG CHEW 2 Tab PO 3 X DAILY, Disp-30, R-0, Oral, No Print This order was created from calcium carbonate (TUMS) chew tab 1,000 mg	Prescribe/New (Edit) 
 hydrocodone-acetaMINOPHEN (NORCO) 5-325 MG TABS 1-2 tablets every 6 hours as needed, Disp-30, R-0, Oral, No Print	New (Edit) 
Signed Medication Changes	
 aspirin 325 MG TABS Take 1 tablet by mouth daily	Resume (Edit) 

From Paper to CPOE: Were Efficiencies, Accuracy Gained?

- * Retrospective audit to evaluate impact of CPOE on the number and type of pharmacist interventions made during medication reconciliation
- Identify the most common interventions made by pharmacists at admission and discharge following CPOE implementation
- Measure time necessary to identify, communicate and resolve interventions following CPOE implementation

Medication Reconciliation Audit

- Admission audit (July-Dec 2007):
 - * 11% of medication orders modified
 - * 63% of patients had at least one intervention
- Discharge audit (February 2001)
 - * 18% of orders modified
 - * 61% of interventions clinically relevant
- * CPOE implemented at UWHC in November 2008 resulting in significant changes to pharmacist workflow at admission and discharge

Methods

- Evaluated four inpatient services including pediatrics, medicine, surgery and transplant
- At every patient admission and discharge, pharmacists documented the following:
 - Number of medications ordered
 - Number of recommendations made
 - Number of recommendations accepted
 - Time spent making interventions
 - Type of interventions made

Results: Meaningful Medication Reconciliation Clinical Measures

Results: Admission

Number of Patients: 227

Number of Interventions: 557

Average Interventions per patient: 2.5

Percent Admissions captured in study: 79%

Average time per patient: 10.6 minutes

Percent recommendations accepted: 92%

Results: Discharge

Number of Patients: 234

Number of Interventions: 304

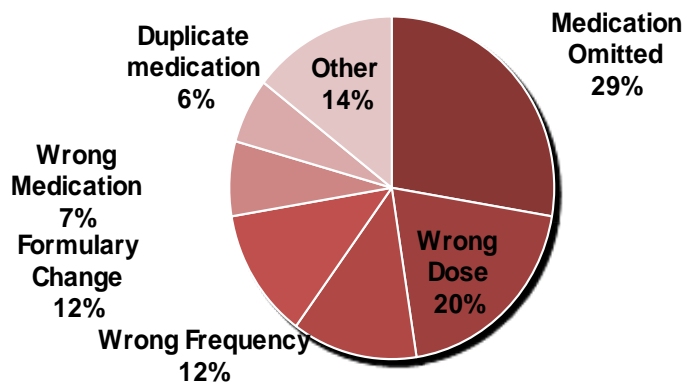
Average interventions per patient: 1.3

Percent Discharges captured in study: 83%

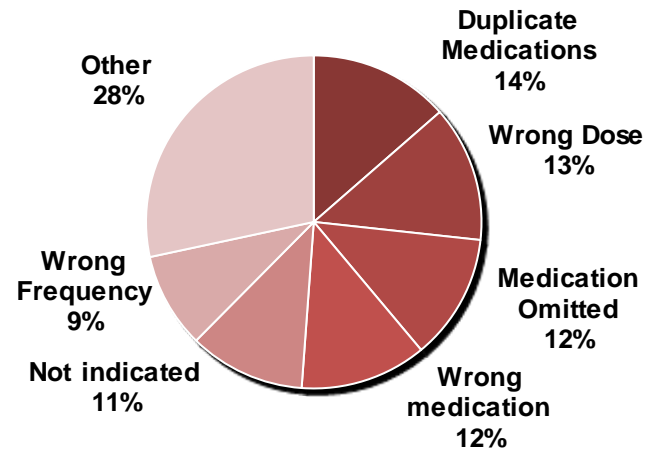
Average time per patient: 10.7 min

Percent recommendations accepted: 98%

Types of Interventions



At Admission



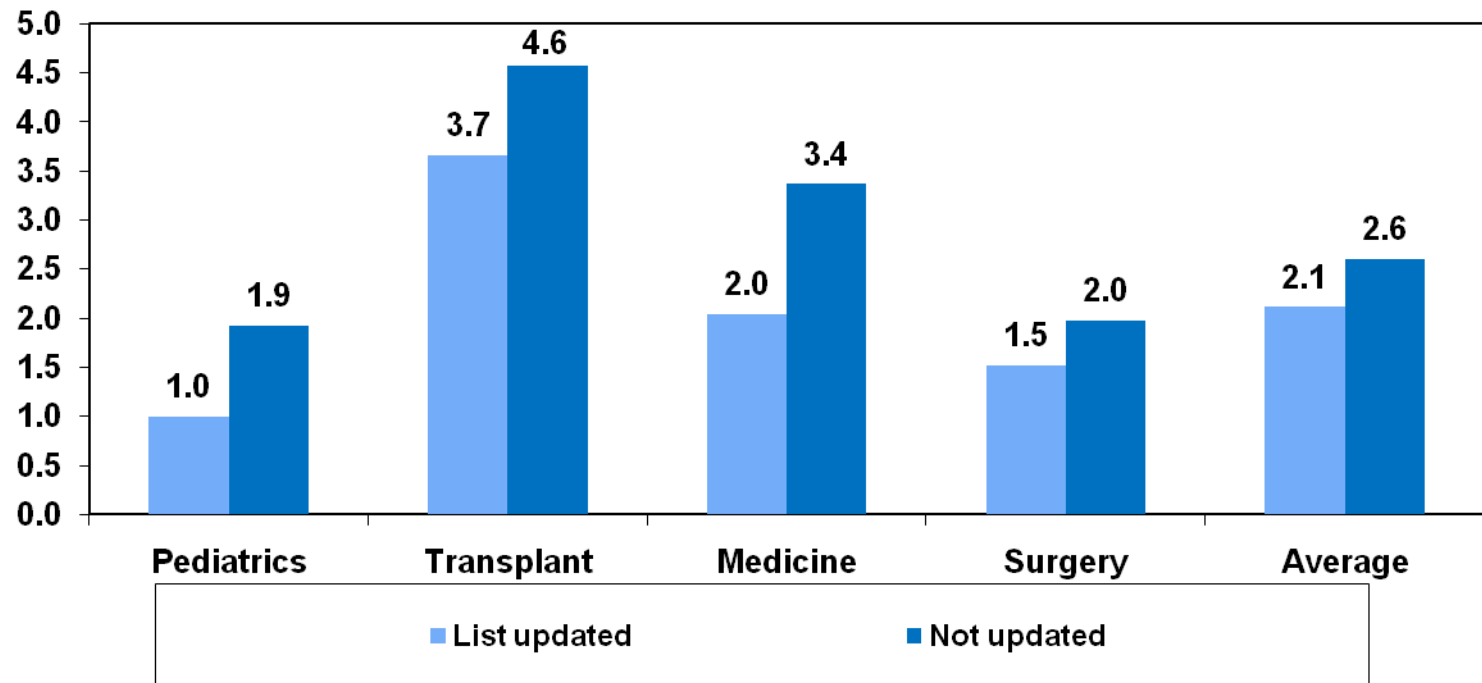
At Discharge

Results

	Pre-CPOE		Post-CPOE	
	Patients	Orders	Patients	Orders
Admission	63%	11%	70%	23%
Discharge	70%	26%	63%	12%

- CPOE led to an increase in the percent of patients and orders requiring interventions by a pharmacist at the time of admission
- CPOE led to a decrease in the percent of patients and orders needing intervention by a pharmacist at the time of discharge

Results: Average number of pharmacist interventions per patient

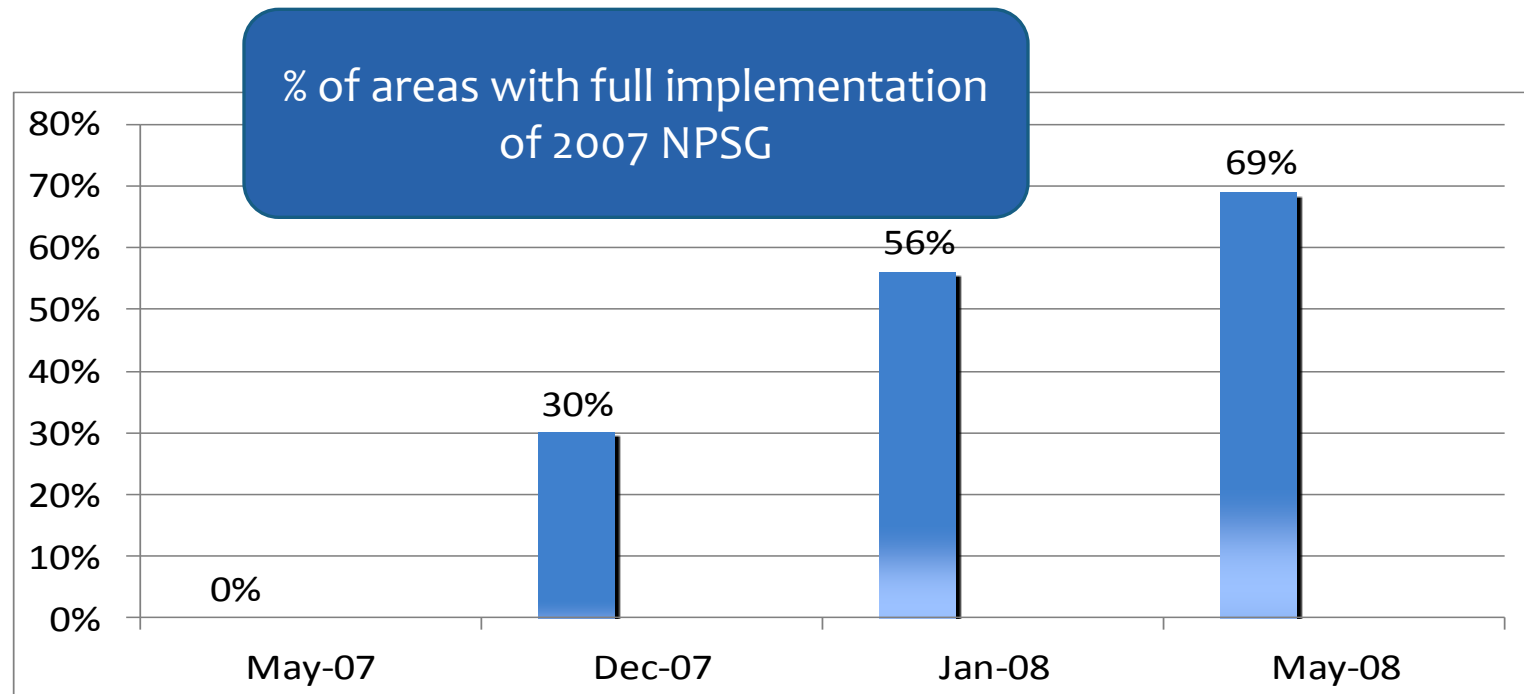


Post CPOE Conclusions

- Interventions during medication reconciliation persist at a similar rate post-CPOE implementation
- Updating admission history prior to physician order entry impacts number of interventions made
- Medication reconciliation process continues to require significant pharmacist time post-CPOE
- Acceptance of pharmacist recommendations during medication reconciliation is high (>90%)

Phases of Implementation: Next Steps for Medication Reconciliation

- * Rollout to ambulatory areas in FY08(n=87)



Barriers to Implementation and Lessons Learned in Ambulatory Care

- * Lack of dedicated resources
 - * Personnel, fax machines
- * Full integration of EHR not completed
 - * Paper histories scanned into HER
- * Training and competencies for non-pharmacy personnel difficult, time consuming
- * Forcing med rec led to errors in medication list, improper prescribing
 - * Decision to limit activities in non-essential areas

Next Steps for Non-Inpatient Areas

- * Implement procedures for minimal use areas
- * Our definition
 - * Minimal use site sites of care are all areas where medications are used minimally or not at all
 - * The minimal amount of information needed to safely administer medications must be collected prior to administering medication or providing therapy
 - * The type of information collected is defined and documented by the clinic or procedure area providing care in coordination with the pharmacy compliance manager

Modified Processes Allowed

- * Modified medication reconciliation processes are allowed if the area consistently meets the following eligibility criteria (requirements) for at least 80% of relevant patient encounters
- * Must be approved by the organization wide regulatory committee to participate

Eligibility Criteria

- * One of the following conditions are satisfied
 - * Medications are never administered during the patient encounter **OR**
 - * Medications are used, but use is minimal
 - * Examples of "minimal medication use" include topical fluoride applications, local infiltration of lidocaine for suturing lacerations, enteric barium for imaging studies, or when medications act locally with little systemic effect (for example, dexamethasone applied for iontophoresis)
 - * “minimal” is a multidisciplinary decision

Eligibility Criteria

- * AND all of the following conditions are satisfied
 - * No changes to the patient's chronic list of medications are made during the course of care
 - * No new medications are prescribed for or provided to the patient for use after encounter that are intended for chronic use (greater than 7 days)
 - * The patient is not admitted for continuation of care to an inpatient setting

Qualifying for Modified Procedures

- * Full reconciliation processes are expected for all encounters unless authorized in writing by the chair of the regulatory, external reporting and compliance committee
- * If criteria is met, modified procedures must be documented at the clinic or procedure area level
 - * Must document the minimal amount of information needed to safely administer medications in their area
 - * Screening protocols most common procedure (example, contrast administration in radiology; document allergies, past exposure to contrast and collect information on specific medication use)

Conclusions

- * Medication reconciliation definitions and processes continue to be refined by regulatory bodies, likely becoming less process oriented and more patient focused
- * Continue organization wide medication reconciliation performance improvement activities using your own patient safety data as a guide
- * Integrate medication reconciliation activities and workflows into electronic medical record when possible