IG Sections

- Patient Medication List Guidance - Melva
    - Introduction
        - pull content from Patient Medication List Guidance to create narrative
            - Objective, History, The Problem
- NEED TO THINK ABOUT INCLUDING DISCUSSION OF ARCHITECTURE WITH RESPECT TO LISTS
    - where does information come from
    - is there a centralized system vs individual systems
- need to consider statuses of the resources
    - do we need a new change request for status in our resources.
- can't answer all of the questions needed in a medication list from just looking at a single resource

Introduction

This Implementation Guide provides guidance on how to create medications lists using HL7 Fast Healthcare Interoperability Resources (FHIR) for different contexts of use. The guidance is intended to be used by implementers of FHIR as well as HL7 standards developers and external projects developing FHIR implementation guides related to medication lists.

Lists of medications are present in many areas of both electronic healthcare applications, mobile applications, and paper based records. These lists serve many purposes, but the context of where the list is used and to whom the list is made available is a critical part of what sources of information should be used to construct the list. Without the context, a list of medications may not provide the user (healthcare provider, patient, care giver, etc.) with the information that they need. Medication lists without context can lead to incorrect understanding of whether the patient is taking a medication, or if the source of the information is unknown or not understood, this may also lead to assuming the list of medications is accurate or complete.

Contexts for Medication Lists

The following contexts are included in this Implementation Guide:

- Prescribing
- Dispensing
- Administration of Medications
- Medication Usage
- Patient's View
- Medication Reconciliation

In ePrescribing applications the lists may be used to represent the active medications that a patient has been ordered/authorized to take and is reported to be taking; in other cases the list of medications may be expanded to represent any medication the patient has ever taken. In the ePrescribing case it may also include filters to see what medications orders have been completed, or those that are on-hold, or those that have been entered-in-error. Some lists may include both medications that have been authorized by a clinician via an order/prescription, and include those medications the patient is taking that have been purchased "over the counter" without any order from any clinician.

In some systems, the list of dispensed medications provides another view of medications the patient is expected to be taking.

In medication administration records, there are two common lists, one represents the list of medications to be administered, including dose, route of administration and timing information; the second use is to represent the actual time, date, route, person who performed the administration, and other relevant medication administration information. The attributes in this paragraph are not meant to be an exhaustive list or required list but are used to provide context about some of the data that may be associated with these types of lists.

Another view of medication lists reflects the reported medications the patient has taken, is taking, or will take - we call this medication usage (formerly medication statement). A challenge that often is documented in this area is how to represent that a patient is taking or not-taking a medication. At it's most basic, the question may look like: Are you taking your medications as prescribed?

More commonly though the questions around taking medication are more nuanced, as you can see in the following examples:

Patient or other carer is asked are you taking medication xyz?

A more complex question may look like - are you taking the medication as prescribed?

Even more complexity can result in asking about future or past medication behavior e.g.

Have you ever taken this medication?

When did you stop taking this medication?

Will you take the prescribed medication starting next week (or some future date time)?

Will you stop taking the prescribed medication at some point in time (can be specific or general)?

With this limited set of use cases, you can see that when a medication list is either constrained or incorporates information related to taken/not taken, the use of FHIR resources can become more complex.

In general, the Pharmacy resource that should be used to capture information about usage of medication should be captured with the Medication Usage resource.

The following are examples of medication lists:

1. active medication list - as represented by the patient
2. active medication list - as represented by a healthcare organization
3. dispense-related medication lists
4. administration-related medication lists
    a. Medication to be administered
    b. Medication that has been administered
    c. Medication that has been "reported" to be administrated
5. Medication usage lists - what the patient or a provider or other caregiver says a patient is taking
6. Prescribing medication lists

Some History About Medication Lists

One of the challenges when creating a medication list is how to represent that a patient is taking / not-taking a medication, and if the patient is taking the medication as prescribed. Currently the mechanism has been implemented differently in the last two FHIR iterations. In one use of FHIR, the Medication Usage (formerly Statement) resource was used to indicate that the patient was taking or not taking a medication. In a more recent use of FHIR this problem resulted using Medication Request. The approaches are seen in how US Core has represented medication lists in their IGs.

Pharmacy WG and representatives from US realm have continued to discuss this issue. Note that there are differences in US Core and how this document provides guidance regarding Mediation Lists. This document's scope is larger, and is not constrained to use cases covered in US Core.

Need to pull more from other discussions into this part of guidance.

Lastly as a result of the discussions, Pharmacy has created a new attribute on MedicationUsage for R5:

takenAsOrdered This attribute has a cardinality of 0..1 with a boolean datatype and is defined: Indicates if the medication is being consumed or administered as prescribed.

With this change, you can now represent using MedicationUsage in R5 via status and/or the new boolean attribute the following information:

Attribute	Datatype Value	Display	Definition
status	active	Active	The medication is still being taken.
status	completed	Completed	The medication is no longer being taken.

status	entered-in-error	Entered in Error	Some of the actions that are implied by the medication usage may have occurred. For example, the patient may have taken some of the medication. Clinical decision support systems should take this status into account.
status	intended	Intended	The medication may be taken at some time in the future.
status	stopped	Stopped	Actions implied by the usage have been permanently halted, before all of them occurred. This should not be used if the statement was entered in error.
status	on-hold	On Hold	Actions implied by the usage have been temporarily halted, but are expected to continue later. May also be called 'suspended'.
status	unknown	Unknown	The state of the medication use is not currently known.
status	not-taken	Not Taken	The medication was not consumed by the patient
takenAsOrdered	boolean=1	N/A	Indicates if the medication is being consumed or administered as prescribed.

- Scope and Boundaries of the IG
  - patient specific lists
  - Medication and medicationKnowledge are out of scope

Scope and Boundaries

The scope of this Implementation Guide includes the following:

- any medication list that is patient specific including the results of a query for medications regardless of the source of the medication records (for example, EHR records, EMR records, pharmacy records, payment or claims based records
- the definition of the characteristics of a medication list - e.g. active, administered medications, expiring
- nomenclature for medication lists across jurisdictions, organizations, etc.

The following are not in scope for this Implementation Guide:

- lists of medications that are not patient specific
- lists created for medications or medication knowledge (for example, formularies, inventory lists)
- medications that are not present in an electronic system e.g. medications purchased by the patient where there is not a record of the purchase in the pharmacy system, or illegal drugs or drugs of abuse that have been purchased but there is no record of the purchase in any electronic system
- medication track and trace which is not patient specific
- audit and monitoring of medications, for example, recall notifications, prescription drug monitoring by a regulatory authority
  - comment about the above - I thought recall notifications sometimes when out to patients? maybe it is a different name, not a recall, but a notice that the drug has some serious issues and the patient should not be taking it.

Assumptions

The following assumptions have been made as part of the guidance:

- assumes that there is a record of the medication in an electronic system

- Applies to R4 (unless we publish when R5 comes out)
- Overview of Pharmacy resources as they apply to medication lists
  - Med Request
  - Med Dispense

Overview of Pharmacy Resources

This Implementation Guide is based on FHIR Release 4.

- Med Admin
- Med Usage

The Pharmacy resources that are in scope for the guidance include:

- MedicationRequest
- MedicationDispense
- MedicationAdministration
- MedicationUsage (formerly MedicationStatement)

The following resources are not in scope for this Implementation Guide, but it should be noted that there may be requirements to use a created list to get additional information about the medication via Medication resource or MedicationKnowledge resource.

- Medication
- MedicationKnowledge

The following provides a high-level overview of the pharmacy resources

Name	Description
MedicationRequest	Represents an instruction for the administration of medication to a patient - both in the inpatient (hospital) and community setting. It can also include instructions for the dispensing, the reasons why the administration should occur and other data. It is called an 'Request' to be consistent with other FHIR resources and the workflow pattern, but a common alias for this resource is a 'Prescription' or an 'Order'. The Order itself represents the content of the instruction and is not, by itself, actionable. The workflow process around 'fulfilling' the order is part of the generic FHIR workflow (see below), with the MedicationRequest representing the contents.
MedicationDispense	The provision of a supply of a medication with the intention that it is subsequently consumed by a patient (usually in response to a prescription).
MedicationAdministration	A record of a patient actually consuming a medicine, or if it has otherwise been administered to them

MedicationUsage (Statement)	This is a record indicating that a patient may be taking a medication now, has taken the medication in the past, or will be taking the medication in the future. The source for this information can be the patient, significant other (such as a family member or spouse), or a clinician. A common scenario where this information is captured is during the history taking process during a patient visit or stay. A medication statement is not a part of the prescribe->dispense->administer sequence, but is a report that such a sequence (or at least a part of it) did take place, resulting in a belief that the patient has received a particular medication. It may be used to construct a patients 'Current Medications' list.
Medication	The medication resource represents an actual medication that can be given to a patient, and referenced by the other medication resources. In many cases, this resource is not needed and the drug is indicated by a reference to the appropriate terminology and so can be represented using a codeable concept. In other cases, however, it may be desired to indicate more details than the simple drug (such as the packaging, whether it is a generic medication or the active and inactive ingredients) and so the Medication resource can be used for this.
MedicationKnowledge	The MedicationKnowledge resource is draft and is included for comment purposes. This resource represents information about a medication, for example, details about the medication including interactions, contraindications, cost, regulatory status, administration guidelines, etc.

- Definitions and Synonyms
  - e.g. active medication list, medication profile, medication list, patient profile
  - may need a set of definitions for the specific lists we define as part of the IG

  - General Guidance - Jean
    - Discussion of use of list vs bundle resources - point to content that exists in the spec
      - point in time "lists" would use List Resource
  - Use Cases/Contexts - for each context (Melva)
    - Description of the context section and short description of the use case

Definitions: (LEAVE UNTIL WE GET TO THE END - JUST ADD THE ITEM AND WE'LL DEFINE LATER)

- Inpatient setting - a hospital, long term care, rehab facility, psychiatric hospital, Surgery Center, Emergency Department, Ambulance?
- Community setting - Ambulatory clinics, Minute clinics, home care , emergency field setting e.g school shooting, disaster site
- Active Medication List - constrained by the patient's input into whether they are taking or not taking the medication
- Active Medication List - based on what was prescribed
- **Context -** the requirements of a use case relative to the selection of records (e.g., "active", "complete"), the record attributes to include (e.g., quantity, date/time of the recorded event) or additional information to be included (e.g., allergy list).
- A ***Medication List*** for a patient, to satisfy a context includes, medication orders/dispenses/administration records with the product name and may include a number of attributes of each record such as date, timing, directions, quantity, dose amount, refills remaining, location of dispense, site of administration, etc.
- A ***Medication Profile*** include the information in a *Medication List* and adds additional, context specific, information. Examples of additional information include allergy /ADE/ADR information, recent encounter information, laboratory results, medication management program information, medication reconciliation information.

For the most part, this guidance document uses the term *Medication List*. However, many contexts include other related information and are properly *Medication Profiles*. The point is that a collection of medication order/dispense/administration records is being created whether it is just a *Medication List* or a *Medication Profile* with additional information.

There may also be jurisdictional implications regarding List versus Profile. The document does not address these jurisdictional considerations

Glossary - should this be a separate section, include terms that may be used in some countries and not others (for example, aged care facilities, senior care facilities, long term care, retirement villages)

List Details

- Prescribing (Danielle)
  - Introduction/Description of the context
  - Scope and Boundaries for the context
    - Assumptions
  - Rationale
  - Synonyms
  - Setting
  - Source of the content of the list (e.g. dispenses, claims, orders, etc)
  - What data elements are important? - figure out what level of detail we should include here
  - What resources to use
  - Example
    - Types of queries
    - Example of result
  - User = prescriber

Introduction/Description

Assumptions

May include current and/or previously prescribed medicines. Does not indicate prescriptions have been filled, only that a prescription has been provided.

Should this include repeat prescriptions - instance orders? JH - I vote no, not sure what that use case would be for Medication List re: prescribing. However, if you wanted to create a list of medication requests (instance orders) for the purposes of populating a MAR, then I say yes.

Synonyms

Rationale

Provide a list of prescribed medications provided to a patient either current prescriptions or a list of historical prescriptions written.

- New prescriber for patient receiving a history of previously prescribed medications (current and/or ceased)
- List provider to specialist on referral
- Summary of prescribed medicines during hospital admission for community GP
- List of prescribed medicines (current and/or ceased) from current prescriber to facility
- List of prescribed medicines collected centrally by jurisdictions for the purpose of monitoring or program provision (Drugs of dependence monitoring, oral dosing programs etc)
- Centralised/aggregated ePrescribing systems providing current list of 'active' prescriptions available for dispensing/supply
- Electronic health records for both practitioners and patients
- Patient or care giver view of currently prescribed medications eg. patient app, health application
- List of reconciled medications for the purposes of prescribing - reconciled medication list
- Renewal Lists - via Pharmacy
- Renewal of medications - via Patient request or some clinical event (e.g chart reviews)

Setting

Any setting in which a prescription may be provided to a patient.

- Community - clinical information systems both general practice and specialist
- Hospital - EHR
- Residential and Aged Care - electronic chart and administration systems
- Facility - jails and other facilities
- Jurisdictional systems - prescription monitoring systems, dose point providers
- Systems supporting ePrescribing, centralised electronic health records
- Patients, care givers

- Dispensing (Melva)
    - Introduction/Description of the context
    - Scope and Boundaries for the context
        - Assumptions
    - Rationale
    - Synonyms
    - Setting
    - Source of the content of the list (e.g. dispenses, claims, orders, etc)
    - What data elements are important? - figure out what level of detail we should include here
    - What resources to use
    - Example
        - Types of queries
        - Example of result
    - User = Dispenser - pharmacist, tech

Description

- List of current medications prescribed to a patient by an authorised prescriber.
- List of all medications (current and/or ceased) prescribed to a patient by an authorised presriber.
- List of repeat authorisations for prescribed medications???

What data elements are important? - figure out what level of detail we should include here

What resources to use

- MedicationRequest

Types of queries

Example

- Give me all prescriptions prescribed for a patient for date range
- Give me all current prescriptions (active) for a patient for date range
- Give me all ceased/previously prescribed prescriptions for a patient for a date range
- Give me all prescriptions prescribed for a medication/s for a date range
- Give me all prescriptions not filled for a patient for a date range
- Give me all prescriptions prescribed by me for a patient for a date range
- Give me all prescriptions prescribed by other prescribers for a patient for a date range
- Give me all prescriptions for a medicine prescribed by a prescriber for a date range
- Give me all prescriptions prescribed by a prescriber for a date range
- Give me all prescriptions prescribed for me for a date range

Introduction/Description - Melva will work on for next week

Assumptions

The inclusion of a medication in the list does not imply that the patient has actually taken the medication, just that it has been supplied to him or her.

Synonyms

Rationale

Depending on the source of the list, may include only those medications from a specific pharmacy or from an institution (hospital) or from an organization (inpatient, outpatient) or within a jurisdiction (e.g. where there is a centralized system that captures dispenses from all community pharmacies)

Use Case: Clinical review prior to dispensing

- To provide a list of medications that have been dispensed to a patient. The list may be confined to a specific date range.
- The list of dispensed medications is often required to be reviewed by the pharmacists prior to dispensing medication, whether a new medication or a refill of an existing medication, to the patient. In many jurisdictions, the review of the patient's dispensed medication is required by legislation and in some cases, the functionality to retrieve a lists of the medication dispensed to a patient is built into the system so that a dispense can not take place until the list is displayed to the user.

- The list would include any medication that has been dispensed and may include over the counter medications that the patient has purchased which have been recorded on the patient's record.

Use Case: Patient Access

- There is a use case for patient access to the list of dispensed medication - to provide a patient with the list of medications that has been dispensed to him or her during a period. Typically, this is a calendar year and is used for the purposes of submitting for reimbursement for insurance purposes. For this use case, it would be necessary to include the ??? resource to bring in cost information.

Use Case: Coroner

Use Case: Drug recalls

Setting

Applicable to inpatient, outpatient and community settings.

May be applicable to patients or care-givers

Description

The list of medications that have been dispensed to a patient.

May be created by the dispensing system, EHR, or jurisdictional centralized Drug Information System (DIS) from dispense records

May be created by a centralized system using dispense claims data as a proxy for dispenses.

Where do the medications that are listed on the Medication Dispense list come from?

A provider view Medication Dispense list may include medications that come from:

- Prescriptions written by clinicians who have the authority to write these types of medication orders - may include those medications that require a prescription to be dispensed as well as over the counter medications (for example, ASA 81mg) that have been prescribed by a clinician
    - Typically over the counter medications are recorded as dispenses when prescribed to allow the patient to submit the receipt for insurance purposes.
- Over-the-counter (OTC) medications that the dispenser adds to the list - often are medications that the patient takes regularly or seasonally (for example, antihistamines) or are medications for which there is a regulatory requirement to record (for example, in Canada, some jurisdictions require the recording of Exempted Codeine products (e.g. Acetaminophen with Codeine 8mg or ASA with Codeine 8mg)

Would not contain records of dispenses that have been recorded in error.

A patient view of a medication list includes:

- Identical list as above plus cost information

What data elements are important? - figure out what level of detail we should include here

What resources to use

MedicationDispense

Optionally, MedicationUsage

Optionally, ??? claim ??

Types of queries

Blister Packing (Peter) - overlaps with prescribing context and dispensing context

- Introduction/Description of the context - what is required here?
- Scope and Boundaries for the context
    - Assumptions
- Rationale
- Synonyms
- Setting
- Source of the content of the list (e.g. dispenses, claims, orders, etc)
- What data elements are important? - figure out what level of detail we should include here
- What resources to use
- Example
    - Types of queries
    - Example of result
- User = Dispenser and prescriber

Give me all medications dispensed to patient x

Give me all medications dispensed to patient x within this time period

Show me all medications dispensed to me

Show me all medications dispensed to me within this time period

Give me the dispenses for patient x for drug y (or for list of drugs - may be generic formulations or brands)

Give me the dispenses for patient x for the drug classification z (or combination of classifications)

Example

Introduction/Description - Peter to work on this section. Recent wo rk in red

Blister packets are sealed units (e.g., foil packet), provided to the patient, containing medication doses which are schedule to be taken at the same specified time or at a specified event (e.g. breakfast). There may be multiple blister packets to be taken within a day.

This is a list that is maintained by the pharmacy of "regular" medicines that are expected in future Medication Requests. This list is different from other lists as it contains information about special packing requirements.

Initially the list is generated after a clinical review of the patient by the care provider and is used in conjunction with the patient's medication profile.

Periodically (weekly/monthly) the pharmacy will create a number of pro forma Medication Request from the profile for the prescriber to approve. Once approved, the blister pack and request details are sent for robot or human packing. The blister pack list may have items that are not to be packed (creams, liquids, PRN items) but in some jurisdictions must printed on the foil header. The remaining items are dispensed and packed in accordance to he instructions in the list.

Assumptions

The medications in the list are the current medicines to be packed in blister packaging in the next packing run for that patient. It is a subset of the medicines that the patient takes on a regular basis as recorded in the patient profile

Synonyms

Foils, Dose Administration Aid, Conformance Packs, Sachet Packs/unit dose packs

Rationale

The list contains medicines to be packed or have been packed along with detailed administration timings that are printed on the foils and the location of each item in the pack.

Use Case: Clinical review prior to dispensing

- The patient profile is used periodically (usually monthly) to create a proforma prescription (collection of Medication Requests) for each patient in this cycle. A proforma request is a request generated by the pharmacy on behalf of the prescriber. This becomes a legal request when approved by the prescriber.
- These Medication Requests are sent electronically to the prescriber to review and authorise
- The prescriber may stop, modify or add to these requests before authorising
- The authorised Medication Requests are returned electronically to the pharmacy where they used to update patient profile details.
- A query is run across the patient profile requesting all the entries with a certain type of packaging (blister pack, sachet etc). This list(s) are the blister packing lists for each type of packing run.

- The blister pack list is then used by the picker/packer to make up the blister packs or an electronic version is transferred to a packing robot.
- Medication Dispense records are produced from the list
- The completed blister packs are provided to the patient /caregiver.

Setting

Applicable to Pharmacies, Aged Care Facilities, Mental Health units and community settings.

Description

The list of medications that have been dispensed or will be dispensed to a patient in blister packaging. -These medicines will need to be authorised by the prescriber by way of medication requests before dispensing.

Where do the medications that are listed on the Blister Packing list come from?

- Prescriptions written by clinicians who have the authority to write these types of medication orders - may include those medications that require a prescription to be dispensed as well as over the counter medications (for example, Paracetamol) that have been prescribed by a clinician
- Medication administration charts within patient care facilities.

What data elements are important?

- Patient Name and code
- Medicine name and code
- Medicine form If not determined by the code
- Medicine strength If not determined by the code
- Dose quantify
- Administration route
- Medicine administration timings
- Type of packaging including not packed.
- Location in the pack.

What resources to use

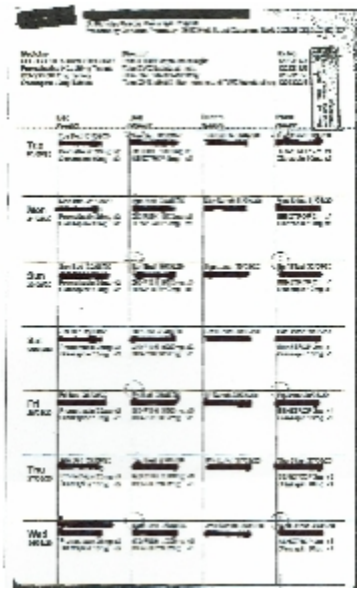
What is/should the patient taking (that can be packed)

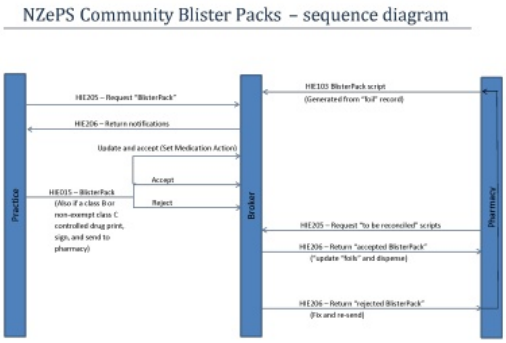
- MedicationRequest (to capture additions to the list)
- MedicationDispense
- MedicationUsage (to catch new patient-reported meds which could be included in the packets)

Types of queries

Give me all medications to be dispensed in a type of packaging to patient x as part of a regular cycle.

Example





Docum

Administration (John)

- Introduction/Description of the context
- Scope and Boundaries for the context
    - Assumptions
- Rationale
- Synonyms
- Setting
- Source of the content of the list (e.g. dispenses, claims, orders, etc)
- What data elements are important? - figure out what level of detail we should include here
- What resources to use
- Example
    - Types of queries
    - Example of result
- User = patient, care giver, clinician

Medication Administration (John)

Introduction/Description

Assumptions

Medication administrations can be done by a clinician, by a patient via self-administration, by a family member e.g. mother for a baby, by a caregiver, or via the use of devices e.g. IV pumps, Insulin pumps, patient controlled analgesic (PCA) pumps. In order to administer a medication there is often some kind of list of medications that includes date and time the medication is to be administered. A common name for this type of list of medications to be administered and the corresponding record of medication administrations is Medication Administration Record (MAR).

Synonyms / Key Definitions

Medication Administration Record (MAR) - a view of a patients medications that need to be administered. Typically an MAR is seen in settings where there is a requirement to document who, when, what and where information, concerning medications administered to a patient, or if self-administered, taken by a patient. The same record often has two primary functions - first it lists what medications need to be administered and what date and time the administration should be done; and second it lists what medications have been administered and the details associated with the administration.

- *Scheduled Medication Administration* - this represents a specific medication, a dose, or IV rate, a route of administration, a date and time, dosage instructions, and optionally, it may include a time interval
- *Medication Administration* - this represents a specific medication administration that includes a dose, or IV rate, a route of administration, and optional administration method, a date and time, or in the case of some IV medications a start date/time and end date/time, optional administration site, name of person who administered the medication, optional details about the administration e.g. patient refused, patient only took a partial dose because they were ill, etc.

Note: The list of attributes in this section is meant to help the reader understand the definitions. It is not meant to define what attributes an individual implementation may include in their design.

Rationale

Scheduled Medication Administration information is used to inform the person who will administer the medication(s) the date/time, and medication specific information e.g. dose, route, method, special instructions for each medication a person is scheduled to take.

Medication Administration details provides a place to capture the data about the actual administration e.g. date/time or time interval of administration, dose, route, method, device, etc.

Depending on the type of application, this type of information may be presented to the user who is administering the medication in an EHR module for medication administration, in a mobile application for the patient or caregiver.

Setting

Should not matter whether the patient is in an inpatient setting or an outpatient or a community based setting

Description

The list of medications to be administered, or that have been administered may be captured in an application on a patient's phone, tablet or computer workstation.

The lists may be created by a variety of users or systems, for example:

- Patient
- Other e.g. parent for a child, care-giver for a patient
- Electronically e.g. health system auto generates the list from orders/prescriptions known to the system
- Clinician e.g. user entry within an EHR Medication Administration module

When a list is created the source of the information may come from a prescription, or a printed list of medications that is used by a patient or caregiver or clinician as input into a digital application.

The level of detail of the data that is captured during medication administration may differ depending of who is creating and entering the data, but the purpose for the list remains the same.

Where do the medications that are listed on the Medication Administration list come from?

Assumption that you either have access to some data source(s0 or no source of data is available or no data in available in any of the sources.

provider view Medication Administration list may include medications that come from:

- Prescribed by clinicians who have the authority to write these types of medication orders
- Over-the-counter (OTC) medications that the patient informs /adds to the list - this would include herbals and supplements

- Medications that are taken in error (this still needs to be documented) NOTE: taken in error has many flavors e.g. wrong dose, wrong route, wrong patient, etc
    - This entry would only show up on the administered list, not on the scheduled list of administrations

A medication administration list includes for a patient:

- Identical list as above with the following caveat
    - may not include some medications - this is seen when the patient is stating by leaving a medication off their list, that they are not taking a specific medication, irrespective of whether it was prescribed - need to edit - not always true

What data elements are important? - figure out what level of detail we should include here

- Scheduled medication administrations that came from Medication Request
    - Drug
    - depending on drug it is either a dosage or rate
    - date/time or interval of date/time
    - route of administration
    - method
    - site
    - dosage instructions
    - reason (should be present for all PRN orders)
- Medication Administrations
    - drug
    - dosage or rate
    - date/time or interval of date/time
    - route
    - method
    - site
    - administered by person or device (see performer in resource)
    - when status = not done, may provide a reason for not given
    - verifier by person (see performer in resource)
    - supporting information e.g. lab, vs, etc.
    - reason
        - scanned the medication supply
    - imported from an EHR
    - reason for taking
        - my physician told me to
        - I decided to take it
- reason for taking

What resources to use

MedicationRequest (intent=instanceOrder) - to support the scheduled medication administrations

MedicationAdministration - to document the actual medication administration

Medication - used for Form, Batch # and/or provide details of what is in a product or compounded product

Types of queries

review US Core queries for a model about how to represent queries.....

What medications should be administered "today"? or this "shift"? or "now"?

Has this patient ever taken "drug xyz"? This would search past medication administrations for this patient?

Did the patient get their "cyclosporin" today?

When was the last time you took demerol?

There may be queries that need to query both MedicationAdministration and MedicationUsage.

Medication Use (John) - needs to be consolidated with other use case ??

- Introduction/Description of the context
- Scope and Boundaries for the context
    - Assumptions
- Rationale
- Synonyms
- Setting
- Source of the content of the list (e.g. dispenses, claims, orders, etc)
- What data elements are important? - figure out what level of detail we should include here
- What resources to use
- Example
    - Types of queries
    - Example of result
- user =

Example

Introduction/Description

Assumptions

When collecting Medication history from patients there are often a series of questions the clinician asks the patient. Another way to ask the questions may come in the form of a questionaire that lists medications and asks These questions can vary depending on the reason for asking the questions. The history can be obtained by talking to a patient, a family member e.g. mother for a baby, by a caregiver, or via queries into systems that record medication administration records (MAR).

Synonyms

Patient reported medication usage

Reported medication usage

Medication history

Rationale

It is common when ordering some medications to understand how the patient responded to the same medication previously. This is one of the primary reasons for reviewing medication administration history. Another reason is to evaluate the dose used previously and make adjustments to a new order for the same medication.

The most common reason in acute care settings is to confirm that a specific dose of a medication was administered.

Setting

Should not matter whether the patient is in an inpatient setting or an outpatient or a community based setting

Description

This section HAS NOT BEEN UPDATED

The list of medications to be administered, or that have been administered may be captured in an application on a patient's phone or computer.

The lists may be created by the patient him or herself or it may be created by a parent for a child or a care-giver for a patient.

The list may be created by a clinician within an EHR Medication Administration module.

The list may be created in a paper document that is used by a patient or caregiver or clinician.

The level of detail of the data that is captured during medication administration may differ depending of who is creating and entering the data, but the purpose for the list remains the same.

Where do the medications that are listed on the Medication Administration History come from?

A provider view of Medication Administration history may include medications that come from:

- Patient reported medication administration history
- Family member medication administration reported history
- Caretaker reported medication administration history
- Via access to Medication Administration Records (MAR)

In acute care settings it is common to query the MAR for medication administration history.

In settings where the patient, caretaker or family member is the source of the medication history it common to ask various questions. The answers to the questions would use FHIR Medication Usage resource to record these types of statements. The following lists some common questions, not all are relevant to Medication Administration History.

- What types of questions do clinicians ask about medication history when they talk to their patients or family member or caretakers
    - What medications are you currently taking? Note this is not bound to just those medications that are prescribed or that are "legal"; and the answer may not include some prescribed medications if the patient is not taking them.
        - A common drill down question is: I noticed you didn't mention the following prescribed medication "xyz", did you forget that medication or are you telling me you are NOT taking that medication? What is the reason you are not taking that prescribed medication?
    - What medications have you been prescribed? This answer can very greatly in quality of response - some folks will know with great detail all of the information about their prescribed medications. Others will have incomplete information; others will have very poor information related to their prescribed medications.
        - A common drill down question is: Are you currently taking this medication?
    - Are you taking any medications that your doctor has not prescribed? In essence this is asking about over the counter (OTC) meds, which may include supplements, herbals, etc.
    - Are you taking any of the following drugs /medications? This list may include depending on who is asking illegal drugs e.g heroin, cocaine, alcohol, morphine, opioids, meth, marijuana, etc.
        - When you fill out a detailed questionnaire often there is a list of medications that you are prompted to answer yes or no regarding whether you are currently taking. These lists of drugs may vary from clinic to clinic. Another common example of this type of list is seen when you donate blood.
    - Have you ever taking medication "xyz"? This could be a transplant reject drug, a chemo drug, or other types of medications.
        - This may not be a list but it could be if the question is can you tell me when, if ever, you took the following medication? The response may be a series of dates and time and potentially different doses for the same medication.

When querying for Medication Administration History it would be common to look at both Medication Administration and Medication Usage records to answer the Medication Administration History question.

A patient view of medication administration history discussion.

- I have not seen this type of view, but here is one opinion. If a patient wanted to understand if they had ever taken a medication, either via self administration or via a clinician or caretaker or family member administration - this would query for Medication Administration and/or Medication Usage records.
    - The results of this type of query may return only one medication or depending on the query multiple instances of the same medication administered over some time period.

What data elements are important? - figure out what level of detail we should include here

- Name of medication administered
- Dose

Medication Reconciliation (Scott/Jean)

- Introduction/Description of the context
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- Synonyms
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- What resources to use
- Example
    - Types of queries
    - Example of result
- User = clinician, pharmacist,

Patient's View (Melva)

- Introduction/Description of the context
- Scope and Boundaries for the context
    - Assumptions
- Rationale
- Synonyms
- Setting
- Source of the content of the list (e.g. dispenses, claims, orders, etc)
- What data elements are important? - figure out what level of detail we should include here
- What resources to use
- Example
    - Types of queries
    - Example of result
- User = patient, family member, care giver

- Date/time of administration
- Form
- Source of medication administration history
    - MAR via EHR module or other system
    - Reported history via Medication Usage record(s)
        - Name of person who provided the history in the Medication Usage record

What resources to use

MedicationAdministration

MedicationUsage

Types of queries

Has this patient ever taken "drug xyz"? This would search past Medication Administration records for this patient? and/or search Medication Usage records.

Did the patient get their "cyclosporin" today?

Example

(working on this in a Word document)

- Introduction/Description of the context
    - need to include discussion of how to remove duplicates if using different types of resources or when there may be multiple orders for the same drug
- Scope and Boundaries for the context
- Assumptions
    - need to include discussion of implementation decisions on how resources are used
- Rationale
- Synonyms
- Setting
- Source of the content of the list (e.g. dispenses, claims, orders, etc)
- What data elements are important? - figure out what level of detail we should include here
- What resources to use
- Example
    - Types of queries
    - Example of result
- User = clinician, pharmacist,

Introduction/Description of the context (Melva)

Assumptions

??? may not need this section

Synonyms

Rationale

To allow a patient to answer the question "what medications am I taking". This list can then be provided to health care practitioners in different settings.

ADD IN USE CASES

- review the list and then request a renewal
- review the list and add new medications
- review the list and update the medications

Setting

Should not matter whether the patient is in an inpatient setting or an outpatient or a community based setting

Description

~~A patient's view of a medication list includes what is in a patients' medication cabinet - may include medication the patient is currently taking, has taken in the past and may take in the future.~~ This list of medication may be captured in an application on a patient's phone or computer.

The list may be created by the patient him or herself or it may be created by a parent for a child or a care-giver for a patient.

Lists created by someone other than the patient may include a different level of detail that if created by the patient, but the purpose for the list is the same.

To address what medications the patient has taken in the past or plans to take in the future....SEE CONTEXT.....

What does it contain

These lists may come in different flavours:

- medications that have been prescribed and are taking
- over the counter medications that the patient taking
- ~~medications that were prescribed but are not being taken - this is not in this list~~
- medications that are being taken, but were prescribed to a different person

A patient view of a medication list includes:

- medications the patient is currently taking
    - and those that were prescribed by the supply should have run out
    - and those that were prescribed for another person that the patient is taking
- ~~medication the patient took in the past but is longer taking~~
- ~~medication the patient plans to take in the future~~

may not include medications that have been prescribed but are not taking

What data elements are important? - figure out what level of detail we should include here

- source
- how captured
    - How was the medication captured in the list?
        - patient or care giver entered
            - manually typed in
            - scanned the medication supply
        - imported from an EHR
        - reason for taking
            - my physician told me to
            - I decided to take it
- reason for taking
- medication details - name, form, etc

What resources to use

MedicationUsage (aka MedicationStatement)

Types of queries

Example

Profiles

- determine if we need - for example, if we have search parameters

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- Owning WG - not needed - will be included in the footer
- History Page - will be automatically generated