Multiple Chronic Condition (MCC) eCare Plan Project

Pre-read material in preparation for the
Federal Partner Meeting on January 24, 2022

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About This Pre-Read

To optimize our time during the Multiple Chronic Condition eCare Plan Federal Partners Meeting on January 24, 2022, we are presenting in this pre-read deck some background information and additional project updates that we may not have the time to go into fully during the meeting.

We plan to reserve some time during the meeting to answer questions regarding this material so we invite you to review this deck if time permits and bring your questions to our meeting on January 24.

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History of Federal Investment in Care Planning/Coordination

Over a decade of federal investment in advancing the development and use of standards for care planning and related care coordination activities:

- **ONC**: 2015 Edition Care Planning Criterion
- **ONC/CMS**: electronic Long-Term Services and Supports (eLTSS)
- **SAMHSA:** Omnibus Care Plan
- **CMS**: PACIO Project
- **NIDDK/AHRQ**: MCC eCare Plan
- **ONC/AHRQ/ACL/CMS**: Gravity Project
- **ACL**: Social Referral Challenge Program
- **ONC**: LEAP Grant Program
- **CDC**: MedMorph
- **CDC**: Clinical Practice Guidelines (CPG) on FHIR
- **ACF**: Human Services Interoperability Innovations Grant
- **CDC**: SDOH Use Case for Chronic Disease Prevention

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Comprehensive Shared Care Plan Definition

1. Gives the person **direct access to health data**.
2. Puts the **person's goals at the center** of decision-making.
3. Is holistic, including **clinical and nonclinical data** (e.g., home- and community-based and social determinants needs and services).
4. **Follows the person** through both high-need episodes (i.e., acute illness) and periods of health improvement and maintenance.
5. Allows **care team coordination**. Clinicians are able to 1) view information relevant to their role, 2) identify which clinician is doing what, and 3) update other members of an interdisciplinary team.

U.S. Department of Health and Human Services 2015 Stakeholder Panel | Baker, et al. Making the Comprehensive Shared Care Plan a Reality. *NEJM Catalyst*. 2016: https://catalyst.nejm.org/making-the-comprehensive-shared-care-plan-a-reality/

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NIDDK/AHRQ e-Care Plan for Multiple Chronic Conditions (MCC) Project

Build capacity for pragmatic, patient-centered outcomes research (PCOR) by developing an **interoperable electronic care plan** to facilitate aggregation and **sharing of critical patient-centered data** across **home-**, **community-**, **clinic-**, and **research-**based settings for people with **multiple chronic conditions** (MCC).

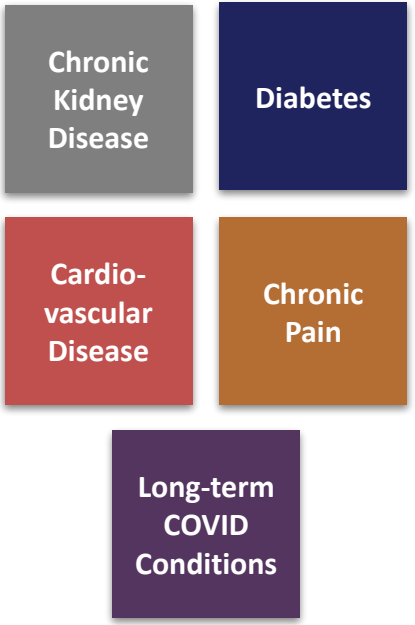
https://ecareplan.ahrq.gov/collaborate/

MCC eCare Project Deliverables*

1. **Data elements, value sets, and FHIR mappings** to enable standardized transfer of data across health and research settings for kidney disease, diabetes, cardiovascular disease, chronic pain, and long-term COVID.

2. **HL7® Fast Health Interoperability Resource (FHIR®) Implementation Guide** based on defined use cases and standardized MCC data elements, balloted for trial use.

3. **Pilot tested provider-facing and patient/caregiver-facing e-care plan applications** that integrate with the EHR to pull, share, and display key patient data.



*All deliverables will be open-source and freely available.

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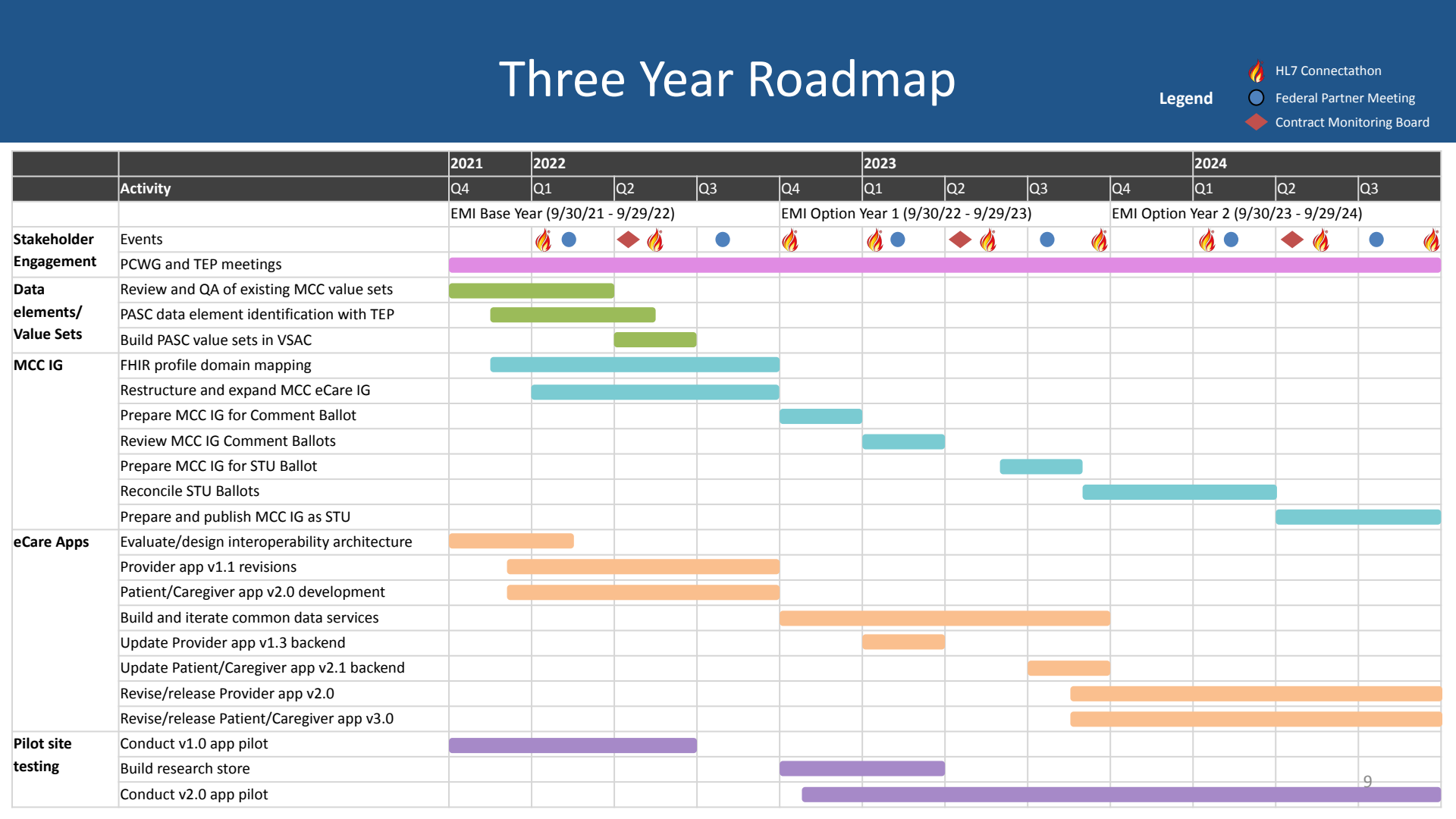
Overview of Work Year Over Year

	Year 1 (Fall 2019-Fall 2020)	Year 2 (Fall 2020-Fall 2021)	Year 3 (Fall 2021-Fall 2022)	Year 4 (Fall 2022-Fall 2023)
Data elements, value sets, and FHIR mappings	• HL7 project approval. • MCC use case development. • Built CKD and other prioritized value sets in NLM VSAC and mapped to FHIR constructs. • Began identification of data elements for CVD, chronic pain, and T2D. • Facilitated TEP.	• Completed identification of 1,100+ data elements for CVD, chronic pain, and T2D. • Facilitated TEP. • Developed data standards approaches for person/plan details, health concerns, and social concerns.	• Conducted quality assurance and review of existing value sets. • Identified long COVID data elements and facilitate TEP. • Built additional, new value sets in VSAC. • Mapped new/revised data elements to FHIR.	• Revise and finalize new value set libraries and tables. • Update use cases. • Build and update new profiles.
HL7 FHIR IG	• Conceptualization and design of the MCC eCare Plan FHIR IG.	• Developed draft MCC eCare Plan FHIR IG.	• Developed high-level mapping and design approach for the MCC eCare Plan FHIR IG. • Restructured the IG to include new guidance and library of value sets. • Expanded to incorporate value sets for all five clinical domains (CKD, CVD, chronic pain, T2D, and long COVID).	• Revise, update, and submit IG for comment HL7 ballot in Jan 2023 cycle. • Integrate ballot comments and perform reconciliation. • Prepare and submit FHIR IG for STU ballot in Sep 2023 cycle.
Patient/ Caregiver and Provider eCare applications		• Developed v1.0 application for patients. • Developed v1.0 application for providers. • Facilitated configuration of apps at OHSU site for pilot testing.	• Built patient/caregiver app v2.0. • Developed features to support goal-oriented shared care planning. • Set up sandbox environment on Azure cloud for demonstration and testing. • Formed an agile team with RTI/OHSU to support development and pilot design. • Conducted iterative user feedback sessions.	• Develop and revise a common data services library. • Allow for multiple, simultaneous logins in the patient/caregiver app. • Patient/caregiver UI redesign. • Modify backend of both apps to use common data services library. • Support pilot testing at OHSU.

Three Year Roadmap



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- Project background and high-level update
- **Long COVID manuscript**
- HL7® FHIR® Implementation Guide development and balloting
- HL7® Connectathon 31 & 32
- eCare Plan SMART on FHIR applications

Establishing Data Elements and Exchange Standards to Support Long COVID Healthcare and Research

Long COVID Manuscript

The project teams are developing a manuscript for submission to the Journal of the American Medical Informatics Association (JAMIA).

The goal is to showcase how consensus-based methodology was used to identify data elements for long COVID, what value sets and data exchange standards were developed for long COVID, and discuss how data standards for long COVID may be used for future research and care delivery.

The team hopes to submit the draft manuscript to the journal for consideration in 2023 Q1.

Draft Abstract

Objective: The multiple chronic conditions (MCC) e-care plan project aims to determine critical care planning data standards needed to manage the capture and exchange of information for people experiencing long COVID as they transition across health and research settings.

Materials and Methods: We used a consensus-driven process involving a Technical Expert Panel (TEP) to identify and define data elements that are critical for the care management of people experiencing long COVID. We used a two-part iterative process: (1) identifying, defining, and prioritizing data element concepts with the TEP, and (2) determining and building standards to support the capture and electronic exchange of each data concept.

Results: The TEP identified data elements for long COVID in the following categories: health concerns, assessment scales for patients, assessment scales for caregivers, treatment interventions, and clinical and laboratory test results.

Discussion: The long COVID data standards can support future efforts for quality improvement measures, research study recruitment, clinical data for epidemiological research, organization of clinical information in applications, and validation of terminology. They also create an evidence base for understanding effective long COVID interventions and caregiver priorities in patients with MCC.

Conclusion: The data standards created through an open collaborative consensus-based process will enable patient-centered long COVID health concerns, interventions, and status/outcomes to be shared and used for care coordination across disparate clinical settings. In addition, the data standards will support the use of real-world data for long COVID research.

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A Primer on FHIR Implementation Guides

What is a FHIR implementation guide?

A FHIR implementation guide (IG) is a set of rules about ***how FHIR resources are used (or should be used) to solve a particular problem***. It contains associated documentation to support and clarify the usage.

Who uses them and for what purpose?

- **Architects and developers of healthcare information technology (HIT) systems** - Follow guidance for developing implementations.
- **Business analysts** - Assist developers in understanding system implementation requirements.
- **Project managers** - Gain understanding of how to manage or prioritize implementation.
- **Clinical informaticists** - Interpret clinical implications and provide feedback.
- **Policymakers** - Understand the IG and encourage implementation once deemed valuable for the industry.

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MCC eCare Plan FHIR Implementation Guide (IG)

The HL7® MCC eCare Plan FHIR Implementation Guide (IG) defines FHIR R4 profiles, structures, extensions, transactions, and value sets needed to represent, query for, and exchange Care Plan information to support care planning for people with multiple chronic conditions (MCC).

The IG supports the following use cases:

1. Generate and update comprehensive e-care plan in clinical setting.
2. Expose (Share) e-care plan to clinical care team, patient, or caregiver.
3. Identify care team members.

HL7 FHIR

Improve care coordination without increasing clinician burden

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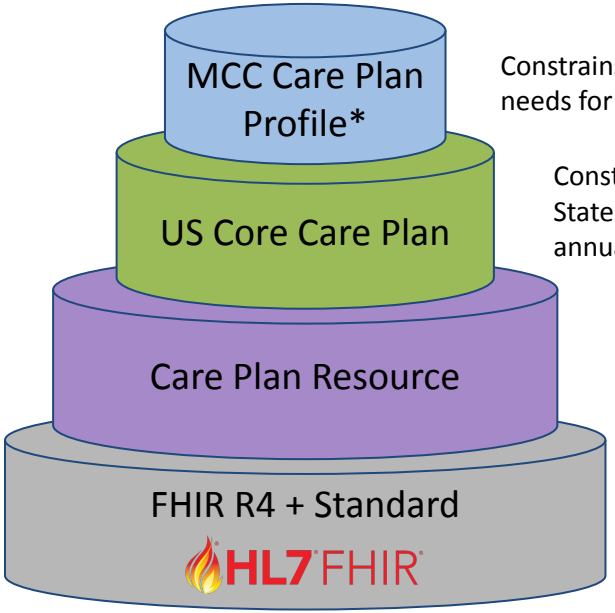
Reusing and Constraining the FHIR Care Plan Resource

The MCC eCare Plan FHIR Implementation Guide is built on the FHIR Care Plan Resource framework.

Each layer in the cake diagram demonstrates how the FHIR Care Plan Resource is reused and constrained for the MCC Care Plan use cases.

**The MCC IG adds additional items or guidance beyond what is available in US Core or FHIR resources but it cannot loosen existing rules from what is constrained.*



Constrains the US Core FHIR Care Plan Resource to meet the needs for multiple chronic conditions (MCC) care planning.

Constrains the Care Plan Resource for use in the United States. US Core incorporates USCDI data elements annually and according to HL7 ballot cycles.

Describes the intention of how one or more practitioners intend to deliver care for a particular patient, group, or community for a period of time.

FHIR is a standard for health care data exchange, published by HL7®.

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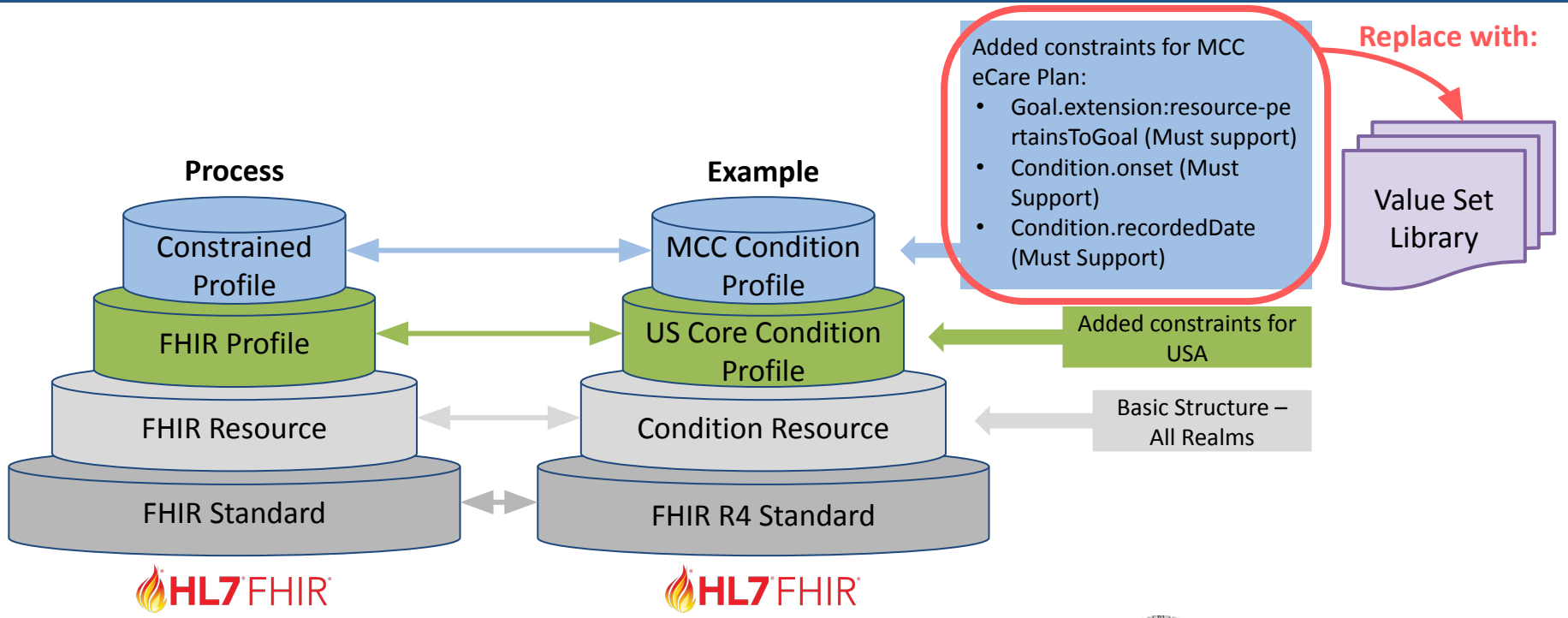
Reusing and Constraining: Value Set Library



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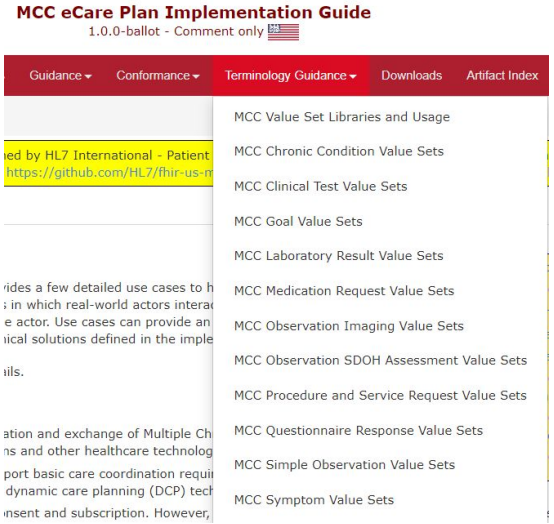
What is “The eCare Plan MCC Value Set Library”?

Similar to the Dewey Decimal System of old, the MCC Value Set Library:

- Organizes the value sets based on their subject.
- Identifies the profiles that the value sets can be used in and where within the profile they can be used.
- Provides links to the Profile from each library (and vice versa).



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Summary of Updates to the FHIR IG

The following updates were made to the MCC eCare Plan IG for comment only ballot in January 2023:

- **IG Home** was updated with language tweaks, acknowledgements, and IG contributors.
- **Use Cases** now reflect current coverage and are more implementer focused.
- **Images** for Structure and Design and Questionnaire Response have been updated to reflect the revised structure of the IG.
- **_include and _revinclude** notes were incorporated.
- **MCC Care Plan SDOH guidance** was included.
- **MCC Questionnaire Response** technical requirements were included.
- **MCC must-support documentation** was included under Conformance.
- **Value set tables** were developed and populated. The value sets are not bound directly into profiles. Within each value set library, there is a link back to the profile for which the value sets have been created or vocabulary guidance in lieu of a value set.

For more information on the IG, please see the Appendix at the end of this document.

MCC eCare Plan FHIR IG Timeline

Balloting is a formal process used by HL7 to get feedback and comments on specifications prior to publication. There are different ballot levels: For Comment, Informative, Standard for Trial Use (STU), and Normative. Over the course of this project, the MCC eCare Plan IG will be matured through the For Comment ballot and the STU ballot. Below is a timeline for the development of the IG:

New additions include finalized value sets, updated Use Cases, capability statements.

Triage comments received during the For Comment ballot and begin comment reconciliation.

Update FHIR IG based on latest version of US Core IG and comments from the January 2023 For Comment ballot.

Triage comments received during the STU ballot and perform comment reconciliation to update the FHIR IG.

Prepare the IG for publication as an STU meaning that the IG is substantially complete and ready for implementation.

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HL7 FHIR Connectathon Testing

An HL7 FHIR Connectathon is a testing event used to develop HL7 FHIR Specifications including resources, profiles, and implementation guides. The purpose of a Connectathon is to prove that the specification is complete and facilitates FHIR implementation guide maturity. The MCC eCare Plan Project has led a track at or participated in Connectathons regularly for the last three years. The most recent ones are captured below:

Connectathon 29	Connectathon 30	Connectathon 31	Connectathon 32	Connectathon 33
January 2022	**May 2022**	**September 2022**	**January 2023**	**May 2023**
Hosted the Care Planning Track.	Hosted the Care Planning Track.	Attended as the MCC eCare Plan team.	Attended as the MCC eCare Plan team.	Planning to host the Care Planning Track.
• Examined the clinical feasibility and interoperability of goals.	• Explored clinical workflow surrounding goal documentation using observation.	• Tested the MCC eCare Plan FHIR IG and SMART on FHIR applications through related tracks.	• Defined testing plans for the MCC eCare Plan FHIR IG to prepare for track testing in May 2023.	• Currently securing implementers to test the IG and preparing the test scenarios.

Notable Achievements

Connectathon 31 (September 2022) - Report Out

- Connected with Allscripts team on integrating the eCare patient/caregiver app with Allscripts FHIR endpoint with OAuth2 authorization.
- Identified recommendations for US Core to add additional query combinations and Should Support guidance.
- Discovered a new tool developed by the clinical reasoning team that would automate the download and update of FHIR ValueSet resources from VSAC.
- Uncovered perspective on FHIR Provenance that is different for data aggregation use cases related to quality measures versus data aggregation use cases for patient care.
- Discussed and planned recommended approaches for using CQL logic libraries to score assessment questionnaire results, such as PROMIS-10 and 29.

Connectathon 32 (January 2023)

Achievements are pending because this Connectathon is taking place January 14-15. We would be happy to recap the highlights during the January 24 Federal Partners Meeting if requested, and include the notable achievements in the Appendix when we share the presentation slides.

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Background for eCare Plan SMART on FHIR Applications

Deliverable **3**

Pilot tested provider-facing and patient/caregiver-facing e-care plan applications that integrate with the EHR to pull, share, and display key patient data.

Year 3 and 4

Expand and revise **Provider Application**.

Design and build **Patient/Caregiver Application**.

Design and build **interoperability architecture**.

Support **pilot testing**.

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eCare Apps Support Comprehensive Shared Care Planning

	Comprehensive Shared Care Plan Definition*		MCC eCare Plan Applications
1	Gives the person **direct access to health data**.	→	Apps query EHR and other FHIR endpoints.
2	Puts the **person's goals at the center** of decision-making.	→	Apps designed around the process of goal-oriented shared decision-making.
3	Is holistic, including **clinical and nonclinical data**.	→	Apps supports SDOH data and patient/caregiver-reported data.
4	**Follows the person** through both acute and chronic care.	→	Apps can be used anytime and support transfer of data between acute and primary care contexts.
5	Allows **care team coordination**.	→	Apps allow caregiver (proxy), patient, and all providers to coordinate and plan care.

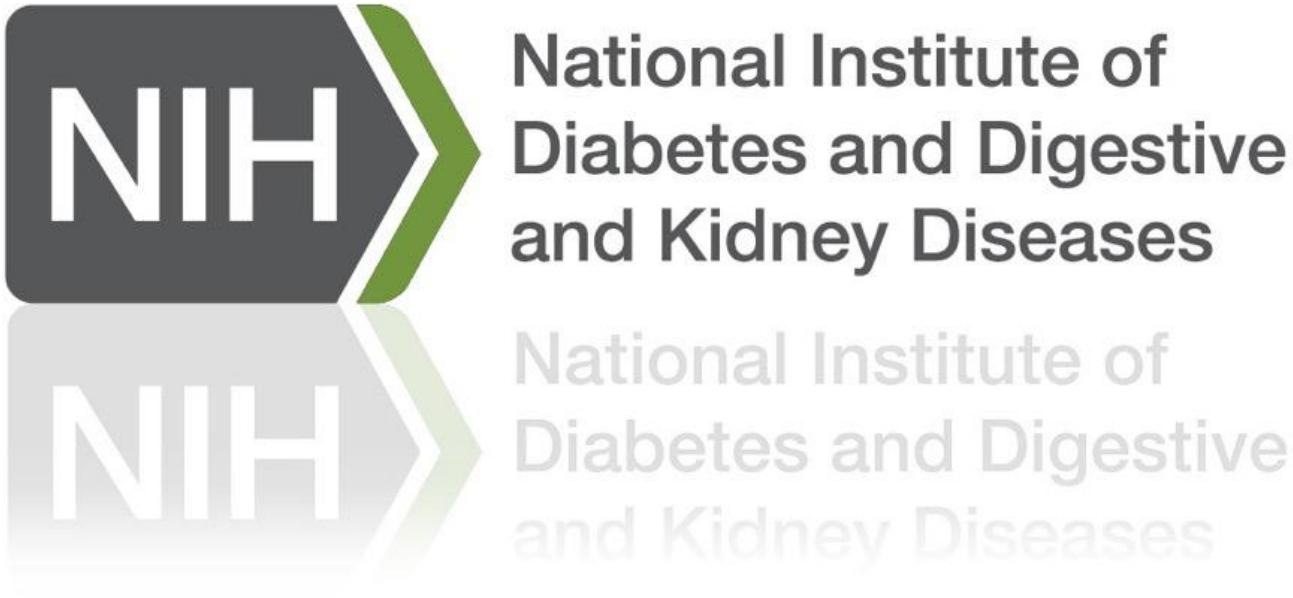
*U.S. Department of Health and Human Services 2015 Stakeholder Panel | Baker, et al. Making the Comprehensive Shared Care Plan a Reality. *NEJM Catalyst*. 2016: https://catalyst.nejm.org/making-the-comprehensive-shared-care-plan-a-reality/

Provider App Vision

- A **standards-based application** platform for providers that supports them in patient-centered care planning and **care coordination** by surfacing key factors and data to improve outcomes for people with multiple chronic condition.
- Serves as a complementary app to an EHR system to:
  - **Improve provider productivity** and **reduce provider burden**, and
  - Bring together in a **single view** care planning data from multiple EHRs and patient-/caregiver-authored data not supported in EHRs.
- Serves as a companion app to the patient/caregiver app enabling **shared care planning** between all members of the care team.

Patient/Caregiver App Vision

- A **standards-based application** platform for patients and caregivers to engage them in **participating in their care planning** for multiple chronic conditions.
- Allows patients and caregivers to **write information** into the app that can be shared with their providers.
- Allows patients and caregivers to see their health data from all of their providers in one place to fully enable **goal-oriented care planning**.
- Supports better care coordination due to **fully interoperable data exchange**.
- Serves as a companion app to the provider-facing app enabling **shared care planning** between all members of the care team.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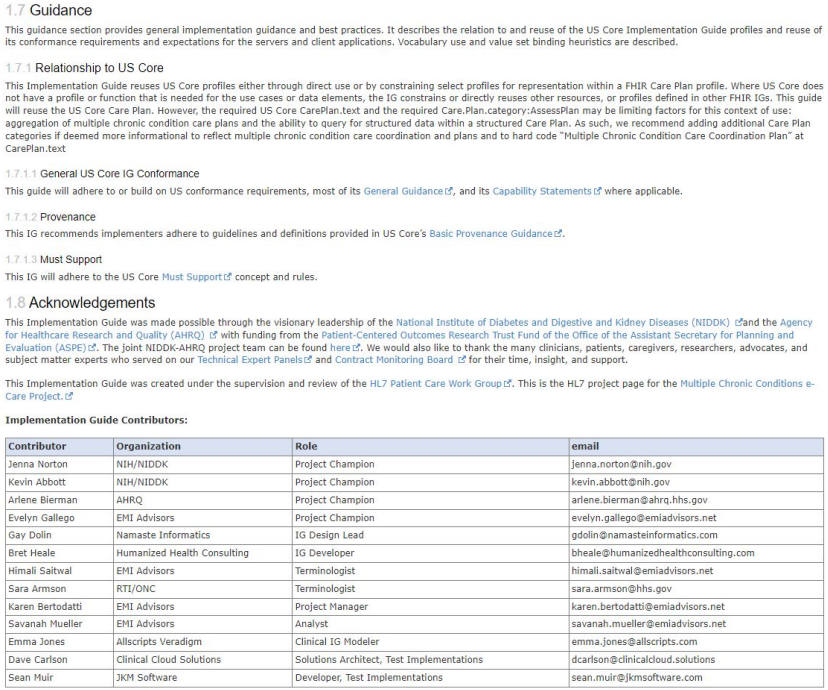
Appendix: Notable features of the HL7® MCC eCare Plan FHIR Implementation Guide (IG)

IG Home

- The implementation guide has just gone through a for-comment ballot where HL7 members can submit comments and suggestions on the current IG.
- The introduction and main page have been updated to include all contributors.



1.7 Guidance

This guidance section provides general implementation guidance and best practices. It describes the relation to and reuse of the US Core Implementation Guide profiles and reuse of its conformance requirements and expectations for the servers and client applications. Vocabulary use and value set binding heuristics are described.

1.7.1 Relationship to US Core

This Implementation Guide reuses US Core profiles either through direct use or by constraining select profiles for representation within a FHIR Care Plan profile. Where US Core does not have a profile or function that is needed for the use cases or data elements, the IG constrains or directly reuses other resources, or profiles defined in other FHIR IGs. This guide will reuse the US Core Care Plan. However, the required US Core CarePlan.text and the required Care.Plan.category:AssessPlan may be limiting factors for this context of use: aggregation of multiple chronic condition care plans and the ability to query for structured data within a structured Care Plan. As such, we recommend adding additional Care Plan categories if deemed more informational to reflect multiple chronic condition care coordination and plans and to hard code "Multiple Chronic Condition Care Coordination Plan" at CarePlan.text

1.7.1.1 General US Core IG Conformance

This guide will adhere to or build on US conformance requirements, most of its General Guidance, and its Capability Statements where applicable.

1.7.1.2 Provenance

This IG recommends implementers adhere to guidelines and definitions provided in US Core's Basic Provenance Guidance.

1.7.1.3 Must Support

This IG will adhere to the US Core Must Support concept and rules.

1.8 Acknowledgements

This Implementation Guide was made possible through the visionary leadership of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and the Agency for Healthcare Research and Quality (AHRQ) with funding from the Patient-Centered Outcomes Research Trust Fund of the Office of the Assistant Secretary for Planning and Evaluation (ASPE). The joint NIDDK-AHRQ project team can be found here. We would also like to thank the many clinicians, patients, caregivers, researchers, advocates, and subject matter experts who served on our Technical Expert Panels and Contract Monitoring Board for their time, insight, and support.

This Implementation Guide was created under the supervision and review of the HL7 Patient Care Work Group. This is the HL7 project page for the Multiple Chronic Conditions e-Care Project.

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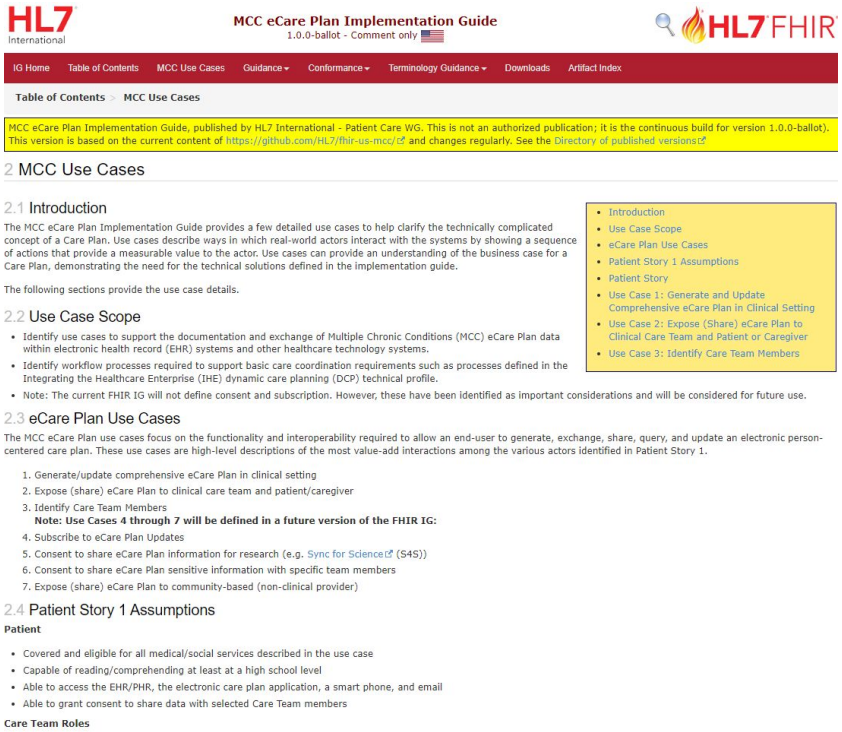
MCC Use Cases



HL7 International

MCC eCare Plan Implementation Guide
1.0.0-ballot - Comment only

HL7 FHIR

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MCC eCare Plan Implementation Guide, published by HL7 International - Patient Care WG. This is not an authorized publication; it is the continuous build for version 1.0.0-ballot). This version is based on the current content of https://github.com/HL7/fhir-us-mcc/ and changes regularly. See the Directory of published versions

2 MCC Use Cases

2.1 Introduction

The MCC eCare Plan Implementation Guide provides a few detailed use cases to help clarify the technically complicated concept of a Care Plan. Use cases describe ways in which real-world actors interact with the systems by showing a sequence of actions that provide a measurable value to the actor. Use cases can provide an understanding of the business case for a Care Plan, demonstrating the need for the technical solutions defined in the implementation guide.

The following sections provide the use case details.

- Introduction
- Use Case Scope
- eCare Plan Use Cases
- Patient Story 1 Assumptions
- Patient Story
- Use Case 1: Generate and Update Comprehensive eCare Plan in Clinical Setting
- Use Case 2: Expose (Share) eCare Plan to Clinical Care Team and Patient or Caregiver
- Use Case 3: Identify Care Team Members

2.2 Use Case Scope

- Identify use cases to support the documentation and exchange of Multiple Chronic Conditions (MCC) eCare Plan data within electronic health record (EHR) systems and other healthcare technology systems.
- Identify workflow processes required to support basic care coordination requirements such as processes defined in the Integrating the Healthcare Enterprise (IHE) dynamic care planning (DCP) technical profile.
- Note: The current FHIR IG will not define consent and subscription. However, these have been identified as important considerations and will be considered for future use.

2.3 eCare Plan Use Cases

The MCC eCare Plan use cases focus on the functionality and interoperability required to allow an end-user to generate, exchange, share, query, and update an electronic person-centered care plan. These use cases are high-level descriptions of the most value-add interactions among the various actors identified in Patient Story 1.

1. Generate/update comprehensive eCare Plan in clinical setting
2. Expose (share) eCare Plan to clinical care team and patient/caregiver
3. Identify Care Team Members
   Note: Use Cases 4 through 7 will be defined in a future version of the FHIR IG:
4. Subscribe to eCare Plan Updates
5. Consent to share eCare Plan information for research (e.g. Sync for Science (S4S))
6. Consent to share eCare Plan sensitive information with specific team members
7. Expose (share) eCare Plan to community-based (non-clinical provider)

2.4 Patient Story 1 Assumptions

Patient

- Covered and eligible for all medical/social services described in the use case
- Capable of reading/comprehending at least at a high school level
- Able to access the EHR/PHR, the electronic care plan application, a smart phone, and email
- Able to grant consent to share data with selected Care Team members

Care Team Roles

- The Use Cases better reflect the current scope and have been changed to be more implementer focused.

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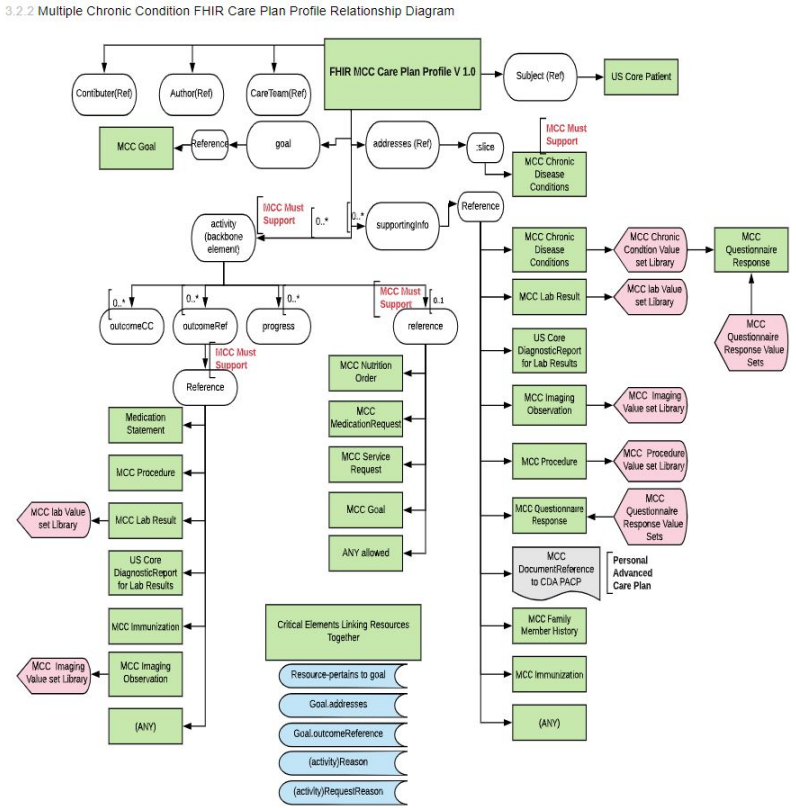
Structure and Design Considerations



- The FHIR Care Plan Profile Relationship Diagram has been updated to reflect interactions in the Care Plan referencing value set libraries instead of profiles.

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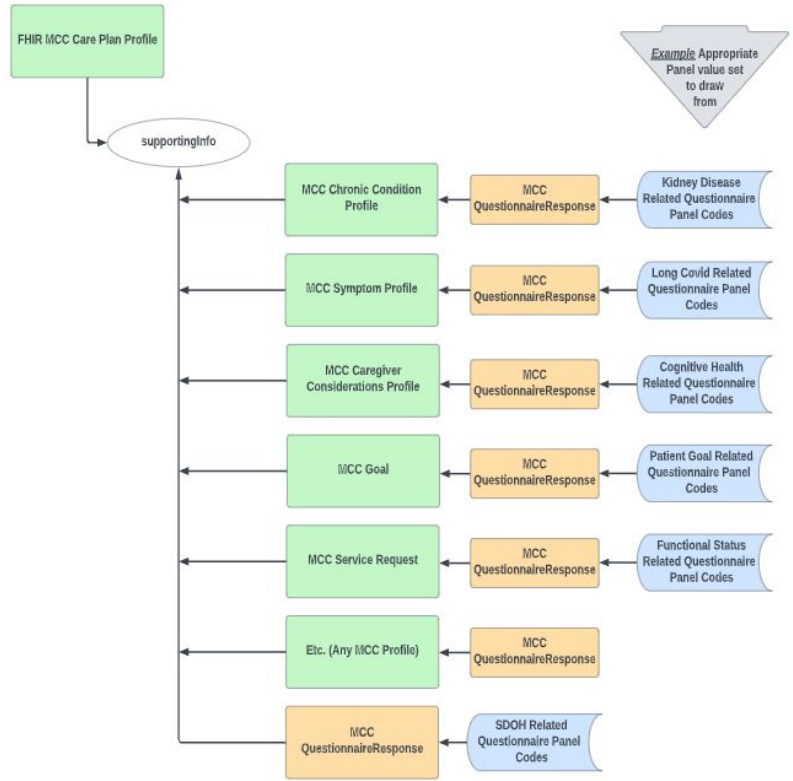
QuestionnaireResponse Guidance

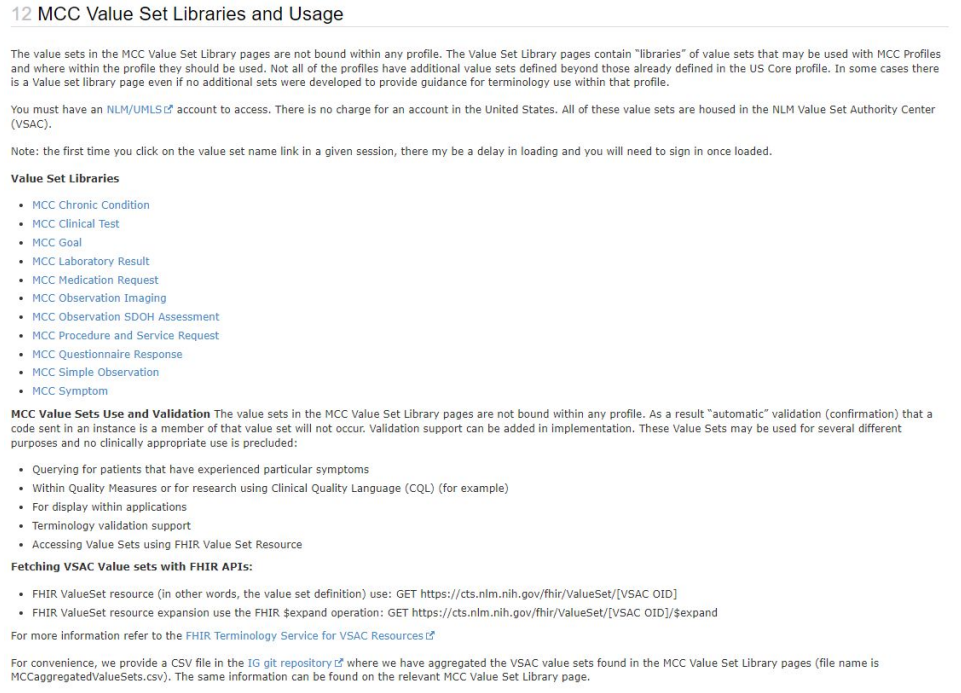
Figure: MCC eCare Plan QuestionnaireResponse Integration Points



- The QuestionnaireResponse diagram has been updated to demonstrate where questionnaire responses can be incorporated into the Care Plan–either directly or through a profile.

Value Sets and Libraries

- All value set tables have been updated to include TEP defined data elements.
- The value sets are not bound directly into the profiles.
- The team created a base set of profiles to which the value set libraries can be bound.
- We are not precluding other value sets.



12 MCC Value Set Libraries and Usage

The value sets in the MCC Value Set Library pages are not bound within any profile. The Value Set Library pages contain "libraries" of value sets that may be used with MCC Profiles and where within the profile they should be used. Not all of the profiles have additional value sets defined beyond those already defined in the US Core profile. In some cases there is a Value set library page even if no additional sets were developed to provide guidance for terminology use within that profile.

You must have an NLM/UMLS account to access. There is no charge for an account in the United States. All of these value sets are housed in the NLM Value Set Authority Center (VSAC).

Note: the first time you click on the value set name link in a given session, there my be a delay in loading and you will need to sign in once loaded.

Value Set Libraries

- MCC Chronic Condition
- MCC Clinical Test
- MCC Goal
- MCC Laboratory Result
- MCC Medication Request
- MCC Observation Imaging
- MCC Observation SDOH Assessment
- MCC Procedure and Service Request
- MCC Questionnaire Response
- MCC Simple Observation
- MCC Symptom

MCC Value Sets Use and Validation The value sets in the MCC Value Set Library pages are not bound within any profile. As a result "automatic" validation (confirmation) that a code sent in an instance is a member of that value set will not occur. Validation support can be added in implementation. These Value Sets may be used for several different purposes and no clinically appropriate use is precluded:

- Querying for patients that have experienced particular symptoms
- Within Quality Measures or for research using Clinical Quality Language (CQL) (for example)
- For display within applications
- Terminology validation support
- Accessing Value Sets using FHIR Value Set Resource

Fetching VSAC Value sets with FHIR APIs:

- FHIR ValueSet resource (in other words, the value set definition) use: GET https://cts.nlm.nih.gov/fhir/ValueSet/[VSAC OID]
- FHIR ValueSet resource expansion use the FHIR $expand operation: GET https://cts.nlm.nih.gov/fhir/ValueSet/[VSAC OID]/$expand

For more information refer to the FHIR Terminology Service for VSAC Resources

For convenience, we provide a CSV file in the IG git repository where we have aggregated the VSAC value sets found in the MCC Value Set Library pages (file name is MCCaggregatedValueSets.csv). The same information can be found on the relevant MCC Value Set Library page.

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Social Determinants of Health (SDOH) Value Sets

- Where we have not created a specific value set for the base profiles, vocabulary guidance is included.
- In SDOH value sets, we highlight the Gravity value sets that were made for these purposes.

12.8.1 MCC Procedure Value Sets

Value Set Name and VSAC Link	Value Set Clinical Focus	OID	Profile Element
Social Determinants of Health Procedures	The value sets in this group represent domain-specific interventions identified by the Gravity Project to document services delivered across the clinical and social care ecosystem (including clinical settings, community-based organizations, departments of health and housing, designated agencies, educational settings, etc.). This value set will continue to be refined to contain specific procedures typically performed by clinical and social care partners in response to a service request. Many social care partners document procedures in compliance with their own data requirements and taxonomies (e.g., 211 LA, Homeless Management Information System, etc.). Although the SDOH ServiceRequest value sets and SDOH Procedure value sets are currently identical, they will diverge as value set development continues under the Gravity governance process.	2.16.840.1.113762.1.4.1196.789	Procedure.code

12.8.2 MCC Service Request Value Set

Value Set Name and VSAC Link	Value Set Clinical Focus	OID	Profile Element
Social Determinants of Health Service Requests	The value sets in this group represent all of the individual domain interventions identified by the Gravity Project that can be used to request services from partners in the clinical and social care ecosystem (including clinical specialists such as community health workers, social workers and dieticians, and community partners such as community-based organizations, departments of education, health and housing, libraries, etc.). This value set will continue to be refined to contain the more general higher-level concepts that typically comprise referrals for services. Clinical and social care partners will typically fulfill the service requests by performing activities (procedures) at a much more detailed level. Currently, the ServiceRequest and Procedure SDOH value sets are identical, but they will diverge in the near future to reflect these differences as they mature and consensus is reached through the Gravity governance process.	2.16.840.1.113762.1.4.1196.790	ServiceRequest.code

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Chronic Condition Value Set - Example

Value Set Name and VSAC Link	Value Set Clinical Focus	OID	Profile Element
Arthritis Conditions	**Value Set Clinical Focus**	**OID**	**Profile Element**
Arthritis Disorders	This set of values contains diagnoses or problem terms representing arthritis disorders.	2.16.840.1.113762.1.4.1222.81	Condition.code
Infectious Arthritis	This set of values addresses terms representing Infectious Arthritis.	2.16.840.1.113762.1.4.1222.654	Condition.code
Osteoarthritis (Oa)	This set of values addresses terms representing Osteoarthritis (Oa).	2.16.840.1.113762.1.4.1222.648	Condition.code
Psoriatic Arthritis	This set of values addresses terms representing Psoriatic Arthritis.	2.16.840.1.113762.1.4.1222.587	Condition.code
Reactive Arthritis	This set of values addresses terms representing Reactive Arthritis.	2.16.840.1.113762.1.4.1222.588	Condition.code
Rheumatoid Arthritis (Ra)	This set of values addresses terms representing Rheumatoid Arthritis (Ra).	2.16.840.1.113762.1.4.1222.651	Condition.code
Cardiovascular Conditions	**Value Set Clinical Focus**	**OID**	**Profile Element**
Acute Coronary Syndromes	This comprehensive set of codes is intended to capture a patient with acute coronary syndromes (e.g., acute myocardial infarction, acute coronary thrombosis and unstable angina diagnoses).	2.16.840.1.113883.3.3157.2000.10	Condition.code
Acute Myocardial Infarction (AMI)	This grouping value set contains diagnoses used to identify patients with acute myocardial infarction.	2.16.840.1.113883.3.666.5.3011	Condition.code
American Heart Association Heart Failure Stage	This set of values addresses terms representing the American Heart Association Heart Failure Stage.	2.16.840.1.113762.1.4.1222.581	Condition.code
Aneurysm	This set of values addresses terms representing Aneurysm.	2.16.840.1.113762.1.4.1222.627	Condition.code
Angina	This set of values addresses terms representing Angina.	2.16.840.1.113762.1.4.1222.608	Condition.code
Aortic Disease	This set of values addresses terms representing Aortic Disease.	2.16.840.1.113762.1.4.1222.636	Condition.code
Arrhythmia	The purpose of this value set is to represent concepts of a diagnosis	2.16.840.1.113883.3.526.3.366	Condition.code

Observation Value Set - Example

Value Set Name and VSAC Link	Value Set Clinical Focus	OID	Profile Element
American College of Cardiology or American Heart Association Ascvd Risk Score (acc/aha Ascvd Risk)	This set of values addresses terms representing an observation for American College of Cardiology/American Heart Association ASCVD risk score (ACC/AHA ASCVD risk)	2.16.840.1.113762.1.4.1222.583	Observation.code
Bathing or grooming/hygiene (ADL/IADL)	This set of values addresses terms representing an observation of bathing/grooming/hygiene (ADL/IADL) ability.	2.16.840.1.113762.1.4.1222.954	Observation.code
Bed Mobility (ADL or IADL)	This set of values addresses terms representing an observation of bed mobility (ADL/IADL).	2.16.840.1.113762.1.4.1222.962	Observation.code
Bowel Sounds	This set of values addresses terms representing an observation of Bowel sounds	2.16.840.1.113762.1.4.1222.822	Observation.code
Carbohydrate Intake	This set of values addresses terms representing an observation of carbohydrate intake.	2.16.840.1.113762.1.4.1222.1026	Observation.code
Cognitive Function Clinician Interpretation	This set of values addresses terms representing a clinical interpretation of a patient's cognitive function.	2.16.840.1.113762.1.4.1222.979	Observation.code
Domestic Duties or Household Tasks (ADL/IADL)	This set of values addresses terms representing an observation of domestic duties/household tasks (ADL/IADL) ability.	2.16.840.1.113762.1.4.1222.960	Observation.code
Dressing (ADL or IADL)	This set of values addresses terms representing an observation of dressing (ADL/IADL) ability.	2.16.840.1.113762.1.4.1222.955	Observation.code
Education Level SCT	This set of values addresses terms representing Education Level.	2.16.840.1.113762.1.4.1222.1229	Observation.code

QuestionnaireResponse Value Sets

Table Key

- **Value Set Name and Link**: All of these value sets are housed in the NLM Value Set Authority Center (VSAC). The value set name is a link to the value set. You must have an NLM/UMLS account to access. There is no charge for an account. Note: the first time you click on the value set name link in a given session, there my be a delay in loading and you will need to sign in once loaded.
- **Value Set Clinical Focus**: The Value Set Clinical Focus is the same as the clinical focus as written in VSAC which is a free text statement describing the general context of the concepts in the set.
- **OID**: The Object Identifier (OID) of the set. OIDs of value sets are unique, whereas the names may not be. If accessing the value set outside of this table link, it is safest to perform that search with the OID
- **Profile Element**: The Profile element asserts the location within the profile the value set term **SHALL** be used. In this table, the appropriate profile element is listed as Questionnaire.code in the FHIR Questionairre Resource
- **LHC LOINC Form examples**: Contains links to the LHC forms widget leveraged by LOINC and associated with each LOINC panel code in the value set. This presents a rendering of the Questionnaire form, the panel code and contained questions and all posssible answers. In order to use or view the LHC form widget and the panels FHIR Conformant Questionnaire and QuestionnaireResponse instance example visit LHC Forms and enter the LOINC panel code and the lower left of the screen under, "Search LOINC panels". Select the panel and the form is rendered. Select "Show Form Data As..." and choose to show the FHIR SDC Questionnaire or the FHIR SDC QuestionnaireResponse in JSON instance examples.

The codes in the value sets below should be able to retrieve MCC QuestionnaireResponses associated with its FHIR Questionairre Resource.

Value Set Name and VSAC Link	Value Set Clinical Focus	OID	QuestionnaireResource Element	LHC LOINC Form examples
Alcohol Use Related Questionnaire Panel Codes	This set of values contain LOINC Panel codes pertaining to Alcohol Use.	2.16.840.1.113762.1.4.1222.1585	Questionnaire.code	Alcohol Use Disorder Identification Test - Consumption [AUDIT-C] PROMIS short form - alcohol - alcohol use 7a - version 1.0
Balance Assessments	This set of values addresses terms representing Balance Assessments.	2.16.840.1.113762.1.4.1222.828	Questionnaire.code	PhenX - balance protocol 170801 Standing Balance Test [NIH Toolbox]
Caregiver Considerations Related Questionnaire Panel Codes	This set of values contain LOINC Panel codes pertaining to Caregiver Considerations Related Questionnaire Panel Codes.	2.16.840.1.113762.1.4.1222.1594	Questionnaire.code	Caregiver Patient Activation Measure - 10 [PAM] Caregiver Caregiver Patient Activation Measure - 13 [PAM] Caregiver WE CARE Survey [WE CARE] Caregiver
Cognitive Health Related Questionnaire Panel Codes	This set of values contain LOINC Panel codes pertaining to cognitive health questionnaire panels.	2.16.840.1.113762.1.4.1222.1584	Questionnaire.code	Cognitive Functioning [FACIT] General Practitioner Assessment of Cognition [GPCOG] Montreal Cognitive Assessment [MoCA] Perceived cognitive abilities [FACIT] Perceived cognitive impairments [FACIT] PROMIS item bank - cognitive function - abilities subset - version 2.0 PROMIS short form - cognitive function - abilities subset 4a - version 2.0 PROMIS short form - cognitive function - abilities subset 6a - version 2.0

- The Questionnaire Response value sets use higher level panel codes.
- There is an identifier for the questionnaire.
- A challenge is that the code is not in the questionnaire response.

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