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Medication Reconciliation and Standards Overview

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Prepared by 1ˢᵗ American Systems and Services LLC

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NIST NCPDP Analysis – Medication Reconciliation and Standards Overview

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Contents

A. Introduction

The goal of this document is to provide an overview of the medication reconciliation process and a high-level review of three electronic information exchange standards that support it—with a focus on potential challenges arising from integrating those standards in a single workflow.

It provides a brief background on the process itself, industry stakeholders and definitions, and problems the process is intended to address. In addition, it identifies the pertinent electronic information exchange standards, including key segments, modules, and data elements and their use in the process. It also considers interaction checking—drug/drug, drug/allergy, etc.—as a component of medication reconciliation and discusses electronic information exchange in the context of that process.

Document sections:

Working Definitions of Medication Reconciliation. Definitions of "medication reconciliation" from industry stakeholders including the Institute for Healthcare Improvement and the Joint Commission.

Medication Reconciliation Process Background. High-level review of typical medication reconciliation events and processes, including review of current and past medications, interaction and allergy checking, and prescribing of new medications.

Overview of Medication Reconciliation Challenges at Transfer of Care. Overview of studies on adverse drug events during transfers of care. Examples of medications and contributing factors to adverse drug events.

Information Exchange Standards and Medication Reconciliation. Overview of NCPDP SCRIPT and other standard transactions/messages that support medication reconciliation. Analysis of key segments, modules, and data elements and their use in the process. Description of information flows between data sources, the prescriber system, and other participants . Consideration of interaction checking within the context of medication reconciliation and related information exchange.

High-level Comparison of Medication Concepts in SCRIPT, HL7 CCD, and CCR. Identification of common medication concepts between the NCPDP SCRIPT 10.6 Medication segments, Continuity of Care Document medications module (as defined in the C32 CCD definition), and the ASTM Continuity of Care Record (CCR)—including high-level comparison of data elements and terminology.

Appendix: Prior version of Joint Commission's National Patient Safety Goal for Medication Reconciliation.

Appendix: Institute for Healthcare Improvement – Medication Reconciliation Process.

B. Working Definitions of Medication Reconciliation

Medication reconciliation is intended to be a systematic process designed to enhance patient safety by validating at every point of care a patient's current medication regimen. As patients are seen by a multitude of providers, in a variety of settings, reviewing and revising their medications (prescription and over-the-counter) is an important step in improving quality and safety. The industry has struggled to develop and implement the most efficient and effective process to accomplish this task. The transition from paper to electronic medical records has also been a factor in determining how to consistently perform medication reconciliation.

There is no doubt that improving the ability of the healthcare industry to exchange medication information will lead to reduced errors and better outcomes. The challenges are many, but the existence of a standard to exchange medication data is an important first step. Many of the processes used today to perform medication reconciliation are manual. Achieving interoperability by using RxNorm and the NCPDP standards will allow for some of those processes to be completed systematically, allowing the clinician more time to focus on patient care and not "paperwork".

(All taken from http://www.ihi.org/IHI/Topics/PatientSafety/MedicationSystems/Tools/Medication+Reconciliation+Review.htm 2/22/11)

According to the Institute for Healthcare Improvement (IHI), "Reconciliation is a process of identifying the most accurate list of all medications a patient is taking — including name, dosage, frequency, and route — and using this list to provide correct medications for patients anywhere within the health care system. Reconciliation involves comparing the patient's current list of medications against the physician's admission, transfer, and/or discharge orders. Experience from hundreds of organizations has shown that poor communication of medical information at transition points is responsible for as many as 50 percent of all medication errors and up to 20 percent of adverse drug events in the hospital. Each time a patient moves from one setting to another, clinicians should review previous medication orders alongside new orders and plans for care, and reconcile any differences. If this process does not occur in a standardized manner designed to ensure complete reconciliation, medication errors may lead to adverse events and harm."

The IHI and its members have dedicated many resources to addressing the issues inherent in medication reconciliation, and the 5 Million Lives Campaign was created, which aims to protect five million lives from harm. Please see Appendix C for a copy of this guide.

(All taken from www.jointcommission.org 1/26/11)

December 7, 2010

The Joint Commission is committed to improving health care safety. This commitment is inherent in its mission to continuously improve the safety and quality of care provided to the public through the provision of health care accreditation and related services that support performance improvement in health care organizations. At its heart, accreditation is a risk-reduction activity; compliance with standards is intended to reduce the risk of adverse outcomes.

The Joint Commission has identified a number of goals and measures that an institution must comply with in order to receive accreditation. These include National Patient Safety Goals.

National Patient Safety Goal (NPSG) 8 specifically addressed medication reconciliation:

"Accurately and completely reconcile medications across the continuum of care."

NPSG 8 was published, but not enforced due to industry concerns about implementation, until December 2010, when a new goal was published. Please see Appendix A for the complete goal.

The Joint Commission Board of Commissioners has approved revisions to the National Patient Safety Goal (NPSG) on reconciling medication information (was NPSG.08.01.01 but is now NPSG.03.06.01), *effective July 1, 2011* (emphasis added) for the ambulatory, behavioral health care, critical access hospital, home care, hospital, long term care, and office-based surgery accreditation programs. The new, streamlined and focused version of the NPSG places a spotlight on critical risk points in the medication reconciliation process.

The NPSG was revised based on input from the field about difficulties with implementation of the 2009 version of the NPSG because it was too prescriptive and detailed. In January 2009, The Joint Commission took action to reduce the burden of the NPSG on medication reconciliation for organizations and determined that survey findings would not be factored into the organization's accreditation decision until a revised NPSG was developed. The revised NPSG underwent a field review in the second quarter of 2010; the review reaffirmed that medication reconciliation is an important patient safety issue that should continue as a NPSG. Please note that NPSG.03.06.01 replaces Goal 8 (08.01.01, 08.02.01, 08.03.01 and 08.04.01) and its related elements of performance.

Following are the specific details of the Joint Commission's National Patient Safety Goal for medication reconciliation, with notations as to where standards can support and enable achievement of this goal.

National Patient Safety Goal on Reconciling Medication Information

NPSG.03.06.01
Elements of Performance for NPSG.03.06.01

➢ Obtain and/or update information on the medications the patient is currently taking. This information is documented in a list or other format that is useful to those who manage medications.
   o Note 1: The organization obtains the patient's medication information at the beginning of an episode of care. The information is updated when the patient's medications change. (MedHx)

   o Note 2: Current medications include those taken at scheduled times and those taken on an as-needed basis. See the Glossary for a definition of medications. (opportunity to add data elements, i.e. Sig, to MedHx?)

   o Note 3: It is often difficult to obtain complete information on current medications from the patient. A good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the EP.

➢ Define the types of medication information to be collected in different settings and patient circumstances.
   o Note 1: Examples of such settings include primary care, urgent and emergent care, ambulatory surgery, convenient care, outpatient radiology, and diagnostic settings. (MedHx)

   o Note 2: Examples of medication information that may be collected include name, dose, route, frequency, and purpose. (MedHx) (opportunity to add data elements, i.e. Sig, to MedHx?)

➢ For organizations that prescribe medications: Compare the medication information the patient brought to the organization with the medications ordered for the patient by the organization in order to identify and resolve discrepancies.
   o Note 1: Discrepancies include omissions, duplications, contraindications, unclear information, and changes. A qualified individual, identified by the organization, does the comparison. (See also HR.01.06.01, EP 1) (This will require manual effort until more information is available to

be transmitted electronically, in a codified manner. At such point, programs should be able to identify the discrepancies. Encouraging the use of the MedHx transaction now will likely mean an easier transition when RxNorm and Sig are widely used.)

- ➢ For organizations that prescribe medications: Provide the patient (or family as needed) with written information on the medications the patient should be taking at the end of the episode of care (for example, name, dose, route, frequency, purpose). (CCD)
    - o Note: When the only additional medications prescribed are for a short duration, the medication information the organization provides may include only those medications. For more information about communications to other providers of care when the patient is discharged or transferred, refer to Standard PC.04.02.01.

- ➢ For organizations that prescribe medications: Explain the importance of managing medication information to the patient at the end of the episode of care.
    - o Note: Examples include instructing the patient to give a list to his or her primary care physician; to update the information when medications are discontinued, doses are changed, or new medications (including over-the-counter products) are added; and to carry medication information at all times in the event of emergency situations. (For information on patient education on medications, refer to Standards MM.06.01.03, PC.02.03.01, and PC.04.01.05.) (The patient can be given a list to give to the next provider of care, but can also be encouraged to have that next provider use the MedHx transaction. Still unaddressed is the role of PHRs in the exchange of data, and this may be critical if OTC use is not tracked in an EHR.)

C. Medication Reconciliation Process Background

The medication reconciliation process varies by setting, and the participants can include administrative staff, who may compile the data, patients/caregivers to validate current regimen/actual practice, and clinicians who review for appropriateness.

Accomplishing Medication Reconciliation

"While the importance of medication reconciliation is universally recognized, there is no consensus on the best method of carrying out the process of reconciling medications. A variety of methods have been studied, including having pharmacists perform the entire process, linking medication reconciliation to existing computerized provider order entry systems, and integrating medication reconciliation within the electronic medical record system. Another avenue being explored is involving patients in reconciling their own medications.

The evidence supporting patient benefits from reconciling medications is relatively scanty. Interventions led by pharmacists or utilizing information technology have reduced actual and potential medication errors, but as yet, no system has resulted in an improvement in clinical outcomes. The effect of electronic systems and nurse-led processes has yet to be determined."

(AHRQ PSNet Patient Safety Primer Page 1 http://psnet.ahrq.gov/printviewPrimer.aspx?primerID=1 1/2/2011)

D. Overview of Medication Reconciliation Challenges at Transfer of Care

Adverse Events Due to Discontinuations in Drug Use and Dose Changes in Patients Transferred Between Acute and Long-term Care Facilities

Kenneth Boockvar, MD, MS; Eliot Fishman, PhD; Corinne Kay Kyriacou, PhD; Anna Monias, MD; Shai Gavi, MD; Tara Cortes, PhD

Studies have shown that unintended changes in medications occur in 33% of patients at the time of transfer from one site of care within a hospital, and in 14% of patients at hospital discharge.

In the United States, where older adults are routinely transferred among multiple sites of care, little is known about how relocation affects patient health. In this sample of individuals transferred between nursing home and hospital, discontinuations of use and dose changes in existing medications on hospital admission, during the hospital stay, and on nursing home readmission were implicated in causing ADEs. The incidence of ADEs measured in this study (20%) exceeded that found in studies of ADEs occurring during episodes of care within acute or long-term care facilities,[7,8] although the severity of ADEs seemed to be less.

Our study suggests that alterations in medication prescribing are common during transfer between institutions and are a cause of ADEs. Clinicians may alter or discontinue medication use at the time of hospital or nursing home admission as a result of changes in a patient's clinical condition or to adhere to institutional formulary requirements. Clinicians may also temporarily discontinue medication use at the time of hospital admission if they believe it is contraindicated or inessential to acute care. In this study, it is not surprising that the frequency of medication change observed on hospital admission was greater than that observed on return to the nursing home, because the time of hospital admission is typically a time of greater change in patient clinical status and a time of in-detail assessment of medication use.

A proportion of transfer-related medication changes and ADEs may occur because of inaccurate or incomplete communication of medication regimens between facilities.

Because most nursing homes and hospitals are loosely affiliated and do not share medical records, medication ordering systems, formularies, or pharmacies (as was the case for institutions that participated in this study), medication information may be inaccurately transcribed.

Of note, although medication changes implicated in causing ADEs occurred in both directions of transfer and during the hospital stay, in most cases the ADE occurred after the study participant returned to the nursing home. This is in part because the interval from a hospital-based medication change to an ADE was greater than the duration of hospital stay. This result suggests that an intervention implemented at the time of nursing home readmission has the potential to prevent most ADEs. Such an intervention might identify and rectify medication changes that occur during hospitalization that have potential for harm, perhaps using the input of a clinical pharmacist. In addition, a proportion of ADEs may be prevented by systems-level interventions. Improved transfer

documentation or telephone communication at the time of transfer may prevent a proportion of inadvertent medication changes and ADEs. Institutions between which patients are frequently transferred might make efforts to minimize formulary-driven medication changes to reduce the number of medication changes that lack clinical rationale. Finally, Department of Veterans Affairs health facilities have an electronic medical record that is accessible to practitioners in inpatient, outpatient, and long-term care settings. Research is needed to determine if such a shared electronic medical record can improve the accuracy of inter-institutional communication of medication information, prevent errors that occur from handwritten transcribing, and prevent relocation-related ADEs.

Appendix B contains information from the Institute for Healthcare Improvement that provides recommendations/guidance on process design for medication reconciliation at various transition points.

E. Information Exchange Standards and Medication Reconciliation

Medication History (NCPDP SCRIPT RXHREQ, RXHRES)

The NCPDP SCRIPT Medication History message is the most common form in which medication history information is shared between a patient's pharmacy benefit insurer and their physician or other practitioner. The SCRIPT Medication History format is named by CMS for use in the care of Medicare Part D recipients, and is required for participation in the federal MIPPA e-prescribing incentive program for practitioners.

The 8.1 version of the standard is in most common use today, though use of the 10.6 version is also allowed by federal programs; the industry is expected to implement the 10.6 version over the course of the upcoming 2-4 years.

This analysis will focus on the 10.6 version of the standard, which contains a combination of free-text and codified medication content.

Continuity of Care Record (ASTM CCR)

The Continuity of Care Record, or CCR, is a patient medical summary format managed by ASTM International. It represents a core data set of the most relevant facts about a patient's health care. The CCR standard pre-dates, and provided the clinical content model, for the Continuity of Care Document—which was created in conjunction with HL7. The CCR has continued to evolve since the creation of the CCD, though the content of the two formats remains very similar. Meaningful Use rules allow use of the ASTM E2369 Standard Specification for Continuity of Care Record.

Medication content in the CCR is held in its Medications section, which is used to list and describe the patient's current medications and pertinent medication history. According to the CCR implementation guide, "at a minimum, the currently active medications should be listed, with an entire Medication History as an option, particularly when the CCR is used for comprehensive data export."

The Medications section allows for a mix of codified and free-text content.

Continuity of Care Document (HL7 CCD)

The CCD is a patient summary format based on the clinical information contained in the Continuity of Care Record and the HL7 Clinical Document Architecture (CDA) electronic document structure. As such, it's content is very similar to that of the CCR, though not identical—as the two standards have evolved since the creation of the CCD. Meaningful Use rules identify the following as the CCD version and implementation guidance: HITSP (Healthcare Information Technology Standards Panel) Summary Documents Using HL7 CCD Component HITSP/C32.

A key characteristic of the CCD is that content can be represented as unstructured text alone, which can optionally be accompanied by structured and codified content. The CDA specifies that the content of the document consists of a mandatory textual part (which ensures human interpretation of the document contents) and optional structured parts (for software processing).

Prescription Fill Status (NCPDP SCRIPT RXFILL)

The NCPDP SCRIPT Fill Status message enables the dispensing pharmacy to notify the prescriber when a prescription is dispensed and picked up by (or delivered to) the patient. The message also enables the prescriber to be notified if the order can't be dispensed or if the patient does not take possession of the medication.

The standard is not in wide use today—with initial usage primarily in the long-term and post-acute care settings. However, the standard is named for optional use by CMS for Medicare Part D patients, and its potential value in the ambulatory setting to alert prescribers of non-compliance by their patients has been noted.

Similar to dispense-based medication history provided by healthcare payers, the Fill Status can augment EMR-based medication information, which typically reflects medication orders which may or may not have actually been filled and picked up by the patient.

The section below provides a high-level comparison of the information content and use of these standards.

F. High-level Comparison of Medication Concepts in SCRIPT, HL7 CCD, and CCR

Below is an overview of how medication content is captured in the standards mentioned above.

Standard / Concept	SCRIPT 10.6 Medication History	ASTM Continuity of Care Record (ASTM E2369)	HITSP C/32 Continuity of Care Document	SCRIPT 10.6 Fill Status
Section of standard	*Medication Dispensed*	*Medications*	*Medications*	*Medication Dispensed*
Prescribed versus dispensed				
Prescribed versus *dispensed* medication	In its typical usage, the standard conveys only *dispensed* medications. Data sources that respond to the message (e.g., PBMs and health plans) typically only have a view of dispensed prescription medications	In its typical usage, medications *prescribed* for the patient—as captured in the practitioner's electronic medical record—are conveyed in the standard.	In its typical usage, medications *prescribed* for the patient—as captured in the practitioner's electronic medical record—are conveyed in the standard.	Reflects medications *dispensed* (or *not dispensed* or *not picked up* by the patient)
Prescriber				
Prescribing clinician	Optional. Typically is included with each medication	A prescriber is not associated with each individual medication	Optional	The ordering prescriber is identified with the subject medication
Pharmacy				
Dispensing pharmacy	Required	Optional. Not typically included if source is EMR	Optional. Not typically included if source is EMR	Required
Dates / Status				
Prescribed date	Optional	Optional	Optional	Required
Dispensed date	Required *Note that each dispensing event is included as a separate item. E.g., a maintenance med dispensed monthly would result in 12 records in the medication history message*	Not applicable when CCR is generated from an EMR	Not applicable when CCR is generated from an EMR	Date of dispensing is required (if the medication was dispensed)

Standard Concept	SCRIPT 10.6 Medication History	ASTM Continuity of Care Record (ASTM E2369)	HITSP C/32 Continuity of Care Document	SCRIPT 10.6 Fill Status
Administration start / end dates	Optional. Not typically included in ambulatory settings	Optional	Required	Optional. Not typically included in ambulatory settings
Drug status (e.g., Active, on-hold, prior history / no longer active)	Not supported. Recipient must consider dispense dates and discuss with the patient whether a medication is currently being taken	Optional	Represented in start/end dates	Not supported
Indication				
Indication /diagnosis	Optional. Not typically included *Terminology:* ICD-9 (used today), ICD-10, others allowed	Optional. *Terminology:* "Problems should be coded at the highest level using SNOMED CT and the most recent ICD-9 CM codes at the time the CCR is generated"	Optional. *Terminology:* VA/KP Problem List Subset of SNOMED CT	Optional. Not typically included *Terminology:* ICD-9 (used today), ICD-10, others allowed
Medication				
Textual drug description	Textual drug description containing • drug name • strength / unit of measure • dose form	Product name required (e.g., Amoxicillin). Strength, form are optional	Required	Textual drug description containing • drug name • strength / unit of measure • dose form
Coded medication	Optional. *Terminology:* • 11-digit NDC typically included today • RxNorm is expected to be adopted for this use, but in not typically included today	Optional. *Terminology:* • RxNorm is recommended • NDC is allowed	Required. *Terminology:* RxNorm for brand names/clinical drugs and NDC for packaged products	Optional. *Terminology:* • 11-digit NDC typically included today • RxNorm is expected to be adopted for this use, but in not typically included today

Standard Concept	SCRIPT 10.6 Medication History	ASTM Continuity of Care Record (ASTM E2369)	HITSP C/32 Continuity of Care Document	SCRIPT 10.6 Fill Status
Coded strength	Optional. *Terminology:* NCIt NCPDP subset – Strength Unit Of Measure	Optional. Terminology not specified	Optional	Optional. *Terminology:* NCIt NCPDP subset – Strength Unit Of Measure
Coded dose form	Optional. *Terminology:* NCIt NCPDP subset	Optional. Terminology not specified	Optional. *Terminology:* NCIt	Optional. *Terminology:* NCIt NCPDP subset - Drug Strength Form
Quantity				
Quantity prescribed	Optional. Not typically included	Optional	Required. *Terminology:* NCIt presentation units or UCUM	Required
Quantity dispensed	Optional. Typically included today. *Terminology:* NCIt NCPDP subset: Quantity Unit of Measure	Optional	Optional	Required (if drug was dispensed)
Days supply	Optional	Optional	Optional	Optional
Refills allowed	Optional	Optional	Optional	Optional
Administration / dosing directions				
Textual administration directions (sig)	Required	Optional	Required	Required
Codified administration directions	Optional. Not widely implemented today; adoption timing unknown	Not supported	Optional. *Terminology:* Dose quantity: UCUM (Unified Code for Units of Measure).	Optional. Not widely implemented today; adoption timing unknown
Alerts				
Patient allergies or intolerances	Not supported	Optional. "At a minimum, currently active and any relevant historical allergies, adverse reactions, and alerts should be listed."	Required	Not supported

Concept *Standard*	SCRIPT 10.6 Medication History	ASTM Continuity of Care Record (ASTM E2369)	HITSP C/32 Continuity of Care Document	SCRIPT 10.6 Fill Status
Drug interactions or other conflicts identified at the time of prescribing (e.g., potential drug interaction)	Optional. Not typically included. *Terminology:* Not standards-based	Not supported	Not supported.	Optional to include interactions identified during dispensing. Not typically included. *Terminology:* Not standards-based
Other				
Fulfillment instructions (e.g., substitutions allowed, dispense as written)	Optional	Optional	Optional	Optional. *Note that the actual dispensed product is included…indicating when substitution occurs*

G. Summary of Support, Challenges and Opportunities

Two key challenges related to the support of medication reconciliation processes by the above-referenced information exchange standards are:

- inconsistent use of coded terminologies—making automated linking and de-duplication of medication information difficult
- the different perspectives of the CCD and CCR versus the NCPDP Medication History message, where the CCD and/or CCR represent ordered and historical patient medications, and the Medication History reflects only dispensed medications.

The sections below describe these challenges in more detail.

Note: A later project deliverable will further explore compatibility between the CCD, CCR, and Medication History standards.

Coded Terminology

The three standards reviewed vary with regard to:

- the level of support for coded terminology (the extent to which clinical content is able to be captured in a standardized coded form in the standard)
- the particular coded terminologies supported, and
- whether coded terminology is required or optional for different clinical concepts—impacting whether a recipient can rely on receiving coded content.

SCRIPT 10.6 Medication History. The SCRIPT 10.6 standard enables codification of drug name, strength, dose form, quantity and directions. However, in the Medication History message, coded content is not required for any of these concepts and is typically not included by implementers today.

- When codified, medication products are typically identified using the NDC 11 of the dispensed product, with RxNorm expected to be used for drug identification in the future.
- Drug strength, dose form and quantity are coded using a subset of the National Cancer Institute's NCI Thesaurus, which can be translated to related terminologies through the NCI Metathesaurus.
- Diagnoses are allowed but not typically included in Medication History messages. When present, they can be coded using ICD-9 or ICD-10, though ICD-9 is typically used today. Allergy information is not supported in the Medication History message.
- Codification of administration directions is made possible using the Structured Sig segment, which is a relatively new addition to the SCRIPT standard that has not yet been adopted by the industry. Clinical concepts within this segment are primarily coded using SNOMED or FMT (Federal Medication Terminologies) terms.

CCR. The CCR enables capture of coded clinical concepts, but does not require their use nor does it limit the terminologies used. From the CCR E2369 implementation guide: "Detailed coding is recommended whenever practical within the CCR. In all instances, the coding system and version must be specified. Specific coding

recommendations (for the U.S.) include the following (note that these are coding suggestions and are non-normative)… "

- When codified, medication products are to be identified using RxNorm codes, with NDC codes used as an optional, secondary identifier. Separate codification of drug strength, dose form and quantity does not appear to be supported.
- Diagnoses are recommended to be coded using SNOMED and ICD-9.
- Administration directions can be captured in a structured form, but it does not appear that component concepts (e.g., "twice daily") can be codified using a standard terminology such as SNOMED.

CCD / C32. The HITSP C32 implementation directions for the Continuity of Care Document (CCD) requires the presence of coded content in addition to human-readable text.

- Medications are to be identified using RxNorm codes, with NDC codes used to specify particular drug products / packages.
- Diagnoses are recommended to be coded using the VA/KP Problem List Subset of SNOMED CT
- Administration directions can be captured in a structured form

Linking Ordered and Dispensed Medications

A key challenge in integrating medication information from the three formats discussed above is that the SCRIPT Medication History reflects *dispensed* medications that have been dispensed, while the CCD and CCR primarily represent *current ordered* medications and optionally historical medications reported by the patient or another provider.

When integrating information from a Medication History and a CCD or CCR, the receiver matches the ordered medications to the related dispensing event(s), and must be careful not to "double count" medications present in both sources. In addition, there may be differences in how a given medication is reported between the order and dispensing event, including:

- brand versus generic—for example if a branded medication is ordered but fulfilled using a generic substitute
- strength / quantity—for example if the order specifies "30 tablets. Take 1 20mg tablet daily" and the pharmacy dispenses 60 10mg tablets instead, with patient instructions to take 2 10mg tablets daily
- multiple dispensing for a single order—for example where a maintenance medication is dispensed twelve times per year based on a single order.

As noted above, the different standards allow for different coded drug references—making it difficult to reliably match up and "de-duplicate" ordered and dispensed medications. Today, prescribing systems use a combination of drug identifier comparison (primarily NDCs) and drug name matching to accomplish this task.

However, linking orders to fulfillment details provides an opportunity to identify situations where a medication is dispensed inappropriately, for example in the case where a patient alters a narcotic

prescription to specify a higher quantity, or obtains prescriptions from other prescribers and brings them to multiple pharmacies to be dispensed.

Medication Reconciliation and Standards Overview

Appendix A –Joint Commission's National Patient Safety Goal for Medication Reconciliation (prior version)

NPSG.08.01.01

A process exists for comparing the patient's current medications with those ordered for the patient while under the care of the organization.

Rationale

Patients are at high risk for harm from adverse drug events when communication about medications is not clear. The chance for communication errors increases whenever individuals involved in a patient's care change. Communicating about the medication list, making sure it is accurate, and reconciling any discrepancies whenever new medications are ordered or current medications are adjusted are essential to reducing the risk of transition-related adverse drug events.

Elements of Performance

1. At the time the patient enters the organization or is admitted, a complete list of the medications the patient is taking at home (including dose, route, and frequency) is created and documented. The patient and, as needed, the family are involved in creating this list.
2. The medications ordered for the patient while under the care of the organization are compared to those on the list created at the time of entry to the organization or admission.
3. Any discrepancies (that is, omissions, duplications, adjustments, deletions, additions) are reconciled and documented while the patient is under the care of the organization.
4. When the patient's care is transferred within the organization the current provider(s) informs the receiving provider(s) about the up-to-date reconciled medication list and documents the communication. Note: Updating the status of a patient's medications is also an important component of all patient care hand-offs.

NPSG.08.02.01

When a patient is referred to or transferred from one organization to another, the complete and reconciled list of medications is communicated to the next provider of service, and the communication is documented. Alternatively, when a patient leaves the organization's care to go directly to his or her home, the complete and reconciled list of medications is provided to the patient's known primary care provider, the original referring provider, or a known next provider of service.

> Note: When the next provider of service is unknown or when no known formal relationship is planned with a next provider, giving the patient and, as needed, the family the list of reconciled medications is sufficient.

Elements of Performance

1. The patient's most current reconciled medication list is communicated to the next provider of service, either within or outside the organization. The communication between providers is documented.

At the time of transfer, the transferring organization informs the next provider of service how to obtain clarification on the list of reconciled medications

NPSG 08.03.01

When a patient leaves the organization's care, a complete and reconciled list of the patient's medications is provided directly to the patient and, as needed, the family, and the list is explained to the patient and/or family.

Rationale

The accurate communication of the patient's medication list to the patient and, as needed, the family, reduces the risk of transition related adverse drug events. A thorough knowledge of the patient's medications is essential for the patient's primary care provider or next provider of service to manage the subsequent stages of care for the patient.

Elements of Performance

1. When the patient leaves the organization's care, the current list of reconciled medications is provided and explained to the patient and, as needed, the family. This interaction is documented. Note: Patients and families are reminded to discard old lists and to update any records with all medication providers or retail pharmacies.

NPSG 08.04.01

In settings where medications are used minimally, or prescribed for a short duration, modified medication reconciliation processes are performed.

Note: This requirement does not apply to organizations that do not administer medications. It may be important for health care organizations to know which types of medications their patients are taking because these medications could affect the care, treatment, or services provided.

Rationale

A number of patient care settings exist in which medications are not used, are used minimally, or are prescribed for only a short duration. This includes areas such as the emergency department, urgent and emergent care, convenient care, office-based surgery, outpatient radiology, ambulatory care, and behavioral health care. In these settings, obtaining a list of the patient's original, known, and current medications that he or she is taking at home is still important; however, obtaining information on the dose, route, and frequency of use is not required.

Elements of Performance

1. The organization obtains and documents an accurate list of the patient's current medications and known allergies in order to safely prescribe any setting-specific medications (for example, local anesthesia, antibiotics) and to assess for potential allergic or adverse drug reactions.

2. When only short-term medications (for example, a pre-procedure medication or a short-term course of an antibiotic) will be prescribed and no changes are made to the patient's current medication list, the patient and, as needed, the family are provided with a list containing the short-term medication additions that the patient will continue after leaving the organization. Note: This list of new short-term medications is not considered to be part of the original, known, and current medication list. When patients leave these settings, a list of the original, known, and current medications does not need to be provided, unless the patient is assessed to be confused or unable to comprehend adequately. In this case, the patient's family is provided both medication lists and the circumstances are documented.

3. In these settings, a complete, documented medication reconciliation process is used when: Any new long-term (chronic) medications are prescribed.

4. In these settings, a complete, documented medication reconciliation process is used when: There is a prescription change for any of the patient's current, known long-term medications.

5. In these settings, a complete, documented medication reconciliation process is used when: The patient is required to be subsequently admitted to an organization from these settings for ongoing care.

When a complete, documented, medication reconciliation is required in any of these settings, the complete list of reconciled medications is provided to the patient, and their family as needed, and to the patient's known primary care provider or original referring provider or a known next provider of service.

Appendix B: Institute for Healthcare Improvement – Medication Reconciliation Process

Reconcile Medications at All Transition Points:
Reconcile Medications in Outpatient Settings
http://www.ihi.org/IHI/Topics/PatientSafety/MedicationSystems/Changes/IndividualChanges/ReconcileMedicationsinOutpatientSettings.htm

It is important for outpatient areas of hospitals and hospital-based clinics (such as outpatient surgery, dialysis facilities, outpatient oncology clinics, and family practice areas) to reconcile medications at each visit.

The process for reconciling medications in outpatient settings (including the Emergency Department for patients who are not admitted) is a bit different than the process for inpatient transitions.

First, a medication list must be collected. It is important to know what medications the patient has been taking or receiving prior to the outpatient visit in order to provide quality care. This applies regardless of the setting from which the patient came — home, long-term care, assisted living, etc.

The medication list should include all medications (prescriptions, over-the-counter, herbals, supplements, etc.) with dose, frequency, route, and reason for taking it. It is also important to verify whether the patient is actually taking the medication as prescribed or instructed, as sometimes this is not the case.

At the end of the outpatient visit, a clinician needs to verify two questions:

1. Based on what occurred in the visit, should any medication that the patient was taking or receiving prior to the visit be discontinued, altered, or held pending consultation with the prescriber?
2. Have any new prescriptions been added today?

These questions should be reviewed by the physician who completed the procedure when one occurs, or the physician who evaluated and treated the patient.

If the answer to *both questions* is "no," the process is complete.

If the answer to *either question* is "yes," the patient needs to receive clear instructions about what to do — all changes, holds, and discontinuations of medications should be specifically noted. Include any follow-up required, such as calling or making appointments with other practitioners and a timeframe for doing so.

When patients are recurring outpatients, a medication list can be kept on file rather than re-created on every visit. Each time the patient comes for a visit, the list should be re-verified for any additions, deletions or changes to medications, doses, frequencies, routes and alterations from original prescription or instructions.

Reconcile Medications at All Transition Points:
Reconcile Discharge Orders with the Nursing Medication Administration Record

http://www.ihi.org/IHI/Topics/PatientSafety/MedicationSystems/Changes/IndividualChanges/Reconcile+Discharge+Orders+with+the+Nursing+Medication+Administration+Record.htm

After discharge from the hospital, a patient may continue taking some medications at home, but not perhaps all of them. Therefore, it is extremely important to compare the discharge medication orders with the nursing medication administration record (MAR) to check for any discrepancies. If a medication the patient has been

receiving in the hospital is not in the discharge orders, and there is no adequate documentation indicating why that medication has been omitted, then a nurse or pharmacist should contact the patient's physician to verify whether or not the patient should discontinue use of the medication.

Tips

- Create a standardized form that lists all the medications the patient has been receiving in the hospital, and include space on the form for physicians to document the reasons for omitting certain medications upon discharge from the hospital. Physicians can also use this form for ordering medications.
- Attach the pre-admission medication list to the discharge orders form — the patient may need to discontinue some medications that were being taken at home.
- Provide the patient with a comprehensive list of all medications — those being taken before admission plus the new medications from the discharge orders. Clearly indicate the name of each drug, its purpose, and the instructions for taking the medication, as well as any instructions for discontinuing use.