Integrating the Healthcare Enterprise

IHE Patient Care Coordination Technical Framework Supplement

Dynamic Care Planning (DCP)

HL7® FHIR® STU 3

Using Resources at FMM Level 2-3

Revision 2.0 – Draft for Public Comment

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Please verify that you have the most recent version of this document. See here for Trial Implementation and Final Text versions and here for Public Comment versions.

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Foreword

This is a supplement to the IHE Patient Care Coordination Technical Framework V11.0. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is published on May 25, 2018 for public comment. Comments are invited and may be submitted at http://www.ihe.net/PCC_Public_Comments. In order to be considered in development of the trial implementation version of the supplement, comments must be received by June 24, 2018.

This supplement describes changes to the existing technical framework documents.

"Boxed" instructions like the sample below indicate to the Volume Editor how to integrate the relevant section(s) into the relevant Technical Framework volume.

Amend Section X.X by the following:

Where the amendment adds text, make the added text **bold underline**. Where the amendment removes text, make the removed text ~~**bold strikethrough**~~. When entire new sections are added, introduce with editor's instructions to "add new text" or similar, which for readability are not bolded or underlined.

General information about IHE can be found at http://ihe.net.

Information about the IHE Patient Care Coordination domain can be found at http://ihe.net/IHE_Domains.

Information about the organization of IHE Technical Frameworks and Supplements and the process used to create them can be found at http://ihe.net/IHE_Process and http://ihe.net/Profiles.

The current version of the IHE Patient Care Coordination Technical Framework can be found at http://ihe.net/Technical_Frameworks.

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Introduction to this Supplement

Whenever possible, IHE profiles are based on established and stable underlying standards. However, if an IHE committee determines that an emerging standard offers significant benefits for the use cases it is attempting to address and has a high likelihood of industry adoption, it may develop IHE profiles and related specifications based on such a standard.

The IHE committee will take care to update and republish the IHE profile in question as the underlying standard evolves. Updates to the profile or its underlying standards may necessitate changes to product implementations and site deployments in order for them to remain interoperable and conformant with the profile in question.

This DCP Profile uses the emerging HL7®[1] FHIR®[2] specification. The FHIR release profiled in this supplement is STU 3. HL7 describes the STU (Standard for Trial Use) standardization state at https://www.hl7.org/fhir/versions.html.

In addition, HL7 provides a rating of the maturity of FHIR content based on the FHIR Maturity Model (FMM): level 0 (draft) through 5 (normative ballot ready). The FHIR Maturity Model is described at http://hl7.org/fhir/http://hl7.org/fhir/versions.html#maturity.

Key FHIR STU 3 content, such as Resources or ValueSets, used in this profile, and their FMM levels are:

FHIR Resource Name	FMM Level
CarePlan	2
Subscription	3
PlanDefinition	2
ActivityDefinition	2
Task	2

Comments on the FHIR Resources

The PCC Technical Committee welcomes your comments on the above resources. Links to them are available from the DCP Profile wiki page at http://wiki.ihe.net/index.php/Dynamic_Care_Planning#FHIR_Implementation_Guide

[1] HL7 is the registered trademark of Health Level Seven International.

[2] FHIR is the registered trademark of Health Level Seven International.

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The Dynamic Care Planning (DCP) Profile provides the structures and transactions for care planning and sharing Care Plans that meet the needs of many, such as providers, patients and payers. Care Plans can be dynamically updated as the patient interacts with the healthcare system. HL7 FHIR resources and transactions are used by this profile. This profile does not define, nor assume, a single Care Plan for a patient.

The use of IHE XDW constructs were discussed as an implementation option for dynamic care planning. Use of XDW constructs was not part of the initial scope for this profile. However, IHE PCC is interested in providing support for XDW implementer if this is of interest as a future consideration. Please see volume 3 appendix 7 for proposed DCP to XDW mappings that is being explored as a future option.

Open Issues and Questions

1. How does XDW Care Planning workflow relate to DCP? Is there interest in developing XDW Care Planning constructs?
2. Is an ATNA Grouping required? If so, how does that impact potential mobile uses of this profile?
3. When profiling the FHIR Resource make sure we can make references to existing documents (e.g., CDA documents, XDW documents, etc.).
4. Concepts from the Care Plan model, DAM or C-CDA, do not have clear mappings to the FHIR CarePlan resource.

Closed Issues

1. 2/15/16 Scope: This profile will not attempt to 'discover' all possible providers that have provided care for the patient. …this means that information on the location of actors is not profiled and is obtained by methods outside of the scope of this profile (similar to how XDS actors know with whom they communicate).
2. (2/16/16) The Care Plan Contributor should use the following pattern, from http://hl7.org/fhir/STU3/http.html#transactional-integrity
   - The server provides a read interaction for any resource it accepts update interactions on
   - Before updating, the client reads the latest version of the resource
   - The client applies the changes it wants to the resource, leaving other information intact (note the extension related rules around this)
   - The client writes the result back as an update interaction, and is able to handle a 409 or 412 response (usually by trying again)

   If clients follow this pattern, then information from other systems that they do not understand will be maintained through the update.

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Note that it's possible for a server to choose to maintain the information that would be lost, but there is no defined way for a server to determine whether the client omitted the information because it wasn't supported (perhaps in this case) or whether it wishes to delete the information.

3. (3/28/16) Does FHIR Search using POST create a resource when the search fails to match on the search criteria?
   No, the search operation, indicated by _search, does not cause creation of content on the server.
4. (7/18/16) Should the FHIR CarePlan.subject be restricted to Patient?
   a. What does CarePlan.subject of type Group mean?

      In behavioral science where "Group" can be family, disaster victim/survivor group, defense or police force groups

      Example: treatment of PTSD in these groups requires observation and management of group dynamics

      In public health where "Group" can be family, community, residents of certain floors or entire building, airplane/cruise passenger cohort

      Example: tracking, monitoring and managing communicable diseases outbreak in these groups
5. (closed 8/24/2017) Need to determine the FHIR version and what to do about future updates.

   See Introduction to this Supplement section.
6. (closed on 2/15/16) This profile will not attempt to ‘discover’ all possible providers that have provided care for the patient. There are other means of discovering patient’s points of care such as state HIE services, Nationwide Health Information Network (NwHIN) and CommonWell Health Alliance. This profile will account for known providers that have provided care for the patient.
7. (closed 8/24/2017) The modeling of the Care Team is changing with newer versions of FHIR. How do we handle these changes?

   See Introduction to this Supplement section.
8. (Closed 12/20/2017) Differing "roles" on the Care Team will likely be needed. We stated in the open issues that representation of the Care Team is not well defined yet and still needs to be addressed.
9. (Closed 02/12/2018) The CarePlan resource includes activity.actionResulting – need understanding how this related to Care Plan concepts. The activity.actionResulting element has been changed to activity.outcomeReference in the CarePlan resource. The basedOn element fulfills the outcomeReference. For example, procedure.basedOn fulfills the request for the procedure.

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10. Care Plan Contributor vs. Content Creator

    (Closed 03/05/2018) These two actors were examined extensively as a possibility for executing activityDefinitions during the care planning process. Based on the understanding that Content Creator (and Content Consumer) is very document centric (i.e., deals with executing a document exchange workflow), it was decided that use of Content Creator and Content Consumer Actors introduces confusing to the care planning workflow as currently used in this profile.

11. (Closed 05/01/2018) CP 0228 - Ballot comment from Philips Health Care - All links to FHIR STU3 specification should be using http://hl7.org/fhir/STU3/ as the base URL. http://hl7.org/fhir/ may change as a new STU version is created.

12. (Closed 05/02/2018) Describe what “as initiator” from the actor description means in volume 2 (if not already there). ‘Initiator’ removed from the profile because it is causing confusion.

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General Introduction

Update the following Appendices to the General Introduction as indicated below. Note that these are not appendices to Volume 1.

Appendix A – Actor Summary Definitions

Add the following actors to the IHE Technical Frameworks General Introduction list of actors:

Actor	Definition
Care Plan Contributor	This actor reads, creates and updates Care Plans hosted on a Care Plan Service. This actor reads, creates and updates Plan Definitions hosted on a Care Plan Guidance Service. This actor generates Care Plans and subsequently generate request resources based on selected activity definition associated with the plan definition based on business rules.
Care Plan Service	This actor manages Care Plans received from Care Plan Contributors and provides updated Care Plans to subscribed Care Plan Contributors.
Care Plan Guidance Service	This actor manages Plan Definition received from Care Plan Contributors and provides updated Plan Definitions to subscribed Care Plan Contributors.

Appendix B – Transaction Summary Definitions

Add the following transactions to the IHE Technical Frameworks General Introduction list of Transactions:

Transaction	Definition
Update Care Plan	Update an existing or create a new Care Plan
Retrieve Care Plan	Retrieve a Care Plan
Subscribe to Care Plan Updates	Subscribe to receive updated Care Plans for specific patients
Provide Care Plan	Provide updated Care Plans to subscribers
Search for Care Plan	Used to find a Care Plan
Search for Plan Definition	Used to find a Plan Definition
Retrieve Plan Definition	Retrieve a Plan Definition
Update Plan Definition	Update an existing or create a new Plan Definition
Subscribe to Plan Definition updates	Subscribe to receive updated Plan Definitions for specific conditions
Provide Plan Definition	Provide updated Plan Definition to subscribers
Provide Activity Definition	Provide applicable Activity Definition
Apply Activity Definition Operation	Generates a Care Plan and subsequent request resources based on business rules

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Glossary

Add the following glossary terms to the IHE Technical Frameworks General Introduction Glossary:

Glossary Term	Definition
Care Plan Domain Analysis Model	A common reference used to support the development of implementable care plan models[3]
Coordination of Care Services Functional Model	Supports shared and coordinated care plans as well as support of multidisciplinary care team members to communicate changes resulting from care plan interventions and collaborate in removing barriers to care.[4]
Care Plan (as used in this profile)	Tool used by clinicians to plan and coordinate care for an individual patient. It aids in understanding and coordinating the actions that need to be performed for the target of care. The care plan is known by several similar and often interchangeable names such as the plan of care and treatment plan.[5]
Plan Definition (as used in this profile)	Contain action definition which describes an activity to be performed[6].
Activity Definition (as used in this profile)	Specific actions to be performed as part of care planning.[7]

[3] Care Plan Project - PCWG. (2015, November 5). Retrieved February 15, 2016, from http://wiki.hl7.org/index.php?title=Care_Plan_Project_-_PCWG
Care Plan Domain Analysis Model (DAM) Documents

[4] Care Coordination Capabilities. (2014, February 8). Retrieved February 15, 2016, from http://wiki.hl7.org/index.php?title=Care_Coordination_Capabilities

[5] Care Plan Project - PCWG. (2015, November 5). Retrieved February 15, 2016, from http://wiki.hl7.org/index.php?title=Care_Plan_Project_-_PCWG

Care Plan Domain Analysis Model (DAM) Documents

[6] Retrieved January 3, 2018 from http://hl7.org/fhir/plandefinition.html

[7] Retrieved January 3, 2018 from http://hl7.org/fhir/activitydefinition.html

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Volume 1 – Profiles

Copyright Licenses

NA

Add the following to the IHE Technical Frameworks General Introduction Copyright section:

Domain-specific additions

NA

Add Section X

X Dynamic Care Planning (DCP) Profile

The Dynamic Care Planning (DCP) Profile provides the structures and transactions for care planning and sharing Care Plans that meet the needs of many, such as providers, patients and payers. Care Plans can be dynamically created from tools used to support evidence-base practice. These care plans can be updated as the patient interacts with the healthcare system. HL7 FHIR resources and transactions are used by this profile. This profile does not define, nor assume, a single Care Plan for a patient.

Globally, the healthcare system is highly fragmented. Fragmentation can increase the number of hospital re-admissions. According to claims data reported for the Medicare beneficiaries in 2003-2004, 19.6% of re-hospitalizations occur within 30 days after discharge. This translated into $17.4 billion dollars in hospital payments from Medicare in 2004.[8]

The numbers of service delivery encounters required by individuals as well as the failure to deliver and coordinate needed services, are significant sources of frustration and errors, and are drivers of health care expenditures. Providing person-centered care is particularly important for medically-complex and/or functionally impaired individuals given the complexity, range, and on-going and evolving nature of their health status and the services needed. Effective, collaborative partnerships between service providers and individuals are necessary to ensure that individuals have the ability to participate in planning their care and that their wants, needs, and preferences are respected in health care decision making.
The ability to target appropriate services and to coordinate care over time, across multiple clinicians and sites of service, with the engagement of the individual (i.e., longitudinal coordination of care) is essential to alleviating fragmented, duplicative and costly care for these medically-complex and/or functionally impaired persons.

X.1 DCP Actors, Transactions, and Content Modules

This section defines the actors, transactions, and/or content modules in this profile. General definitions of actors are given in the Technical Frameworks General Introduction Appendix A at http://ihe.net/Technical_Frameworks.

Figure X.1-1 shows the actors directly involved in the DCP Profile and the relevant transactions between them. If needed for context, other actors that may be indirectly involved due to their participation in other related profiles are shown in dotted lines. Actors which have a mandatory grouping are shown in conjoined boxes.

[8] Coleman, MD. MPH, Eric A. "Preparing Patients and Caregivers to Participate in Care Delivered Across Settings: The Care Transitions Intervention." *Journal of the American Geriatric Society* 52, (2004): 1817-1825.

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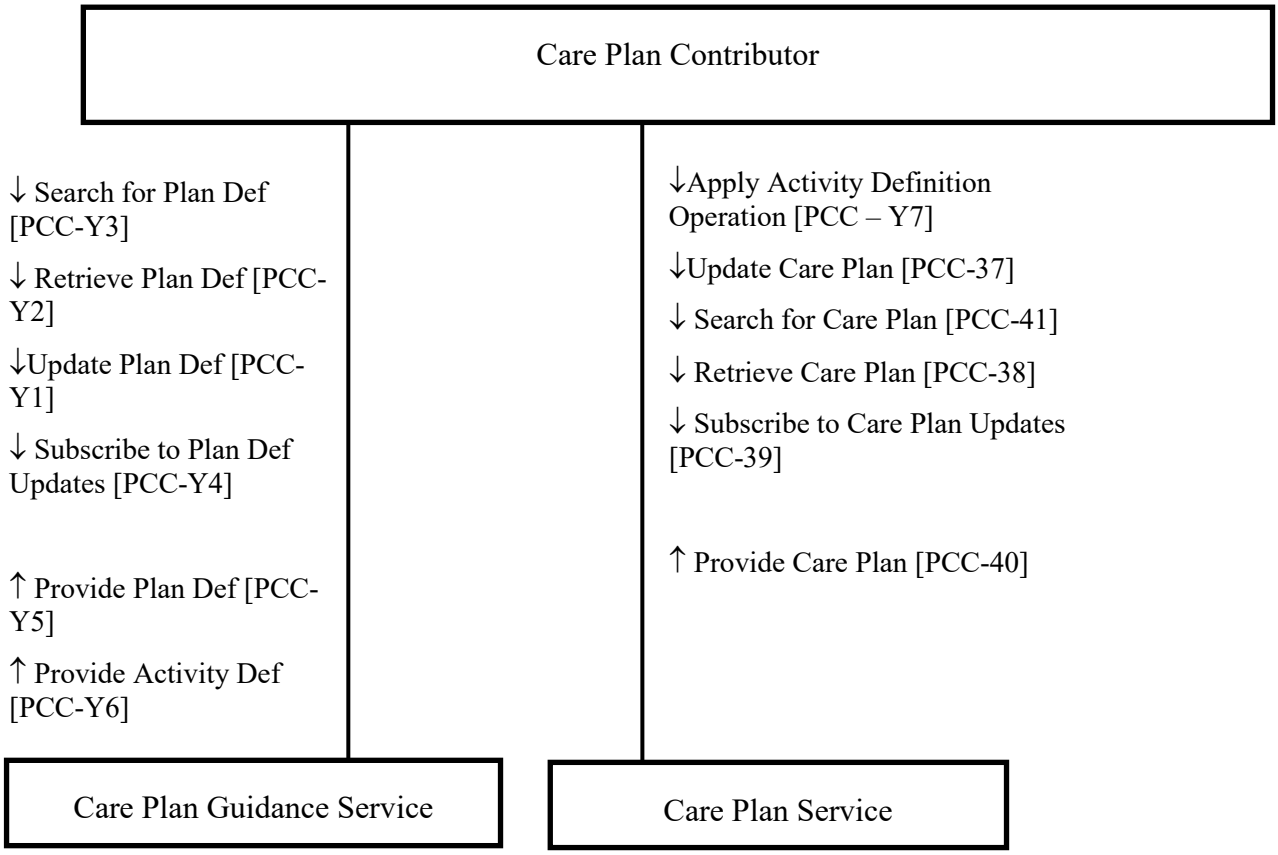

405 **Figure X.1-1: DCP Actor Diagram**

Table X.1-1: DCP Profile - Actors and Transactions

Actors	Transactions	Optionality	Reference
Care Plan Contributor	Update Care Plan	R	PCC TF-2: 3.37
	Search for Care Plan	R	PCC TF-2: 3.41
	Retrieve Care Plan	R	PCC TF-2: 3.38
	Subscribe to Care Plan Updates	O	PCC TF-2: 3.39
	Provide Care Plan	O	PCC TF-2: 3.40
	Search for Plan Definition	O	PCC TF-2: 3.Y3
	Retrieve Plan Definition	O	PCC TF-2: 3.Y2
	Update Plan Definition	O	PCC TF-2: 3.Y1
	Subscribe to Plan Definition Updates	O	PCC TF-2: 3.Y4
	Apply Activity Definition Operation	O	PCC TF-2: 3.Y7

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Actors	Transactions	Optionality	Reference
Care Plan Service	Search for Care Plan	R	PCC TF-2: 3.41
	Update Care Plan	R	PCC TF-2: 3.37
	Retrieve Care Plan	R	PCC TF-2: 3.38
	Subscribe to Care Plan Updates	R	PCC TF-2: 3.39
	Provide Care Plan	R	PCC TF-2: 3.40
Care Plan Guidance Service	Search for Plan Definition	R	PCC TF-2: 3.Y3
	Provide Plan Definition	R	PCC TF-2: 3.Y5
	Provide Activity Definition	R	PCC TF-2: 3.Y6
	Update Plan Definition	R	PCC TF-2: 3.Y1
	Retrieve Plan Definition	R	PCC TF-2: 3.Y2
	Subscribe to Plan Definition Updates	R	PCC TF-2: 3.Y4

Table X.1-1 lists the transactions for each actor directly involved in the DCP Profile. To claim compliance with this profile, an actor shall support all required transactions (labeled "R") and may support the optional transactions (labeled "O").

X.1.1 Actor Descriptions and Actor Profile Requirements

Most requirements are documented in Transactions (Volume 2) and Content Modules (Volume 3). This section documents any additional requirements on profile's actors.

There are three actors in this profile. The first actor is the Care Plan Contributor. This actor interacts with both the Care Plan Service and the Care Plan Guidance Service. This actor creates and updates the care plan. This actor also actions the request or task resources as part of the care planning process.

The second actor is the Care Plan Service. This actor manages patient specific Care Plans.

The third actor is the Care Plan Guidance Service. This actor manages Plan Definitions that are used for order sets, protocols, clinical practice guidelines, etc.

Each actor is described in detail below.

X.1.1.1 Care Plan Contributor

This actor does the following two things:

1. Reads, creates and updates Care Plans hosted by a Care Plan Service.
2. Reads, creates and updates Plan Definitions (e.g., order sets, protocols, etc.) hosted by a Care Plan Guidance Service.
3. Applies Activity Definitions when the care plan is created and/or updated

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In order to ensure data integrity, as is necessary when multiple Care Plan Contributors are attempting to update the same Care Plan, the Care Plan Contributor SHALL use the following pattern, (from http://hl7.org/fhir/STU3/http.html#transactional-integrity)

- Before updating, the Care Plan Contributor SHALL read the latest version of the Care Plan;
- The Care Plan Contributor SHALL apply the changes (additions, updates, deletions) it wants to the Care Plan, leaving all other information intact;
- The Care Plan Contributor SHALL write the Care Plan back as an update interaction, and is able to handle a failure response, commonly due to other Contributor Updates (usually by trying again).

The same pattern SHALL be used when multiple Care Plan Contributors are updating the same Plan Definition hosted by a Care Plan Guidance Service.

- Before updating, the Care Plan Contributor SHALL read the latest version of the Plan Definition;
- The Care Plan Contributor SHALL apply the changes (additions, updates, deletions) it wants to the Plan Definition, leaving all other information intact;
- The Care Plan Contributor SHALL write the Plan Definition back as an update interaction, and is able to handle a failure response, commonly due to other Contributor Updates (usually by trying again).

If a Care Plan Contributor follows this pattern, then information from other systems that they do not manage will be maintained through the update.

X.1.1.2 Care Plan Service

This actor manages Care Plans received from Care Plan Contributors and provides updated Care Plans to subscribers.

As described above under the Care Plan Contributor, the Care Plan Service receives a Care Plan and manages versions of the Care Plan as a whole. Note – the Care Plan Service SHALL support versioning of the CarePlan resource.

The Care Plan Service SHALL support the delete interaction for the Subscription resource. See http://hl7.org/fhir/STU3/http.html#delete. This enables a Care Plan Contributor to unsubscribe from updates for a care plan.

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X.1.1.3 Care Plan Guidance Service

This actor manages Plan Definitions received from Care Plan Contributors and provides updated Plan Definitions to subscribers. Examples of Plan Definitions include order sets, protocols, clinical practice guidelines, decision support rules, etc.[9]

As described above under the Care Plan Contributor, the Care Plan Guidance Service receives a Plan Definition and manages versions of the Plan Definition as a whole. Note – the Plan Definition Service SHALL support versioning of the PlanDefinition resource.

The Care Plan Definition Service SHALL support the delete interaction for the Subscription resource. See http://hl7.org/fhir/STU3/http.html#delete. This enables a Care Plan Contributor to unsubscribe from updates for a Plan Definition.

X.2 DCP Actor Options

Options that may be selected for each actor in this profile, if any, are listed in Table X.2-1. Dependencies between options when applicable are specified in notes.

Table X.2-1: DCP - Actors and Options

Actor	Option Name	Reference
Care Plan Contributor	Subscribe to Care Plan Updates	3.39
	Subscribe to Plan Definition Updates	3.Y.4
	Apply Activity Definition Operation	3.Y.7
Care Plan Service	No options defined	--
Care Plan Guidance Service	No options defined	--

X.2.1 Subscribe to Care Plan Updates

Support for this Subscribe to Care Plan Updates means that the optional Subscribe to Care Plan Updates [PCC-39] and the optional Provide Care Plan [PCC-40] are both supported.

The alternative to subscribing to care plan updates is a polling process, where a Care Plan Contributor would periodically query for a CarePlan resource history and determine that a Retrieve Care Plan was necessary.

[9] Retrieved January 17, 2018 from http://build.fhir.org/plandefinition.html

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X.2.2 Subscribe to Plan Definition Updates

Support for this Subscribe to Plan Definition Updates means that the optional Subscribe to Plan Definition Updates [PCC-Y4] and the optional Provide Plan Definition [PCC-Y5] are both supported.

The alternative to subscribing to plan definition updates is a polling process, where a Care Plan Contributor would periodically query for a PlanDefinition resource history and determine that a Retrieve Plan Definition was necessary.

X.2.3 Apply Activity Definition Operation

Support for this Apply Activity Definition Operation means that the optional Apply Activity Definition Operation [PCC-Y7] and the required Update Care Plan are both supported. The Apply Activity Definition Operation Option supports the generation of request or task resources as part of the care planning process. Request resources as defined by FHIR are "resources that represent a specific proposal, plan and/or order for some sort of action or service".[10] Request resources associated with the CarePlan.activity.reference are Appointment, CommunicationRequest, DeviceRequest, MedicationRequest, NutritionOrder, Task, ProcedureRequest, ReferralRequest , VisionPrescription, RequestGroup.

X.3 DCP Required Actor Groupings

Table X.3-1: DCP - Required Actor Groupings

DCP Actor	Actor to be grouped with	Reference	Content Bindings Reference
Care Plan Contributor	none		
Care Plan Service	none		--
Care Plan Guidance Service	none		

X.4 DCP Overview

Care planning is needed to manage medically complex and/or functionally impaired individuals as they interact with the health care system. Often, these individuals require real time coordination of the care as they receive care from multiple care providers and care settings. HL7 Care Plan Domain Analysis Model (CP DAM) depicts the care plan as a tool used by clinicians to plan and coordinate care[11]. Effective care planning and care coordination for patient with complex health problems and needs are needed throughout the world. Both the European Union and the United States are currently working to encourage more effective use of information and

[10] Retrieved March 28, 2018 from http://hl7.org/fhir/request.html

[11] Care Plan Domain Analysis Model. (May 2016). Retrieved September 20, 2017, from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435

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communication technology to support the delivery of health services. This has led to the promotion of interoperability of health information and communication technology products and services.[12]

In the United States, providers and payers are interested in ensuring that patients are receiving effective and efficient care. The Medicare and Medicaid EHR incentive programs provide financial incentives to care providers for the meaningful use of certified EHR technology that supports care coordination[13]. According to the United States Office of the National Coordinator for Health Information Technology's Connecting Health and Care for the Nation Shared Nationwide Interoperability Roadmap, "Providers also play a critical role in coordinating care with other providers in support of patients. However, coordinating care and engaging with multi-disciplinary, cross-organization care, support and service teams has been incredibly difficult with the tools available today. Technology that does not facilitate the sharing and use of electronic health information that providers need, when they need it, which often creates additional challenges to care coordination. Additionally, care coordination via electronic means requires workflow changes for providers and their staff, particularly to close referral loops and ensure all of an individual's health information is available to the entire care, support and services team. These workflow changes are not insignificant and must be overcome in order to enable interoperability."[14]

CP DAM recognizes that many clinical settings use multiple tools such as (templates, protocols, care pathways, ordersets) without regards of overlap or discrepancy in care planning[15]. This profile depicts how care plans can be created with the use of coordinated tools by using FHIR planDefinition. The Care Plan can then be shared and used to plan and coordinate care.

X.4.1 Concepts

Care plans have many different meanings to many different people. Each discipline has its own definition of what a care plan is and what it contains. Dynamic care planning expands the concept of care planning from being only discipline specific to an interdisciplinary process where all disciplines that care for the patient are able to share their plans of care, treatment plans, health issues, interventions and goals/outcomes, etc. for the patient. For a view of the Shared Care Planning process, see

[12] Transatlantic eHealth/health IT Cooperation Roadmap. (2015, November). Retrieved February 12, 2016, from https://www.healthit.gov/sites/default/files/eu-us-roadmap_final_nov2015_consultationversion.pdf

[13] Health IT Regulations: Meaningful Use Regulations. (2015, March 20). Retrieved February 12, 2016, from https://www.healthit.gov/policy-researchers-implementers/meaningful-use-regulations

[14] Connecting Health and Care for the Nation A Shared Nationwide Interoperability Roadmap. (2015, December 22). Retrieved February 12, 2016, from https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf

[15] Care Plan Domain Analysis Model. (May 2016). Retrieved January 2, 2018, from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435

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ftp://ftp.ihe.net/TF_Implementation_Material/PCC/DCP/Use%20Case%20Dynamic%20Care%20Planning%20Diagram.pptx

As identified in the IHE PCC Nursing White Paper to Advocate the Uptake of Patient Plan of Care and eNursing Summary Profiles July 2012, each clinical discipline's plan of care or treatment plan should be incorporated into one overarching central Care Plan for the patient.

In environments where there is no centralized care plan, this profile enables care team members to share the details of their specific care plans with other providers to coordinate care. For example, a payer or provider might share a care plan they have for a patient with the provider who is caring for them, or the payer who is covering the care of the patient using this profile, without any assumption that there is a centrally managed singular care plan for the patient.

X.4.2 Use Case

This profile reuses the HL7 Care Plan Domain Analysis Model specification storyboard 2: Chronic Conditions[16] with permission from HL7 Patient Care Work Group. The storyboard includes chronic disease management as well as a transition of care episode. This profile asserts that the providers depicted in the use cases are utilizing care protocols or order sets as part of their workflow process. The profile will not go into detail as to the content of the care protocols or order sets.

For the purpose of IHE profiling, the storyboard is being referred to as a use case.

X.4.2.1 Use Case: Chronic Conditions

The use case provides narrative description of clinical scenarios where the care plan is accessed, updated or used during care provision. For a process flow diagram of this entire use case, see the diagram at:
ftp://ftp.ihe.net/TF_Implementation_Material/PCC/DCP/DynamicCarePlanningFlow_chronicCondition.vsd

X.4.2.1.1 Chronic Conditions Use Case Description

The purpose of the HL7 chronic conditions care plan storyboard (use case) is to illustrate the creation/update, communication flow and documentation of a care plan. The Care plan is then shared between a patient, his or her primary care provider, ancillary providers and specialists involved in the care and treatment of a case of Type II Diabetes Mellitus. It consists of four types of encounters (although in reality there could be many more encounters) which also include an episode of care in which transition of care occurs. The following encounters are depicted:

- Encounter A: Primary Care Physician Initial Visit
- Encounter(s) B: Allied Health Care Provider Visits/Specialist Visits

[16] HL7 Care Plan Domain Analysis Model specification retrieved from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435

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- Encounter(s) C: ED Visit with hospital admission (inpatient stay)
- Encounter D: Primary Care Follow-up post hospital discharge Visit

The use case contains the following actors and roles.

- Primary Care Physician: Dr. Patricia Primary
- Patient: Mr. Bob Anyman
- Diabetic Educator: Ms. Edith Teaching
- Dietitian/Nutritionist: Ms. Debbie Nutrition
- Exercise Physiologist: Mr. Ed Active
- Pharmacist: Ms. Susan Script
- Optometrist: Dr. Victor Vision
- Podiatrist: Dr. Barry Bunion
- Psychologist: Dr. Larry Listener
- Emergency Department Physician: Dr. Eddie Emergent
- Hospital Attending Physician: Dr. Allen Attend

X.4.2.1.1.1 Encounter A: Primary Care Physician Initial Visit

Pre-conditions: Patient Mr. Bob Anyman attends his primary care physician (PCP) clinic because he has been feeling generally unwell in the past 7-8 months. His recent blood test results reveal abnormal glucose challenge test profile.

Description of Encounter: Dr. Patricia Primary reviews Mr. Anyman's medical history, presenting complaints and the oral glucose tolerance test results and concludes the patient suffers from Type II Diabetes Mellitus (Type II DM). Dr. Primary accesses Mr. Anyman's medical record and records the clinical assessment findings and the diagnosis.

Dr. Primary discusses with Mr. Anyman the identified problems, potential risks, goals, management strategies and intended outcomes. After ensuring that these are understood by the patient, Dr. Primary begins to draw up a customized chronic condition (Type II DM) care plan based on a standardized multi-disciplinary evidenced-based Type II DM care plan adopted for use by her practice. The care plan is derived from American Diabetes Association 2017 Standards of Medical Care in Diabetes[17]. Agreed goals and scheduled activities specific for the care of Mr. Anyman are entered into the care plan.

[17] Retrieved January 3, 2018 from http://www.diabetes.org/newsroom/press-releases/2016/american-diabetes-2017-standards-of-care.html?referrer=https://www.google.com/

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Dr. Primary also discusses with the patient the importance of good nutrition and medication management and exercise in achieving good control of the disease, as well as the criticality of good skin/foot care and eye care to prevent complications. Scheduling of consultations with diabetic educator, dietitian, exercise physiologist, community pharmacist, optometrist, and podiatrist (allied health care providers) is discussed and agreed to by the patient. The frequency of visit to allied health care providers is scheduled according to the national professional recommendation for collaborative diabetes care. Dr. Primary also notices signs and symptoms of mood changes in the patient after the diagnosis is made. She recommends that the patient may benefit from seeing a clinical psychologist to which the patient also agrees.

Dr. Primary generates a set of referrals to these allied health care providers. The referrals contain information about the patient's medical history including the recent diagnosis of Type II diabetes, reasons for referral, requested services and supporting clinical information such as any relevant clinical assessment findings including test results. A copy of the care plan agreed to by the patient is made available with the referral.

Post Condition: Once the care plan is completed, it is committed to the patient's medical record. The patient is offered a copy of the plan.

A number of referrals in the form of notification/request for services together with the care plan are made available to the relevant health care providers.

The patient is advised to follow the referral practice/protocol specific to the local health care system or insurance plan. For the first appointment, the patient may wait for scheduled appointments from the relevant health care providers to whom referral/request for services have been made or may be able to schedule his own appointment using booking systems of the specialist or allied health providers.

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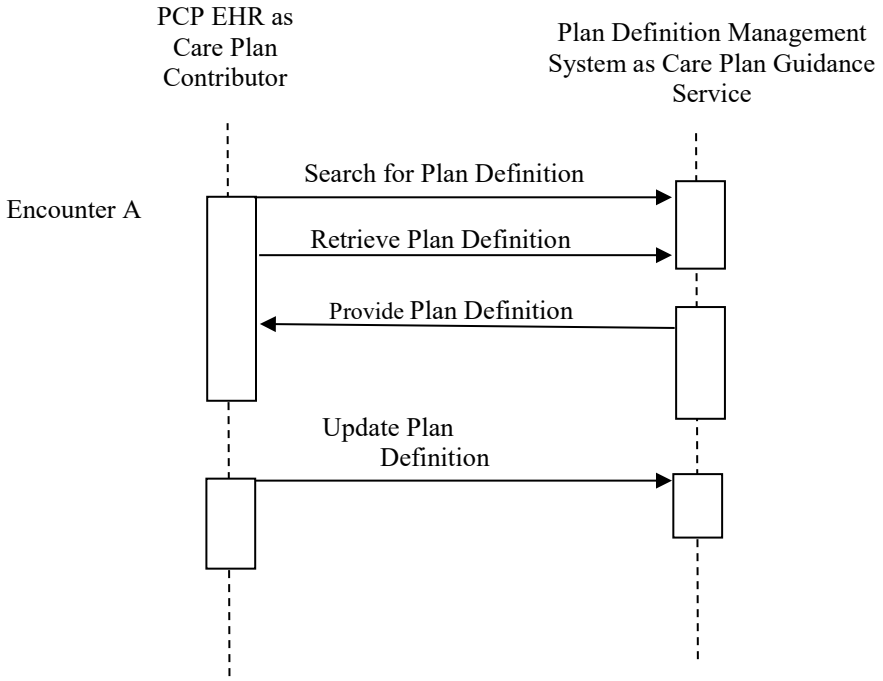

Figure X.4.2.1.1.1-1: Encounter A: Basic Process Flow for Plan Definition

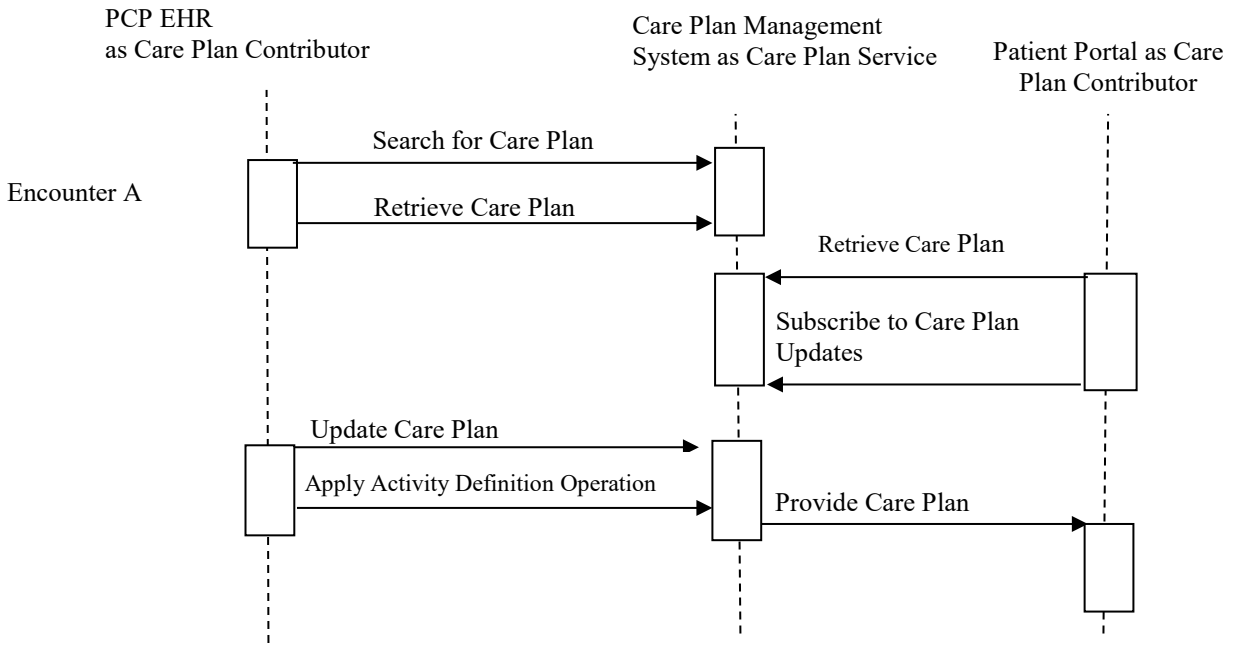

Figure X.4.2.1.1.1-2: Encounter A: Basic Process Flow for Care Plan

X.4.2.1.1.2 Encounter(s) B: Allied Health Care Providers and Specialists

Pre-conditions: Mr. Anyman's allied health care providers and specialists have received a referral with copy of care plan from Dr. Patricia Primary.

The allied health care providers and specialists have accepted the referral and scheduled a first visit with the patient – Mr. Bob Anyman.

The case has been assigned to the following individual allied health care providers and referrals made to the applicable specialists:

A. Ms. Edith Teaching (Diabetic Educator) for development and implementation of comprehensive diabetic education program and plan to ensure that the patient understands the nature of the disease, the problem, potential complications and how best to manage the condition and prevention of potential complications.

B. Ms. Debbie Nutrition (Dietitian/Nutritionist) for development and implementation of a nutrition care plan for diabetes to ensure effective stabilization of the blood glucose level with the help of effective diet control.

C. Mr. Ed Active (Exercise Physiologist) for development and implementation of an exercise regime.

D. In certain countries (e.g., Australia), the community pharmacist (Ms. Susan Script) provides patient with education on diabetic medications prescribed for the patient by Dr.

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Primary, and development and implementation of an effective and safe medication management program. The objectives are to gain and maintain effective control of the condition and to prevent hypo- and hyper- glycemic episodes.

E. Dr. Larry Listener (clinical psychologist) for counseling and to develop and implement an emotional support program; this includes a plan to reduce the impact of emotional stress brought about by the newly diagnosed condition and to improve the patient's psychological well-being. The plan may include enrolling patient in diabetic support group.

F. Dr. Victor Vision (Optometrist) for regular (e.g., 6 monthly) visual and retinal screening and to educate patient on the eye care and how best to prevent/minimize the risks of ocular complications.

G. Dr. Barry Bunion (Podiatrist) for education on the risks of foot complications and to develop and implement an effective foot care program including regular self-assessment, care of the feet and follow-up visits.

Description of Encounter: The patient is registered at the allied health care provider/specialist's reception. Any additional or new information provided by the patient is recorded in the health care record system operated by the allied health provider clinic.

During the first consultation, the allied health care provider/specialist reviews the referral and care plan provided by Dr. Primary. The creation/update of the care plan is based on order sets, care guides, protocols, etc.

During subsequent consultation, the allied health care provider/specialist reviews the patient's health care record and most recent care plan of the patient.

At each consultation, the allied health care provider reviews the patient's health record, assesses the patient, checks the progress and any risks of non-adherence (compliance) and complications, and discusses the outcomes of the management strategies and/or risks. Any difficulties in following the management strategies or activities by the patient are discussed. Any new/revised goals and timing, new intervention and self-care activities are discussed and agreed to by the patient. The new/changed activities are scheduled and target dates agreed upon.

The allied health care provider updates the clinical notes and the care plan with the assessment details, and any changes to the management plan including new advice to the patient. The date of next visit is also determined.

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Table X.4.2.1.1.2-1: Allied Health Professionals/Specialists Encounters – Activities and Outcomes

Provider / Allied Health Provider	Encounter Activities	Outcomes	Communications
Diabetic Educator	Review referral/patient progress assess learning needs and strategy discuss and finalize education plan	Develop/update education plan Update clinical notes Generate progress notes	New/updated education plan to patient Summary care plan and progress note shared with primary care provider and other care providers,
Dietitian/Nutritionist	Review referral/patient progress Assess diet management needs and strategies Discuss and finalize diet management plan	Develop/update diet plan Weight assessment; Exercise plan Diet management plan; Referral to educator and exercise therapy if necessary Update clinical notes Generate progress notes	New/updated care plan to patient Summary care plan and progress note shared with primary care provider and other care providers, e.g., diabetic educator, exercise physiologist, etc.
Exercise Physiologist	Review referral/patient progress Assess exercise/activity needs and strategies Discuss and finalize exercise plan	Develop/update exercise plan: Weight assessment; exercise plan Update clinical notes Generate progress notes	New/updated exercise plan to patient Summary care plan and progress note shared with primary care provider and other care providers, e.g., diabetic educator, dietitian, etc.
Community Pharmacist	Review patient medication profile Assess medication management (education, conformance, etc.) needs and strategies Discuss and finalize medication management plan	Develop/update medication management plan: patient current medication list assessment result; recommendation on meds management; referral to other provider(s) if necessary dispense record on dispensed meds Update clinical notes Generate progress notes	New/updated medication management plan to patient Summary care plan and progress note shared with primary care provider and to other care providers, e.g., diabetic educator, dietitian, etc.
Clinical Psychologist	Review referral/patient progress Assess emotional status, coping mechanisms and strategies Discuss and finalize psychological management plan	Develop/update psychological management plan: Emotion assessment; Psychotherapy session plan Update clinical notes Generate progress notes	New/updated psychological management plan to patient Summary care plan and progress note shared with primary care provider and other care providers, e.g., diabetic educator, dietitian, etc.

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Provider / Allied Health Provider	Encounter Activities	Outcomes	Communications
Optometrist	Review referral/patient progress Assess eye care needs and strategies Discuss and finalize eye care plan	Develop/update eye care plan: Regular eye checks for early detection of Diabetic retinopathy (1yearly to 2 yearly depending on national protocol and how advanced is DM) Stop smoking (prevent smoking related damage to eye cells) Wear sun glasses when in sun (prevent UV accelerating eye damage) – dispense prescription sun glasses if necessary; Referral to Dietitian/Nutritionist for counseling on diet rich in fruits and green leafy veg and Omega 3 fats along with effective weight control Update clinical notes Generate progress notes	New/updated eye care plan to patient Summary care plan and progress note shared with primary care provider and other care providers, e.g., diabetic educator, dietitian, etc.
Podiatrist	Review referral/patient progress Assess foot care needs and strategies Discuss and finalize foot care plan	Develop/update foot care plan Foot assessment Foot care plan Update clinical notes Generate progress notes	New/updated foot care plan to patient Summary care plan and progress note shared with primary care provider and other care providers, e.g., diabetic educator, dietitian, pharmacist, etc.

Post Condition: An updated allied health domain specific care plan complete with action items and target dates is completed with patient agreement.

The patient is provided a copy of the new/updated care plan at the end of each allied health/specialist consultation.

Updates to the care plan are supported by workflow, where for example at the end of each consultation a progress note is written by the allied health provider/specialist which documents the outcomes of the assessment, any new risks identified and changes to or new management strategies that have been included in the updated care plan. This allied health domain specific progress note is shared with the patient's primary care provider, Dr. Primary. Any care coordination responsibilities required of Dr. Primary is also communicated.

The progress note may also be shared with any other allied health care provider(s) who may need to be informed about changes in risks, goals, and management plan that are relevant to the ongoing management of the patient. For example, a progress note from a dietitian/nutritionist may contain clinical information that may need to be considered by the diabetic educator.

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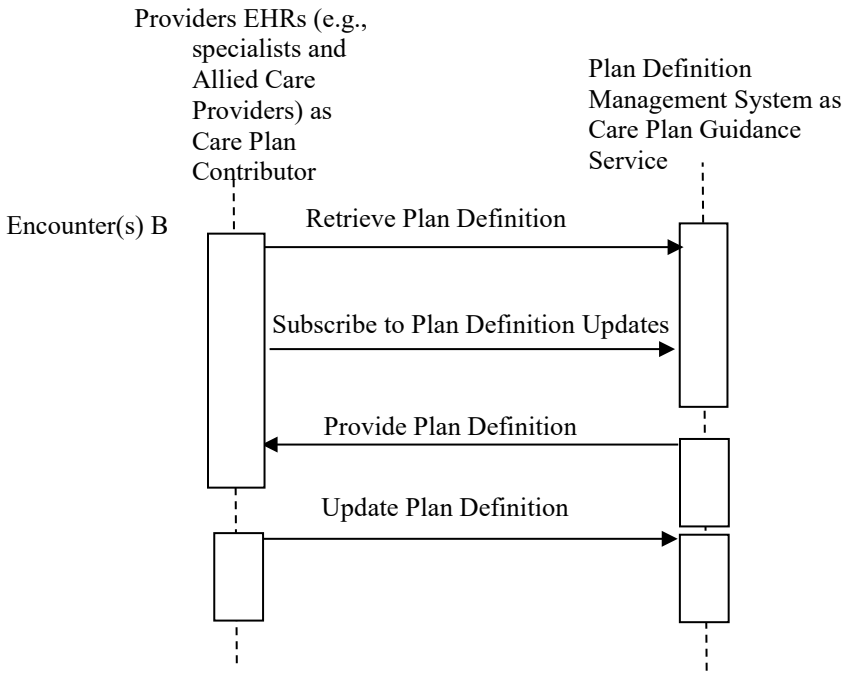

Figure X.4.2.1.1.2-1: Encounter(s) B: Basic Process Flow for Plan Definition

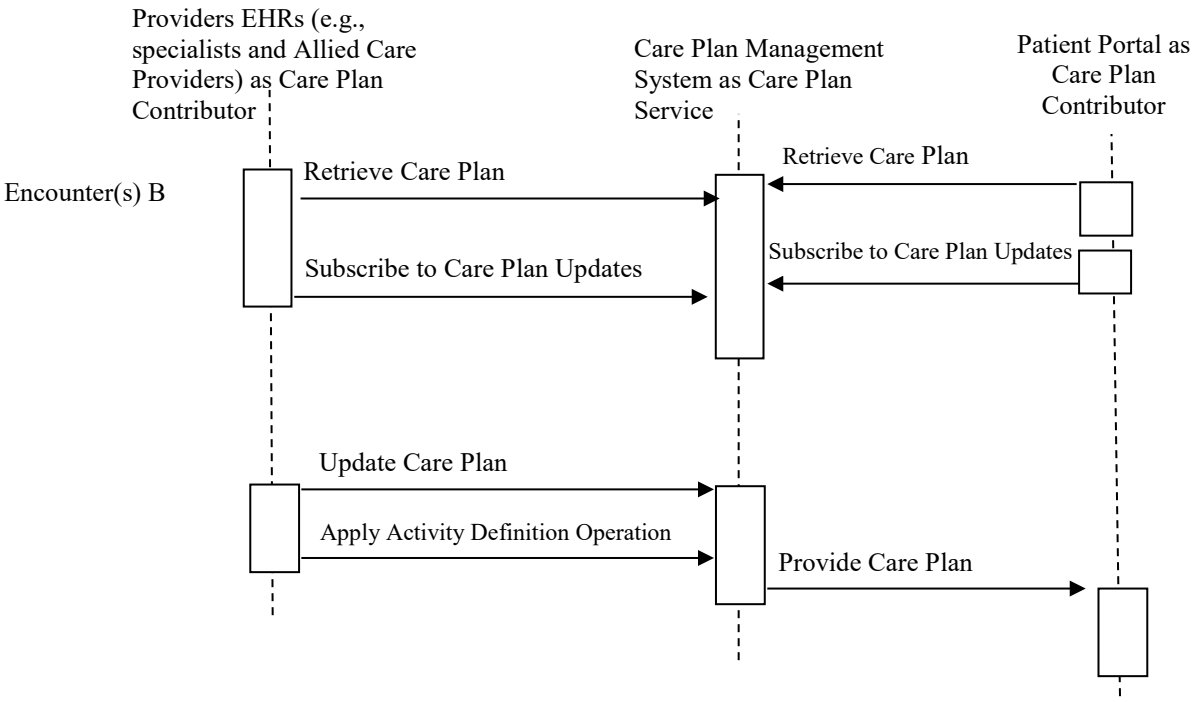

Figure X.4.2.1.1.2-2: Encounter(s) B: Basic Process Flow for Care Plan

X.4.2.1.1.3 Encounter(s) C: ED Visit and Hospital Admission

Pre-Condition: Mr. Bob Anyman took a 3-month holiday in Australia during the southern hemisphere spring season, missed the influenza immunization window in his northern hemisphere home country, and forgot about the immunization after he returned home. He develops a severe episode of influenza with broncho-pneumonia and very high blood glucose level (spot BSL = 23 mM) as complications. He suffers from increasing shortness of breath on a Saturday afternoon.

Mr. Anyman presents himself at the emergency department of his local hospital as Dr. Primary's clinic is closed over the weekend.

Description of Encounter: Mr. Anyman is admitted to the hospital and placed under the care of physicians from the general medicine clinical unit.

During the hospitalization, the patient is given a course of IV antibiotics and insulin injections to stabilize the blood glucose level. The patient was assessed by the hospital attending physician, Dr. Allen Attend, as medically fit for discharge after four days of inpatient care. Dr. Attend reconciles the medication treatment during inpatient care, creates a discharge medication list, outlines follow up information and discusses post discharge care with the patient. He recommends the patient to consider receiving influenza immunization before the next influenza session and updates this as recommendation to Dr. Primary in the patient's discharge plan.

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Planning for discharge is initiated by the physician and the nurse assigned to care for the patient soon after admission as per hospital discharge planning protocol. The discharge plan is finalized on the day of discharge and a discharge summary is generated.

Post Condition: The patient's discharge care plan is completed. This plan may include information on changes to medications, management recommendations to the patient's primary care provider and the patient, and any health care services that are requested or scheduled.

The patient is given a copy of the discharge summary that includes the discharge care plan.

A discharge summary and the discharge care plan are shared with the patient's primary care provider, Dr. Primary with recommendation for pre-influenza season immunization.

Note: The process flow pattern for this encounter is the same as encounter(s) B. See Figures X.4.2.1.1.2-1 and X.4.2.1.1.2-2.

X.4.2.1.1.4 Encounter D: Primary Care Follow-up Visits

Pre-Condition: Patient Mr. Bob Anyman is scheduled for a post-hospital discharge consultation with his primary care provider, Dr. Primary.

Mr. Anyman is seen by Dr. Primary at her clinic on the day of appointment.

The discharge summary information from the hospital is incorporated into the patient's medical record and is ready for Dr. Primary to review at the consultation.

Description of Encounter: Primary Care Physician Dr. Patricia Primary reviews patient Mr. Anyman's hospital discharge summary and discusses the pre-influenza season immunization recommendation with the patient. The patient agrees with the recommendation. The care plan is updated.

Dr. Primary notices that the patient has gained extra weight and the blood sugar level has not quite stabilized after discharge from hospital. Dr. Primary reviews the care plan and discusses with patient the plan to change the diet and medication. Patient agrees. The care plan is updated.

Dr. Primary issues a new prescription to the patient and asks the patient to make an early appointment to see the dietitian to discuss new nutrition management strategy and plan.

Dr. Primary generates progress notes with nutrition management and exercise change recommendations are generated by Dr. Primary and shared with the patient's dietitian. The care plan is updated and shared with relevant allied health providers.

Dr. Primary changes patient's follow-up visits from four monthly to two monthly for the next two appointments with the aim to review the follow-up frequency after that.

Post Condition: A new prescription is shared with the patient's community pharmacy. Ms. Script will discuss the new medication management plan with the patient when he goes to pick up his medications.

The patient also makes an early appointment to see the dietitian and exercise physiologist. A copy of progress notes from Dr. Primary will be made available to the dietitian and exercise physiologist before the scheduled appointment.

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Patient gets a copy of the updated care plan, and a copy of the plan is also shared with relevant allied health providers.

Note: The process flow pattern for this encounter is the same as encounter A. See Figures X.4.2.1.1.1-1 and X.4.2.1.1.1-2.

X.4.2.2 Use Case: Pregnancy Plan

This use case provides narrative description of clinical scenarios that can lead to the definition of a standard procedure for the treatment of pregnant women. The definition covers period from the time of diagnosis through the postpartum period.

The following section describes a normal pregnancy use case.

X.4.2.2.1 Normal Pregnancy Use Case Description

In this use case the patient actively participates in her care planning in order to ensure a normal and healthy pregnancy. The entire process involves collaborative care which includes the patient and all her care providers. This entails sharing of care plan information across care providers and with the patient.

The following macro steps are depicted:

- Step A: Diagnosis and first General Practitioner encounters
- Step B: Subsequent encounters with include medical examinations and laboratory studies performed during the pregnancy period
- Step C: Delivery and Postpartum care

The use case involves the following actors and roles:

- Patient: Mrs. Kate Anywoman
- General Practitioner: Dr. Max Power
- Obstetrician-Gynecologist: Dr. John Smith
- Healthcare Professionals needed for laboratory studies

X.4.2.2.1.1 Step A: Diagnosis and First General Practitioner encounter

Pre-conditions: Patient, Mrs. Kate Anywoman, in the recent weeks shows signs of nausea, breast changes, fatigue and her menstrual cycle is late. Due to these symptoms, she decides to perform a home pregnancy test. The result of the test is positive.

Description of Encounter: Mrs. Kate Anywoman visits her General Practitioner, Dr. Max Power, informing him about the test result. Dr. Power creates or updates Mrs. Anywoman's care plan based on evidenced based clinical practice guideline. Dr. Power orders a quantitative human chorionic gonadotropin (HCG) blood test as an intervention. The care plan is updated and the added information is made available to be shared with the laboratory performing the study and with the patient.

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Mrs. Anywoman goes to the lab for the HCG blood test. It is confirmed that she is pregnant. The lab result is made available to be shared.

Mrs. Anywoman follows up with Dr. Max Power to discuss her pregnancy case. Dr. Power confirms that this is not a high-risk pregnancy case and instructs her or refer her to be followed by an obstetrician-gynecologist (OB-GYN). He updates the patient's care plan with the pregnancy information and generates applicable planned interventions/orders based on best practice. The care plan is now updated with information from the patient's initial encounter with Dr. Power which includes the HCG lab result and other related observations performed during these encounters. Observations include physical exams, vital signs, referrals and applicable laboratory tests and results. The care plan also includes patient instructions which lists things Mrs. Anywoman should and should not do to ensure a healthy pregnancy. The updated care plan is made available to be shared.

Post condition: Dr. Max Power updates the care plan and makes it available to be shared with Mrs. Anywoman and her healthcare providers. Mrs. Anywoman is able access to her care plan so she can actively participate in her care. Other healthcare providers involved in Mrs. Anywoman care are made aware of the updated care plan and it's available to be accessed.

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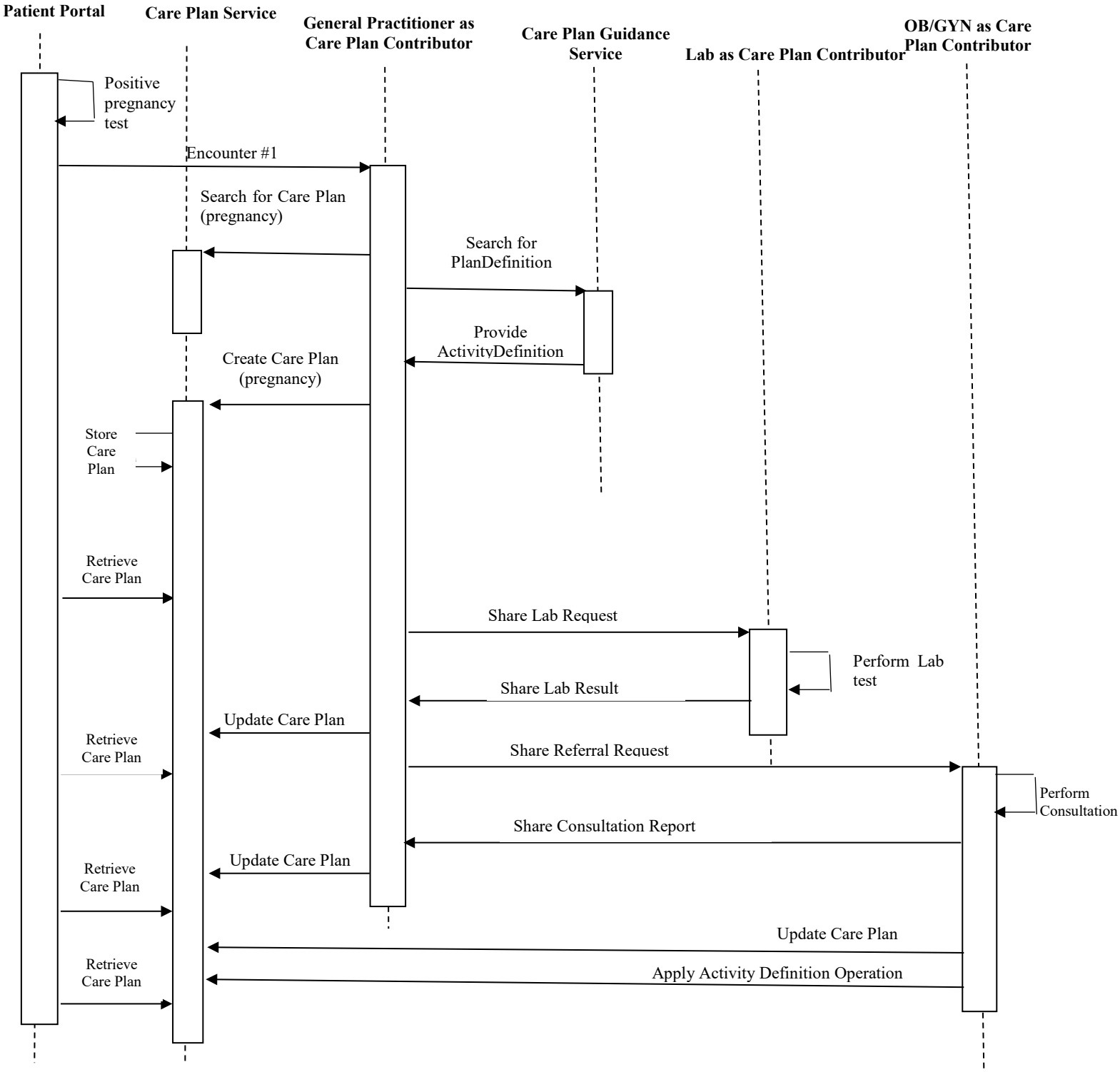

Figure X.4.2.2.1.1-1: Step A: Diagnosis and First General Practitioner Encounter

X.4.2.2.1.2 Step B: Medical observations and treatment during pregnancy

Pre-conditions: Mrs. Kate Anywoman is made aware of her updated care plan which she is able to access. Healthcare providers participating in Mrs. Anywoman's care is also made aware of her updated care plan which is made available to be accessed.

Description of Encounter: After Mrs. Kate Anywoman encounters with her general practitioner, Dr. Max Power, she continues her pregnancy care with her obstetrician-gynecologist (OB-GYN) Dr. John Smith. Dr. Smith provides Mrs. Anywoman routine pregnancy care based on evidence based practice using clinical practice guidelines. Mrs. Anywoman's care includes a number of observations and treatment that may be repeated at varying times throughout her pregnancy period. This is needed in order to discover and treat possible complications, such as toxoplasmosis, that can occur during pregnancy. As Mrs. Anywoman's care plan is updated, it is made available for access by her and healthcare providers involved in her care.

Post condition: Mrs. Kate Anywoman was able to receive evidenced based pregnancy care throughout her pregnancy. She and her healthcare providers were able to actively participate in her care while utilizing her care plan to keep track of near or real time updates throughout her pregnancy period.

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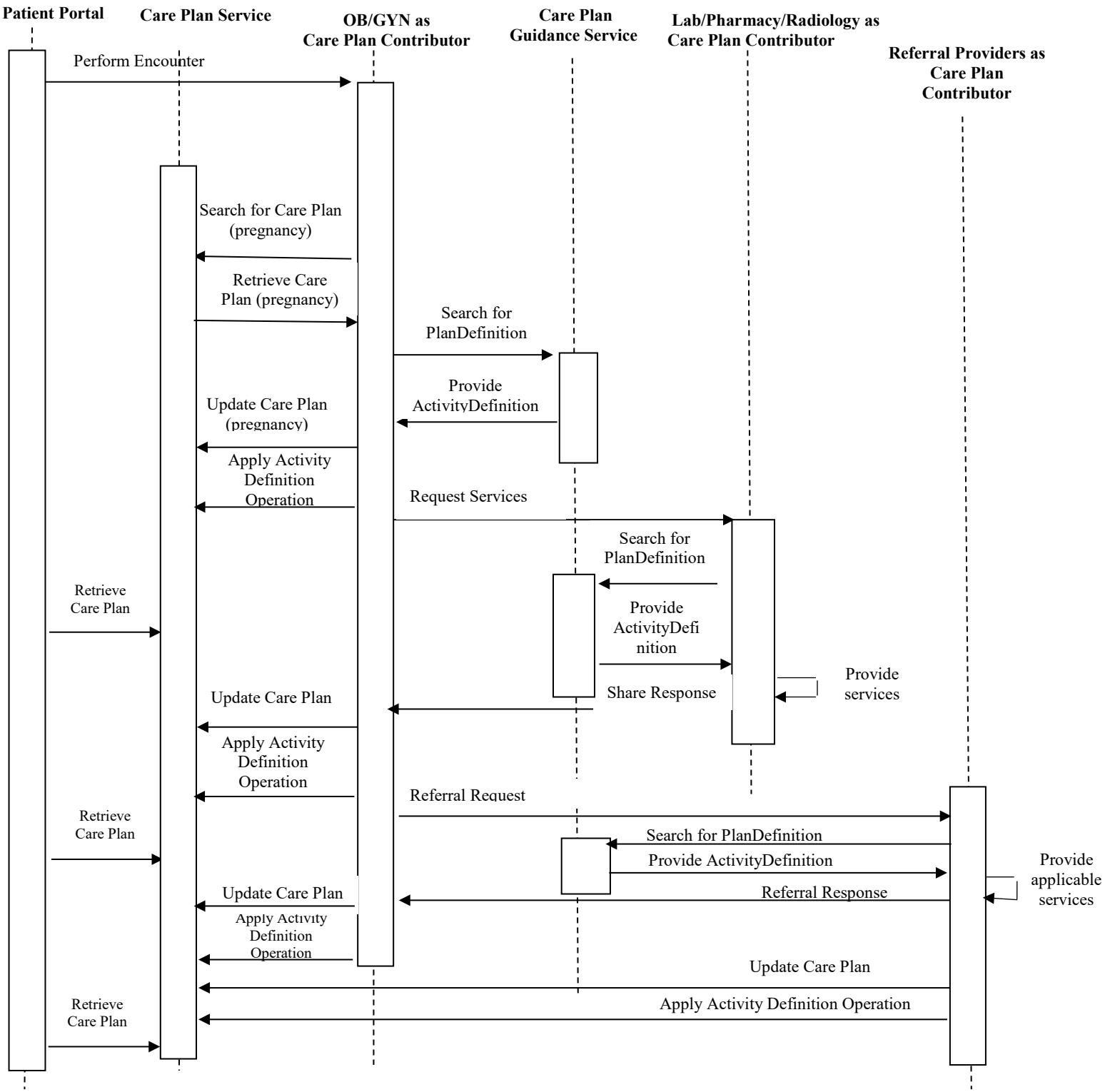

Figure X.4.2.2.1.2-1: Step B: Medical observations and treatment during pregnancy

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X.4.2.2.1.3 Step C: Delivery and Postpartum treatment

Pre-conditions: Mrs. Kate Anywoman's childbirth at a birthing facility was successful. She was discharged to home after a duration of forty-eight hours at the birthing facility.

Description of Encounter: Six weeks after her baby was born, Mrs. Anywoman has a post-partum encounter with Dr. John Smith, her OB-GYN. Routine observations such as her glucose level and vital signs are within normal limits. Her care plan is updated and made available.

Post condition: Mrs. Anywoman's postpartum period is ended. In the future, Mrs. Anywoman's care plan will be updated with any future conditions, observations and treatments and it will be made available for access by her and healthcare providers involved in her care.

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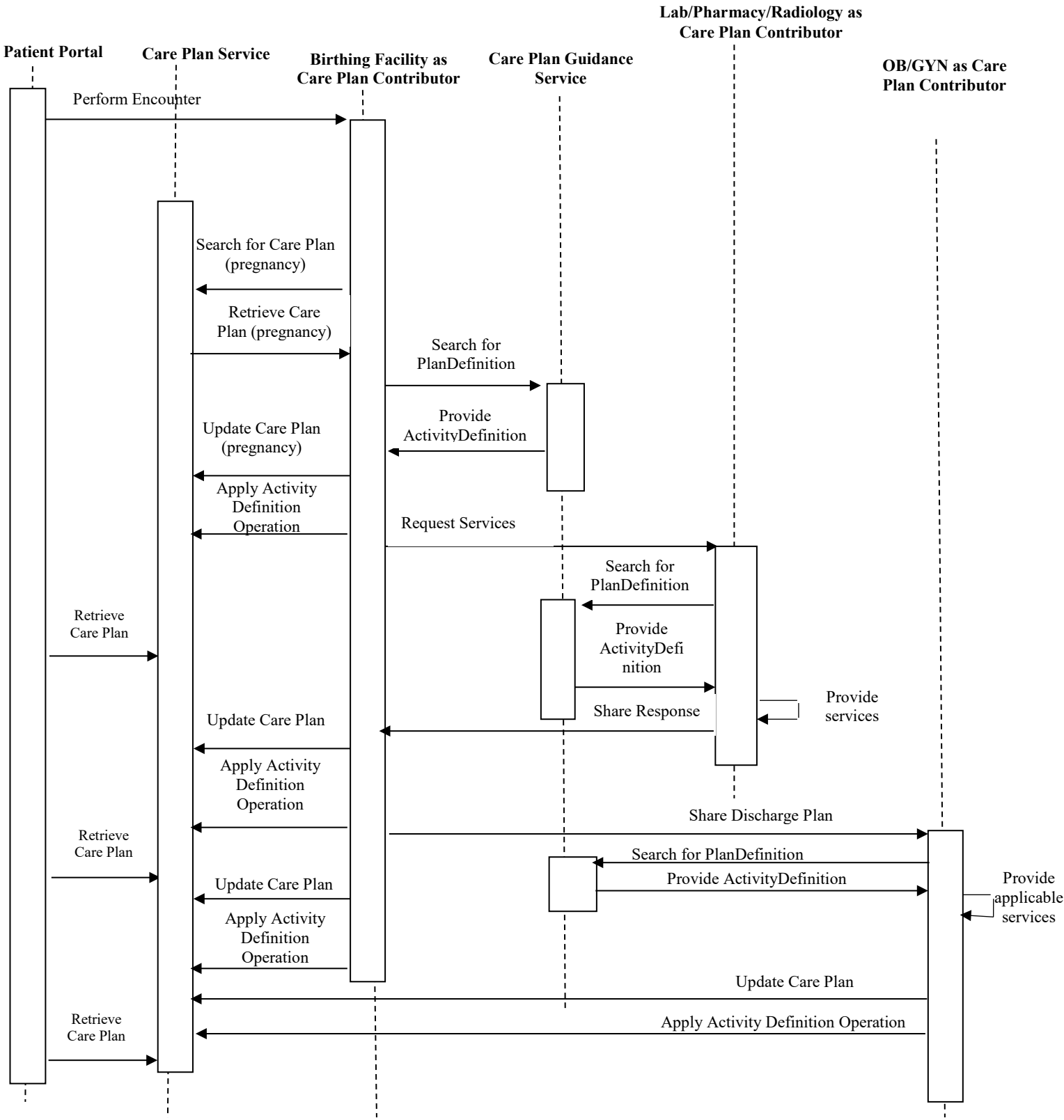

Figure X.4.2.2.1.3-1: Step C: Delivery Care

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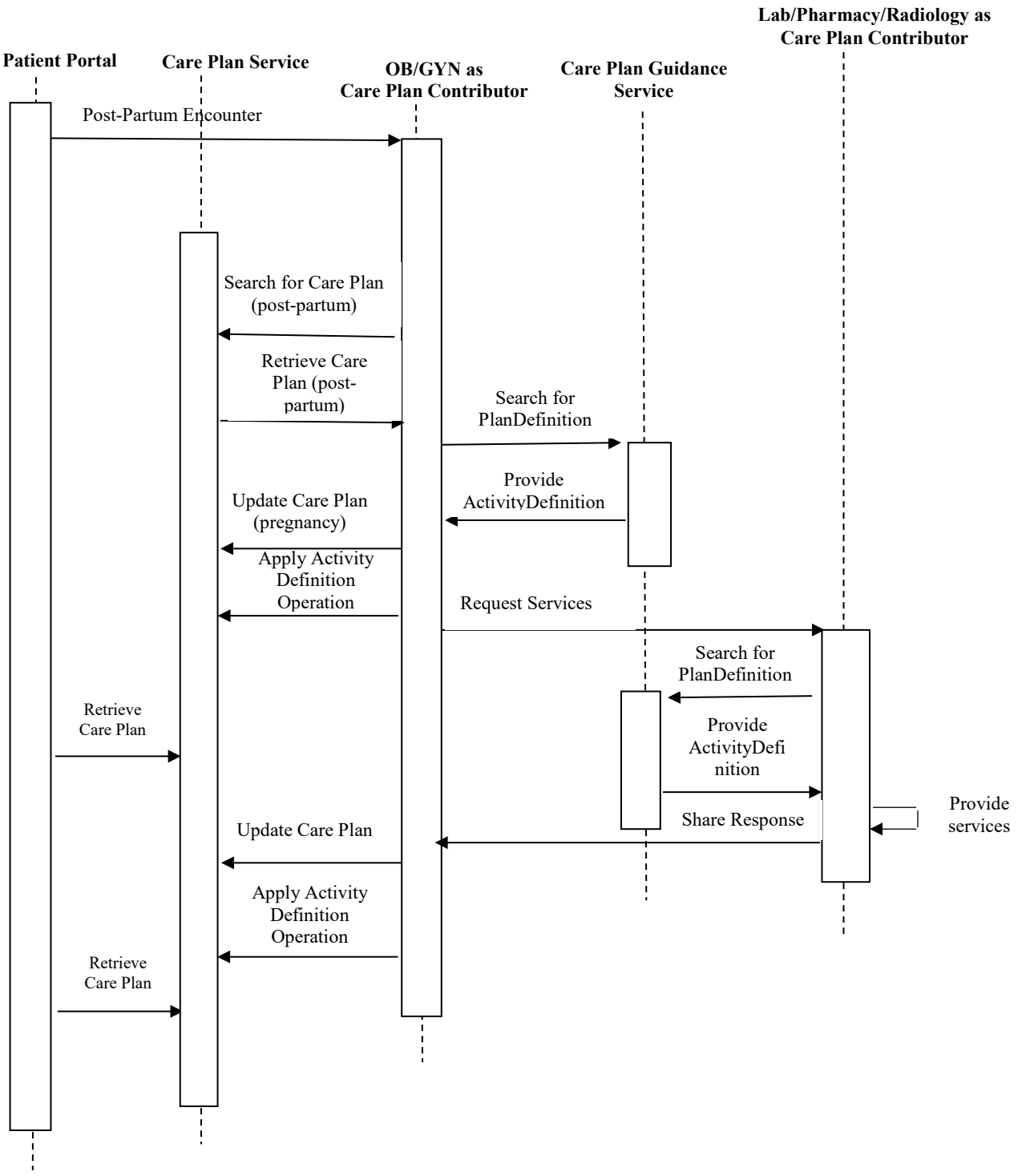

875 **Figure X.4.2.2.1.3-2 Step C: Post-Partum Care**

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X.5 DCP Security Considerations

See ITI TF-2.x Appendix Z.8 "Mobile Security Considerations"

X.6 DCP Cross Profile Considerations

X.6.1 Reconciliation of Clinical Content and Care Providers (RECON) Profile

880 A Reconciliation Agent might be grouped with a Care Plan Contributor and also with a Care Plan Guidance Service to facilitate the reconciliation processes.

X.6.2 ATNA Profile

As mentioned in the security considerations section, a Secure Node or a Secure Application Actor in the ATNA Profile may be grouped with any and all of the actors in this profile.

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Volume 2 – Transactions

Add Section 3.37

3.37 Update Care Plan [PCC-37]

3.37.1 Scope

This transaction is used to update or to create a care plan. A CarePlan resource is submitted to a Care Plan Service where the update or creation is handled.

3.37.2 Actor Roles

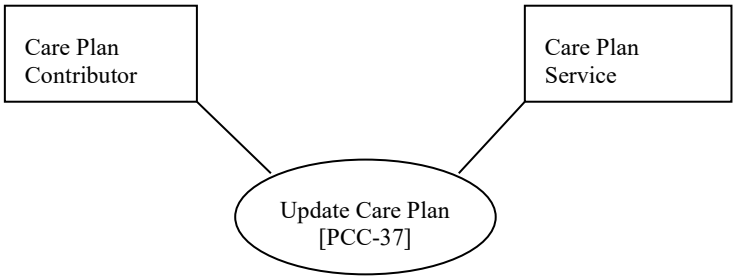

Figure 3.37.2-1: Use Case Diagram

Table 3.37.2-1: Actor Roles

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor submits a care plan that is updated or needs to be created.
Actor:	Care Plan Service
Role:	The Care Plan Service receives submitted care plans for management as per FHIR Resource Integrity management.

3.37.3 Referenced Standards

HL7 FHIR standard STU 3

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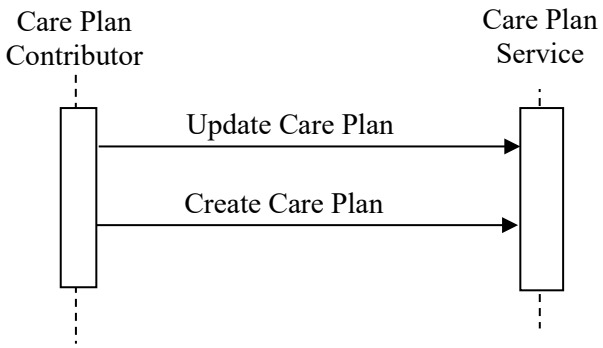
3.37.4 Interaction Diagram



900

3.37.4.1 Update Care Plan

The Care Plan Contributor submits a care plan that has been edited to a Care Plan Service. The Care Plan Service handles the FHIR CarePlan Resource according to FHIR Resource integrity.

3.37.4.1.1 Trigger Events

905 An existing care plan has been edited, and the set of activity for the care plan are to be committed to a Care Plan Service.

3.37.4.1.2 Message Semantics

This is an HTTP or HTTPS PUT of a CarePlan resource, as constrained by this profile.

The base URL for this is: [base]/CarePlan/[id]

910 Where the body of the transaction contains the CarePlan resource.

See: http://hl7.org/fhir/STU3/http.html#update

3.37.4.1.3 Expected Actions

When updating an existing care plan, the Care Plan Contributor shall merge changes into a recently received CarePlan, leaving unchanged content unaltered.

915 If the Care Plan Service returns an error to the Update Care Plan transaction, as would happen if the version of the CarePlan is old, then the Care Plan Contributor should perform the steps of Retrieve Care Plan, merge changes, and then attempt Update Care Plan again. For example, two providers retrieved copies of a care plan, one after another, and then attempt to update the care plan later.

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Since the Care Plan Service SHALL support versioning of the CarePlan resources, the response SHALL contain meta.versionId. See http://hl7.org/fhir/http.html#create details on the response from the Care Plan Service.

3.37.4.2 Create Care Plan

The Care Plan Contributor submits a newly created care plan to a Care Plan Service.

3.37.4.2.1 Trigger Events

Newly created care plan content is ready to be saved to a Care Plan Service.

3.37.4.2.2 Message Semantics

This is an HTTP or HTTPS POST of a CarePlan resource, as constrained by this profile.

The base URL for this is: [base]/CarePlan

Where the body of the transaction contains the CarePlan resource.

See http://hl7.org/fhir/STU3/http.html#create.

3.37.4.2.3 Expected Actions

The Care Plan Service responds, with success or error, as defined by the FHIR RESTful create interaction. See http://hl7.org/fhir/STU3/http.html#create.

3.37.5 Security Considerations

See Section X.5 DCP Security Considerations

3.38 Retrieve Care Plan [PCC-38]

3.38.1 Scope

This transaction is used to retrieve a specific care plan using a known FHIR CarePlan resource id.

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3.38.2 Actor Roles

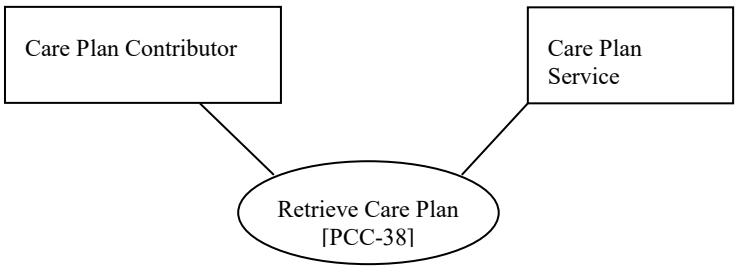


Figure 3.38.2-1: Use Case Diagram

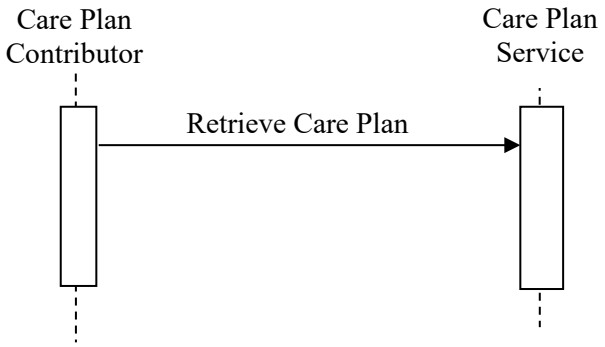
945 **Table 3.38.2-1: Actor Roles**

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor requests a specific care plan using the CarePlan id
Actor:	Care Plan Service
Role:	The Care Plan Service returns the requested CarePlan resource, or an error if the requested id does not exist.

3.38.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.38.4 Interaction Diagram



950 #### 3.38.4.1 Retrieve Care Plan

The Care Plan Contributor retrieves a specific care plan from the Care Plan Service.

3.38.4.1.1 Trigger Events

Any time a specific care plan needs to be retrieved, for the purposes of viewing or in conjunction with the preparation for an update to a care plan.

3.38.4.1.2 Message Semantics

The message is a FHIR HTTP or HTTPS GET of a CarePlan resources where the parameter provided is the CarePlan.id with an option to ask for a specific version of the given CarePlan

The URL for this operation is: [base]/CarePlan/[id]

or, if this is an historical, version specific retrieval: [base]/CarePlan/[id]/_history/[vid]

3.38.4.1.3 Expected Actions

The Care Plan Contributor initiates the retrieve request using HTTP or HTTPS GET, and the Care Plan Service responds according to the FHIR GET specification with the requested care plan or an error message. See http://hl7.org/fhir/STU3/http.html#read.

3.38.5 Security Considerations

See Section X.5 DCP Security Considerations.

3.39 Subscribe to Care Plan Updates [PCC-39]

3.39.1 Scope

This transaction is used to subscribe to updates made to a Care Plan. As noted in TF-1:X-1.1.3, the Care Plan Service SHALL support RESTful delete, as well as the following messages for creating and updating a Subscription.

3.39.2 Actor Roles

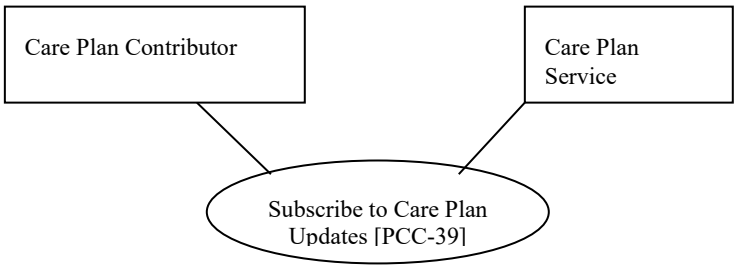


Figure 3.39.2-1: Use Case Diagram

Table 3.39.2-1: Actor Roles

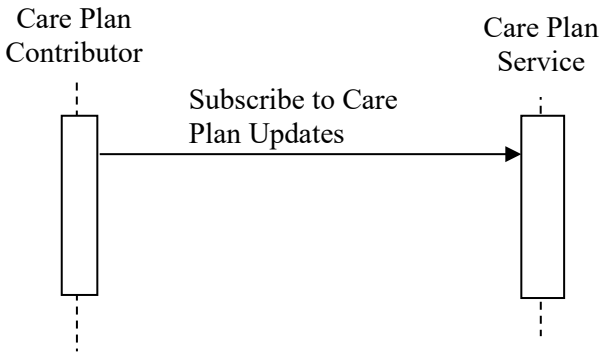
Actor:	Care Plan Contributor

Role:	The Care Plan Contributor subscribes to updates based upon changes to a CarePlan resource.
Actor:	Care Plan Service
Role:	The Care Plan Service evaluates the involved resources of the Subscription and uses the defined channel to notify a Care Plan Contributor about changes.

3.39.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.39.4 Interaction Diagram



3.39.4.1 Subscribe to Care Plan Updates

A Care Plan Contributor may choose to receive updates as CarePlan resources are changed by using the Subscribe to Care Plan Updates transaction.

When the criteria of a subscription request are satisfied, the Care Plan Service sends the entire Care Plan resource, using the Provide Care Plan [PCC-40] transaction to the subscribing Care Plan Contributor.

3.39.4.1.1 Trigger Events

Subscribing to Care Plan Updates is a business and workflow decision, and the use of this is optional in the DCP Profile.

The Subscription criteria, used to trigger updates, may be simple or complex.

Simple Subscription criteria includes only query parameters about a CarePlan resource, such as the id. Simple Subscription criteria results in notifications of changes to the CarePlan resource

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itself, but the subscription update would not be triggered by changes to a resource referenced by the care plan.

Complex Subscription criteria contains chained parameters, such as parameters about resources that are referenced within the CarePlan. For example, chaining parameters about a goal referenced from a CarePlan results in notifications of changes to either the CarePlan or to the referenced goal.

3.39.4.1.2 Message Semantics

This is an HTTP or HTTPS POST of a Subscription resource, as constrained by this profile.

The base URL for this is: [base]/Subscription

Where the body of the transaction contains the Subscription resource.

See http://hl7.org/fhir/STU3/subscription.html.

3.39.4.1.3 Expected Actions

The Care Plan Contributor shall check the response from the Care Plan Service. See http://hl7.org/fhir/STU3/http.html#create for details.

The Care Plan Service shall check that the Subscription resource meets the constraints defined by this profile, in PCC TF-3: 6.6.2.

When a Subscription resource is accepted, the Care Plan Service sets the status to “requested” and returns in the Location header the Subscription’s logical id for use in future operations. This logical id shall be saved by the Care Plan Contributor.

A Subscription may be rejected by the Care Plan Service for a number of reasons, such as if the Subscription is incomplete or does not meet the requirements of this profile as in PCC TF-3: 6.6.2

As per FHIR POST protocol, a rejected transaction results in the return of a 406 – rejected HTTP response.

3.39.4.2 Update Subscription to Care Plan Updates

An existing subscription may be updated by a Care Plan Contributor, for example to refine the search criteria.

3.39.4.2.1 Trigger Events

An existing subscription needs to be updated.

3.39.4.2.2 Message Semantics

This is an HTTP or HTTPS PUT of a Subscription resource, as constrained by this profile.

The base URL for this is: [base]/Subscription/[id]

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Where the body of the transaction contains the Subscription resource.

See http://hl7.org/fhir/STU3/http.html#update.

3.39.4.2.3 Expected Actions

See http://hl7.org/fhir/STU3/http.html#update

3.39.5 Security Considerations

See X.5 DCP Security Considerations

3.40 Provide Care Plan [PCC-40]

3.40.1 Scope

This transaction is used to provide an updated CarePlan resource to a Care Plan Contributor that has subscribed to updates.

3.40.2 Actor Roles

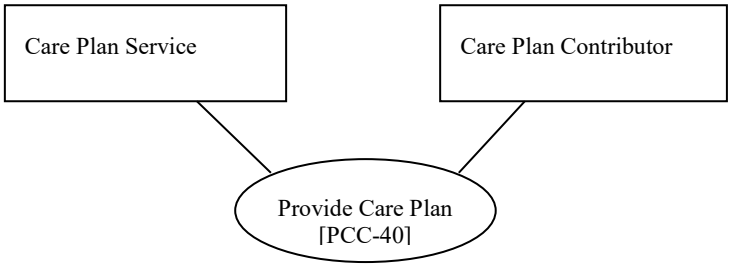


Figure 3.40.2-1: Use Case Diagram

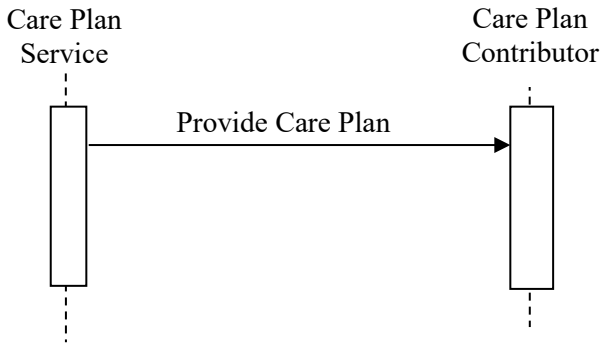
Table 3.40.2-1: Actor Roles

Actor:	Care Plan Service
Role:	The Care Plan Service provides updated CarePlan resources to subscribed Care Plan Contributors.
Actor:	Care Plan Contributor
Role:	The Care Plan Contributor that has subscribed to care plan updates receives updates of changed CarePlan resources.

3.40.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.40.4 Interaction Diagram



3.40.4.1 Provide Care Plan

The Care Plan Service sends a CarePlan resource to the endpoint specified in the Subscription resource.

3.40.4.1.1 Trigger Events

A change to a resource causes a Subscription Criteria to evaluate as true, so the Care Plan Service sends the updated CarePlan resource to the designated endpoint.

3.40.4.1.2 Message Semantics

This is an HTTP or HTTPS POST of a CarePlan resource, as constrained by this profile.

The base URL for this is specified in the registered Subscription resource.

Where the body of the transaction contains the CarePlan resource.

See http://hl7.org/fhir/STU3/subscription.html

3.40.4.1.3 Expected Actions

The Care Plan Contributor receives the CarePlan resource in the body of the POST.

3.40.5 Security Considerations

See X.5 DCP Security Considerations

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3.41 Search for Care Plan [PCC-41]

3.41.1 Scope

This transaction is used to find a care plan. The Care Plan Contributor searches for a care plan of interest. A care plan located by search may then be retrieved for viewing or updating.

3.41.2 Actor Roles

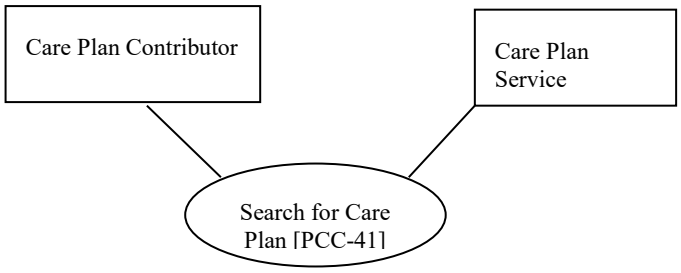

Figure 3.41.2-1: Use Case Diagram

Table 3.41.2-1: Actor Roles

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor initiates Search for Care Plan in order to locate a care plan of interest.
Actor:	Care Plan Service
Role:	The Care Plan Service responds to the Search for Care Plan according to the search parameters and values provided in the transaction.

3.41.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

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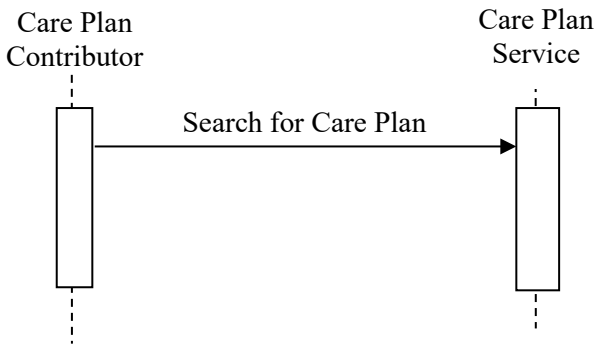
3.41.4 Interaction Diagram



3.41.4.1 Search for Care Plan

The Search for Care Plan is implemented through the FHIR search operation using the REST platform constrained to the HTTP or HTTPS GET.

3.41.4.1.1 Trigger Events

The Search for Care Plan may be initiated for a number of different reasons:

1. need to view a care plan;
2. need to update a portion of a care plan
3. need to subscribe to updates for a care plan

3.41.4.1.2 Message Semantics

This is a standard FHIR search operation on the CarePlan resource. It SHALL use the HTTP or HTTPS GET protocol

The URL for this operation is: [base]/CarePlan/_search

See the FHIR CarePlan resource Search Parameters at
http://hl7.org/fhir/STU3/careplan.html#search

3.41.4.1.3 Expected Actions

The Care Plan Contributor initiates the search using HTTP or HTTPS GET, and the Care Plan Service responds according to the FHIR Search specification with zero or more care plans that match the search parameter values supplied with the search message. Specifically, the Care Plan Service returns a bundle as the HTTP Response, where the bundle includes the resources that are the results of the search.

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3.41.5 Security Considerations

See X.5 DCP Security Considerations.

3.Y1 Update Plan Definition [PCC-Y1]

3.Y1.1 Scope

This transaction is used to update or to create a plan definition. A PlanDefinition resource is submitted to a Care Plan Guidance Service where the update or creation is handled.

3.Y1.2 Actor Roles

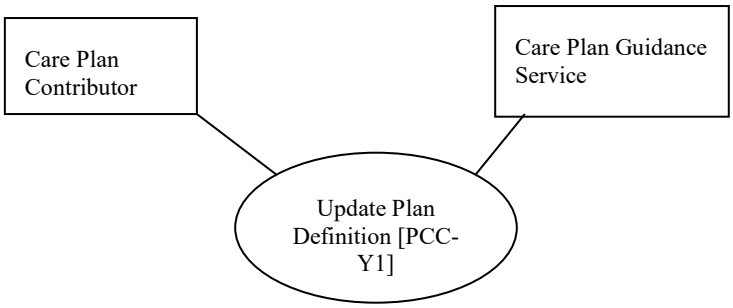

Figure 3.Y1.2-1: Use Case Diagram

Table 3.Y1.2-1: Actor Roles

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor submits a plan definition that is updated or needs to be created.
Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service receives submitted plan definitions for management as per FHIR Resource Integrity management.

3.Y1.3 Referenced Standards

HL7 FHIR standard STU 3

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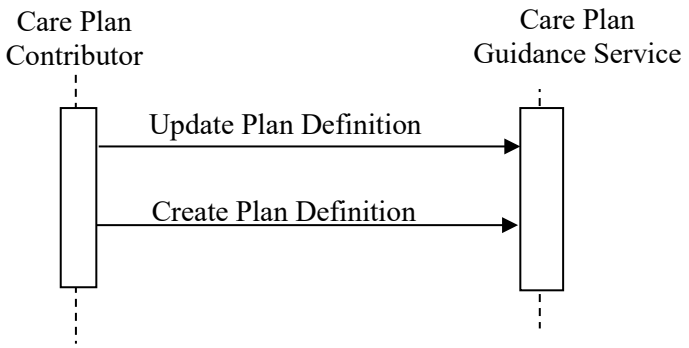
3.Y1.4 Interaction Diagram



3.Y1.4.1 Update Plan Definition

The Care Plan Contributor submits a plan definition that has been edited to a Care Plan Guidance Service. The Care Plan Guidance Service handles the FHIR PlanDefinition Resource according to FHIR Resource integrity.

3.Y1.4.1.1 Trigger Events

An existing plan definition has been edited, and the set of activity for the plan definition are to be committed to a Care Plan Guidance Service.

3.Y1.4.1.2 Message Semantics

This is an HTTP or HTTPS PUT of a PlanDefinition resource, as constrained by this profile.

The base URL for this is: [base]/PlanDefinition/[id]

Where the body of the transaction contains the PlanDefinition resource.

See: http://hl7.org/fhir/STU3/http.html#update

3.Y1.4.1.3 Expected Actions

When updating an existing plan definition, the Care Plan Contributor shall merge changes into a recently received PlanDefinition, leaving unchanged content unaltered.

If the Care Plan Guidance Service returns an error to the Update Plan Definition transaction, as would happen if the version of the PlanDefinition is old, then the Care Plan Contributor should perform the steps of Retrieve Plan Definition, merge changes, and then attempt Update Plan Definition again. For example, two providers retrieved copies of a plan definition, one after another, and then attempt to update the plan definition later.

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Since the Care Plan Guidance Service SHALL support versioning of the PlanDefinition resources, the response SHALL contain meta.versionId. See http://hl7.org/fhir/STU3/http.html#create details on the response from the Care Plan Guidance Service.

3.Y1.4.2 Create Plan Definition

The Care Plan Contributor submits a newly created plan definition to a Care Plan Guidance Service.

3.Y1.4.2.1 Trigger Events

Newly created plan definition content is ready to be saved to a Care Plan Guidance Service.

3.Y1.4.2.2 Message Semantics

This is an HTTP or HTTPS POST of a PlanDefinition resource, as constrained by this profile.

The base URL for this is: [base]/PlanDefinition

Where the body of the transaction contains the PlanDefinition resource.

See http://hl7.org/fhir/STU3/http.html#create

3.Y1.4.2.3 Expected Actions

The Care Plan Guidance Service responds, with success or error, as defined by the FHIR RESTful create interaction. See http://hl7.org/fhir/STU3/http.html#create

3.Y1.5 Security Considerations

See Section X.5 DCP Security Considerations

3.Y2 Retrieve Plan Definition [PCC-Y2]

3.Y2.1 Scope

This transaction is used to retrieve a specific Plan Definition using a known FHIR PlanDefinition resource id.

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3.Y2.2 Actor Roles

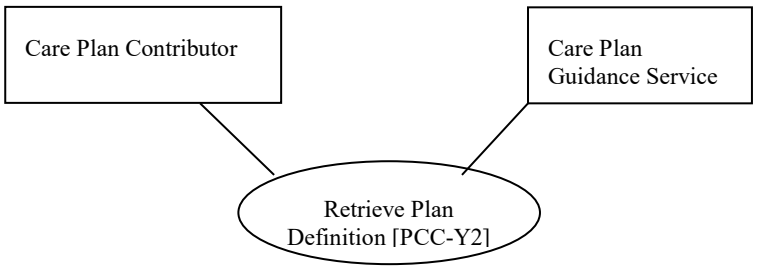


Figure 3.Y2.2-1: Use Case Diagram

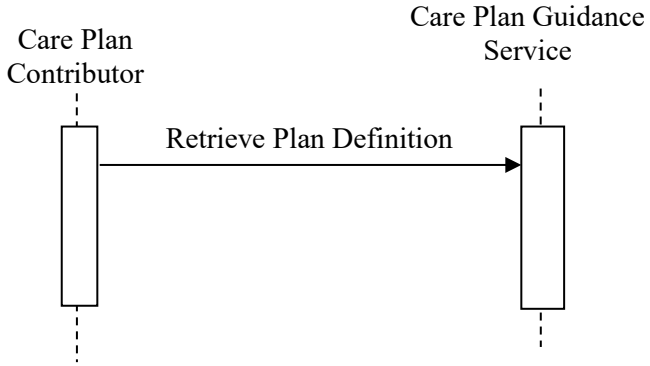
1155 **Table 3.Y2.2-1: Actor Roles**

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor requests a specific plan definition using the PlanDefinition id.
Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service returns the requested PlanDefinition resource, or an error if the requested id does not exist.

3.Y2.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.Y2.4 Interaction Diagram



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3.Y2.4.1 Retrieve Plan Definition

The Care Plan Contributor retrieves a specific plan definition from the Care Plan Guidance Service.

3.Y2.4.1.1 Trigger Events

Any time a specific plan definition needs to be retrieved, for the purposes of viewing or in conjunction with the preparation for an update to a plan definition.

3.Y2.4.1.2 Message Semantics

The message is a FHIR HTTP or HTTPS GET of a PlanDefinition resources where the parameter provided is the PlanDefinition.id with an option to ask for a specific version of the given PlanDefinition

The URL for this operation is: [base]/PlanDefinition/[id]

or, if this is an historical, version specific retrieval: [base]/PlanDefinition/[id]/_history/[vid]

3.Y2.4.1.3 Expected Actions

The Care Plan Contributor initiates the retrieve request using HTTP or HTTPS GET, and the Care Plan Guidance Service responds according to the FHIR GET specification with the requested plan definition or an error message. See http://hl7.org/fhir/STU3/http.html#read

3.Y2.5 Security Considerations

See Section X.5 DCP Security Considerations

3.Y3 Search for Plan Definition [PCC-Y3]

3.Y3.1 Scope

This transaction is used to find a plan definition. The Care Plan Contributor searches for a plan definition of interest. A plan definition located by search may then be retrieved for viewing or updating.

3.Y3.2 Actor Roles

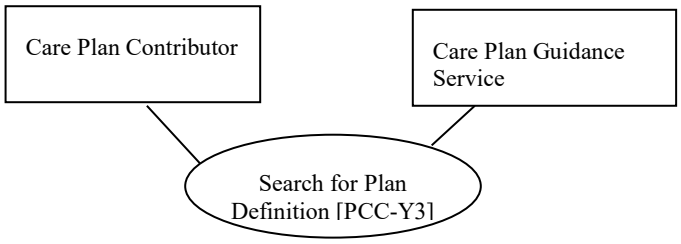

Figure 3.Y3.2-1: Use Case Diagram

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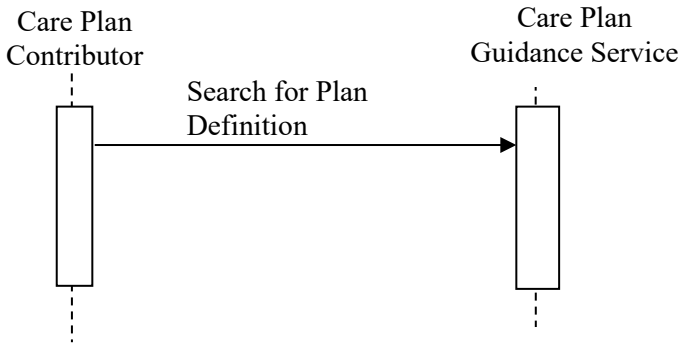
Table 3.Y3.2-1: Actor Roles

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor initiates Search for Plan Definition in order to locate a plan definition of interest.
Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service responds to the Search for Plan Definition according to the search parameters and values provided in the transaction.

3.Y3.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.Y3.4 Interaction Diagram



3.Y3.4.1 Search for Plan Definition

The Search for Plan Definition is implemented through the FHIR search operation using the REST platform constrained to the HTTP or HTTPS GET.

3.Y3.4.1.1 Trigger Events

The Search for Plan Definition may be initiated for a number of different reasons:

4. need to view a plan definition;
5. need to update a portion of a plan definition
6. need to subscribe to updates for a plan definition

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3.Y3.4.1.2 Message Semantics

This is a standard FHIR search operation on the PlanDefinition resource. It SHALL use the HTTP or HTTPS GET protocol

The URL for this operation is: [base]/PlanDefinition/_search

See the FHIR PlanDefinition resource Search Parameters at
http://hl7.org/fhir/STU3/planDefinition.html#search

3.Y3.4.1.3 Expected Actions

The Care Plan Contributor initiates the search using HTTP or HTTPS GET, and the Care Plan Guidance Service responds according to the FHIR Search specification with zero or more plan definitions that match the search parameter values supplied with the search message. Specifically, the Care Plan Guidance Service returns a bundle as the HTTP Response, where the bundle includes the resources that are the results of the search.

3.Y3.5 Security Considerations

See X.5 DCP Security Considerations.

3.Y4 Subscribe to Plan Definition Updates [PCC-Y4]

3.Y4.1 Scope

This transaction is used to subscribe to updates made to a Plan Definition. As noted in TF-1:X-1.1.3, the Care Plan Guidance Service SHALL support RESTful delete, as well as the following messages for creating and updating a Subscription.

3.Y4.2 Actor Roles

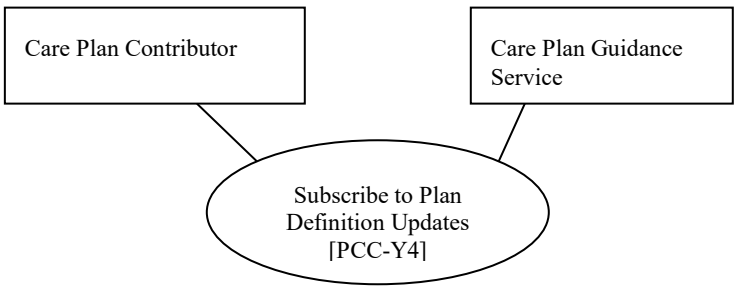

Figure 3.Y4.2-1: Use Case Diagram

Table 3.Y4.2-1: Actor Roles

Actor:	Care Plan Contributor

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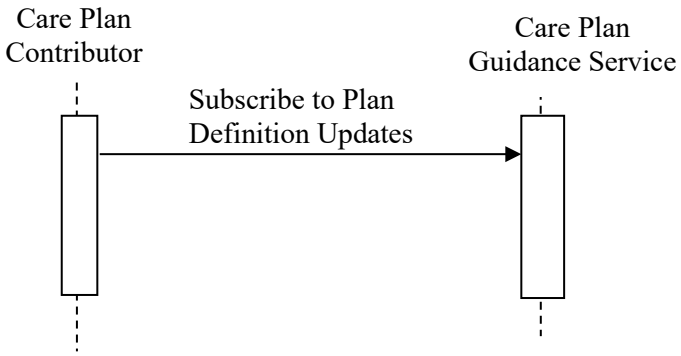
Role:	The Care Plan Contributor subscribes to updates based upon changes to a PlanDefinition resource.
Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service evaluates the involved resources of the Subscription and uses the defined channel to notify a Care Plan Contributor about changes.

3.Y4.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.Y4.4 Interaction Diagram



3.Y4.4.1 Subscribe to Plan Definition Updates

A Care Plan Contributor may choose to receive updates as PlanDefinition resources are changed by using the Subscribe to Plan Definition Updates transaction.

When the criteria of a subscription request are satisfied, the Care Plan Guidance Service sends the entire Plan Definition resource, using the Provide Plan Definition [PCC-Y5] transaction to the subscribing Care Plan Contributor.

3.Y4.4.1.1 Trigger Events

Subscribing to Plan Definition Updates is a business and workflow decision, and the use of this is optional in the DCP Profile.

The Subscription criteria, used to trigger updates, may be simple or complex.

Simple Subscription criteria includes only query parameters about a PlanDefinition resource, such as the id. Simple Subscription criteria results in notifications of changes to the

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PlanDefinition resource itself, but the subscription update would not be triggered by changes to a resource referenced by the plan definition.

Complex Subscription criteria contains chained parameters, such as parameters about resources that are referenced within the PlanDefinition. For example, chaining parameters about an ActivityDefinition referenced from a PlanDefinition results in notifications of changes to either the PlanDefinition or to the referenced ActivityDefinition.

3.Y4.4.1.2 Message Semantics

This is an HTTP or HTTPS POST of a Subscription resource, as constrained by this profile.

The base URL for this is: [base]/Subscription

Where the body of the transaction contains the Subscription resource.

See http://hl7.org/fhir/STU3/subscription.html

3.Y4.4.1.3 Expected Actions

The Care Plan Contributor shall check the response from the Care Plan Guidance Service. See http://hl7.org/fhir/STU3/http.html#create for details.

The Care Plan Guidance Service shall check that the Subscription resource meets the constraints defined by this profile, in PCC TF-3: 6.6.2.

When a Subscription resource is accepted, the Care Plan Guidance Service sets the status to "requested" and returns in the Location header the Subscription's logical id for use in future operations. This logical id shall be saved by the Care Plan Contributor.

A Subscription may be rejected by the Care Plan Guidance Service for a number of reasons, such as if the Subscription is incomplete or does not meet the requirements of this profile as in PCC TF-3: 6.6.2

As per FHIR POST protocol, a rejected transaction results in the return of a 406 – rejected HTTP response.

3.Y4.4.2 Update Subscription to Plan Definition Updates

An existing subscription may be updated by a Care Plan Contributor, for example to refine the search criteria.

3.Y4.4.2.1 Trigger Events

An existing subscription needs to be updated.

3.Y4.4.2.2 Message Semantics

This is an HTTP or HTTPS PUT of a Subscription resource, as constrained by this profile.

The base URL for this is: [base]/Subscription/[id]

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Where the body of the transaction contains the Subscription resource.

See http://hl7.org/fhir/STU3/http.html#update

3.Y4.4.2.3 Expected Actions

See http://hl7.org/fhir/STU3/http.html#update

3.Y4.5 Security Considerations

See X.5 DCP Security Considerations

3.Y5 Provide Plan Definition [PCC-Y5]

3.Y5.1 Scope

This transaction is used to provide an updated PlanDefinition resource to a Care Plan Contributor that has subscribed to updates.

3.Y5.2 Actor Roles

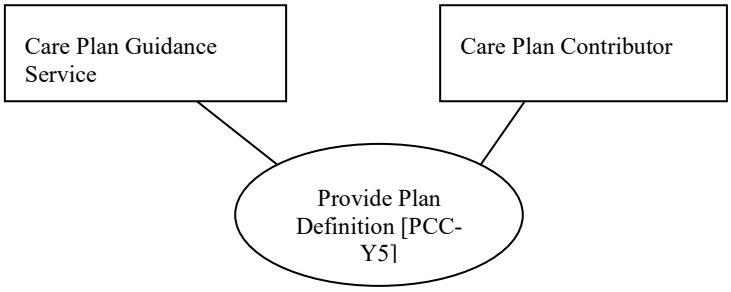

Figure 3.Y5.2-1: Use Case Diagram

Table 3.Y5.2-1: Actor Roles

Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service provides updated PlanDefinition resources to subscribed Care Plan Contributors.
Actor:	Care Plan Contributor
Role:	The Care Plan Contributor that has subscribed to plan definition updates receives updates of changed PlanDefinition resources.

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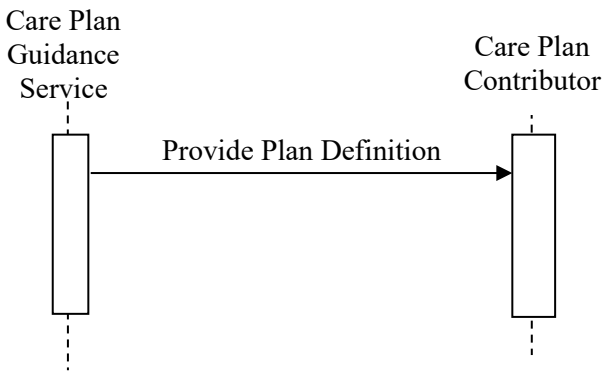
3.Y5.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

3.Y5.4 Interaction Diagram



3.Y5.4.1 Provide Plan Definition

The Care Plan Guidance Service sends a PlanDefinition resource to the endpoint specified in the Subscription resource.

3.Y5.4.1.1 Trigger Events

A change to a resource causes a Subscription Criteria to evaluate as true, so the Care Plan Guidance Service sends the updated PlanDefinition resource to the designated endpoint.

3.Y5.4.1.2 Message Semantics

This is an HTTP or HTTPS POST of a PlanDefinition resource, as constrained by this profile.

The base URL for this is specified in the registered Subscription resource.

Where the body of the transaction contains the PlanDefinition resource.

See http://hl7.org/fhir/STU3/subscription.html.

3.Y5.4.1.3 Expected Actions

The Care Plan Contributor receives the PlanDefinition resource in the body of the POST.

3.Y5.5 Security Considerations

See X.5 DCP Security Considerations

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3.Y6 Provide Activity Definition [PCC-Y6]

3.Y6.1 Scope

This transaction is used to provide an updated ActivityDefinition resource to a Care Plan Contributor that has subscribed to updates.

3.Y6.2 Actor Roles

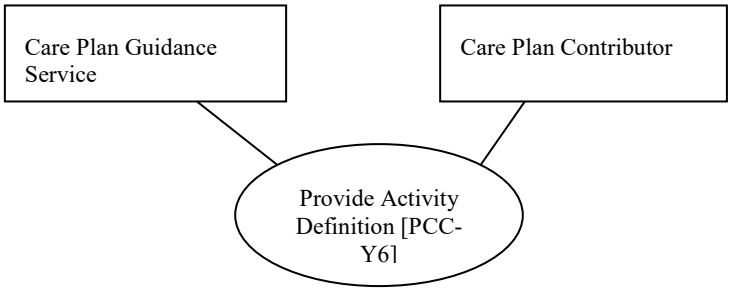

Figure 3.Y6.2-1: Use Case Diagram

Table 3.Y6.2-1: Actor Roles

Actor:	Care Plan Guidance Service
Role:	The Care Plan Guidance Service provides updated ActivityDefinition resources to subscribed Care Plan Contributors.
Actor:	Care Plan Contributor
Role:	The Care Plan Contributor that has subscribed to activity definition updates receives updates of changed ActivityDefinition resources.

3.Y6.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

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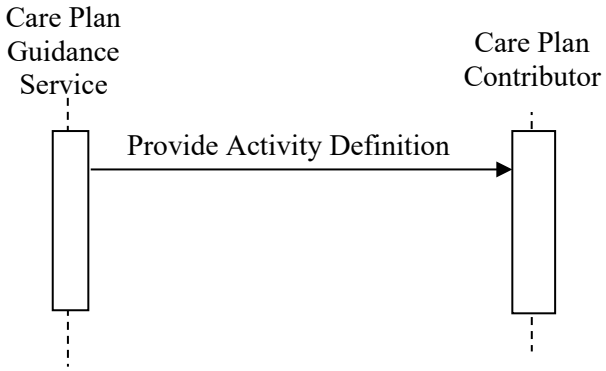
3.Y6.4 Interaction Diagram



1320

3.Y6.4.1 Provide Activity Definition

The Care Plan Guidance Service sends an ActivityDefinition resource to the endpoint specified in the Subscription resource.

3.Y6.4.1.1 Trigger Events

1325 A change to a resource causes a Subscription Criteria to evaluate as true, so the Care Plan Guidance Service sends the updated ActivityDefinition resource to the designated endpoint.

3.Y6.4.1.2 Message Semantics

This is an HTTP or HTTPS POST of an ActivityDefinition resource, as constrained by this profile.

1330 The base URL for this is specified in the registered Subscription resource.

Where the body of the transaction contains the ActivityDefinition resource.

See http://hl7.org/fhir/STU3/subscription.html

3.Y6.4.1.3 Expected Actions

The Care Plan Contributor receives the ActivityDefinition resource in the body of the POST.

1335 ### 3.Y6.5 Security Considerations

See X.5 DCP Security Considerations

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3.Y7 Apply Activity Definition Operation [PCC-Y7]

3.Y7.1 Scope

This transaction is used to generate a Care Plan and subsequent request or task resources. Care Plan Contributor Actor receives Activity Definitions provided by the Care Plan Guidance Service Actor. A Care Plan is created. Subsequent request or task resources are generated based on the selected ActivityDefinition to be acted on. This is based on business rules determined by the Care Plan Contributor system. As described in Section X.4.2.2 Pregnancy Use Case, when the patient's clinical status changes and the Care Plan is updated with Activity Definitions, the Care Plan Contributor generates request resources based on business rules. Request resources associated with the CarePlan.activity.reference are Appointment, CommunicationRequest, DeviceRequest, MedicationRequest, NutritionOrder, Task, ProcedureRequest, ReferralRequest , VisionPrescription, RequestGroup.

An optional possibility is that the process can be accomplished by tasks to be performed. In this case, the Care Plan Contributor generates FHIR Task resource from the Activity Definitions. The FHIR Task resource is used to support care planning workflow.

3.Y7.2 Actor Roles

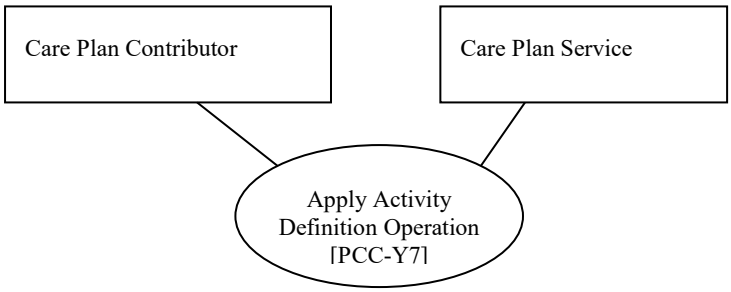

Figure 3.Y7.2-1: Use Case Diagram

Table 3.Y7.2-1: Actor Roles

Actor:	Care Plan Contributor
Role:	The Care Plan Contributor generates Care Plan with request resources
Actor:	Care Plan Service
Role:	The Care Plan Service receives submitted Care Plans for management as per FHIR Resource Integrity management.

3.Y7.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

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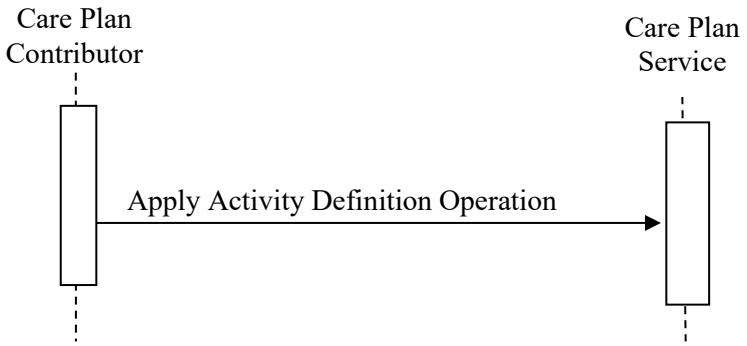
3.Y7.4 Interaction Diagram



3.Y7.4.1 Apply Activity Definition Operation

The Care Plan Contributor receives Activity Definition resource provided by the Care Plan Guidance Actor using the Provide Activity Definition transaction (PCC-Y6). Care Plan Contributor uses FHIR $Apply operation to generate or update a Care Plan with corresponding request or task resources. The Care Plan Contributor Actor uses existing business logic to act on the request or task resources in the generated Care Plan.

3.Y7.4.1.1 Trigger Events

The Care Plan Contributor has received an updated ActivityDefinition resource and generates or updates a Care Plan containing request or task resource based on existing business logic.

3.Y7.4.1.2 Message Semantics

Care Plan Contributor receives the POST containing the activity definition from the Care Plan Guidance Service Actor. Care Plan Contributor then utilizes FHIR $Apply operation to generate or update a Care Plan based on defined business logic. The Care Plan contains request or task resources. Business logic may also include generating or updating request or task resources. For example, business logic may determine that an Activity Definition include the need to create a procedureRequest resource. The procedureRequest resource is then sent to a laboratory system or a creation of a medicationRequest resource which is sent to a pharmacy system. Business logic may also include the handling of responses to the request resources. The updated or created Care Plan is managed by the Care Plan Service Actor.

The base URL for this is: [base]/ActivityDefinition/[id]/$apply

Where the body of the transaction contains an activityDefinition resource.

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See: http://hl7.org/fhir/STU3/activitydefinition-operations.html#apply

3.Y7.4.1.3 Expected Actions

Based on business logic, Care Plan Contributor generates a Care Plan in the body of the POST. Subsequent use of apply operation will subsequently generate request or task resources based on the selected ActivityDefinition associated with the PlanDefinition.

3.Y7.5 Security Considerations

See X.5 DCP Security Considerations

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Appendices

None

Volume 2 Namespace Additions

Add the following terms to the IHE General Introduction Appendix G:

None

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Volume 3 – Content Modules

5 Namespaces and Vocabularies

Add to Section 5 Namespaces and Vocabularies

NA

Add to Section 5.1.1 IHE Format Codes

NA

Add to Section 5.1.2 IHE ActCode Vocabulary

NA

Add to Section 5.1.3 IHE RoleCode Vocabulary

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6 Content Modules

6.3.1 CDA®[18] Content Modules

NA

6.6 HL7 FHIR Content Module

6.6.1 Care Plan

The following table shows the DynamicCarePlan StructureDefinition, which constrains the CarePlan resource. The below table is a conceptual representation of the FHIR StuctureDefinition.

Table 6.6.1-1: CarePlan resource

Name	Flags	Base Card.	DCP Constraint Card.	Description & Constraints	(Profile) Comments
.. CarePlan				Healthcare plan for patient	
...identifier	Σ	0..*	1..*	External Ids for this plan	This version of the profile requires at least one identifier.
… definition	Σ	0..*		Protocol or definition	
... basedOn	Σ	0..*		Fulfills care plan (reference carePlan)	This version of the profile requires that a related DynamicCarePlan be referenced when basedOn
... replaces	Σ	0..*		CarePlan replaced by this CarePlan (reference carePlan)	This version of the profile requires that a related DynamicCarePlan be referenced when replaced
... partOf	Σ	0..*		Part of referenced CarePlan (reference carePlan)	This version of the profile requires that a related DynamicCarePlan be referenced when partOf
... status	?!	1..1		draft | active | suspended | completed | entered-in-error | cancelled | unknown	
... intent	?!	1..1		proposal | plan | order | option	

[18] CDA is the registered trademark of Health Level Seven International.

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Name	Flags	Base Card.	DCP Constraint Card.	Description & Constraints	(Profile) Comments
... category	Σ	0..*	1..*	Type of plan	This version of the profile fixes the code system to SNOMED CT; http://snomed.info/sct
... title	Σ	0..1		Human-friendly name for the CarePlan	
... description	Σ	0..1	1..1	Summary of nature of plan	This version of the profile requires a description
... subject	Σ	1..1		Identifies the patient.	For this version of the profile, the use of group is not supported.
... context	Σ	0..1		Created in context of	This profile allows for CarePlan creation outside of the context of an encounter or episode.
... period	Σ	0..1	1..1	Time period plan covers	This version of the profile requires at least a start time for the CarePlan.
... author	Σ	0..*	1..*	Who is responsible for contents of the plan	This version of the profile requires at least one author.
... careTeam		0..*		Who's involved in plan?	
... addresses	Σ	0..*	1..*	Health issues this plan addresses	This version of the profile requires one of more addressed conditions/problems/concerns/ diagnoses
... supportingInfo		0..*		Information considered as part of plan (reference Any)	
... goal		0..*	1..*	Desired outcome of plan	This version of the profile requires at least one Goal.
... activity	I	0..*		Action to occur as part of plan Provide a reference or detail, not both	
.... outcomeCodeableConcept		0..*		Results of the activity	

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Name	Flags	Base Card.	DCP Constraint Card.	Description & Constraints	(Profile) Comments
.... outcomeReference		0..*		Appointment, Encounter, Procedure, etc. (reference Any)	
.... progress		0..*		Annotation Comments about the activity status/progress	
.... reference	I	0..1		Activity details defined in specific resource	
.... detail		0..1		In-line definition of activity	
..... category	I	0..1		diet | drug | encounter | observation | procedure | supply | other CarePlanActivityCategory (Example)	
..... definition		0..1		Protocol or definition	
..... code		0..1		Detail type of activity Care Plan Activity (Example)	
..... reasonCode		0..*		Why activity should be done or why activity was prohibited Activity Reason (Example)	
..... reasonReference		0..*		Condition triggering need for activity	
..... goal		0..*		Goals this activity relates to	

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Name	Flags	Base Card.	DCP Constraint Card.	Description & Constraints	(Profile) Comments
..... status	?!	1..1		not-started | scheduled | in-progress | on-hold | completed | cancelled | unknown CarePlanActivityStatus (Required)	
..... statusReason		0..1		Reason for current status GoalStatusReason (Example)	
..... prohibited	?!	0..1		Do NOT do	
..... scheduled		0..1		When activity is to occur	
..... scheduledTiming					
..... scheduledPeriod					
..... scheduledString					
..... location		0..1		Where it should happen	
..... performer		0..*		Who will be responsible?	
..... product		0..1		What is to be administered/supplied SNOMED CT Medication Codes (Example)	
..... productCodeableConcept					
..... productReference					
..... dailyAmount		0..1		How to consume/day?	

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Name	Flags	Base Card.	DCP Constraint Card.	Description & Constraints	(Profile) Comments
..... quantity		0..1		How much to administer/supply/consume	
..... description		0..1		Extra info describing activity to perform	
... note		0..*		Annotation Comments about the plan	

A FHIR CarePlan StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

6.6.2 Subscription

The following table documents the CarePlanSubscription, which constrains the Subscription resource. The below table is a conceptual representation of the FHIR StuctureDefinition.

Table 6.6.2-1: Subscription resource

Name	Flags	Base Card.	IHE PCC Constraint Card.	Description	Comments
.. Subscription	Σ			A server push subscription criteria	
...status	?! Σ	1..1		requested | active | error | off	
...contact	Σ	0..*		Contact details for source (e.g., troubleshooting)	
…end	Σ	0..1		When to automatically delete the subscription	
...reason	Σ	1..1		Description of why this subscription was created	
…criteria	Σ	1..1		Rule for server push criteria	
...error	Σ	0..1		Latest error note	
...channel	Σ	1..1		The channel on which to report matches to the criteria	
....type	Σ	1..1		rest-hook	This version of the profile constrains the channel type to rest-hook.

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description	Comments
....endpoint	Σ	0..1	1..1	Where the channel points to	This version of the profile constrains the channel type to rest-hook, the endpoint must be a valid URL for the Provide Care Plan [PCC-40] transaction.
....payload	Σ	0..1	1..1	Mimetype to send	This version of the profile constrains the channel payload to a non-blank value - the CarePlan resource must be the payload.
....header	Σ	0..*		Usage depends on the channel type	
...tag	Σ	0..*		A tag to add to matching resources	

A FHIR Subscription StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

6.6.3 PlanDefinition

The following table shows the DynamicCarePlanPlanDefinition StructureDefinition, which constrains the planDefiniton resource.

Table 6.6.3-1: PlanDefinition resource

Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.. PlanDefinition				planDefinition for care planning	
… url	Σ	0..1	1..1	Logical URI to reference this plan definition (globally unique)	This version of the profile requires url where the library of planDefinitions are stored.
...identifier	Σ	0..*	1..*	External Ids for this planDefinition	This version of the profile requires at least one identifier.
... version	Σ	0..1	1..1	Business version of the plan definition	This version of the profile requires specifying the version of this PlanDefinition.
... name	Σ	0..1	1..1	Name for this plan definition (computer friendly)	This version of the profile requires the name of the planDefinition

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
... title	Σ	0..1	1..1	Name for this plan definition (human friendly)	This version of the profile requires a title which is used in an UI.
... type	Σ	0..1		order-set | protocol | eca-rule	
... status	?! Σ	1..1		draft | active | retired | unknown	
... experimental	?! Σ	0..1		For testing purposes, not real usage	
... date	Σ	0..1	1..1	Date this was last changed	This version of the profile requires a date for when the PlanDefinition was last changed
... publisher	Σ	0..1	1..1	Name of the publisher (organization or individual)	This version of the profile requires the name of the PlanDefinition publisher.
... description	Σ	0..1	1..1	Natural language description of the plan definition	This version of the profile requires a description of the PlanDefinition.
... purpose		0..1		Why this plan definition is defined	
... usage		0..1		Describes the clinical usage of the asset	
... approvalDate		0..1		When the plan definition was approved by publisher	
... lastReviewDate		0..1	1..1	When the plan definition was last reviewed	This version of the profile requires a date when the PlanDefinition was last reviewed.
... effectivePeriod	Σ	0..1		When the plan definition is expected to be used	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
…. id		0..1		unique id for the element within a resource (for internal references). This may be any string value that does not contain spaces.	
…. start		0..1	1..1	The start of the period.	This version of the profile requires an effectivePeriod of period.start when the PlanDefinition status value is active
…. end		0..1		The end of the period.	
... useContext	Σ	0..*	1..*	Context the content is intended to support	This version of the profile requires a useContext which is used to discover planDefinitions of similar useContext. Will be used to drive searches related to the patient's condition.
... jurisdiction	Σ	0..*		Intended jurisdiction for plan definition (if applicable)	
... topic		0..*		E.g., Education, Treatment, Assessment, etc.	
... contributor		0..*		A content contributor	
.... contact	Σ	0..*		Contact details for the publisher	
.... copyright		0..1		Use and/or publishing restrictions	
.... relatedArtifact		0..*		Related artifacts for the asset	
.... library		0..*		Logic used by the plan definition	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.... goal		0..*		What the plan is trying to accomplish	
..... category		0..1		E.g., Treatment, dietary, behavioral, etc.	
..... description		1..1		Code or text describing the goal	
..... priority		0..1		high-priority | medium-priority | low-priority	
..... start		0..1		When goal pursuit begins	
..... addresses		0..*	1..*	What does the goal address	This version of the profile requires the concept the PlanDefinition.goal addresses.
..... documentation		0..*		Supporting documentation for the goal	
..... target		0..*		Target outcome for the goal	
..... measure		0..1		The parameter whose value is to be tracked	
..... detail[x]		0..1		The target value to be achieved	
..... detailQuantity					
..... detailRange					
..... detailCodeableConcept					
..... due		0..1		Reach goal within	
.... action		0..*	1..*	Action defined by the plan	This version of the profile requires action (activityDefinitions).

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
..... label		0..1		User-visible label for the action (e.g., 1. or A.)	
..... title		0..1	1..1	User-visible title	This version of the profile requires a title of the action (activityDefinitions).
..... description		0..1	1..1	Short description of the action	This version of the profile requires a description of the action (activityDefinitions).
..... textEquivalent		0..1		Static text equivalent of the action, used if the dynamic aspects cannot be interpreted by the receiving system	
..... code		0..*		Code representing the meaning of the action or sub-actions	
..... reason		0..*		Why the action should be performed	
..... documentation		0..*		Supporting documentation for the intended performer of the action	
..... goalId		0..*		What goals this action supports	
..... triggerDefinition		0..*		When the action should be triggered	
..... condition		0..*		Whether or not the action is applicable	
..... kind		1..1		applicability | start | stop	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
..... description		0..1		Natural language description of the condition	
..... language		0..1		Language of the expression	
..... expression		0..1		Boolean-valued expression	
..... input		0..*		Input data requirements	
..... output		0..*		Output data definition	
..... relatedAction		0..*		Relationship to another action	
..... actionId		1..1		What action is this related to	
..... relationship		1..1		before-start | before | before-end | concurrent-with-start | concurrent | concurrent-with-end | after-start | after | after-end	
..... offset[x]		0..1		Time offset for the relationship	
..... offsetDuration					
..... offsetRange					
..... timing[x]		0..1		When the action should take place	
..... timingDateTime					
..... timingPeriod					

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
..... timingDuration					
..... timingRange					
..... timingTiming					
..... participant		0..*		Who should participate in the action	
..... type		1..1		patient | practitioner | related-person	
..... role		0..1		E.g., Nurse, Surgeon, Parent, etc.	
..... type		0..1		create | update | remove | fire-event	
..... groupingBehavior		0..1		visual-group | logical-group | sentence-group	
..... selectionBehavior		0..1		any | all | all-or-none | exactly-one | at-most-one | one-or-more	
..... requiredBehavior		0..1		must | could | must-unless-documented	
..... precheckBehavior		0..1		yes | no	
..... cardinalityBehavior		0..1		single | multiple	
..... definition		0..1	1..1	Description of the activity to be performed	This version of the profile requires activityDefinitions referenced by the planDefinition
..... transform		0..1		Transform to apply the template	
..... dynamicValue		0..*		Dynamic aspects of the definition	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
..... description		0..1		Natural language description of the dynamic value	
..... path		0..1		The path to the element to be set dynamically	
..... language		0..1		Language of the expression	
..... expression		0..1		An expression that provides the dynamic value for the customization	
..... action		0..*		A sub-action	

A FHIR PlanDefinition StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

6.6.4 ActivityDefinition

The following table shows the DynamicCarePlanActivityDefinition StructureDefinition, which constrains the activityDefiniton resource. It is important to note that activityDefinition.kind is the kind of resource the activity definition defines as resources to be used. For the purposed of this profile, the following Request resources SHOULD be used and SHALL be referenced from CarePlan.activity.reference: Appointment; CommunicationRequest; DeviceRequest; MedicationRequest; NutritionOrder; Task; ProcedureRequest; ReferralRequest; VisionPrescription; RequestGroup

Table 6.6.4-1: ActivityDefinition resource

Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.. ActivityDefinition				activityDefinition for care planning	
… url	Σ	0..1	1..1	Logical URI to reference this activity definition (globally unique)	This version of the profile requires url where the library of activityDefinitions are stored.

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
... identifier	Σ	0..*	1..*	External Ids for this activityDefinition	This version of the profile requires at least one identifier.
... version	Σ	0..1	1..1	Business version of the activity definition	This version of the profile requires specifying the version of this activityDefinition.
... name	Σ	0..1	1..1	Name for this activity definition (computer friendly)	This version of the profile requires the name of the activityDefinition
... title	Σ	0..1	1..1	Name for this plan definition (human friendly)	This version of the profile requires a title which is used in an UI.
... status	?! Σ	1..1		draft | active | retired | unknown	
... experimental	?! Σ	0..1		For testing purposes, not real usage	
... date	Σ	0..1	1..1	Date this was last changed	This version of the profile requires a date for when the ActivityDefinition was last changed
... publisher	Σ	0..1	1..1	Name of the publisher (organization or individual)	This version of the profile requires the name of the ActivityDefinition publisher.
... description	Σ	0..1	1..1	Natural language description of the activity definition	This version of the profile requires a description of the ActivityDefinition.
... purpose		0..1		Why this activity definition is defined	
... usage		0..1		Describes the clinical usage of the asset	
... approvalDate		0..1		When the activity definition was approved by publisher	
... lastReviewDate		0..1	1..1	When the activity definition was last reviewed	This version of the profile requires a date when the ActivityDefinition was last reviewed.
... effectivePeriod	Σ	0..1		When the activity definition is expected to be used	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
…. id		0..1		unique id for the element within a resource (for internal references). This may be any string value that does not contain spaces.	
…. start		0..1	1..1	The start of the period.	This version of the profile requires an effectivePeriod of period.start when the ActivityDefinition status value is active
…. end		0..1		The end of the period.	
... useContext	Σ	0..*	1..*	Context the content is intended to support	This version of the profile requires a useContext which is used to discover activityDefinitions of similar useContext.
... jurisdiction	Σ	0..*		Intended jurisdiction for activity definition (if applicable)	
... topic		0..*		E.g., Education, Treatment, Assessment, etc.	
... contributor		0..*		A content contributor	
.... contact	Σ	0..*		Contact details for the publisher	
.... copyright		0..1		Use and/or publishing restrictions	
.... relatedArtifact		0..*		Additional documentation, citations, etc.	
.... library		0..*		Logic used by the asset	
.... kind		0..1	1..1	Kind of resource	This version of the profile requires kind which is used to generate the request resources.
.... code		0..1		Detail type of activity	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.... timing[x]		0..1	1..1	When activity is to occur	This version of the profile requires timing of when the activityDefinition is to occur.
..... timingTiming					
..... timingDateTime					
..... timingPeriod					
..... timingRange					
.... location		0..1		Where it should happen	
.... participant		0..*		Who should participate in the action	
..... type		1..1		Patient | practitioner | related-person	
..... role		0..1		E.g., Nurse, Surgeon, Parent, etc.	
.... product		0..1		What's administered/supplied	
..... productReference					
..... productCodeableCOncept					
.... quantity		0..1		How much is administered/consumed/supplied	
.... dosage		0..*		Detailed dosage instructions	
.... bodySite		0..*		What part of body to perform on	
.... transform		0..1		Transform to apply the template	
.... dynamicValue		0..*		Dynamic aspects of the definition	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
..... description		0..1		Natural language description of the dynamic value	
..... path		0..1		The path to the element to be set dynamically	
..... language		0..1		Language of the expression	
..... expression		0..1		An expression that provides the dynamic value for the customization	

A FHIR ActivityDefinition StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

6.6.5 Task

Task resources are resources that represent a task to be performed. Task resources can be one of activityDefinition.kind which is the kind of resource the activity definition defines as request resources to be used. The purpose of profiling the task resource is to support cases when the Task resource is used to support care planning workflow. In this situation, the PlanDefinition uses the Task resource to leverage care planning.

The following table shows the DynamicCarePlanTask StructureDefinition, which constrains the Task resource when the Task resource is used for the care planning process. It is important to note that Task resources can be one of activityDefinition.kind which is the kind of resource the activity definition defines as resources to be used.

Table 6.6.5-1: Task resource

Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.. Task				A task to be performed	
... identifier	Σ	0..*	1..*	External Ids for this task	**This version of the profile requires at least one identifier.**
... definition[x]	Σ	0..1	1..1	Formal definition of task	**This version of the profile requires at least one definition.**

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.... definitionUri					
.... definitionReference					
... basedOn	Σ	0..*		Request fulfilled by this task	
... groupIdentifier	Σ	0..1		Requisition or grouper id	
... partOf	Σ	0..*		Composite task	
... status	Σ	1..1		draft | requested | received | accepted | +	
... statusReason	Σ	0..1		Reason for current status	
... businessStatus	Σ	0..1		E.g., "Specimen collected", "IV prepped"	
... intent	Σ	0..1		proposal | plan | order +	
... priority		0..1		normal | urgent | asap | stat	
... code	Σ	0..1	1..1	Task Type	**This version of the profile requires a code.**
... description	Σ	0..1	1..1	Human-readable explanation of task	**This version of the profile requires a description.**
... focus	Σ	0..1		What task is acting on	
... for	Σ	0..1		Beneficiary of the Task	
... context	Σ	0..1		Healthcare event during which this task originated	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
... executionPeriod	Σ	0..1		Start and end time of execution	
... authoredOn	I	0..1	1..1	Task Creation Date	**This version of the profile requires an authoredOn.**
... lastModified	Σ I	0..1	1..1	Task Last Modified Date	**This version of the profile requires a lastModified.**
... requester	Σ	0..1	1..1	Who is asking for task to be done	**This version of the profile requires a requester.**
.... agent	Σ	1..1		Individual asking for task	
.... onBehalfOf		0..1		Organization individual is acting for	
... performerType		0..*		requester | dispatcher | scheduler | performer | monitor | manager | acquirer | reviewer	
... owner	Σ	0..1	1..1	Responsible individual	**This version of the profile requires an owner.**
... reason		0..1		Why task is needed	
... note		0..*		Comments made about the task	
... relevantHistory		0..*		Key events in history of the Task	
... restrictions		0..1		Constraints on fulfillment tasks	
.... repetitions		0..1		How many times to repeat	
.... period		0..1		When fulfillment sought	

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Name	Flags	Base Card.	IHE PCC Constraint Card.	Description & Constraints	(Profile) Comments
.... recipient		0..*		For whom is fulfillment sought?	
... input		0..*		Information used to perform task	
.... type		1..1		Label for the input	
.... value[x]		1..1		Content to use in performing the task	
... output		0..*		Information produced as part of task	
.... type		1..1		Label for output	
.... value[x]		1..1		Result of output	

A FHIR Task StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

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Appendices

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Appendix D – DCP Proposed Mapping to XDW Profiles

Cross-Enterprise Document Workflow (XDW) is a profile that provides the ability to define and manage workflows by sharing XDW "Workflow Document". XDW Workflow Document keeps track of the state (current and previous) and all related input/output Documents involved in the workflow process.

XDW Workflow Document is made up of selected XDW "tasks" that defines all the needed process that completes the workflow. The list of needed process is the XDW "Workflow Definition".

The DCP Profile provides the ability to use Plan Definition and its referenced Activity Definitions to create actions. The actions created by the Activity Definition resource can be used as part of the care planning process. FHIR Task resource is one of the resources used in the care planning process. There exists a lot of similarity between XDW and DCP constructs. The following section provides a comparison between XDW and DCP elements as it relates to care planning.

D.1 Concepts

Starting from the strong relations existing between DCP and XDW Profiles, it's possible to individuate a parallelism between the objects involved in these two profiles:

1. The Plan Definition provides support for Activity Definition to support the care planning process in the DCP Profile. This can be correlated with the Workflow Definition defined in XDW Profiles.
2. The Activity Definition references the Task resource which can correlated with XDW Task defined in the XDW Workflow Definition.
3. The FHIR Care Plan use of the FHIR Task resource can be correlated with XDW Workflow Document as defined in XDW Profile.
4. The Activity Definition's referenced request and task resources as used by the DCP can be correlated with active XDW Tasks used in an XDW application. The FHIR Task resource has been profiled to support this workflow (see 6.6.5).

D.2 DCP to XDW Concept Mapping

In an XDW environment, DCP transactions can be mapped to XDW transactions using the following guideline:

1. [PCC-37] Update Care Plan transaction can be mapped to the creation of a Workflow Document. When this transaction is used to update a Care Plan, the mapping lead to the update of the Workflow Document already created. The Workflow Document elements shall be defined per the concept mappings below.
2. [PCC-38] Retrieve Care Plan transaction can be mapped to the retrieve of a Workflow Document.

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3. [PCC-41] Search for Care Plan transaction can be mapped to a query for searching Workflow Documents.

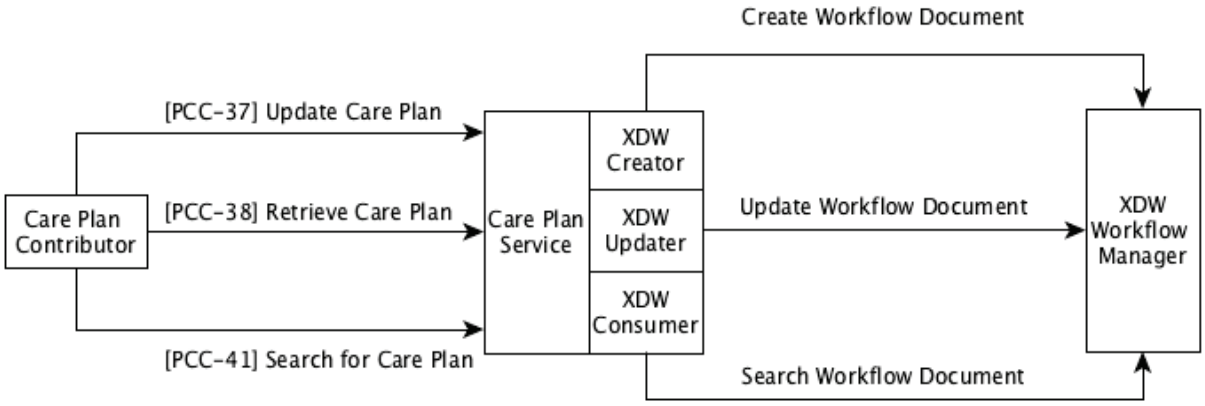

Figure D.2-1: DCP to XDW Concept Mapping Diagram

D.2.1 Mapping DCP CarePlan resource to XDW Workflow Document

The purpose of this mapping exercise is to demonstrate a situation in which the DCP FHIR based profile and XDW Profiles can correlate. In order to support this, mapping between DCP CarePlan resources and XDW Workflow Document is provided below. The purpose for doing this is to support the ability for DCP Care Plan Service that receives a CarePlan with referenced Task resources, will be able to translate this information into an XDW Workflow Document.

Table D.2.1-1: DCP CarePlan resource to XDW Workflow Mapping

CarePlan resource elements	Description	XDW Workflow Document elements	Notes
id	Document Id	id	
meta	meta elements for resource	Mapping defined on children elements	
… versionId	The version specific identifier, as it appears in the version portion of the URL. This value changes when the resource is created, updated, or deleted.	workflowDocumentSequence Number	
… lastUpdated	When the last update occurred	effectiveTime	
… security	Security labels applied to this resource	confidentialityCode	
implicitRules	A reference to a set of rules that were followed when the resource was constructed, and which must be understood when processing the content. (uri)	workflowDefinitionReferenc e (urn:oid: that defines the kind of Workflow Document)	Could be the solution for FHIR typeCode

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CarePlan resource elements	Description	XDW Workflow Document elements	Notes
identifier	External Ids for this plan. This version of the profile requires at least one identifier	workflowInstanceId	
definition	Protocol or definition	TaskList/XDWTask/TaskData/input for the first task with FHIR resource PlanDefinition	
basedOn	Fulfills care plan (reference carePlan). This version of the profile requires that a related DynamicCarePlan be referenced when basedOn	TaskList/XDWTask/TaskData/input for the first task with FHIR resource CarePlan	
replaces	CarePlan replaced by this CarePlan (reference carePlan). This version of the profile requires that a related DynamicCarePlan be referenced when replaced	TaskList/XDWTask/TaskData/input for the first task with FHIR resource CarePlan	
partOf	Part of referenced CarePlan (reference carePlan). This version of the profile requires that a related DynamicCarePlan be referenced when part of.	TaskList/XDWTask/TaskData/input for the first task with FHIR resource CarePlan	
status	draft | active | suspended | completed | entered-in-error | cancelled | unknown	workflowStatus	
intent	proposal | plan | order | option	no mapping	
category	Type of plan. This version of the profile fixes the code system to SNOMED CT; http://snomed.info/sct	no mapping	
title	Human-friendly name for the CarePlan	title	
description	Summary of nature of plan. This version of the profile requires a description	no mapping	
subject	Identifies the patient. For this version of the profile, the use of group is not supported.	patient. Patient/id element can be found in the Patient resource referenced in CarePlan/subject element	
context	Created in context of. This profile allows for CarePlan creation outside of the context of an encounter or episode	TaskList/XDWTask/TaskData/input for the first task with FHIR resource Encounter or EpisodeOfCare	
period	Time period plan covers. This version of the profile requires at least a start time for the CarePlan	no mapping	
author	Who is responsible for contents of the plan. This version of the profile requires at least one author	author/assignedAuthor. author/assignedAuthor/id element can be found in the resource referenced in CarePlan/author element	

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CarePlan resource elements	Description	XDW Workflow Document elements	Notes
careTeam	Who's involved in plan?	no mapping	
addresses	Health issues this plan addresses. This version of the profile requires one of more addressed conditions/problems/concerns/diagnoses	no mapping	
supportingInfo	Information considered as part of plan (reference Any)	TaskList/XDWTask/TaskData/input or TaskList/XDWTask/TaskData/output of a specific task	
goal	Desired outcome of plan. This version of the profile requires at least one Goal.	no mapping	
activity	Action to occur as part of plan Provide a reference or detail, not both	Contains the list of Task references. Mapping is performed on the children elements	
… outcomeCodeableConcept	Results of the activity	no mapping	
… outcomeReference	Appointment, Encounter, Procedure, etc. (reference Any)	TaskList/XDWTask/TaskData/output of the task referenced in activity/reference element	
… progress	Annotation Comments about the activity status/progress	no mapping	
… reference	Activity details defined in specific resource	Reference to Task resource – Mapping is on the Task resource (see **Table 7.3.3-1**)	
… details	In-line definition of activity	General details of Task resource. Mapping is on children elements.	
…. category	diet | drug | encounter | observation | procedure | supply | other CarePlanActivityCategory (Example)	no mapping	
…. definition	Protocol or definition	TaskList/XDWTask/TaskData/input with FHIR resource ActivityDefinition	
…. code	Detail type of activity Care Plan Activity (Example)	no mapping	
…. reasonCode	Why activity should be done or why activity was prohibited Activity Reason (Example)	no mapping	
…. reasonReference	Condition triggering need for activity	no mapping	
…. goal	Goals this activity relates to	no mapping	

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CarePlan resource elements	Description	XDW Workflow Document elements	Notes
…. status	not-started | scheduled | in-progress | on-hold | completed | cancelled | unknown CarePlanActivityStatus (Required)	TaskList/XDWTask/TaskData/TaskDetails/status	
…. statusReason	Reason for current status GoalStatusReason (Example)	no mapping	
…. prohibited	Do NOT do	no mapping	
…. Scheduled[x]	When activity is to occur	no mapping	
….. scheduledTiming		no mapping	
….. scheduledPeriod		no mapping	
…. scheduledString		no mapping	
…. location	Where it should happen	no mapping	
…. performer	Who will be responsible?	TaskList/XDWTask/TaskData/TaskDetails/actualOwner	
…. product[x]elduledefinition k m the profile because it is causing confusion.	What is to be administered/supplied SNOMED CT Medication Codes (Example)	no mapping	
….. productCodeableConcept	CodeableConcept	no mapping	
….. productReference	Reference (Medication | Substance)	no mapping	
…. dailyAmount	How to consume/day?	no mapping	
…. quantity	How much to administer/supply/consume	no mapping	
…. description	Extra info describing activity to perform	no mapping	
note	Annotation Comments about the plan	no mapping	

D.2.2 Mapping XDW Workflow Document History to CarePlan and Task Resource Ancestor Elements

The table below contains XDW Workflow Document history elements. Consideration should be given for use of Provenance resource versus use of the CarePlan resource ancestor elements.

Table D.2.2-1: XDW Workflow Document History to CarePlan and Task Resource Mapping

XDW Workflow Document history	Description	CarePlan or Task resource	Notes
workflowStatusHistory/documentEvent	A detailed event that represents a change of the workflowStatus. The first documentEvent element is added when the workflow document is	Mapping defined on children elements	

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XDW Workflow Document history		Description	CarePlan or Task resource	Notes
		created. A documentEvent element is then added whenever the workflowStatus of the workflow document changes.		
	eventTime	Time when the specific documentEvent element is added to the workflow document	Time of the transaction for a CarePlan/status change	
	eventType	The type of event that happens that solicits the modification of the workflowStatus. It should be valorized with one of these types: create, stop, suspend, resume, fail, complete	no mapping	
	taskEventIdentifier	Element that permits to track the reference to the taskEvent that solicits the modification of the workflowStatus. It stores the same value of the element taskEvent/identifier of the taskEvent of reference	Task/identifier of the Task resource that has led to the CarePlan/status change	
	author	Actual owner of the workflow after the event	Task/owner of the task that has led to the CarePlan/status change	
	previousStatus	The previous value of workflowStatus. Either “OPEN” or “CLOSED”. In case of a Workflow Document just created this element shall be valorized with “”	CarePlan/status from the previous versions of CarePlan	
	actualStatus	Equal to the current value of the workflowStatus element. Either “OPEN” or “CLOSED”.	CarePlan/status	

D.2.3 Mapping Task Resource to XDW Workflow Document Elements

The following table contains mapping between the Task resource and XDW Workflow Document elements.

Table D.2.3-1: Task Resource to XDW Workflow Document Mapping

Task resource elements	Description	XDW Workflow Document elements	Notes
identifier	External Ids for this task. This version of the profile requires at least one identifier.	TaskList/XDWTask/TaskData/TaskDetails/id	
definitionReference	Formal definition of task. This version of the profile requires at least one definition.	TaskList/XDWTask/TaskData/input	

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Task resource elements		Description	XDW Workflow Document elements	Notes
basedOn		Request fulfilled by this task	TaskList/XDWTask/TaskData/input containing the reference to a FHIR resource	
groupIdentifier		Requisition or grouper id	no mapping	
partOf		Composite task	TaskList/XDWTask/TaskData/input containing the reference to a FHIR resource	
status		draft | requested | received | accepted | +	TaskList/XDWTask/TaskData/TaskDetails/status	
statusReason		Reason for current status	no mapping	
businessStatus		E.g., "Specimen collected", "IV prepped"	no mapping	
intent		proposal | plan | order +	no mapping	
priority		normal | urgent | asap | stat	TaskList/XDWTask/TaskData/TaskDetails/priority	
code		Task Type. This version of the profile requires a code.	TaskList/XDWTask/TaskData/TaskDetails/taskType	
description		Human-readable explanation of task. This version of the profile requires a description.	TaskList/XDWTask/TaskData/TaskDetails/name	
focus		What task is acting on	no mapping	
for		Beneficiary of the Task	no mapping	
context		Healthcare event during which this task originated	no mapping	
executionPeriod		Start and end time of execution	no mapping	
authoredOn		Task Creation Date	taskDetails/createdTime	
lastModified		Task Last Modified Date	taskDetails/lastModifiedTime	
requester		Who is asking for task to be done	taskDetails/createdBy	
	agent	Individual asking for task	taskDetails/taskInitiatior	
	onBehalfOf	Organization individual is acting for	no mapping	
performerType		requester | dispatcher | scheduler | performer | monitor | manager | acquirer | reviewer	no mapping	
owner		Responsible individual	TaskList/XDWTask/TaskData/TaskDetails/actualOwner	
reason		Why task is needed	no mapping	
note		Comments made about the task	taskData/comments	
relevantHistory		Key events in history of the Task	no mapping	
restrictions		Constraints on fulfillment tasks	no mapping	
	repetitions	How many times to repeat	no mapping	
	period	When fulfillment sought	no mapping	
	recipient	For whom is fulfillment sought?	no mapping	

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Task resource elements		Description	XDW Workflow Document elements	Notes
input		Information used to perform task	TaskList/XDWTask/TaskData/TaskDetails/input	
	type	Label for the input	no mapping	
	value[x]	Content to use in performing the task	Elements of input/part/attachmentInfo	
output		Information produced as part of task	TaskList/XDWTask/TaskData/TaskDetails/output	
	type	Label for output	no mapping	
	value[x]	Result of output	Elements of output/part/attachmentInfo	

D.2.4 Mapping XDW Task History Required Elements to CarePlan and Task Resource

The following table contains mapping of the XDW Task History required elements to CarePlan and Task Resource.

Table D.2.4-1: XDW Task History Required Elements to CarePlan and Task Resource Mapping

XDW Task history		Description	CarePlan or Task resource	Notes
taskEventHistory/taskEvent		A detailed event that represents a change of the task status	Mapping is performed on children elements	
	id		no mapping	Shall be defined or can be set when element is created?
	eventTime	Time when the specific taskEvent element is added to the workflow document	Time of the transaction for Task/status change	
	identifier	Identifier for the task	Task/identifier	
	eventType	The type of event that happens that solicits the modification of the status of the task (adding a new taskEvent). It should be valorized with one of these types: create, stop, suspend, resume, fail, complete.	no mapping	
	status	Status of the task	Task/status from the current Task and the previous Task (see history of Task resource)	

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Volume 3 Namespace Additions

None

Add the following terms to the IHE Namespace:

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Volume 4 – National Extensions

Add appropriate Country section

None