Executive Summary

This document explains the place of a limited medication reconciliation pilot initiative designed as a derivative from and within a much larger universe of a specification-defined comprehensive Medication Reconciliation\(^1\). In this pilot the focus is on the patient contributions to medication reconciliation e.g., aggregating all patient specified medication information that may inform the larger comprehensive medication reconciliation. A major objective of this project is to develop and test means to automate differentiation between specification-defined Medication Reconciliation outputs to assure their fitness for a given end-use.

Overview

Medication reconciliation (MR) is a process that collects all available medication information about a patient e.g., existing medication orders, patient reported medication orders, over-the-counter (OTC) medication information (e.g., herbals, supplements, vitamins, and other medications), medication dispenses, medication administrations, medication history and medication related claims or bills. After aggregating the medication information, the provider determines if any action needs to be taken related to the known medications. These actions include updating an existing prescription, writing a new prescription, writing a new order indicating that a patient should not take a medication, including one or more of the OTCs. The end point of the MR process is to end up with a reconciled medication list that can be usefully shared with a provider or patient or patient representative.

\(^1\) A task that remains incomplete currently is normalizing naming conventions and differentiating colloquial terms and Standards-based technical specifications. For example, making sure that a specification-defined comprehensive Medication Reconciliation does not get confused with Comprehensive Medication Review (CMR), a term in Medicare Part D MTM regulations.
This reconciliation process is often done when a patient is:

- admitted or discharged from a hospital or other healthcare setting or home
- admitted or discharged from the ER/ED
- admitted to a healthcare setting for an outpatient procedure
- seen for a primary care visit at a clinic or GP practice setting e.g., episodic care, annual exam, one time visit
- transferred from one inpatient location to another e.g., emergency department (ED) to a med-surg unit, ICU to med surg unit, ED to operating room
- transferred from one healthcare setting (e.g., hospital) to another post-acute healthcare setting (e.g., long term care, or rehab facility, psychiatric hospital, home health care agency)

At transitions of care (TOC), it is best practice to perform a MR process to determine the status of:

- existing medication prescription orders
- orders from other providers that the patient is aware of, but that their primary care provider(s) or other clinical staff may not be aware of
- reported OTC medications the patient is taking
- medication history – this may include herbs, supplements, Illicit drugs,
- adherence to taking/not-taking drugs is a separate process; this information may be useful, and therefore a component of the specification for creating a reconciled medication list. This process documents whether the patient is taking or not taking a medication or whether a patient is taking or not taking a medication as prescribed

The individuals involved in the process of performing MR may include a team e.g., physician, nurse practitioner, pharmacist, clerk, nurse, social worker, patient, caregiver. This list of team members Is not exhaustive but representative of the types of individuals who may be involved in some part of the MR process.

The output of the MR process can be a list that is shared with the patient and/or clinical staff at the time of transfer of care. Note that discharge to home is a TOC process.

**Sources for Medication Information**

The source of uncurated medication information is often taken from one or more of the following:

- Medication requests/orders/prescriptions
- Dispensed medication transactions
- Medication administration events
- Medication usage history e.g., often patient reported, but not exclusively patient reported
- Medication related claims
- Previous medication list that a clinician or patient has access to

The source data may be captured from systems, often EHRs, MARs, ePrescribing systems, pharmacy, or billing systems. Depending on the architecture of the healthcare organization and the larger cross enterprise system the data may involve data housed in centralized healthcare data repositories that include medication related data, e.g., dispenses, orders, claims, Personal Health Records (PHR), or patient portals.
How to represent the data that is pulled together and in turn make it available via a FHIR API?

Depending on the business requirements the overall list of medications may include data from diverse systems and if it is important to maintain the relationship of the data to the primary FHIR resources this could end up with a collection of data that is represented with the following resources:

- MedicationRequest
- MedicationDispense
- MedicationAdministration
- MedicationUsage

Often, however the internal systems may make a business determination that they will expose the data via one of the resources (e.g., if the list of medication data is to reflect what the patient “should” be taking, it would be accurate to represent this using the MedicationRequest resource.) See US Core ²for one example for how to represent this type of approach.

As additional requirements evolve additional resources may be required to support creating a medication list. For example, if you want to include whether the patient is taking or not taking a medication, or whether the patient is taking or not taking the medication as prescribed, you may want to include MedicationUsage to reflect the taking / not taking.

Another example of an additional requirement may be if you want to create a reference to what type of data was used to create the entry on the medication list – this may result in exposing the referenced data as a MedicationRequest (common), MedicationDispense (often), MedicationAdministration (rare), or MedicationUsage (situational).

A strong suggestion is to consider carefully how you want to expose this information. This will influence what resources may be used in a FHIR API interface. A simple medication list may only include one or two of the primary Pharmacy resources e.g., MedicationRequest or MedicationUsages, but a more complex or full featured medication list may include many if not all the Pharmacy resources.

Context Impacts Medication Reconciliation

In long term care settings in the US, pharmacists take on a role that is reflected in the MR process. The pharmacist serves as a key contributor in this MR process. Note this regulatory requirement may exist in other settings for other healthcare professionals.

In other settings, reconciliation events will occur that include only components of a comprehensive MR and may be executed by non-pharmacy personnel. These can be usefully defined (and specified) as derivatives ³of a model comprehensive event specification to assure consistency and interoperability.

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³ Derivative: “(H)aving parts that originate from another source : made up of or marked by derived elements” at https://www.merriam-webster.com/dictionary/derivative as adjective, definition 2. In this context the derived specification is a subset of the elements of the primary or master specification and includes no clinical elements that are not in the primary/master specification.
Creating Derivative Data Sets from the (comprehensive) Medication Reconciliation Data Set

The current work of the Conformant Reconciled Medication List (cRML) Task Force is an example of a derivative MR specification. It will map to an n NCPDP SCRIPT Medication History Transaction. "Medication History information may include adjudicated claims and/or pharmacy dispensed/point of sale prescription information. Medication History transactions may be exchanged among pharmacies, payers, and prescribers. RxFill Status transactions are exchanged between pharmacies and providers. Information supplied in the RxFill transaction may be duplicative of information provided in the Medication History transaction because more than one source may send information about a specific prescription (e.g. the pharmacy sends an RxFill status and prescription history and the payer sends claim history)." (Source: NCPDP SCRIPT Standard Implementation Guide Version 2017071).

A different example of how context may impact MR is when one looks at Medication Profiles or similar named groupings of clinical data that will include the patient’s reconciled medication information and ALSO include non-medications information e.g., allergy information, diagnoses, problem lists, patient weight, and other relevant healthcare information deemed significant to include in this larger summary. Another example may focus solely on the patient’s understanding of their medication information.

In any example it is possible that some medication information may be constrained or even excluded from the medication reconciliation e.g., exclude history of long-past substance abuse, constrain to only prescribed medications. These limited derivative Medication Reconciliation outputs will have some value to some end-uses, but not to all end-uses. A major objective of this project is to develop and test means to reduce burden by assuring trust requirements are met. In particular, automating fitness for
use testing of varying MR outputs based on specification requirements reduces the burdens of uncertainty, better assuring fitness for safe and effective patient care.

**NOTE:**

This is a work in progress, intended to launch and support an ongoing discussion about establishing a general understanding of diverse Medication Reconciliation events from comprehensive to minimalist.

The longer-term objective is for this ongoing discussion to lead to a typology of variant Medication Reconciliation events acts and actions in the real world, rendered into specification-differentiated data objects available for machine verification conformance attestation. This will, in turn, provide for eventual CLIA-like infrastructure to assure fitness for use for both senders and recipients of records that purport to be accurate and authentic Medication Reconciliation records.

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