

Integrating the Healthcare Enterprise



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# **IHE Patient Care Coordination Technical Framework Supplement**

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## **Dynamic Care Planning (DCP)**

HL7<sup>®</sup> FHIR<sup>®</sup> STU 4

Using Resources at FMM Level 2-3

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### **Revision 3.1 – Trial Implementation**

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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.**

## Foreword

30 This is a supplement to the IHE Patient Care Coordination Technical Framework. 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 September 27, 2019 for trial implementation and may be available for testing at subsequent IHE Connectathons. The supplement may be amended based on the results of testing. Following successful testing it will be incorporated into the Patient Care  
35 Coordination Technical Framework. Comments are invited and can be submitted at [http://www.ihe.net/PCC\\_Public\\_Comments](http://www.ihe.net/PCC_Public_Comments).

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.

40 *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.

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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](http://ihe.net/IHE_Domains).

50 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](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](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 domain determines that an emerging standard has high likelihood of industry adoption, and the standard offers significant benefits for the use cases it is attempting to address, the domain may develop IHE profiles based on such a standard. During Trial Implementation, the IHE domain will update and republish the IHE profile as the underlying standard evolves.

Product implementations and site deployments may need to be updated in order for them to remain interoperable and conformant with an updated IHE profile.

This DCP Profile is based on Release 4 of the emerging HL7<sup>®1</sup> FHIR<sup>®2</sup> specification. HL7 describes FHIR Change Management and Versioning at <https://www.hl7.org/fhir/versions.html>.

HL7 provides a rating of the maturity of FHIR content based on the FHIR Maturity Model (FMM): level 0 (draft) through N (Normative). See <http://hl7.org/fhir/versions.html#maturity>.

The FMM levels for FHIR content used in this profile are:

FHIR Resource Name	FMM Level
CarePlan	2
Subscription	3
PlanDefinition	2
ActivityDefinition	2
Task	2
CareTeam	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](http://wiki.ihe.net/index.php/Dynamic_Care_Planning#FHIR_Implementation_Guide)

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<sup>1</sup> HL7 is the registered trademark of Health Level Seven International.

<sup>2</sup> FHIR is the registered trademark of Health Level Seven International.

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  
345 define, nor assume, a single Care Plan for a patient.

Updates to this profile will provide a mechanism to facilitate system interactions to support care team membership while care planning. Care team membership include support for:

- Adding Care Team Members
- Removing Care Team Members
- 350 • Request Participation
- Respond to Participation Request

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  
355 consideration. Please see Volume 3 Appendix D for proposed DCP to XDW mappings that is being explored as a future option.

## Open Issues and Questions

1. Seeking feedback: Are there systems/applications in existence today where the primary duty of that system is to manage care teams by creating, updating care teams including  
360 identifying specific individuals that are fulfilling care team roles?
2. How does XDW Care Planning workflow relate to DCP? Is there interest in developing XDW Care Planning constructs?
3. Is an ATNA Grouping required? If so, how does that impact potential mobile uses of this profile?
- 365 4. When profiling the FHIR Resource make sure we can make references to existing documents (e.g., CDA<sup>®3</sup> documents, XDW documents, etc.).
5. Concepts from the Care Plan model, DAM or C-CDA<sup>®4</sup>, do not have clear mappings to the FHIR CarePlan resource.
- 370 6. Request made to FHIR gForge – to add care team and organization to activityDefinition.participant.type

[https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker\\_item\\_id=20907](https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker_item_id=20907)

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<sup>3</sup> CDA is the registered trademark of Health Level Seven International.

<sup>4</sup> C-CDA is the registered trademark of Health Level Seven International.

## Closed Issues

- 375 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).
- 380 2. (2/16/16) The Care Plan Contributor should use the following pattern, from <http://hl7.org/fhir/R4/http.html#transactional-integrity>
- 385 ○ 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.

390 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.

- 395 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.

- 400 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

405 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.

- 410 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.
- 415 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.
- 420 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.
- 425 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.
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.
- 430 11. (Closed 05/01/2018) CP 0228 - Ballot comment from Philips Health Care - All links to FHIR R4 specification should be using <http://hl7.org/fhir/R4/> as the base URL. <http://hl7.org/fhir/> may change as a new STU version is created.
- 435 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.
- 440 13. (Closed 07/25/2018) Change made. The following tracker items submitted to FHIR to Make \$apply a resource operation as well as an instance operation (for both ActivityDefinition and PlanDefinition) – See Section 3.63 Update Plan Definition [PCC-63]  
[https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker\\_item\\_id=17437](https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker_item_id=17437)  
445 [https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker\\_item\\_id=17395](https://gforge.hl7.org/gf/project/fhir/tracker/?action=TrackerItemEdit&tracker_item_id=17395)

450

Open issue is to determine if FHIR will update STU 3 or provide this change as R4.

Note: Changes have been made in build.fhir.org. See:

<http://build.fhir.org/plandefinition-operation-apply.html>

<http://build.fhir.org/activitydefinition-operation-apply.html>

## General Introduction

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

### 455 Appendix A – Actor Summary Definitions

Add the following **new** 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 Definition 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 Definition Service	This actor manages Plan Definition received from Care Plan Contributors and provides updated Plan Definitions to subscribed Care Plan Contributors.
Care Team Contributor	This actor reads, creates and updates Care Teams hosted by a Care Team Service.
Care Team Service	This actor manages Care Teams received from Care Team Contributors and provides notification of updates and access to updated Care Teams to subscribers.

### Appendix B – Transaction Summary Definitions

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

Transaction	Definition
Update Care Plan [PCC-37]	Update an existing or create a new Care Plan
Retrieve Care Plan [PCC-38]	Retrieve a Care Plan
Subscribe to Care Plan Updates [PCC-39]	Subscribe to receive updated Care Plans for specific patients
Provide Care Plan [PCC-40]	Provide updated Care Plans to subscribers
Search for Care Plan [PCC-41]	Used to find a Care Plan
Search for Plan Definition [PCC-65]	Used to find a Plan Definition
Retrieve Plan Definition [PCC-64]	Retrieve a Plan Definition
Update Plan Definition [PCC-63]	Update an existing or create a new Plan Definition
Subscribe to Plan Definition updates [PCC-66]	Subscribe to receive updated Plan Definitions for specific conditions
Provide Plan Definition [PCC-67]	Provide updated Plan Definition to subscribers
Provide Activity Definition [PCC-68]	Provide applicable Activity Definition
Apply Activity Definition Operation [PCC-69]	Generates a Care Plan and subsequent request resources based on business rules

Transaction	Definition
Apply Plan Definition Operation [PCC-70]	Generates a Care Plan, Care Team and subsequent request resources based on business rules
Update Care Team [PCC-45]	Used to update or to create a Care Team
Search for Care Team [PCC-46]	Used to find a Care Team
Retrieve Care Team [PCC-47]	Retrieve a specific Care Team
Provide Care Team [PCC-49]	Provide an updated Care Team to subscribers
Subscribe to Care Team Updates [PCC-48]	Subscribe to updates made to a Care Team for specific patients

## Glossary

465 Add the following **new** 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 <sup>5</sup>
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. <sup>6</sup>
Care Plan	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. <sup>7</sup>
Plan Definition	Contain action definition which describes an activity to be performed <sup>8</sup> .
Activity Definition	Specific actions to be performed as part of care planning. <sup>9</sup>
Care Team Domain Analysis Model (DAM)	Captures the roles and relationships of the unique group of individuals who provide care for a single patient. <sup>10</sup>

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

<sup>6</sup> Care Coordination Capabilities. (2014, February 8). Retrieved February 15, 2016, from [http://wiki.hl7.org/index.php?title=Care\\_Coordination\\_Capabilities](http://wiki.hl7.org/index.php?title=Care_Coordination_Capabilities)

<sup>7</sup> Care Plan Project - PCWG. (2015, November 5). Retrieved February 15, 2016, from [http://wiki.hl7.org/index.php?title=Care\\_Plan\\_Project\\_-\\_PCWG](http://wiki.hl7.org/index.php?title=Care_Plan_Project_-_PCWG)  
Care Plan Domain Analysis Model (DAM) Documents

<sup>8</sup> Retrieved January 3, 2018 from <http://hl7.org/fhir/plandefinition.html>

<sup>9</sup> Retrieved January 3, 2018 from <http://hl7.org/fhir/activitydefinition.html>

<sup>10</sup> Retrieved February 15, 2019 from [https://confluence.hl7.org/display/LHS/Care+Team+DAM+Ballot+Artifacts?preview=%2F21856891%2F39160002%2FHL7\\_DAM\\_PCCT\\_R1\\_O1\\_2018SEP.pdf](https://confluence.hl7.org/display/LHS/Care+Team+DAM+Ballot+Artifacts?preview=%2F21856891%2F39160002%2FHL7_DAM_PCCT_R1_O1_2018SEP.pdf)



## IHE Patient Care Coordination Technical Framework Supplement – Dynamic Care Planning (DCP)

Glossary Term	Definition
Care Team	Party who manages and/or provides care or service as specified and agreed to in the care plan, including clinicians, other paid and informal caregivers, communication sponsor and the patient. Note: In some settings, the Care Team is a separate group of people whose responsibility it is to formalize a care plan and possibly even to implement or coordinate its implementation. This group of people may or may not include any or all members of the patient’s rendering team of healthcare professionals. Members of the Care Team are typically selected because of their comprehensive knowledge of the patient’s condition(s) and/or due to their knowledge of the healthcare business rules governing aspects of patient care or its financing. For this reason, the term Care Team is capitalized to indicate the specific group of individuals who create the content of the structured document referred to as care plan. <sup>11</sup>
Clinical Care Team	A clinical care team for a given patient consists of the health professionals—physicians, advanced practice registered nurses, other registered nurses, physician assistants, clinical pharmacists, and other health care professionals—with the training and skills needed to provide high-quality, coordinated care specific to the patient's clinical needs and circumstances. <sup>12</sup>
Care Team Management	Parties who manage and/or provide care or service as specified and agreed to in the Care Plan, including clinicians (including providers), other paid and informal caregivers, and the patient. Care Team Members may include individuals who do not provide direct care such as a Care Manager. <sup>13</sup> As a point of differentiation, note that care team management is a process, whereas care manager is a participant role.
Encounter-focused Care Team	This type of team focuses on one specific encounter. The encounter is determined by the context of use. <sup>14</sup>
Episode-focused Care Team	This type of team focuses on one specific episode of care. The episode of care is determined by the context of use. <sup>15</sup>
Condition-focused Care Team	This type of team focuses on one specific condition. The condition is determined by the context of use. <sup>16</sup>
Care-coordination focused Care Team	This type of team focuses on overall care coordination. The members of the team are determined or selected by an individual or organization. When determined by an organization, the team may be assigned or based on the person’s enrollment in a particular program. <sup>17</sup>

<sup>11</sup> Retrieved 07/18/2017 from [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=452](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=452)

<sup>12</sup> Retrieved 12/05/2016 from <http://annals.org/aim/article/1737233/principles-supporting-dynamic-clinical-care-teams-american-college-physicians-position>

<sup>13</sup> Retrieved 12/05/2016 from <http://wiki.siframework.org/file/view/LCC%20Care%20Plan%20Exchange%20Use%20Case%20Final.pdf/442230840/LCC%20Care%20Plan%20Exchange%20Use%20Case%20Final.pdf>

<sup>14</sup> Retrieved 04/12/2017 [http://wiki.hl7.org/images/d/db/HL7\\_Care-Team-Types-v009\\_2017-01-09.pptx](http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx)

<sup>15</sup> Retrieved 04/12/2017 [http://wiki.hl7.org/images/d/db/HL7\\_Care-Team-Types-v009\\_2017-01-09.pptx](http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx)

<sup>16</sup> Retrieved 04/12/2017 [http://wiki.hl7.org/images/d/db/HL7\\_Care-Team-Types-v009\\_2017-01-09.pptx](http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx)

<sup>17</sup> Retrieved 04/12/2017 [http://wiki.hl7.org/images/d/db/HL7\\_Care-Team-Types-v009\\_2017-01-09.pptx](http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx)

## IHE Patient Care Coordination Technical Framework Supplement – Dynamic Care Planning (DCP)

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Glossary Term	Definition
Research-focused Care Team	Patients enrolled in a clinical trial may have a team that is part of that clinical trial. In many cases that team may be involved in interventions that are part of the protocol for that clinical trial and often related to a primary diagnosis of the patient, such as a chemotherapy trial for a cancer patient. That research team may include a provider whom the patient was already engaged with or the patient may have been referred to the clinical trial or enrolled on their own volition. Team members might include a principal investigator, sub-investigator, research coordinator site coordinator, research nurse, or others involved in conducting the trial. <sup>18</sup>
Utilization Review	A critical evaluation (as by a physician or nurse) of health-care services provided to patients that is made especially for the purpose of controlling costs and monitoring quality of care. <sup>19</sup>

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<sup>18</sup> Retrieved 04/12/2017 [http://wiki.hl7.org/images/d/db/HL7\\_Care-Team-Types-v009\\_2017-01-09.pptx](http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx)

<sup>19</sup> Retrieved 12/15/2016 from <https://www.merriam-webster.com/dictionary/utilization%20review>

# Volume 1 – Profiles

## Copyright Licenses

470 NA

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

## Domain-specific additions

NA

475 *Add Section X*

## X Dynamic Care Planning (DCP) Profile

480 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.

485 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.<sup>20</sup>

490 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.

495 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. To this end, care planning can provide guidance for care team management by directing the coordinated care team members activities.<sup>21</sup>

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<sup>20</sup> 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.

<sup>21</sup> Retrieved December 31, 2018 from [http://www.hl7.org/documentcenter/public\\_temp\\_FF083290-1C23-BA17-0C7395DFDA269A06/standards/dstu/HL7\\_SFM\\_CCS\\_R1\\_STU\\_2017APR.pdf](http://www.hl7.org/documentcenter/public_temp_FF083290-1C23-BA17-0C7395DFDA269A06/standards/dstu/HL7_SFM_CCS_R1_STU_2017APR.pdf)

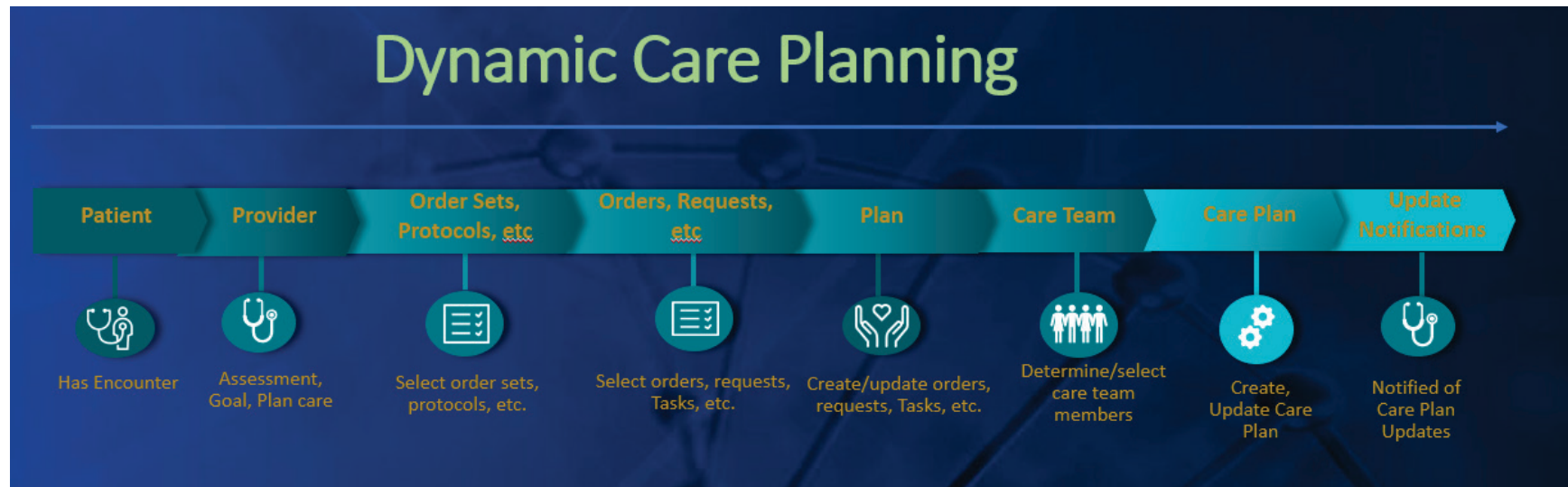


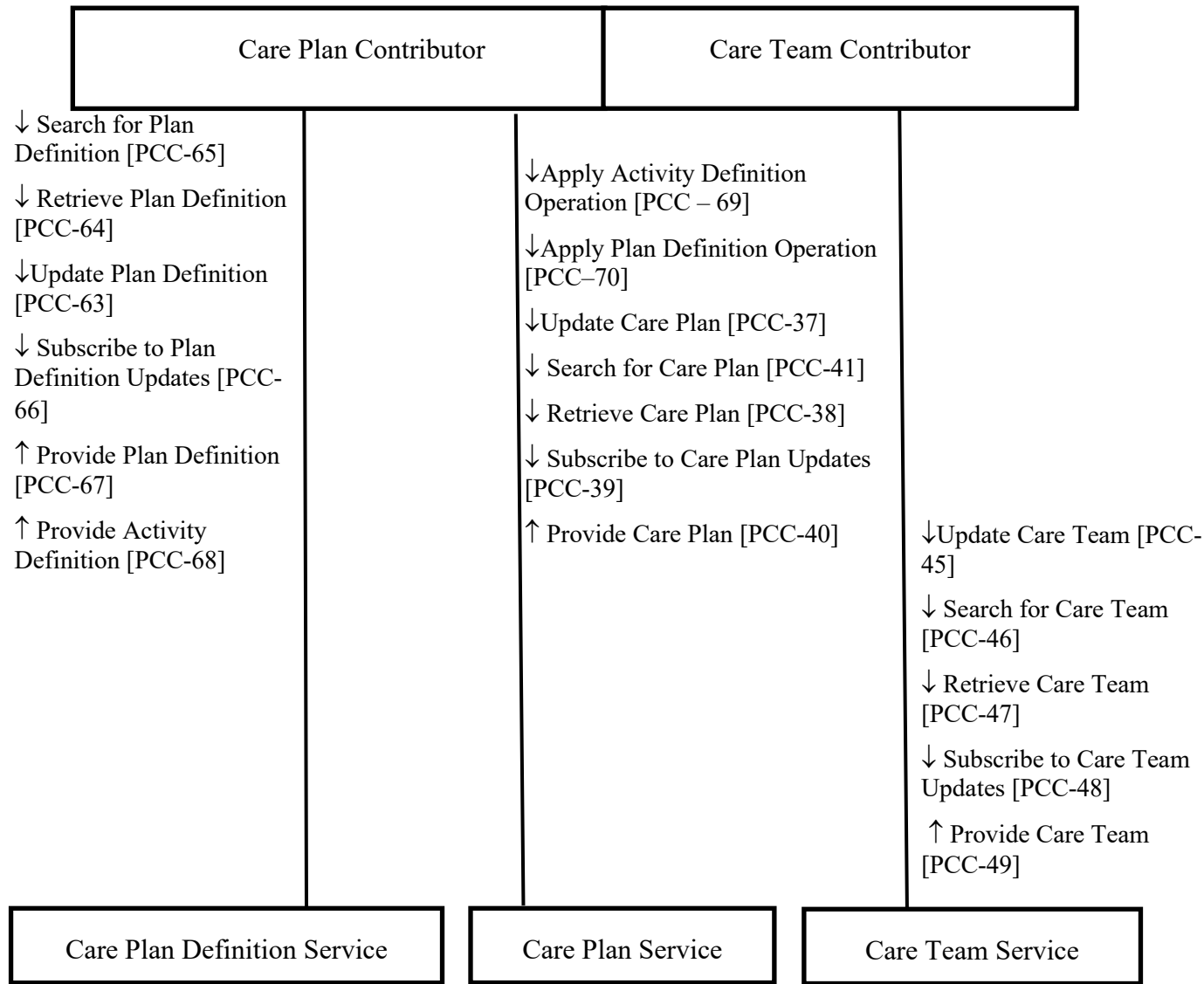
Figure X-1: Dynamic Care Planning Workflow Example

### X.1 DCP Actors, Transactions, and Content Modules

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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](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.



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**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 <sup>Note 2</sup>	PCC TF-2: 3.39
	Provide Care Plan	O	PCC TF-2: 3.40
	Search for Plan Definition	O	PCC TF-2: 3.65
	Retrieve Plan Definition	O	PCC TF-2: 3.64
	Update Plan Definition	O	PCC TF-2: 3.63
	Subscribe to Plan Definition Updates	O	PCC TF-2: 3.66
	Apply Activity Definition Operation	O	PCC TF-2: 3.69
	Apply Plan Definition Operation	O	PCC TF-2: 3.70
Care Team Contributor	Update Care Team	R	PCC TF-2: 3.45
	Search for Care Team	R	PCC TF-2: 3.46
	Retrieve Care Team	R	PCC TF-2: 3.47
	Subscribe to Care Team Updates	O <sup>Note 1</sup>	PCC TF-2: 3.48
	Provide Care Team	O	PCC TF-2: 3.49
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 Team Service	Search for Care Team	R	PCC TF-2: 3.46
	Retrieve Care Team	R	PCC TF-2: 3.47
	Update Care Team	R	PCC TF-2: 3.45
	Subscribe to Care Team Updates	R	PCC TF-2: 3.48
	Provide Care Team	R (as initiator)	PCC TF-2: 3.49
Care Plan Definition Service	Search for Plan Definition	R	PCC TF-2: 3.65
	Provide Plan Definition	R	PCC TF-2: 3.67
	Provide Activity Definition	R	PCC TF-2: 3.68
	Update Plan Definition	R	PCC TF-2: 3.63
	Retrieve Plan Definition	R	PCC TF-2: 3.64
	Subscribe to Plan Definition Updates	R	PCC TF-2: 3.66

Note 1: If the Subscribe to Care Team Updates Option is supported, must also support Provide Care Team Option

Note 2: If the Subscribe to Care Plan Updates Option is supported, must also support Provide Care Plan Option

520 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.

525 There are five 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 Definition Service. This actor creates and updates the care plan. This actor also acts on the request or task resources as part of the care planning process.

530 The second actor is the Care Team Contributor. This actor is grouped with the Care Plan Contributor to support the care team workflow as a component of care planning. This actor interacts with the Care Team Service to create and update the care team aspects of the care plan.

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

The fourth actor is the Care Team Service. This actor manages Care Team updates.

535 The fifth actor is the Care Plan Definition 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
- 540 2. Reads, creates and updates Plan Definitions (e.g., order sets, protocols, etc.) hosted by a Care Plan Definition Service
3. Applies Plan Definitions when the care plan is created and/or updated
4. Applies Activity Definitions when the care plan is created and/or updated

545 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/R4/http.html#transactional-integrity>):

- Before updating, the Care Plan Contributor SHALL read the latest version of the Care Plan;
- 550 • 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).

555 The same pattern SHALL be used when multiple Care Plan Contributors are updating the same Plan Definition hosted by a Care Plan Definition 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;

560 • 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.

#### 565 **X.1.1.2 Care Team Contributor**

This actor reads, creates and updates CareTeam resources hosted by a Care Team Service FHIR server in accordance with changes in the care team. Updates include removal of participants by removing the respective CareTeam.participant.elements. The CareTeam.participant.period element can be used to determine historical plus forward-looking aspects for members of the care team.

In order to ensure data integrity, as is necessary when multiple Care Team Contributor Actors are attempting to update to the same CareTeam resource, the Care Team Contributor SHALL use the following sequence of operations (from <http://hl7.org/fhir/http.html#transactional-integrity>).

- Before updating, the Care Team Contributor SHALL read the latest version of the CareTeam resource;
- The Care Team Contributor SHALL apply the changes (additions, updates, deletions) it wants to the CareTeam resource, leaving all other information intact;
- The Care Team Contributor SHALL write the CareTeam resource 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 Team Contributor follows this pattern, then information from Care Team Contributor Actors on other systems will be maintained through the update

#### **X.1.1.3 Care Plan Service**

585 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.

590 A Care Plan Service SHALL enable a Care Plan Contributor to unsubscribe from updates for a Care Plan.

#### **X.1.1.4 Care Team Service**

595 This actor manages Care Team Updates received from Care Team Contributors and provides notification of updates and access to subscribers of CareTeam resource changes. Notifications are managed through the Subscription resource, also maintained on the Care Team Service FHIR server.

600 As described above under the Care Team Contributor, the Care Team Service receives Update Care Team transactions and manages versions of the CareTeam resource as a whole. Note – the Care Team Service FHIR server SHALL support versioning of the CareTeam resource. The versioning support allows one to obtain a full history of each CareTeam resource including the state of the resource at each stage.

A Care Team Service SHALL enable a Care Team Contributor to unsubscribe from updates for a Care Team.

#### **X.1.1.5 Care Plan Definition Service**

605 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.<sup>22</sup>

As described above under the Care Plan Contributor, the Care Plan Definition 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.

610 A Care Plan Definition Service SHALL enable 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.

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<sup>22</sup> Retrieved January 17, 2018 from <http://build.fhir.org/plandefinition.html>

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

Actor	Option Name	Reference
Care Plan Contributor	Subscribe to Care Plan Updates	PCC TF-2: 3.39
	Subscribe to Plan Definition Updates	PCC TF-2: 3.66
	Apply Activity Definition Operation	PCC TF-2: 3.69
	Apply Plan Definition Operation	PCC TF-2: 3.70
Care Team Contributor	Subscribe to Care Team Updates	PCC TF-2: 3.48
Care Plan Service	No options defined	--
Care Team Service	No options defined	--
Care Plan Definition Service	No options defined	--

### X.2.1 Subscribe to Care Plan Updates

620 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.

### X.2.2 Subscribe to Plan Definition Updates

625 Support for this Subscribe to Plan Definition Updates means that the optional Subscribe to Plan Definition Updates [PCC-66] and the optional Provide Plan Definition [PCC-67] are both supported.

630 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

635 Support for this Apply Activity Definition Operation means that the optional Apply Activity Definition Operation [PCC-69] 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”.<sup>23</sup> Request resources associated with the CarePlan.activity.reference are Appointment,

<sup>23</sup> Retrieved March 28, 2018 from <http://hl7.org/fhir/request.html>

CommunicationRequest, DeviceRequest, MedicationRequest, NutritionOrder, Task, ProcedureRequest, ReferralRequest, VisionPrescription, RequestGroup.

640 **X.2.4 Apply Plan Definition Operation**

Support for this Apply Plan Definition Operation means that the optional Apply Plan Definition Operation [PCC-70] and the required Update Care Plan are both supported. The Apply Plan Definition Operation Option supports the generation of CareTeam, along with request or task resources as part of the care planning process. The Apply Plan Definition Operation utilizes the contained element attribute of the DomainResource to define the full ActivityDefinition resources and CareTeam resources the \$apply operation will use to provide all the attributes needed to create or update the Care Plan including the referenced Care Team.

**X.2.5 Subscribe to Care Team Updates**

650 Support for this Subscribe to Care Team Updates means that the optional Subscribe to Care Team Updates [PCC-48] and the optional Provide Care Team [PCC-49] are both supported.

The alternative to subscribing to CareTeam resource updates is a polling process, where a Care Team Contributor would periodically query for a CareTeam resource history and determine that a Retrieve Care Team is necessary.

**X.3 DCP Required Actor Groupings**

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

DCP Actor	Actor to be grouped with	Reference	Content Bindings Reference
Care Plan Contributor	Care Team Contributor		
Care Plan Service	None		
Care Plan Definition Service	none		

**X.4 DCP Overview**

660 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 (Care Plan DAM) depicts the care plan as a tool used by clinicians to plan and coordinate care<sup>24</sup>. Care planning is needed to manage medically complex

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<sup>24</sup> Care Plan Domain Analysis Model. (May 2016). Retrieved September 20, 2017, from [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=435](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435)

665 and/or functionally impaired individuals as they interact with the health care system. Effective care planning requires the ability to include care provisions by care teams and care team members. Care teams and care team members are typically associated with the care they provide. This association supports the care planning aspects associated with the person for whom the care is provided. Often, care teams and care team members require real time coordination of care as individuals receive care from multiple care providers and care settings. These care providers make up patient centered collaborative focused care teams.

670 Effective care planning and care coordination for patients 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 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.<sup>25</sup>

675 The HL7 Care Team Domain Analysis Model (DAM) provides a model that captures the roles and relationships of entities who provide care for an individual. These entities are considered to be a care team due to the fact that they participate in the care of the same individual.<sup>26</sup>

680 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<sup>27</sup>. 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.”<sup>28</sup>

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<sup>25</sup> 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](https://www.healthit.gov/sites/default/files/eu-us-roadmap_final_nov2015_consultationversion.pdf)

<sup>26</sup> HL7 Domain Analysis Model: Patient Centered Care Team, Release 1 (September 2018 HL7 Comment-Only Ballot.) Retrieved January 4, 2019, from <https://confluence.hl7.org/x/e4JNAQ>

<sup>27</sup> Health IT Regulations: Meaningful Use Regulations. (2015, March 20). Retrieved February 12, 2016, from <https://www.healthit.gov/policy-researchers-implementers/meaningful-use-regulations>

<sup>28</sup> 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>

695 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<sup>29</sup>. 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**

700 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

705 [ftp://ftp.ihe.net/TF\\_Implementation\\_Material/PCC/DCP/Use%20Case%20Dynamic%20Care%20Planning%20Diagram.pptx](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.

710 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.

715 The care team concepts described in this profile are patient centered with the overarching goal to support collaborative care. Care teams have many different meanings to many different people. Each discipline has its own definition of what a care team is and what it contains. The concept of care team is also often jurisdictional and can be defined in many different ways.

Care teams can be made up of a single individual, a single group of individuals or multiple groups of individuals providing various types of services.

720 Care teams made up of a group or groups of individuals are often found in situations that utilize multi-disciplinary teams. The services provided by these teams can be clinical and non-clinical.

725 An example of a care team made up of a single individual is a patient who provides self-care and may consider his caregiver team a team of one, himself. He provides his clinical care by self-administering his medications, checking his own blood glucose levels etc. He provides his non-clinical care by taking care of his own administrative or financial needs such as scheduling his own appointments and paying for his own care services. Another example is a physical therapist who may have his own physical therapy business in which he functions independently providing

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<sup>29</sup> Care Plan Domain Analysis Model. (May 2016). Retrieved January 2, 2018, from [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=435](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435)

physical therapy services to patients in an out-patient setting. He provides non-clinical services such as billing, appointment scheduling, etc.

730 Care teams can be discipline and or condition specific. Examples of discipline specific care teams include, but not limited to, cardiology care team, nursing care team, respiratory care team, etc. Conditions specific care team examples include, but not limited to, diabetes care team, oncology care team, wound care team, etc. These care teams are often clinical in nature because of the types of services provided to the patient. Some care teams can be non-clinical in nature  
735 providing services that may be administrative, personal care, social or community based. Other care teams can provide both clinical and non-clinical services.

The HL7 Learning Health System’s Patient-Centered Care Team Domain Analysis Model project<sup>30</sup> has defined the following classification of types of care team: Encounter-focused Care Team, Episode-focused Care Team, Condition-focused Care Team, Care-coordination focused  
740 Care Team and Research-focused Care Team. This classification is used to include care team members specific to a particular care plan, an episode of care, an encounter or to reflect all team members across these perspectives.

A patient may be associated with multiple types of care teams at any given time. For example, a patient may be provided care by his or her PCP and/or specialist based on the encounter-focused  
745 care team paradigm. Consequently, the patient may have an inpatient stay involving episode-focused care team. During the inpatient stay, the patient care may be coordinated utilizing a care coordination-focused care team. The care provided for the patient may be for a condition that requires the need for a condition-focused care team. The patient’s situation may provide the opportunity for him or her to participate in a research-focused care team. Similarly, participants  
750 can be associated with multiple care teams at any given time as well. For example, the patient’s PCP may participate in an event-focused team and in the episode-focused team by continuing to provide care if the patient gets admitted to an inpatient setting. The PCP also participates in the condition-focused team while managing the patient’s condition. The PCP or a specialist who is involved in the patient’s care may be participating in a research-focused team in which he  
755 oversees the care of his patients participating in a research study. A care team member could fill more than one role from more than one organization on the same care team. The PCP could function in a role as part of one organization (e.g., primary care provider for the medical clinic) while at the same time function in another role as part of another organization (e.g., primary investigator on the National Institute of Health research team). Both organizations could be part  
760 of the same care team.

The point here is to reiterate that the concept of care team is often jurisdictional and can be defined in many different ways.

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<sup>30</sup> Retrieved April 10, 2017 from [http://wiki.hl7.org/index.php?title=Patient-Centered\\_Care\\_Team\\_Domain\\_Analysis\\_Model](http://wiki.hl7.org/index.php?title=Patient-Centered_Care_Team_Domain_Analysis_Model)

## X.4.2 Use Case

765 This profile reuses the HL7 Care Plan Domain Analysis Model specification storyboard 2:  
Chronic Conditions<sup>31</sup> 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. This is depicted by Figure X.4.2.1.1.1-1: Encounter A: Basic Process  
Flow for Plan Definition. The Plan and Activity definitions are used to create or update the  
770 patient care plan. This is further explained in Volume 2 of the profile. The profile will not go into  
detail as to the content of the care protocols or order sets.

Slight modifications have been made to the HL7 Care Plan Domain Analysis Model  
specification storyboard 2: Chronic Conditions storyboard in order to depict care team  
management needed for chronic disease management as well as transition of care episodes.

775 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  
diagrams at:

780 [ftp://ftp.ihe.net/TF\\_Implementation\\_Material/PCC/DCP/DynamicCarePlanningFlow\\_chronicCo  
ndition.vsd](ftp://ftp.ihe.net/TF_Implementation_Material/PCC/DCP/DynamicCarePlanningFlow_chronicCondition.vsd)

[ftp://ftp.ihe.net/TF\\_Implementation\\_Material/PCC/DCTM/DynamicCareTeamManagement\\_ch  
ronicCondition\\_Flow.vsd](ftp://ftp.ihe.net/TF_Implementation_Material/PCC/DCTM/DynamicCareTeamManagement_chronicCondition_Flow.vsd)

#### X.4.2.1.1 Chronic Conditions Use Case Description

785 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 as well as interaction of  
types of care teams for a patient involved in the care and treatment of a case of Type II Diabetes  
Mellitus with complications. The Care plan is shared between a patient, his or her primary care  
provider, ancillary providers and specialists involved in the care and treatment of the patient. The  
790 use case 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
- 795 • Encounter(s) C: ED Visit with hospital admission (inpatient stay)

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<sup>31</sup> HL7 Care Plan Domain Analysis Model specification retrieved from  
[http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=435](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=435)



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

810 This aspect of the Use Case is to illustrate the purpose and interaction of types of care teams for a patient involved in the care and treatment of a case of Type II Diabetes Mellitus with complications. The use case includes HL7 Care Team Definition Project's classification of types of care teams:

Encounter-focused Care Team

- Primary Care Physician (PCP)
- 815 • Patient

Condition-focused Care Team (e.g., Diabetes)

- PCP
- Specialists
- Allied Health Care Providers
- 820 • Patient

Episode-focused Care Team

- Emergency Department (ED)
  - Care Providers
  - Patient
- 825 • Hospital (In-patient stay)

- Care Providers
- Discharge Planner
- Patient

Care-coordination focused Care Team

- 830
  - PCP
  - Home Health
    - Case manager
    - Care providers
  - Patient
- 835
  - Research-focused team
    - Primary Investigator
    - Sub-investigator
    - Research coordinator
    - Site coordinator
- 840
  - Research nurse
  - Patient

The use case contains the following actors and roles.

- Primary Care Physician: Dr. Patricia Primary
- Patient: Mr. Bob Anyman
- 845
  - Diabetic Educator: Ms. Edith Teaching
  - Dietitian/Nutritionist: Ms. Debbie Nutrition
  - Physical Therapist: Mr. Ed Active
  - Pharmacist: Ms. Susan Script
  - Optometrist: Dr. Victor Vision
- 850
  - Podiatrist: Dr. Barry Bunion
  - Psychologist: Dr. Larry Listener
  - Emergency Department Physician: Dr. Eddie Emergent
  - Hospital Attending Physician: Dr. Allen Attend
  - Discharge Planner: Debra Discharge

- 855
- Case Manager: Nurse Nancy Case
  - Home Health Nurse: Nurse Angie Able
  - Home Health Physical Therapist: Peter Physical
  - Primary Investigator: Dr. Rick Research
  - Sub-investigator: Nurse Mary Reese

860 **X.4.2.1.1.1 Encounter A: Primary Care Physician Initial Visit; Encounter-focused Care Team**

**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.

865 **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.

870 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<sup>32</sup>. Agreed goals and scheduled activities specific for the care of Mr. Anyman are entered into the care plan.

875 Dr. Primary identifies Bob as a potential candidate for a nationwide Type II DM research study. She informs Bob of the study purpose and criteria for participation. Bob consents to participate in the study. Dr. Primary also makes Bob aware of her practice contact information and who to call in cases of emergency. Dr. Primary is aware that although Bob is married, he is his own primary caregiver.

880 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

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<sup>32</sup> Retrieved January 3, 2018 from <http://www.diabetes.org/newsroom/press-releases/2016/american-diabetes-2017-standards-of-care.html>

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.

890 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. The referral is sent to multiple recipients to  
895 increase the opportunity for Bob and Dr. Primary to select a preferred provider or incase the preferred provider is unable to accept the referral.

**Post Condition:** Dr. Primary draws up a customized chronic condition (Type II DM) care plan identifying the need for a condition-focused care team. Once the care plan is completed, it is committed to the patient’s medical record. The patient is offered a copy of the plan.

900 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  
905 been made or may be able to schedule his own appointment using booking systems of the specialist or allied health providers.

910

915

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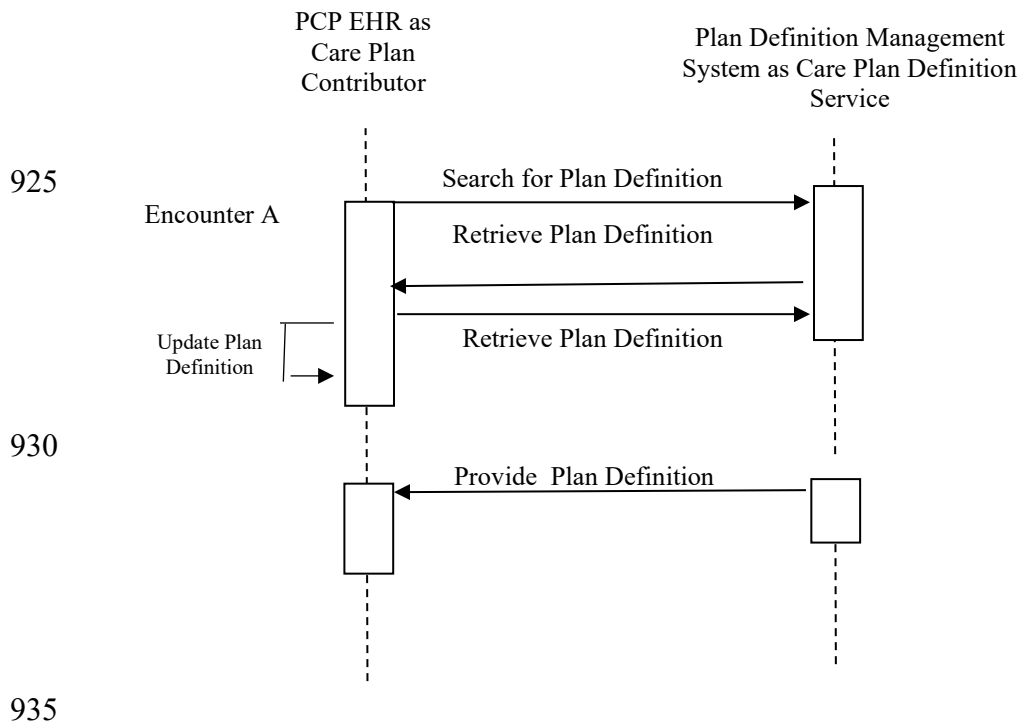


Figure X.4.2.1.1.1-1: Encounter A: Basic Process Flow for Plan Definition

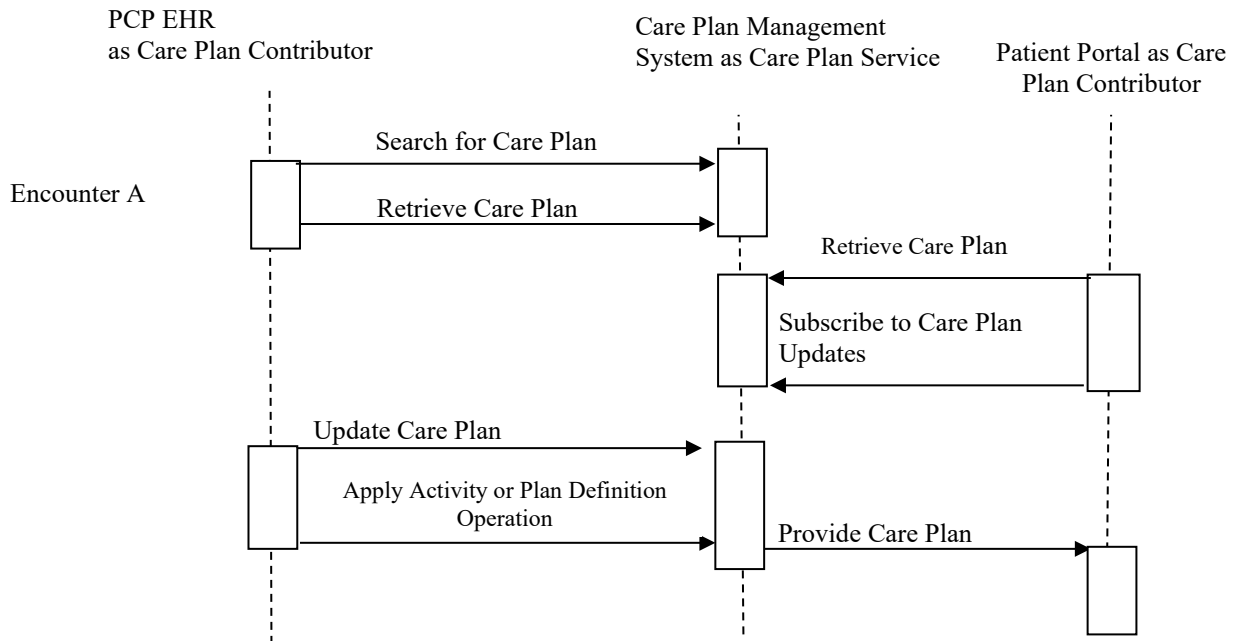
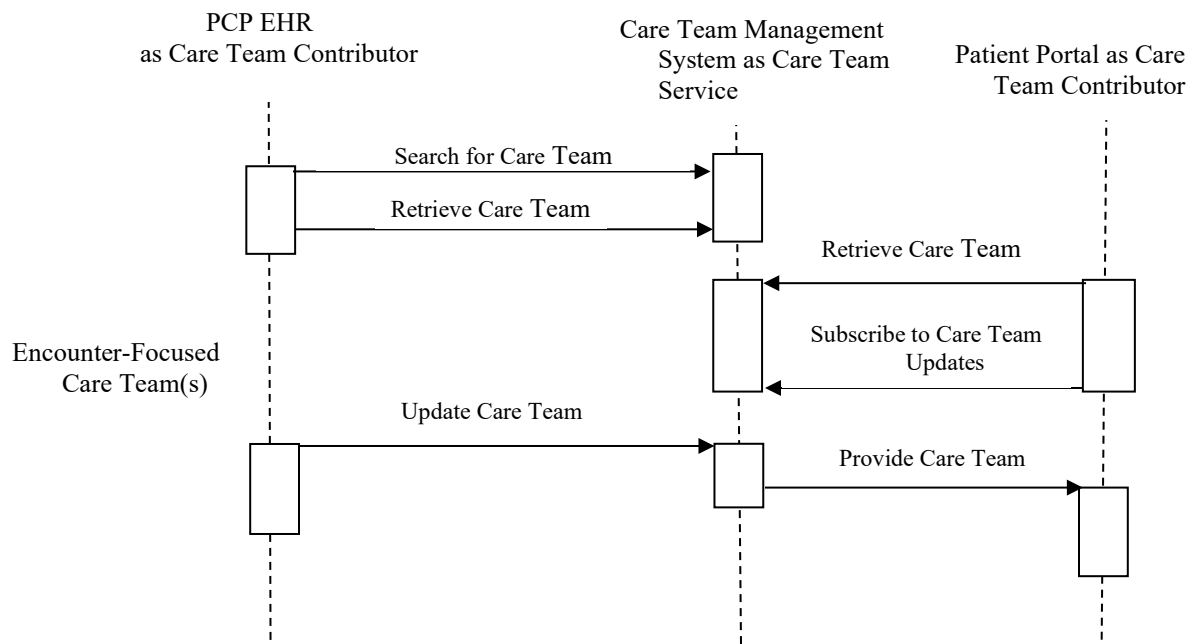


Figure X.4.2.1.1.1-2: Encounter A: Basic Process Flow for Care Plan



940 **Figure X.4.2.1.1.1-3: Basic Process Flow for Encounter-focused Care Team**

**X.4.2.1.1.2 Encounter(s) B: Allied Health Care Providers and Specialists; Condition-focused Care Team**

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

945 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:

- 950 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.
- 955 C. Mr. Ed Active (Exercise Physiologist) for development and implementation of an exercise regime.

- 960 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. 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.
- 965 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.
- 970 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.

975 **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.*

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

985 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.

990 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. Each care provider makes Bob aware of their practice contact information and who to call in cases of emergency. Each care provider is aware that although Bob is married, he is his own primary caregiver

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

<b>Provider / Allied Health Provider</b>	<b>Encounter Activities</b>	<b>Outcomes</b>	<b>Communications</b>
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 (1 yearly 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.

995

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

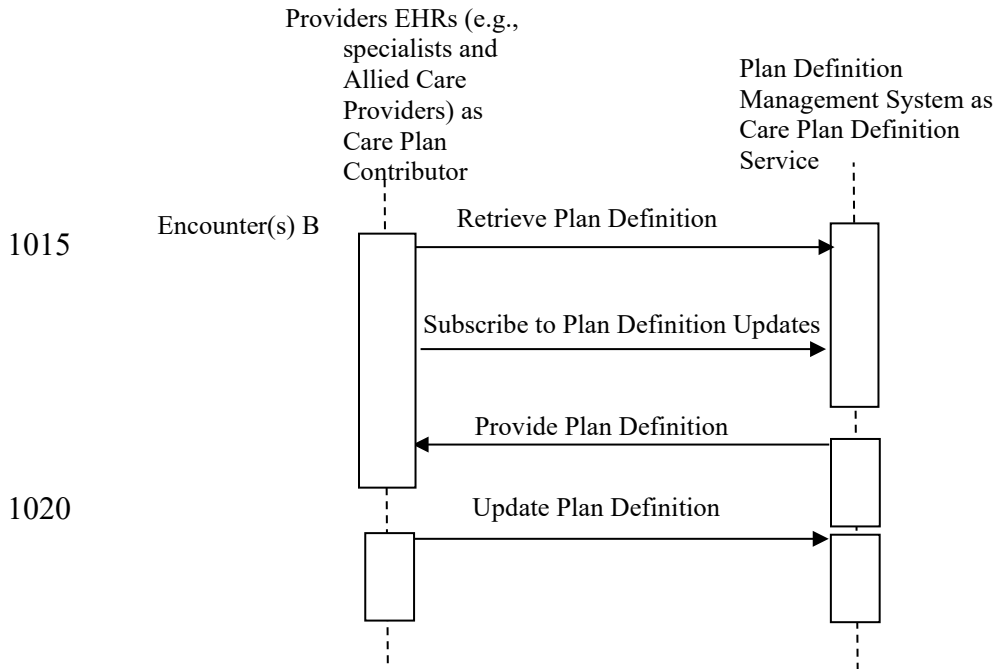
The patient is provided a copy of the new/updated care plan at the end of each allied health/specialist consultation.

1000 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.

1005

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.

1010



1025 **Figure X.4.2.1.1.2-1: Encounter(s) B: Basic Process Flow for Plan Definition**

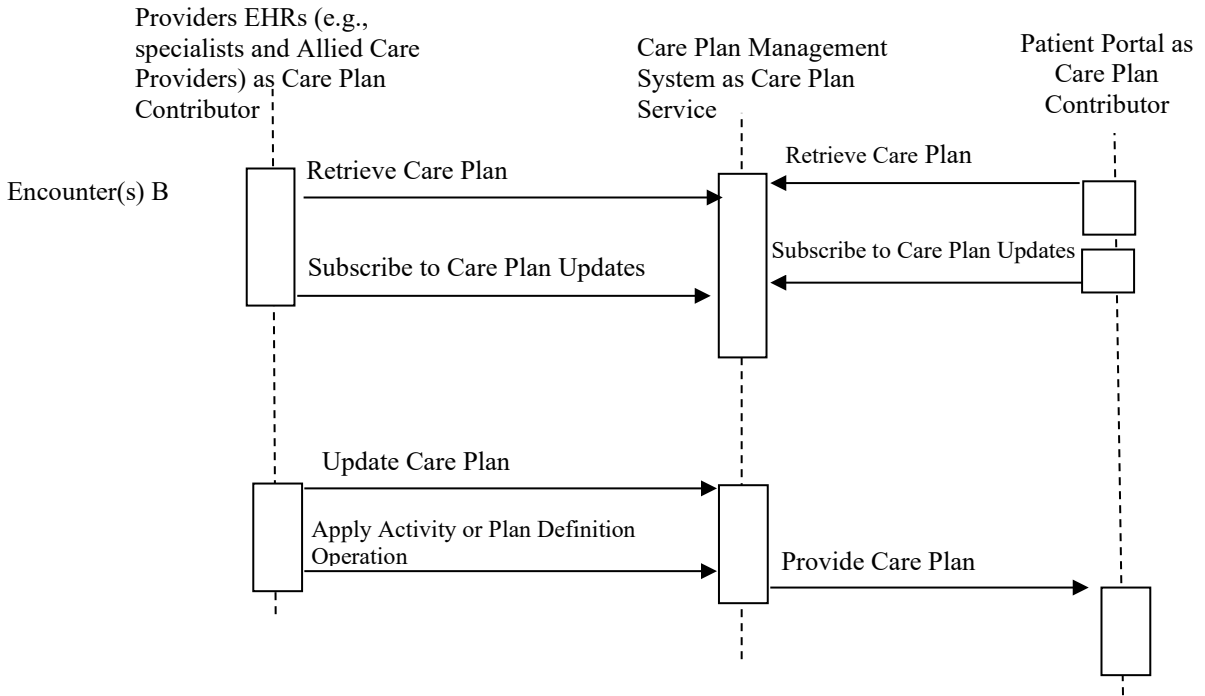


Figure X.4.2.1.1.2-2: Encounter(s) B: Basic Process Flow for Care Plan

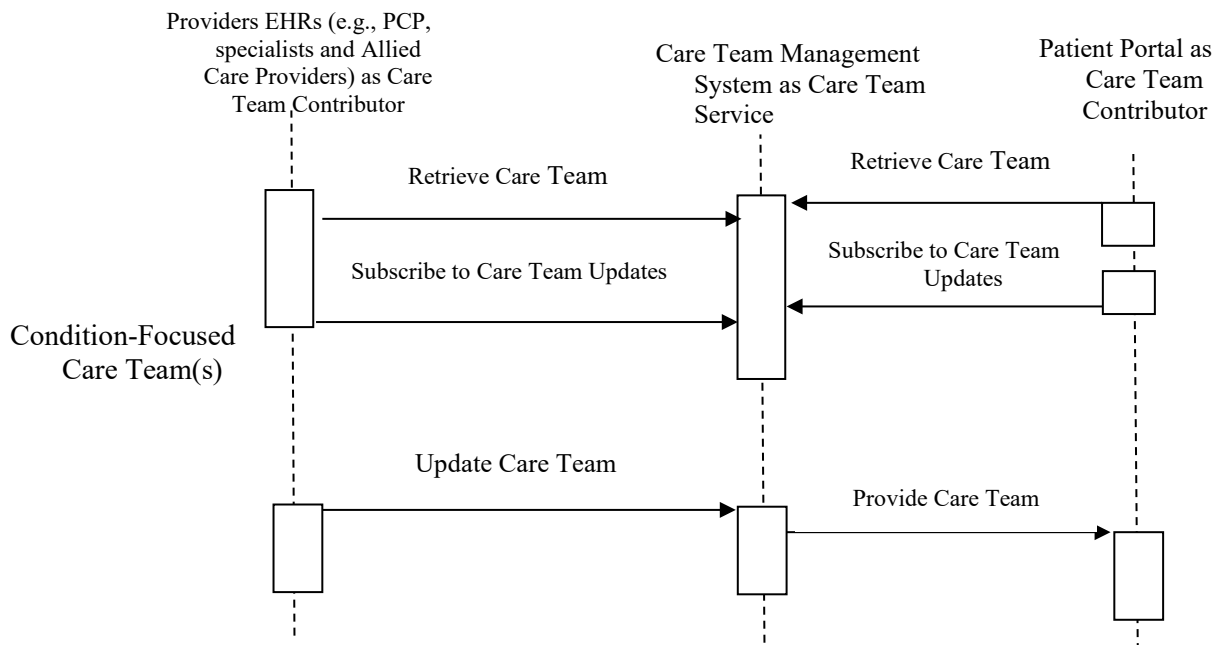


Figure X.4.2.1.1.2-3: Basic Process Flow for Condition-focused Care Team

### **X.4.2.1.1.3 Encounter(s) C: ED Visit and Hospital Admission; Episode-focused Care Team**

1035 **Note:** "Episode" in acute care and chronic disease management usually encompasses more than one encounter event. In this use case, it includes the ED encounter and subsequent in-patient encounter.

1040 **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.

1045 **Description of Encounter:** Mr. Anyman is admitted to the hospital and placed under the care of physicians from the general medicine clinical unit.

1050 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.

1055 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. Discharge planning is done by the **in-patient case management team** in collaboration with Bob's care providers. The case management team also provides non-clinical services such as utilization review to ensure that provided health services is appropriate for billing purposes. All case management activities are documented in the hospital health care record system.

1060 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.

1065 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, X.4.2.1.1.2-2 and X.4.2.1.1.2-3.

#### **X.4.2.1.1.4 Encounter D: Primary Care Follow-up Visits; Care Coordination Focused Care Team**

1070

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.

1075

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.

1080

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.

1085

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.

1090

**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.

1095

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.4.2.1.1.5 Diabetes Research Participation; Research Focused Care Team**

1100

**Pre-Condition:** Bob has consented to participate in a diabetes research trial relating to medication adherence. Bob is accepted in the study and is enrolled.

**Description of Care:** The purpose of the research study is to measure Bob's adherence to his diabetes care. Dr. Rick Researcher is the primary investigator of the research study. His team gathers and evaluates data on the diabetes care Bob receives and the type of care providers

1105 providing Bob’s diabetes care. Bob is seen by a nurse who is a sub-investigator for the study in Bob’s city. The nurse conducts an enrollment interview and administers a survey questionnaire about Bob’s knowledge of his DM and his self-management. She also obtains Bob’s consent to access his records related to his care in the other facilities where he is seen. He will return every 6 months for a follow-up visit with the study nurse for a period of 3 years.

1110 **Post Condition:** Any updates or changes to Bob’s care and the various care teams are shared.

Note: The process flow pattern for this care coordination care team is the same as condition-focused care team. See Figure X.4.2.1.1.2-3.

### **X.4.2.2 Use Case: Pregnancy Plan**

1115 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 the period from the time of diagnosis through postpartum.

The following section describes a normal pregnancy use case.

#### **X.4.2.2.1 Normal Pregnancy Use Case Description**

1120 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
- 1125 • Step B: Subsequent encounters with include medical examinations and laboratory studies performed during the pregnancy period
- Step C: Delivery and Postpartum care

1130 This aspect of the Use Case is to illustrate the purpose and interaction of type of care team for a patient involved in pregnancy care. The use case includes HL7 Care Team Definition Project’s classification of types of care teams:

Condition-focused Care Team (e.g., Pregnancy care)

- Patient
- General Practitioner
- Obstetrician-Gynecologist
- 1135 • Birthing Center (Organization)

The use case involves the following actors and roles:

- Patient: Mrs. Kate Anywoman

- General Practitioner: Dr. Max Power
  - Obstetrician-Gynecologist: Dr. John Smith
- 1140 • 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.

- 1145 **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 and identifies the need for a condition-focused care team. 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
- 1150 be shared with the laboratory performing the study and with the patient.

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.

- 1155 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 refers 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
- 1160 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.

- 1165 **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.

Note: The process flow pattern for this care encounter is the same as encounter-focused care team. See Figure X.4.2.1.1.1-3.

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

- 1170 **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 are 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

1175 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.

1180 **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.

1185 Note: The process flow pattern for these care encounters are the same as condition-focused care team. See Figure X.4.2.1.1.2-3.

#### **X.4.2.2.1.3 Step C: Delivery and Postpartum treatment**

1190 **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. Discharge planning was done by the **in-patient case management team** in collaboration with Kate’s care providers.

**Description of Encounter:** Six weeks after her baby was born, Mrs. Anywoman has a postpartum 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.

1195 **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.

Note: The process flow pattern for these encounters are the same as the episode-focused care team and the care coordination-focused care team. See Figure X.4.2.1.1.2-3.

1200



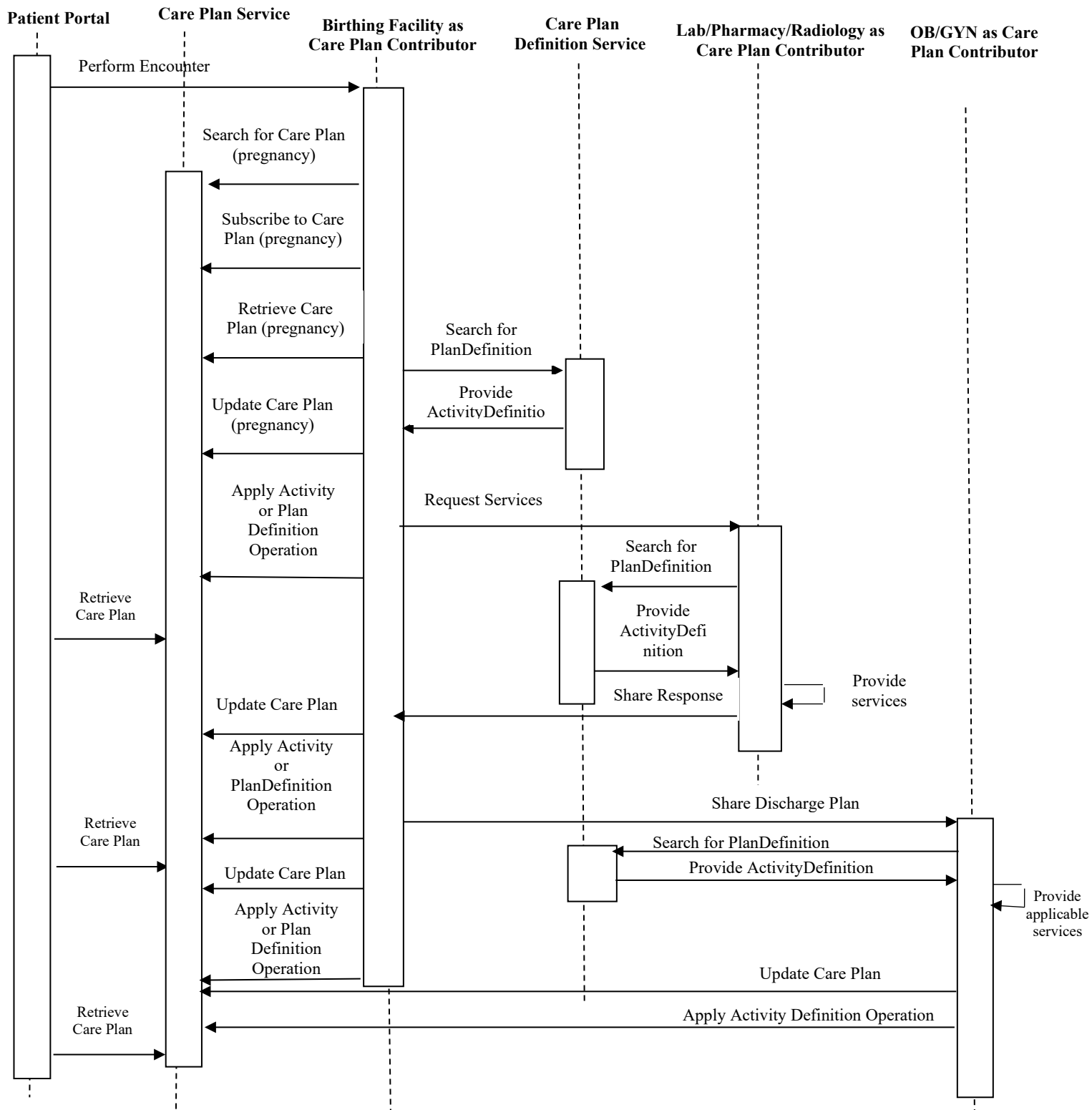


Figure X.4.2.2.1.3-1: Step C: Delivery Care

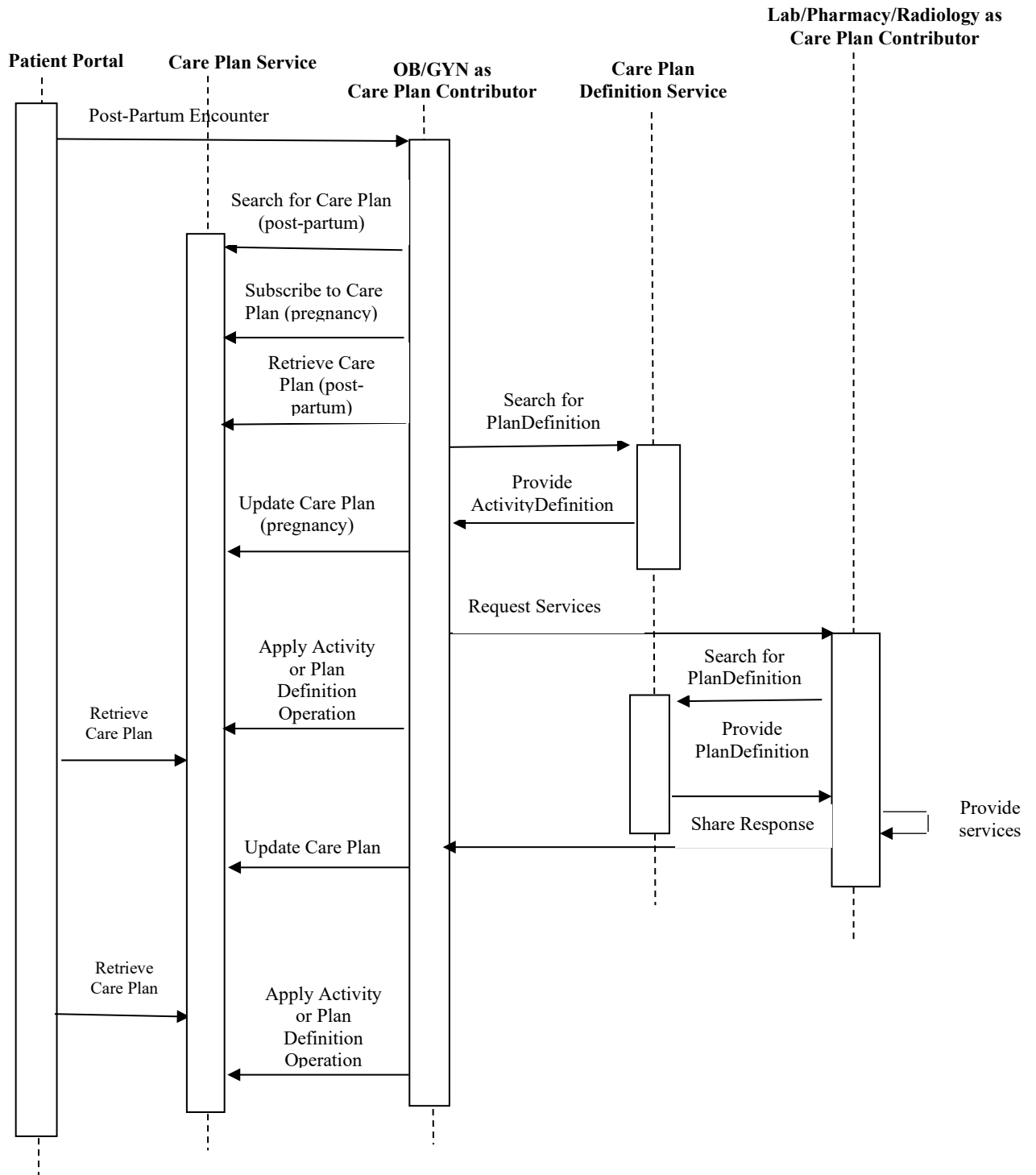


Figure X.4.2.2.1.3-2: Step C: Post-Partum Care

1205 **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**

1210 A Reconciliation Agent might be grouped with a Care Plan Contributor and with a Care Plan Definition Service to facilitate the planning reconciliation processes. It can also be grouped with a Care Team Contributor to facilitate reconciliation of Care Team members.

**X.6.2 Alert Communication Management Profile**

1215 An Alert Communicator, upon receiving an alert from an Alert Manager, can send the alert to a care planning device (client application) notifying the endpoint device that a change in the patients’ plan may be warranted.

**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.

## Volume 2 – Transactions

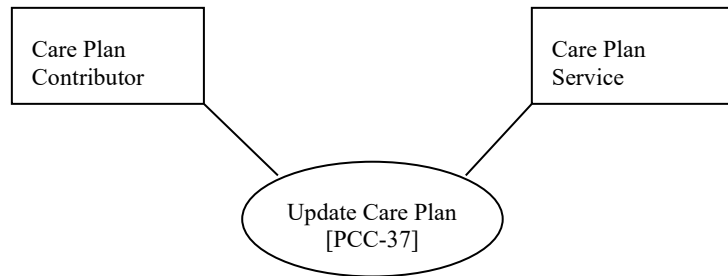
1220 *Add Section 3.37*

### 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.

1225 **3.37.2 Actor Roles**



**Figure 3.37.2-1: Use Case Diagram**

**Table 3.37.2-1: Actor Roles**

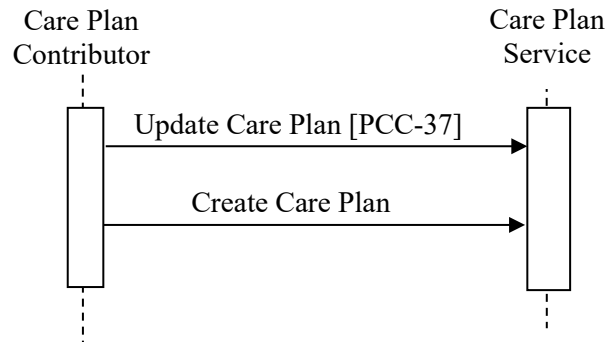
<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor submits a care plan that is updated or needs to be created.
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	The Care Plan Service receives submitted care plans for management as per FHIR Resource Integrity management.

1230

#### 3.37.3 Referenced Standards

HL7 FHIR standard R4

### 3.37.4 Messages



1235

**Figure 3.37.4-1: Interaction Diagram**

#### 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

1240 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.

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

1245 Where the body of the transaction contains the CarePlan resource.

See: <http://hl7.org/fhir/R4/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.

1250 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.

1255 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.

1260 **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.

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

1265 Where the body of the transaction contains the CarePlan resource.

See <http://hl7.org/fhir/R4/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/R4/http.html#create>.

1270 **3.37.5 Security Considerations**

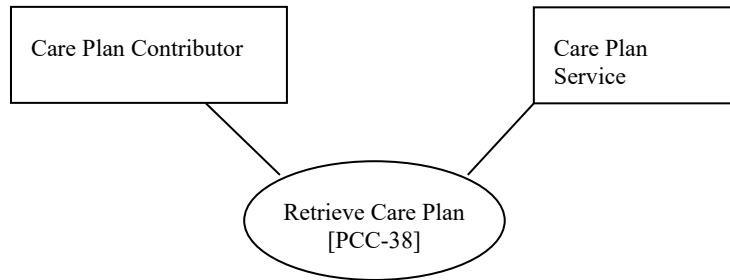
See Section X.5 DCP Security Considerations.

### **3.38 Retrieve Care Plan [PCC-38]**

#### **3.38.1 Scope**

1275 This transaction is used to retrieve a specific care plan using a known FHIR CarePlan resource id.

### 3.38.2 Actor Roles



**Figure 3.38.2-1: Use Case Diagram**

1280

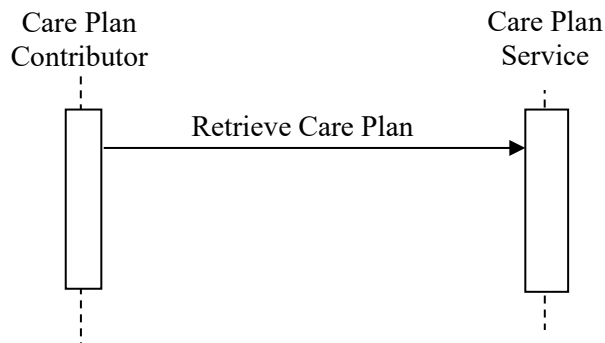
**Table 3.38.2-1: Actor Roles**

<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor requests a specific care plan using the CarePlan id
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	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 R4.

### 3.38.4 Messages



**Figure 3.38.4-1: Interaction Diagram**

1285

#### 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

1290 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]

1295 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/R4/http.html#read>.

### 1300 3.38.5 Security Considerations

See Section X.5 DCP Security Considerations.

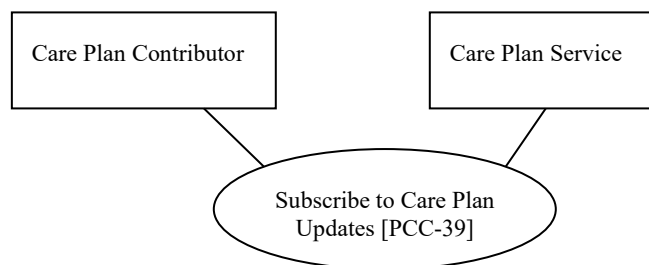
## 3.39 Subscribe to Care Plan Updates [PCC-39]

### 3.39.1 Scope

This transaction is used to subscribe to updates made to a Care Plan.

1305 Note: There is no transaction to unsubscribe from care plan updates. However, to unsubscribe from care plan updates, the Care Plan Contributor SHALL support RESTful delete of the subscription resource. See <http://hl7.org/fhir/R4/http.html#delete>.

### 3.39.2 Actor Roles



1310

**Figure 3.39.2-1: Use Case Diagram**



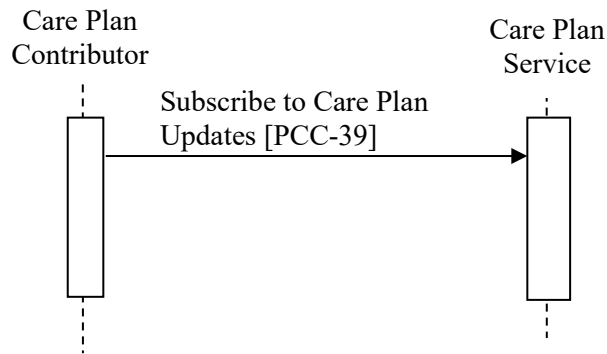
**Table 3.39.2-1: Actor Roles**

<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor subscribes to updates based upon changes to a CarePlan resource.
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	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 R4.

### 1315 3.39.4 Messages



**Figure 3.39.4-1: Interaction Diagram**

#### 3.39.4.1 Subscribe to Care Plan Updates

1320 A Care Plan Contributor may choose to receive updates as CarePlan resources are changed by using the Subscribe to Care Plan Updates transaction. See [IHE DCP Care Plan Contributor Capability Statement](#).

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.

#### 1325 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.

1330 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 itself, but the subscription update would not be triggered by changes to a resource referenced by the care plan.

1335 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.

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

1340 Where the body of the transaction contains the Subscription resource.

See <http://hl7.org/fhir/R4/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/R4/http.html#create> for details.

1345 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.

1350 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.

#### **1355 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.

##### **1360 3.39.4.2.2 Message Semantics**

This is an HTTP or HTTPS PUT of a Subscription resource.

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

Where the body of the transaction contains the Subscription resource.

See <http://hl7.org/fhir/R4/http.html#update>.

1365 **3.39.4.2.3 Expected Actions**

See <http://hl7.org/fhir/R4/http.html#update>.

**3.39.5 Security Considerations**

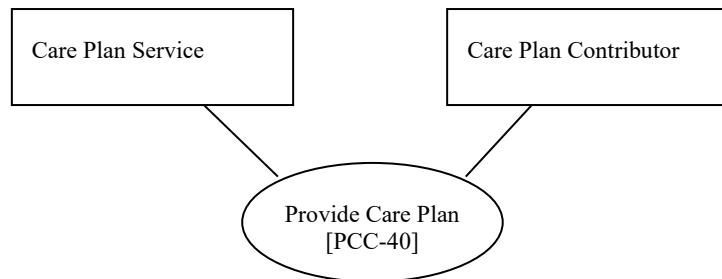
See X.5 DCP Security Considerations.

**3.40 Provide Care Plan [PCC-40]**

1370 **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**



1375

**Figure 3.40.2-1: Use Case Diagram**

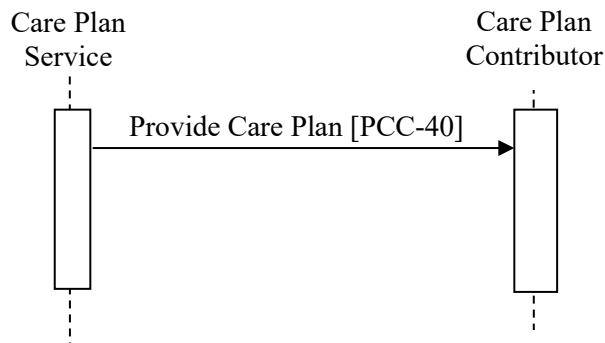
**Table 3.40.2-1: Actor Roles**

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

### 3.40.3 Referenced Standards

1380 HL7 FHIR standard release 4

### 3.40.4 Messages



**Figure 3.40.4-1: Interaction Diagram**

#### 3.40.4.1 Provide Care Plan

1385 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.

1390 **3.40.4.1.2 Message Semantics**

This is an HTTP or HTTPS POST of a CarePlan resource.

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/R4/subscription.html>

1395 **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

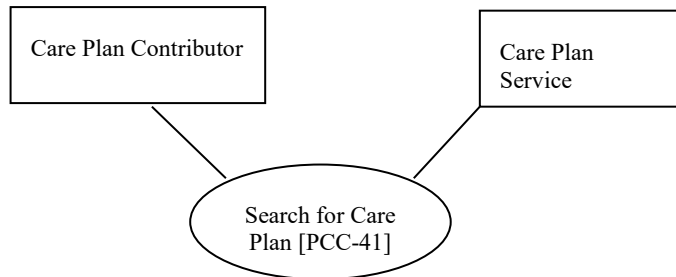
See X.5 DCP Security Considerations.

### 3.41 Search for Care Plan [PCC-41]

1400 **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**



1405

**Figure 3.41.2-1: Use Case Diagram**

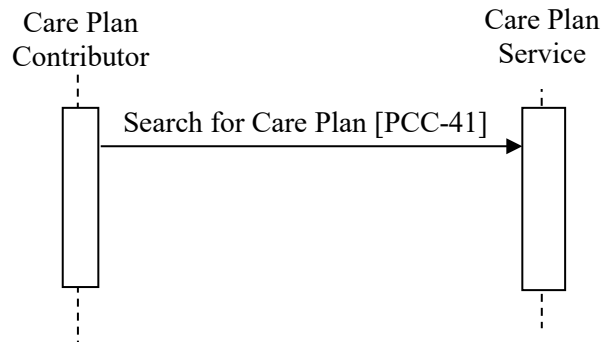
**Table 3.41.2-1: Actor Roles**

<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor initiates Search for Care Plan in order to locate a care plan of interest.
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	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 R4.

1410 **3.41.4 Messages**



**Figure 3.41.4-1: Interaction Diagram**

**3.41.4.1 Search for Care Plan**

1415 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
- 1420 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.

1425 See the FHIR CarePlan resource Search Parameters at <http://hl7.org/fhir/R4/careplan.html#search>.

**3.41.4.1.3 Expected Actions**

1430 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.

### 3.41.5 Security Considerations

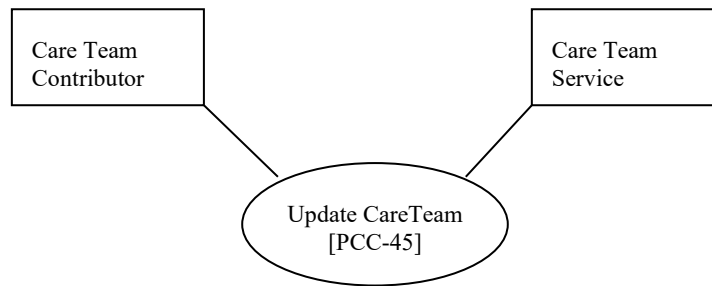
See X.5 DCP Security Considerations.

## 1435 3.45 Update Care Team [PCC-45]

### 3.45.1 Scope

This transaction is used to update or to create a CareTeam resource. A CareTeam resource is submitted to a Care Team Service where the update or creation is handled.

### 3.45.2 Actor Roles



1440

**Figure 3.45.2-1: Use Case Diagram**

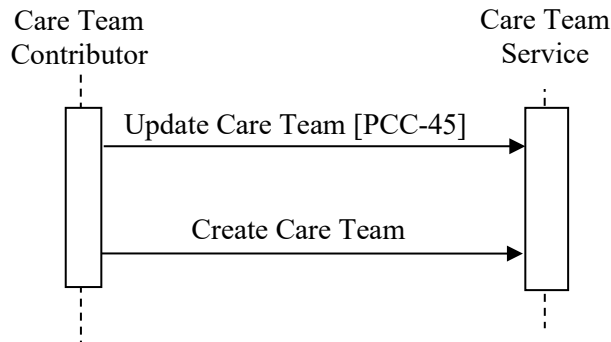
**Table 3.45.2-1: Actor Roles**

<b>Actor:</b>	Care Team Contributor
<b>Role:</b>	The Care Team Contributor submits a CareTeam resource that is updated or needs to be created.
<b>Actor:</b>	Care Team Service
<b>Role:</b>	The Care Team Service receives submitted CareTeam resources for management as per FHIR Resource Integrity management.

## 1445 3.45.3 Referenced Standards

HL7 FHIR standard R4

### 3.45.4 Messages



**Figure 3.45.4-1: Interaction Diagram**

#### 1450 3.45.4.1 Update Care Team

The Care Team Contributor submits a CareTeam resource that has been edited to a Care Team Service. The Care Team Service handles the FHIR CareTeam resource according to FHIR Resource integrity.

##### 3.45.4.1.1 Trigger Events

1455 An existing CareTeam resource has been edited, and the set of attributes for the CareTeam resource are to be committed to a Care Team Service.

##### 3.45.4.1.2 Message Semantics

This is an HTTP or HTTPS PUT of a CareTeam resource. Being an update, the client must specify the logical id.

1460 The base URL for this is: [base]/CareTeam/[id]

Where the body of the transaction contains the CareTeam resource.

See <http://hl7.org/fhir/http.html#update>.

##### 3.45.4.1.3 Expected Actions

1465 When updating an existing CareTeam resource, the Care Team Contributor shall merge changes into a recently received CareTeam resource, leaving unchanged content unaltered.

When a CareTeam resource is updated, a new version of the CareTeam resource is instantiated with the CareTeam resource members that are participating. If there is a need for a historical list of CareTeam resource members, use the Retrieve Care Team transaction specifying the CareTeam.participant.period.

1470 If the Care Team Service returns an error to the Update Care Team transaction, as would happen if the version of the CareTeam resource is old, then the Care Team Contributor should perform



the steps of Retrieve Care Team, merge changes, and then attempt Update Care Team again. For example, two providers retrieved copies of a CareTeam resource, one after another, and then attempt to update the CareTeam resource later.

- 1475 Since the Care Team Service SHALL support versioning of the CareTeam resources, the response SHALL contain meta.versionId. See: <http://hl7.org/fhir/http.html#create> on the response from the Care Team Service.

#### **3.45.4.2 Create Care Team**

The Care Team Contributor submits a newly created CareTeam resource to a Care Team Service.

##### **1480 3.45.4.2.1 Trigger Events**

Newly created CareTeam resource content is ready to be saved to a Care Team Service.

##### **3.45.4.2.2 Message Semantics**

This is an HTTP or HTTPS POST of a CareTeam resource.

The base URL for this is: [base]/CareTeam.

- 1485 Where the body of the transaction contains the CareTeam resource.

See: <http://hl7.org/fhir/http.html#create>.

##### **3.45.4.2.3 Expected Actions**

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

#### **1490 3.45.5 Security Considerations**

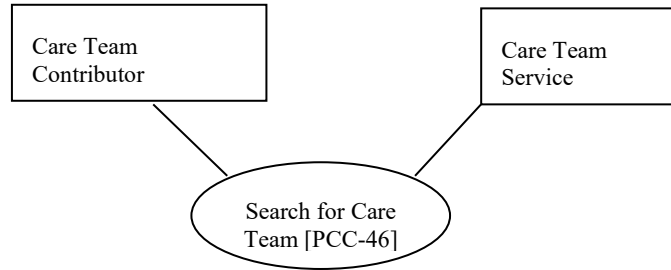
See X.5 DCTM Security Considerations.

### **3.46 Search for Care Team [PCC-46]**

#### **3.46.1 Scope**

- 1495 This transaction is used to find a CareTeam resource. The Care Team Contributor searches for a CareTeam resource of interest. A CareTeam resource located by search may then be retrieved for viewing or updating.

### 3.46.2 Actor Roles



1500

**Figure 3.46.2-1: Use Case Diagram**

**Table 3.46.2-1: Actor Roles**

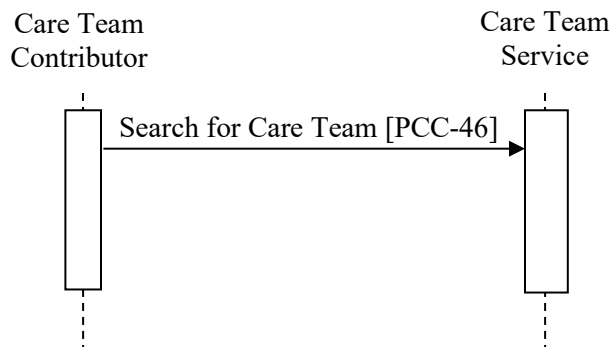
<b>Actor:</b>	Care Team Contributor
<b>Role:</b>	The Care Team Contributor initiates Search for Care Team in order to locate a CareTeam resource of interest.
<b>Actor:</b>	Care Team Service
<b>Role:</b>	The Care Team Service responds to the Search for CareTeam resource according to the search parameters and values provided in the transaction.

### 3.46.3 Referenced Standards

HL7 FHIR standard R4

1505

### 3.46.4 Messages



1510

**Figure 3.46.4-1: Interaction Diagram**

1515 **3.46.4.1 Search for Care Team**

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

**3.46.4.1.1 Trigger Events**

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

- 1520
1. need to view a CareTeam resource
  2. need to update a portion of a CareTeam resource
  3. in response to subscription to provide update for a CareTeam resource

**3.46.4.1.2 Message Semantics**

1525 This is a standard FHIR search operation on the CareTeam resource. It SHALL use the HTTP or HTTPS GET protocol.

The URL for this operation is: [base]/CareTeam/\_search.

See the FHIR CareTeam resource Search Parameters at <http://hl7.org/fhir/R4/careteam.html#search>.

**3.46.4.1.3 Expected Actions**

1530 The Care Team Contributor initiates the search using HTTP or HTTPS GET, and the Care Team Service responds according to the [FHIR Search specification](#) with zero or more CareTeam resources that match the search parameter values supplied with the search message. Specifically, the Care Team Service returns a [bundle](#) as the HTTP Response, where the bundle includes the resources that are the results of the search.

1535 **3.46.5 Security Considerations**

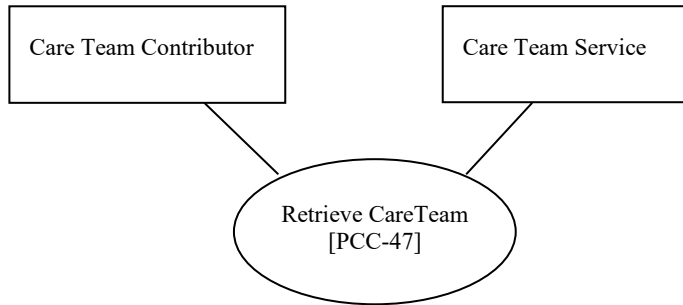
See PCC TF-1: X.5 for DCTM Security Considerations.

**3.47 Retrieve Care Team [PCC-47]**

**3.47.1 Scope**

1540 This transaction is used to retrieve a specific CareTeam resource using a known FHIR CareTeam resource id.

### 3.47.2 Actor Roles



**Figure 3.47.2-1: Use Case Diagram**

**Table 3.47.2-1: Actor Roles**

<b>Actor:</b>	Care Team Contributor
<b>Role:</b>	The Care Team Contributor requests a specific CareTeam resource using the CareTeam resource id
<b>Actor:</b>	Care Team Service
<b>Role:</b>	The Care Team Service returns the requested CareTeam resource, or an error if the requested resource does not exist.

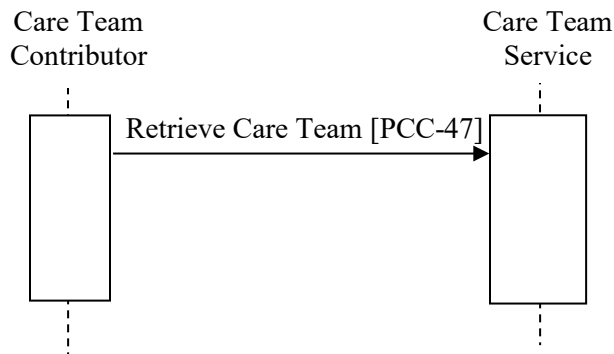
1545

### 3.47.3 Referenced Standards

HL7 FHIR standard R4

### 3.47.4 Messages

1550



1555

**Figure 3.47.4-1: Interaction Diagram**

### **3.47.4.1 Retrieve Care Team**

The Care Team Contributor retrieves a specific CareTeam resource from the Care Team Service.

#### **1560 3.47.4.1.1 Trigger Events**

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

#### **3.47.4.1.2 Message Semantics**

1565 The message is a FHIR HTTP or HTTPS GET of a CareTeam resources where the parameter provided is the CareTeam.id with an option to ask for a specific version of the given CareTeam resource.

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

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

#### **3.47.4.1.3 Expected Actions**

1570 The Care Team Contributor initiates the retrieve request using HTTP or HTTPS GET, and the Care Team Service responds according to the FHIR GET specification with the requested CareTeam resource or an error message. See: <http://hl7.org/fhir/http.html#read>.

### **3.47.5 Security Considerations**

See X.5 DCTM Security Considerations.

## **1575 3.48 Subscribe to Care Team Updates [PCC-48]**

### **3.48.1 Scope**

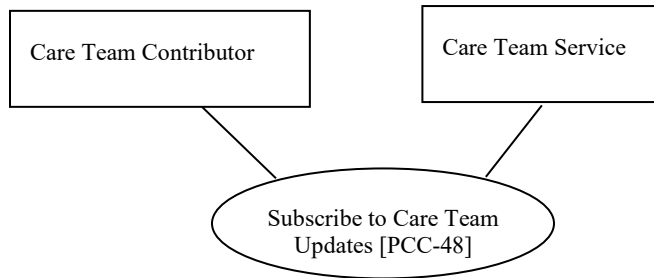
This transaction is used to subscribe to updates made to a CareTeam resource.

1580 As noted in Section X.1.1.2, the Care Team Service SHALL support RESTful delete of the subscription, as well as the following messages for creating and updating a Subscription. See: <http://hl7.org/fhir/subscription.html>.

### **3.48.2 Actor Roles**

1585

1590



1595

**Figure 3.48.2-1: Use Case Diagram**

**Table 3.48.2-1: Actor Roles**

<b>Actor:</b>	Care Team Contributor
<b>Role:</b>	The Care Team Contributor subscribes to updates based upon changes to a CareTeam resource.
<b>Actor:</b>	Care Team Service
<b>Role:</b>	The Care Team Service evaluates the involved resources of the Subscription and uses the defined channel to notify a Care Team Contributor about changes.

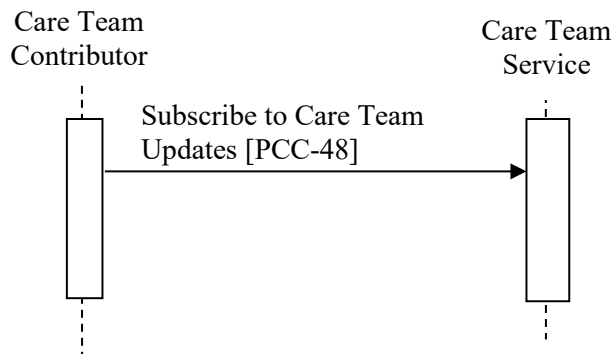
**3.48.3 Referenced Standards**

HL7 FHIR standard R4.

1600

**3.48.4 Messages**

1605



**Figure 3.48.4-1: Interaction Diagram**

1610 **3.48.4.1 Subscribe to Care Team Updates**

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

1615 When the criteria of a subscription request are satisfied, the Care Team Service sends the entire CareTeam resource, using the Provide Care Team [PCC-49] transaction to the subscribing Care Team Contributor.

**3.48.4.1.1 Trigger Events**

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

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

1620 A simple Subscription criteria includes only query parameters about a CareTeam resource, such as the id. A simple Subscription criteria results in notifications of changes to the CareTeam resource itself, but the subscription update would not be triggered by changes to a resource referenced by the CareTeam resource.

1625 A complex Subscription criteria contains chained parameters, such as parameters about resources that are referenced within the CareTeam resource. For example, chaining parameters about a practitioner referenced from a CareTeam resource results in notifications of changes to either the CareTeam resource or to the referenced practitioner.

**3.48.4.1.2 Message Semantics**

This is an HTTP or HTTPS POST of a Subscription resource.

1630 The base URL for this is: [base]/Subscription.

Where the body of the transaction contains the Subscription resource.

**3.48.4.1.3 Expected Actions**

The Care Team Contributor shall inspect the response from the Care Team Service. See <http://hl7.org/fhir/http.html#create> for details.

1635 The Care Team Service shall check that the Subscription resource meets the constraints defined by this profile, in PCC TF-3: 6.6.2.

Also see <http://hl7.org/fhir/subscription.html> for details.

1640 When a Subscription resource is accepted, the Care Team 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 Team Contributor.

A Subscription may be rejected by the Care Team 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.

1645 As per FHIR POST protocol, a rejected transaction results in the return of a 406 – rejected HTTP response.

### 3.48.4.2 Update Subscription to Care Team Updates

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

#### 3.48.4.2.1 Trigger Events

1650 An existing subscription needs to be updated.

#### 3.48.4.2.2 Message Semantics

This is an HTTP or HTTPS PUT of a Subscription resource. Using the update requires the client to specify the logical id.

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

1655 Where the body of the transaction contains the Subscription resource.

See: <http://hl7.org/fhir/http.html#update>.

#### 3.48.4.2.3 Expected Actions

See <http://hl7.org/fhir/http.html#update>.

### 3.48.5 Security Considerations

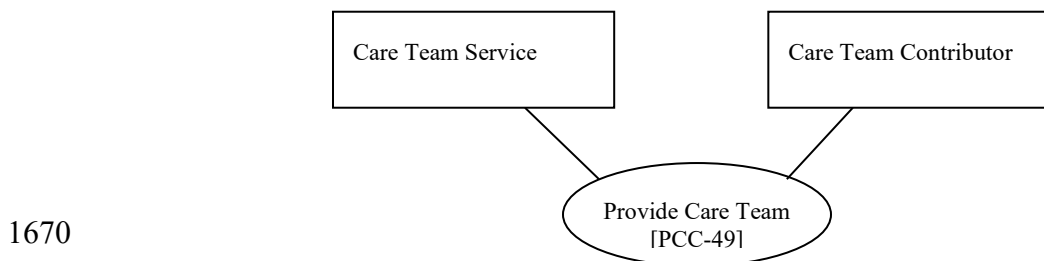
1660 See X.5 DCTM Security Considerations.

## 3.49 Provide Care Team [PCC-49]

### 3.49.1 Scope

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

### 1665 3.49.2 Actor Roles



**Figure 3.49.2-1: Use Case Diagram**



**Table 3.49.2-1: Actor Roles**

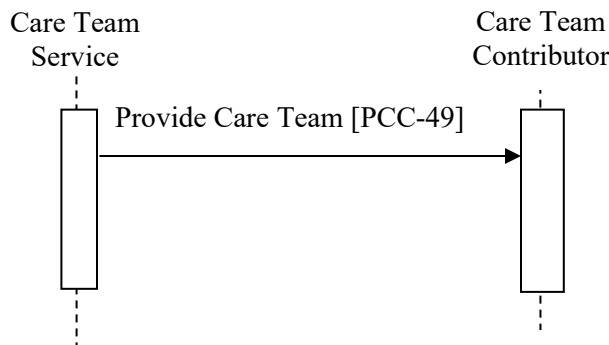
<b>Actor:</b>	Care Team Service
<b>Role:</b>	The Care Team Service provides updated CareTeam resources to subscribed Care Team Contributors.
<b>Actor:</b>	Care Team Contributor
<b>Role:</b>	The Care Team Contributor that has Subscribed to Care Team Updates receives updates of changed CareTeam resources.

**3.49.3 Referenced Standards**

1675 HL7 FHIR standard R4.

**3.49.4 Messages**

1680



**Figure 3.49.4-1: Interaction Diagram**

1685 **3.49.4.1 Provide Care Team**

The Care Team Service sends a CareTeam resource to the endpoint specified in the Subscription resource.

**3.49.4.1.1 Trigger Events**

1690

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

**3.49.4.1.2 Message Semantics**

This is an HTTP or HTTPS POST of a CareTeam resource.

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

Where the body of the transaction contains the CareTeam resource.

1695 See: <http://hl7.org/fhir/subscription.html>.

### 3.49.4.1.3 Expected Actions

1700 The Care Team Contributor receives the CareTeam resource in the body of the POST. If the Care Team Contributor is offline and cannot accept the transaction, according to 2.46.5 Managing Subscriptions and Errors (see: <http://hl7.org/fhir/subscription.html>), the server may retry the notification a fixed number of times and/or refer errors to its own alert logs. If the notification fails, the server should set the status to 'error' and mark the error in the resource. If the notification succeeds, the server should update the status to 'active' again. If a subscription fails consistently, a server may choose to set the subscription status to off and stop trying to send notifications.

### 1705 3.49.5 Security Considerations

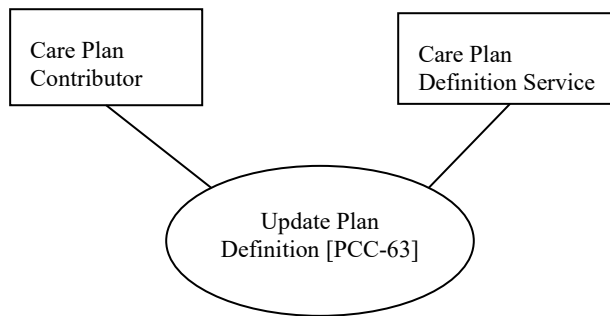
See Section X.5 DCTM Security Considerations.

## 3.63 Update Plan Definition [PCC-63]

### 3.63.1 Scope

1710 This transaction is used to update or to create a plan definition. A PlanDefinition resource is submitted to a Care Plan Definition Service where the update or creation is handled.

### 3.63.2 Actor Roles



**Figure 3.63.2-1: Use Case Diagram**

1715

**Table 3.63.2-1: Actor Roles**

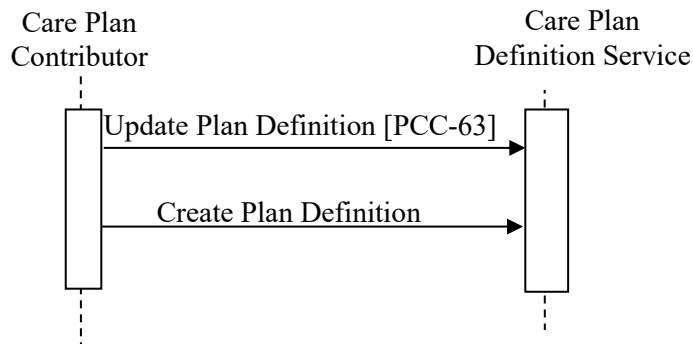
<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor submits a plan definition that is updated or needs to be created.
<b>Actor:</b>	Care Plan Definition Service

<b>Role:</b>	The Care Plan Definition Service receives submitted plan definitions for management as per FHIR Resource Integrity management.
--------------	--

### 3.63.3 Referenced Standards

HL7 FHIR standard R4.

### 3.63.4 Messages



1720

Figure 3.63.4-1: Interaction Diagram

#### 3.63.4.1 Update Plan Definition

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

1725

##### 3.63.4.1.1 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 Definition Service.

##### 3.63.4.1.2 Message Semantics

This is an HTTP or HTTPS PUT of a PlanDefinition resource.

1730

The base URL for this in FHIR R4 is: [base]/PlanDefinition/[id]

Where the body of the transaction contains the PlanDefinition resource.

See: <http://hl7.org/fhir/R4/http.html#update>.

This \$apply operation assumes the PlanDefinition and ActivityDefinition resources are already present on the server.

1735

1740 However, DCP workflow supports the ability to pass the PlanDefinition resource to the FHIR server. To that end, the Care Plan Contributor retrieves the PlanDefinition from the Care Plan Definition service as a template but then allows the user to edit it by selecting the ActivityDefinitions to include before passing the edited PlanDefinition to the server in the \$apply operation.

The base URL for this will be: [base]/PlanDefinition.

#### **3.63.4.1.3 Expected Actions**

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

1745 If the Care Plan Definition 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.

1750 Since the Care Plan Definition Service SHALL support versioning of the PlanDefinition resources, the response SHALL contain meta.versionId. See <http://hl7.org/fhir/R4/http.html#create> details on the response from the Care Plan Definition Service.

#### **3.63.4.2 Create Plan Definition**

1755 The Care Plan Contributor submits a newly created plan definition to a Care Plan Definition Service.

##### **3.63.4.2.1 Trigger Events**

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

##### **3.63.4.2.2 Message Semantics**

1760 This is an HTTP or HTTPS POST of a PlanDefinition resource.

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

Where the body of the transaction contains the PlanDefinition resource.

See <http://hl7.org/fhir/R4/http.html#create>.

##### **3.63.4.2.3 Expected Actions**

1765 The Care Plan Definition Service responds, with success or error, as defined by the FHIR RESTful create interaction. See <http://hl7.org/fhir/R4/http.html#create>.

### 3.63.5 Security Considerations

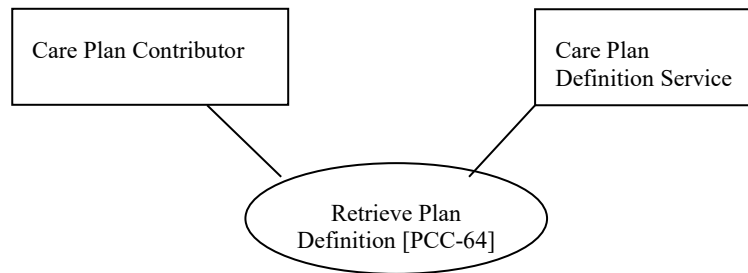
See Section X.5 DCP Security Considerations.

## 3.64 Retrieve Plan Definition [PCC-64]

### 1770 3.64.1 Scope

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

### 3.64.2 Actor Roles



1775 **Figure 3.64.2-1: Use Case Diagram**

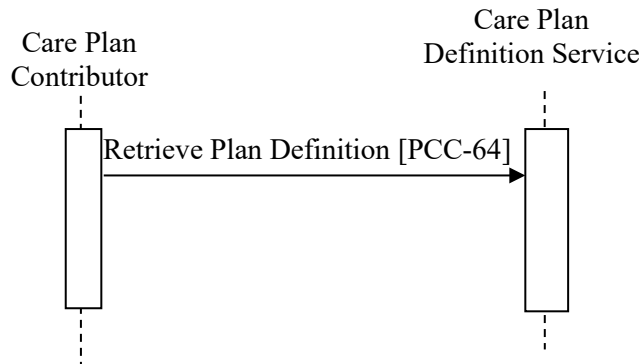
**Table 3.64.2-1: Actor Roles**

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

### 3.64.3 Referenced Standards

HL7 FHIR standard R4.

### 3.64.4 Messages



1780

**Figure 3.64.4-1: Interaction Diagram**

#### 3.64.4.1 Retrieve Plan Definition

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

##### 1785 3.64.4.1.1 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.

##### 3.64.4.1.2 Message Semantics

1790 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].

##### 3.64.4.1.3 Expected Actions

1795 The Care Plan Contributor initiates the retrieve request using HTTP or HTTPS GET, and the Care Plan Definition Service responds according to the FHIR GET specification with the requested plan definition or an error message. See <http://hl7.org/fhir/R4/http.html#read>.

### 3.64.5 Security Considerations

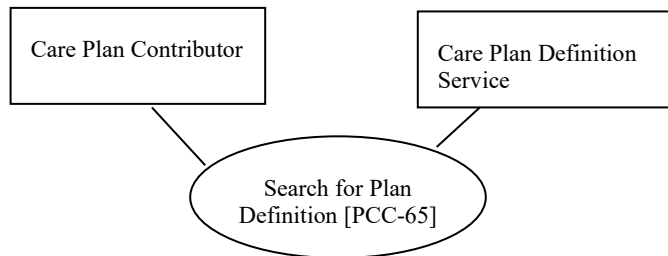
See Section X.5 DCP Security Considerations.

1800 **3.65 Search for Plan Definition [PCC-65]**

**3.65.1 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.

1805 **3.65.2 Actor Roles**



**Figure 3.65.2-1: Use Case Diagram**

**Table 3.65.2-1: Actor Roles**

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

1810 **3.65.3 Referenced Standards**

HL7 FHIR standard R4

### 3.65.4 Messages

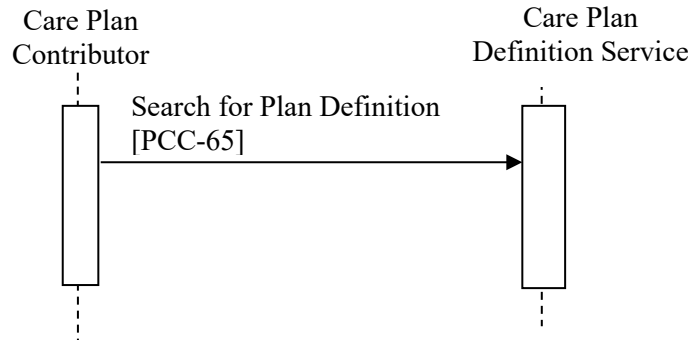


Figure 3.65.4-1: Interaction Diagram

#### 1815 3.65.4.1 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.

##### 3.65.4.1.1 Trigger Events

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

- 1820
1. need to view a plan definition
  2. need to update a portion of a plan definition
  3. need to subscribe to updates for a plan definition

##### 3.65.4.1.2 Message Semantics

1825 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/R4/planDefinition.html#search>.

##### 3.65.4.1.3 Expected Actions

1830 The Care Plan Contributor initiates the search using HTTP or HTTPS GET, and the Care Plan Definition 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 Definition Service returns a [bundle](#) as the HTTP Response, where the bundle includes the resources that are the results of the search.



1835 **3.65.5 Security Considerations**

See X.5 DCP Security Considerations.

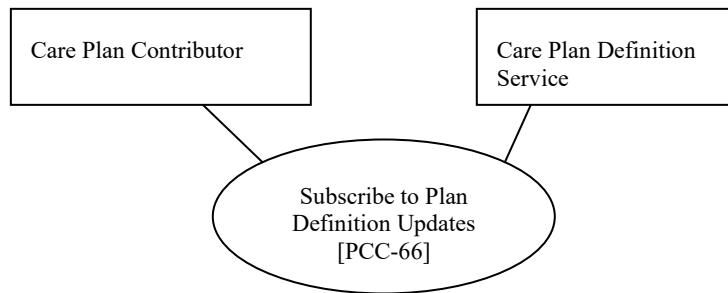
**3.66 Subscribe to Plan Definition Updates [PCC-66]**

**3.66.1 Scope**

This transaction is used to subscribe to updates made to a Plan Definition.

1840 Note: There is no transaction to unsubscribe from plan definition updates. However, to unsubscribe from plan definition updates, the Care Plan Definition Service SHALL support RESTful delete of the subscription resource. See <http://hl7.org/fhir/R4/http.html#delete>.

**3.66.2 Actor Roles**



1845 **Figure 3.66.2-1: Use Case Diagram**

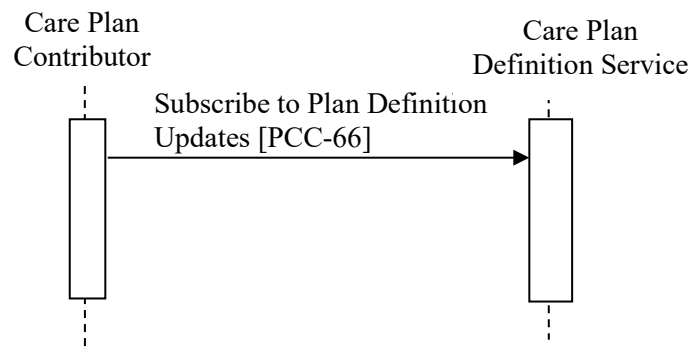
**Table 3.66.2-1: Actor Roles**

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

**3.66.3 Referenced Standards**

HL7 FHIR standard R4.

1850 **3.66.4 Messages**



**Figure 3.66.4-1: Interaction Diagram**

**3.66.4.1 Subscribe to Plan Definition Updates**

1855 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 Definition Service sends the entire Plan Definition resource, using the Provide Plan Definition [PCC-67] transaction to the subscribing Care Plan Contributor.

**3.66.4.1.1 Trigger Events**

1860 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.

1865 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 PlanDefinition resource itself, but the subscription update would not be triggered by changes to a resource referenced by the plan definition.

1870 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.

**3.66.4.1.2 Message Semantics**

This is an HTTP or HTTPS POST of a Subscription resource.

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

Where the body of the transaction contains the Subscription resource.

1875 See <http://hl7.org/fhir/R4/subscription.html>

### **3.66.4.1.3 Expected Actions**

The Care Plan Contributor shall check the response from the Care Plan Definition Service. See <http://hl7.org/fhir/R4/http.html#create> for details.

1880 The Care Plan Definition 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 Definition 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.

1885 A Subscription may be rejected by the Care Plan Definition 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.

### **3.66.4.2 Update Subscription to Plan Definition Updates**

1890 An existing subscription may be updated by a Care Plan Contributor, for example to refine the search criteria.

#### **3.66.4.2.1 Trigger Events**

An existing subscription needs to be updated.

#### **3.66.4.2.2 Message Semantics**

1895 This is an HTTP or HTTPS PUT of a Subscription resource.

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

Where the body of the transaction contains the Subscription resource.

See <http://hl7.org/fhir/R4/http.html#update>

#### **3.66.4.2.3 Expected Actions**

1900 See <http://hl7.org/fhir/R4/http.html#update>

### **3.66.5 Security Considerations**

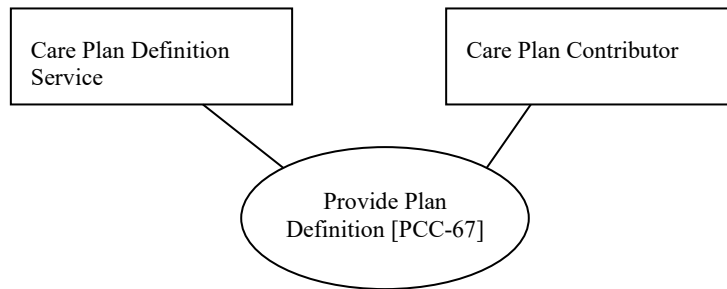
See X.5 DCP Security Considerations.

### 3.67 Provide Plan Definition [PCC-67]

#### 3.67.1 Scope

1905 This transaction is used to provide an updated PlanDefinition resource to a Care Plan Contributor that has subscribed to updates.

#### 3.67.2 Actor Roles



1910

**Figure 3.67.2-1: Use Case Diagram**

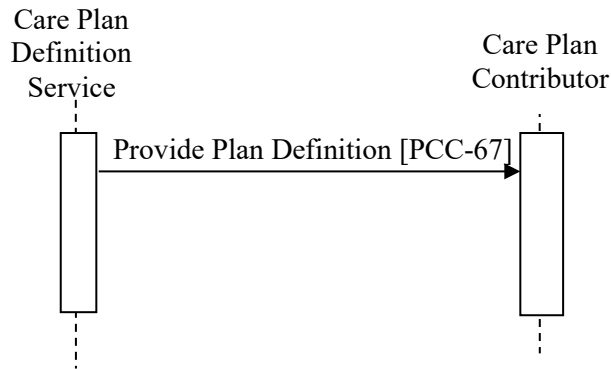
**Table 3.67.2-1: Actor Roles**

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

#### 3.67.3 Referenced Standards

HL7 FHIR standard R4.

1915 **3.67.4 Messages**



**Figure 3.67.4-1: Interaction Diagram**

**3.67.4.1 Provide Plan Definition**

1920 The Care Plan Definition Service sends a PlanDefinition resource to the endpoint specified in the Subscription resource.

**3.67.4.1.1 Trigger Events**

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

**3.67.4.1.2 Message Semantics**

1925 This is an HTTP or HTTPS POST of a PlanDefinition resource.

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/R4/subscription.html>.

**3.67.4.1.3 Expected Actions**

1930 The Care Plan Contributor receives the PlanDefinition resource in the body of the POST.

**3.67.5 Security Considerations**

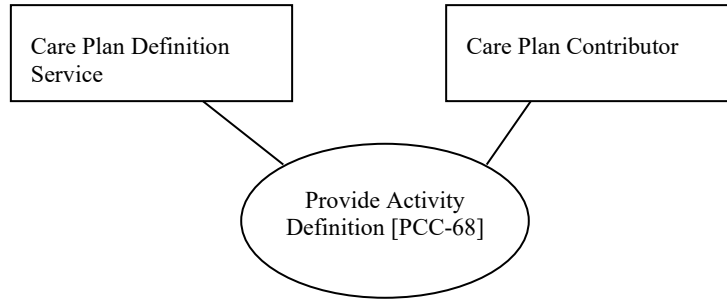
See X.5 DCP Security Considerations.

**3.68 Provide Activity Definition [PCC-68]**

**3.68.1 Scope**

1935 This transaction is used to provide an updated ActivityDefinition resource to a Care Plan Contributor that has subscribed to updates.

**3.68.2 Actor Roles**



1940

**Figure 3.68.2-1: Use Case Diagram**

**Table 3.68.2-1: Actor Roles**

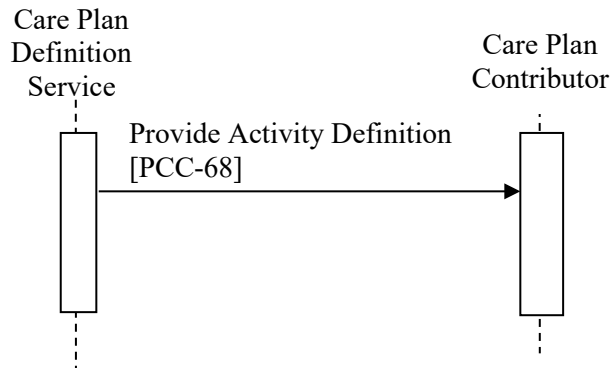
<b>Actor:</b>	Care Plan Definition Service
<b>Role:</b>	The Care Plan Definition Service provides updated ActivityDefinition resources to subscribed Care Plan Contributors.
<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor that has subscribed to activity definition updates receives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

**3.68.3 Referenced Standards**

HL7 FHIR standard R4

1945

**3.68.4 Messages**



**Figure 3.68.4-1: Interaction Diagram**

### **3.68.4.1 Provide Activity Definition**

1950 The Care Plan Definition Service sends an ActivityDefinition resource to the endpoint specified in the Subscription resource.

#### **3.68.4.1.1 Trigger Events**

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

#### **3.68.4.1.2 Message Semantics**

1955 This is an HTTP or HTTPS POST of an ActivityDefinition resource.

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/R4/subscription.html>

#### **3.68.4.1.3 Expected Actions**

1960 The Care Plan Contributor receives the ActivityDefinition resource in the body of the POST.

### **3.68.5 Security Considerations**

See X.5 DCP Security Considerations.

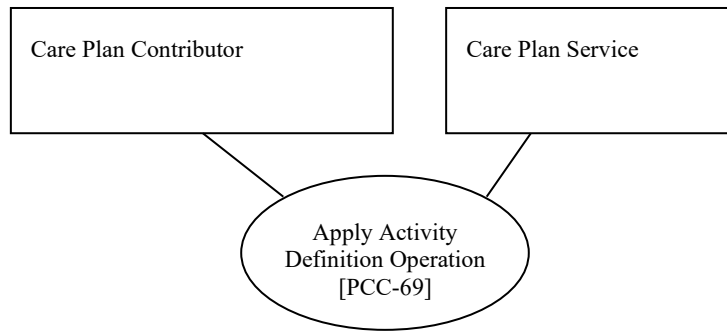
## **3.69 Apply Activity Definition Operation [PCC-69]**

### **3.69.1 Scope**

1965 This transaction is used to generate a Care Plan and subsequent request or task resources. Care Plan Contributor receives Activity Definitions provided by the Care Plan Definition Service. 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.

1975 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.

**3.69.2 Actor Roles**



1980

**Figure 3.69.2-1: Use Case Diagram**

**Table 3.69.2-1: Actor Roles**

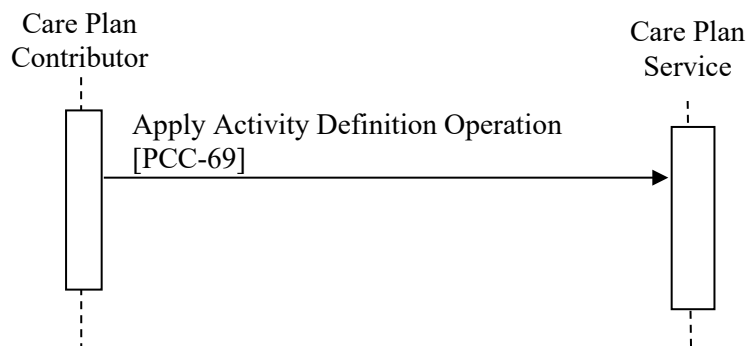
<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor generates Care Plan with request resources
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	The Care Plan Service receives submitted Care Plans for management as per FHIR Resource Integrity management.

**3.69.3 Referenced Standards**

HL7 FHIR standard R4.

**3.69.4 Messages**

1985



**Figure 3.69.4-1: Interaction Diagram**



### **3.69.4.1 Apply Activity Definition Operation**

1990 The Care Plan Contributor receives Activity Definition resource provided by the Care Plan Definition using the Provide Activity Definition transaction (PCC-68). Care Plan Contributor uses FHIR \$Apply operation to generate or update a Care Plan and/or Care Team with corresponding request or task resources. The Care Plan Contributor uses existing business logic to act on the request or task resources in the generated Care Plan and/or Care Team.

#### **3.69.4.1.1 Trigger Events**

1995 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.

#### **3.69.4.1.2 Message Semantics**

2000 Care Plan Contributor receives the POST containing the activity definition from the Care Plan Definition Service. 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  
2005 may also include the handling of responses to the request resources. The updated or created Care Plan is managed by the Care Plan Service.

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

Where the body of the transaction contains an ActivityDefinition resource.

See: <http://hl7.org/fhir/R4/activitydefinition-operations.html#apply>

#### **3.69.4.1.3 Expected Actions**

2010 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.

### **3.69.5 Security Considerations**

2015 See X.5 DCP Security Considerations.

## **3.70 Apply Plan Definition Operation [PCC-70]**

### **3.70.1 Scope**

2020 This transaction is used to generate a CarePlan, CareTeam and subsequent request or task resources. System business rules can support the care team members aggregation to make up members for a subsequent Care Team resource. An example workflow should enable the user to select care team participants similar to how activities are selected as part of care planning.

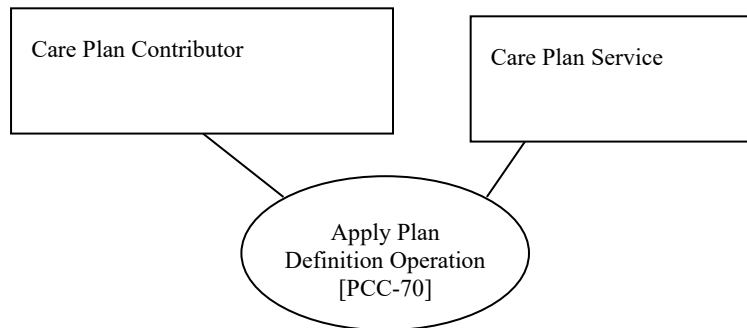
2025 The difference between this transaction and the Apply Activity Definition Operation [PCC-69] is that this operation is used on the PlanDefinition resource. In this transaction, the PlanDefinition contains all the elements needed for a CarePlan including the CareTeam. The PlanDefinition utilizes the contained element attribute of the DomainResource to define the full ActivityDefinition resources and CareTeam resources. The \$apply operation will use the fully defined ActivityDefinition resources and CareTeam resources to provide all the attributes needed to create or update the Care Plan. This includes the referenced Care Team.

2030 Care Plan Contributor receives Plan Definitions provided by the Care Plan Definition Service. The applicable ActivityDefinitions are selected and linked as pointers in another PlanDefinition at PlanDefinition.action.definitionCanonical. The related full ActivityDefinition is defined in the PlanDefinition.DomainResource.contained element. The CareTeam is also defined in the PlanDefinition.DomainResource.contained element. If there is an existing CareTeam, the id element will be included as a pointer to the existing Care Team. If the CareTeam is newly created, it will not contain an id element.

ActivityDefinition.participant elements from each ActivityDefinition will be used to create the members of the defined or updated CareTeam. This [gForge 20907](#) has been submitted to request addition of care team and organization to ActivityDefinition.participant.type.

This transaction is used to generate care team members that will act on the selected activity.

2040 **3.70.2 Actor Roles**



**Figure 3.70.2-1: Use Case Diagram**

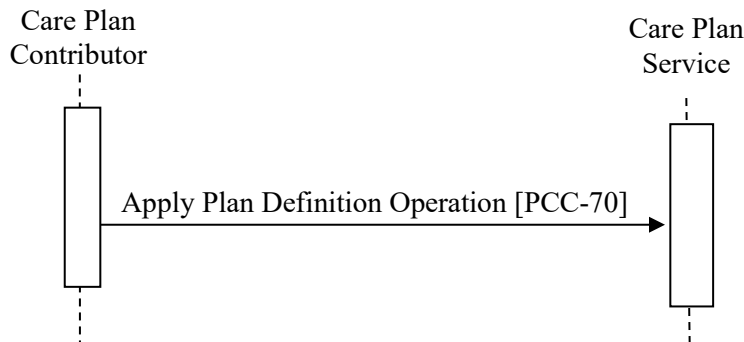
**Table 3.70.2-1: Actor Roles**

<b>Actor:</b>	Care Plan Contributor
<b>Role:</b>	The Care Plan Contributor generates Care Plan, Care Team and request resources
<b>Actor:</b>	Care Plan Service
<b>Role:</b>	The Care Plan Service receives submitted Care Plans and Care Teams for management as per FHIR Resource Integrity management.

### 3.70.3 Referenced Standards

2045 HL7 FHIR standard R4

### 3.70.4 Messages



**Figure 3.70.4-1: Interaction Diagram**

#### 3.70.4.1 Apply Plan Definition Operation

2050 The Care Plan Contributor receives Activity Definition resource provided by the Care Plan  
Definition using the Provide Activity Definition transaction [PCC-68]. Care Plan Contributor  
creates a PlanDefinition with status ‘draft’ and uses the provided Activity Definition ID as  
action.definition pointers. The full ActivityDefinition is defined as a contained attribute of the  
associated DomainResource. The selected participant.type and participant.role attributes from the  
2055 Activity Definition resource provided by [PCC-68] is also used to populate the full CareTeam  
resource defined as a contained attribute of the associated DomainResource. If the CareTeam is  
newly created, the id element remains blank. If the participant.type and participant.role is an  
update to an existing CareTeam resource, the id element is populated. FHIR \$Apply operation is  
used on the draft PlanDefinition to generate or update a Care Plan and/or Care Team. The Care  
2060 Plan Contributor uses existing business logic to act on the request or task resources in the  
generated Care Plan and/or Care Team.

##### 3.70.4.1.1 Trigger Events

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

##### 2065 3.70.4.1.2 Message Semantics

Care Plan Contributor creates the PlanDefinition. Care Plan Contributor then utilizes FHIR \$Apply operation to generate or update a Care Plan based on defined business logic. The generated 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

2070 an Activity Definition include the need to create a CommunicationRequest resource. The CommunicationRequest resource is then sent to a care team member with a request to join the Care Team. 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.

2075 The base URL for this is: [base]/PlanDefinition/[id]/\$apply.

Where the body of the transaction contains a PlanDefinition resource.

See: <http://hl7.org/fhir/R4/plandefinition-operations.html#apply>

#### **3.70.4.1.3 Expected Actions**

2080 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 PlanDefinition associated with the PlanDefinition selected from the Care Plan Definition Service.

#### **3.70.5 Security Considerations**

See X.5 DCP Security Considerations.

2085

# Appendices

None

## Namespace Additions for Volume 2

2090

<i>Add the following terms to the IHE General Introduction Appendix G:</i>
--

None

2095

## 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*

2100

NA

*Add to Section 5.1.2 IHE ActCode Vocabulary*

NA

*Add to Section 5.1.3 IHE RoleCode Vocabulary*

NA

2105 **6 Content Modules**

**6.3.1 CDA Content Modules**

NA

**6.6 HL7 FHIR Content Module**

**6.6.1 Care Plan**

2110 The following table shows the DynamicCarePlan StructureDefinition, which constrains the CarePlan resource. The below table is a conceptual representation of the FHIR StructureDefinition.

**Table 6.6.1-1: CarePlan resource**

Name	Flags	Card.	Description & Constraints	(Profile) Comments
.. CarePlan			Healthcare plan for patient	
...identifier	Σ	1..*	External Ids for this plan	This version of the profile requires at least one identifier.
... instantiatesCanonical	Σ	0..*	Instantiates FHIR protocol or definition	This version of the profile requires that a FHIR protocol or definition can be referenced
... instantiatesUri	Σ	0..*	Instantiates external protocol or definition	This version of the profile requires that an external protocol or definition can be referenced
... 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	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... category	Σ	1..*	Type of plan	This version of the profile fixes the code system to SNOMED CT;
... title	Σ	0..1	Human-friendly name for the CarePlan	
... description	Σ	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.
...encounter	Σ	0..1	Encounter created as part of	
... period	Σ	1..1	Time period plan covers	This version of the profile requires at least a start time for the CarePlan.
...created	Σ	0..1	Date record was first recorded	
... author	Σ	1..1	Who is the designated responsible party	This version of the profile requires at least one author.
...contributor		0..*	Who provided the content of the care plan	
... careTeam		0..*	Who's involved in plan?	
... addresses	Σ	1..*	Health issues this plan addresses	This version of the profile requires one or more addressed conditions/problems/concerns/diagnoses
... supportingInfo		0..*	Information considered as part of plan (reference Any)	
... goal		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	



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Name	Flags	Card.	Description & Constraints	(Profile) Comments
.... outcomeCodeableConcept		0..*	Results of the activity	
.... 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	
.... kind		0..1	Kind of resource Care Plan Activity Kind (Required)	
.... instantiatesCanonical		0..*	Instantiates FHIR protocol or definition	
.... instantiatesUri		0..*	Instantiates external protocol or definition	
.... code		0..1	Detail type of activity	
.... reasonCode		0..*	Why activity should be done or why activity was prohibited	
.... reasonReference		0..*	Why activity is needed	
.... goal		0..*	Goals this activity relates to	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
.... status	?!	1..1	not-started   scheduled   in-progress   on-hold   completed   cancelled   stopped   unknown   entered-in-error	
.... statusReason		0..1	Reason for current status	
.... doNotPerform	?!	0..1	If true, activity is prohibiting action	
.... 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	
..... productCodeableConcept				
..... productReference				
.... dailyAmount		0..1	How to consume/day?	
.... quantity		0..1	How much to administer/supply/consume	

Name	Flags	Card.	Description & Constraints	(Profile) Comments
..... description		0..1	Extra info describing activity to perform	
... note		0..*	Comments about the plan	

2115 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 dcpSubscription

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

2120

**Table 6.6.2-1: Subscription resource**

Name	Flags	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.
....endpoint	Σ	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	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	

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

2125 The following table shows the DynamicCarePlanPlanDefinition StructureDefinition, which constrains the planDefiniton resource.

**Table 6.6.3-1: PlanDefinition resource**

Name	Flags	Card.	Description & Constraints	(Profile) Comments
..PlanDefinition	I		PlanDefinition for care planning	
... url	Σ	1..1	Canonical identifier for this plan definition, represented as a URI (globally unique)	This version of the profile requires url where the library of PlanDefinitions are stored.
...identifier	Σ	1..*	Additional identifier for the plan definition	This version of the profile requires at least one identifier.
... version	Σ	1..1	Business version of the plan definition	This version of the profile requires specifying the version of this PlanDefinition. This version of the profile requires specifying the version of this PlanDefinition. <b>MUST follow Major.Minor.Patch version format based on FHIR versioning guidance<sup>34</sup>.</b>
... name	ΣI	0..1	Name for this plan definition (computer friendly)	This version of the profile requires the name of the PlanDefinition
... title	Σ	1..1	Name for this plan definition (human friendly)	This version of the profile requires a title which is used in an UI.
...subtitle		0..1	subordinate title of the plan definition	
... type	Σ	0..1	order-set   clinical-protocol   eca-rule   workflow-definition	
... status	?! Σ	1..1	draft   active   retired   unknown	

<sup>34</sup> Retrieved May 4, 2019 from <https://www.hl7.org/fhir/versions.html#versions>

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... experimental	Σ	0..1	For testing purposes, not real usage	
... subject		0..1	Type of individual the plan definition is focused on	
.... subjectCodeableConcept				
.... subjectReference				
... date	Σ	1..1	Date last changed	This version of the profile requires a date for when the PlanDefinition was last changed
... publisher	Σ	1..1	Name of the publisher (organization or individual)	This version of the profile requires the name of the PlanDefinition publisher.
... contact	Σ	0..*	Contact details for the publisher	
... description	Σ	1..1	Natural language description of the plan definition	This version of the profile requires a description of the PlanDefinition.
... useContext	Σ	1..*	The context that 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)	
... purpose		0..1	Why this plan definition is defined	
... usage		0..1	Describes the clinical usage of the plan	
... copyright		0..1	Use and/or publishing restrictions	
... approvalDate		0..1	When the plan definition was approved by publisher	
... lastReviewDate		1..1	When the plan definition was last reviewed	This version of the profile requires a date when the PlanDefinition was last reviewed.

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... effectivePeriod	Σ	0..1	When the plan definition is expected to be used	
... topic		0..*	Education, Treatment, Assessment	
... author		0..*	Who authored the content	
... editor		0..*	Who edited the content	
... reviewer		0..*	Who reviewed the content	
... endorser		0..*	Who endorsed the content	
.... relatedArtifact		0..*	Additional documentation, citations	
.... library		0..*	Logic used by the plan definition	
.... goal		0..*	What the plan is trying to accomplish	
..... category		0..1	E.g., Treatment, dietary, behavioral	
..... 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		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	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
..... detail[x]		0..1	The target value to be achieved	
..... detailQuantity				
..... detailRange				
..... detailCodeableConcept				
..... due		0..1	Reach goal within	
.... action		1..*	Action defined by the plan	This version of the profile requires action (ActivityDefinitions).
.... prefix		0..1	User-visible prefix for the action (e.g., 1. or A.)	
..... title		1..1	User-visible title	This version of the profile requires a title of the action (ActivityDefinitions).
..... description		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	
.... priority		0..1	routine   urgent   asap   stat	
..... 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	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
..... goalId		0..*	What goals this action supports	
.... subject[x]		0..1	Type of individual the action is focused on	
..... subjectCodeableConcept				
..... subjectReference				
..... trigger		0..*	When the action should be triggered	
..... condition		0..*	Whether or not the action is applicable	
..... kind		1..1	applicability   start   stop	
..... 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				



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Name	Flags	Card.	Description & Constraints	(Profile) Comments
..... timing[x]		0..1	When the action should take place	
..... timingDateTime				
..... timingPeriod				
..... timingDuration				
..... timingRange				
..... timingTiming				
.... participant		0..*	Who should participate in the action	
..... type		1..1	patient   practitioner   related-person	
..... role		1..1	E.g., Nurse, Surgeon, Parent, etc.	Value set - <a href="https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1099.27/expansion">https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1099.27/expansion</a>
..... 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		1..1	Description of the activity to be performed	This version of the profile requires ActivityDefinitions referenced by the PlanDefinition
..... definitionCanonical				

Name	Flags	Card.	Description & Constraints	(Profile) Comments
..... definitionUri				
.... transform		0..1	Transform to apply the template	
.... dynamicValue		0..*	Dynamic aspects of the definition	
..... path		0..1	The path to the element to be set dynamically	
..... 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.

#### 2130 6.6.4 ActivityDefinition

The following table shows the DynamicCarePlanActivityDefinition StructureDefinition, which constrains the activityDefinition 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 purposes 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.

2135

When specifying an ActivityDefinition, a participant SHOULD be specified.

**Table 6.6.4-1: ActivityDefinition resource**

Name	Flags	Card.	Description & Constraints	(Profile) Comments
.. ActivityDefinition			ActivityDefinition for care planning	
... url	Σ	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.
... identifier	Σ	1..*	External Ids for this ActivityDefinition	This version of the profile requires at least one identifier.

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... version	Σ	1..1	Business version of the activity definition	This version of the profile requires specifying the version of this ActivityDefinition.
... name	Σ	0..1	Name for this activity definition (computer friendly)	This version of the profile requires the name of the ActivityDefinition
... title	Σ	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	
... subject[x]			Type of individual the activity definition is intended for	
.... subjectCodeableConcept				
.... subjectReference				
... date	Σ	1..1	Date this was last changed	This version of the profile requires a date for when the ActivityDefinition was last changed
... publisher	Σ	1..1	Name of the publisher (organization or individual)	This version of the profile requires the name of the ActivityDefinition publisher.
... contact	Σ		Contact details for the publisher	
... description	Σ	1..1	Natural language description of the activity definition	This version of the profile requires a description of the ActivityDefinition.
... useContext	Σ	1..*	The context that 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)	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... purpose		0..1	Why this activity definition is defined	
... usage		0..1	Describes the clinical usage of the asset	
... copyright		0..1	Use and/or publishing restrictions	
... approvalDate		0..1	When the activity definition was approved by publisher	
... lastReviewDate		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	
... topic		0..*	E.g., Education, Treatment, Assessment, etc.	
... author		0..*	Who authored the content	
... editor		0..*	Who edited the content	
... reviewer		0..*	Who reviewed the content	
... endorser		0..*	Who endorsed the content	
.... relatedArtifact		0..*	Additional documentation, citations, etc.	
.... library		0..*	Logic used by the asset	
.... kind		1..1	Kind of resource	This version of the profile requires kind which is used to generate the request resources.
... profile		0..1	What profile the resource needs to conform to	
.... code		0..1	Detail type of activity	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... intent		0..1	proposal   plan   order	
... priority		0..1	routine   urgent   asap   stat	
... doNotPerform	?!Σ	0..1	True if the activity should not be performed	
.... timing[x]		0..1	When activity is to occur	
..... timingTiming				
..... timingDateTime				
.... timingAge				
..... timingPeriod				
..... timingRange				
.... timingDuration				
.... location		0..1	Where it should happen	
.... participant		0..*	Who should participate in the action	
..... type		1..1	Patient   practitioner   related-person	Used as a component for creating or updating CareTeam
..... role		0..1	E.g., Nurse, Surgeon, Parent, etc.	Used as a component for creating or updating CareTeam
.... product		0..1	What's administered/supplied	
..... productReference				
..... productCodeableConcept				

Name	Flags	Card.	Description & Constraints	(Profile) Comments
.... quantity		0..1	How much is administered/consumed/supplied	
.... dosage		0..*	Detailed dosage instructions	
.... bodySite		0..*	What part of body to perform on	
... specimenRequirement		0..*	What specimens are required to perform this action	
... observationRequirement		0..*	What observations are required to perform this action	
... observationResultRequirement		0..*	What observations must be produced by this action	
.... transform		0..1	Transform to apply the template	
.... dynamicValue		0..*	Dynamic aspects of the definition	
..... path		1..1	The path to the element to be set dynamically	
..... expression		1..1	An expression that provides the dynamic value for the customization	

2140

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

2145 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.

2150 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	Card.	Description & Constraints	(Profile) Comments
.. Task			A task to be performed	
... identifier	Σ	1..*	External Ids for this task	<b>This version of the profile requires at least one identifier.</b>
... instantiatesCanonical	Σ	1..1	Formal definition of task	<b>This version of the profile requires at least one definition.</b>
.. instantiatesUri	Σ	0..1	Formal definition of task	
... 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	1..1	Task Type	<b>This version of the profile requires a code.</b>
... description	Σ	1..1	Human-readable explanation of task	<b>This version of the profile requires a description.</b>
... focus	Σ	0..1	What task is acting on	
... for	Σ	0..1	Beneficiary of the Task	
... encounter	Σ	0..1	Healthcare event during which this task originated	
... executionPeriod	Σ	0..1	Start and end time of execution	

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Name	Flags	Card.	Description & Constraints	(Profile) Comments
... authoredOn	I	1..1	Task Creation Date	<b>This version of the profile requires an authoredOn.</b>
... lastModified	Σ I	1..1	Task Last Modified Date	<b>This version of the profile requires a lastModified.</b>
... requester	Σ	1..1	Who is asking for task to be done	<b>This version of the profile requires a requester.</b>
... performerType		0..*	requester   dispatcher   scheduler   performer   monitor   manager   acquirer   reviewer	
... owner	Σ	1..1	Responsible individual	<b>This version of the profile requires an owner.</b>
... location	Σ	0..1	Where task occurs	
... reasonCode		0..1	Why task is needed	
... reasonReference		0..1	Why task is needed	
... insurance		0..*	Associated insurance coverage	
... 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	
.... 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	



Name	Flags	Card.	Description & Constraints	(Profile) Comments
... output		0..*	Information produced as part of task	
.... type		1..1	Label for output	
.... value[x]		1..1	Result of output	

2155 **6.6.6 CareTeam**

The following table shows the DynamicCareTeamManagement StructureDefinition, which constrains the CareTeam resource. Constraints applied to the CareTeam base resource by this profile are shown in bold. The below table is a conceptual representation of the FHIR StructureDefinition.

2160

**Table 6.6.6-1: CareTeam resource**

Name	Flags	Card.	Description & Constraints	Comments
.. CareTeam			Planned participants in the coordination and delivery of care for a patient or group	
... identifier	Σ	1..*	External Ids for this team	<b>This version of the profile requires at least one identifier.</b>
... identifier.value		1..1		<b>This version of the profile requires an ID identifying this profile as an IHE PCC Dynamic Care Team</b>
... status	?! Σ	1..1	proposed   active   suspended   inactive   entered-in-error	<b>This version of the profile requires the status of the care team.</b>
... category	Σ	0.. *	Type of team	
... name	Σ	1..1	Name of the team, such as crisis assessment team	<b>This version of the profile requires the name of the care team.</b>
... subject	Σ	1..1	The patient who the care team is for	<b>For this version of the profile, the use of group is not supported.</b>
... encounter	Σ	0..1	Encounter created as part of	<b>This profile allows for CareTeam creation outside of the context of an encounter or episode.</b>

Name	Flags	Card.	Description & Constraints	Comments
... period	Σ	1..1	Time period team covers	<b>This version of the profile requires period for the CareTeam.</b>
.... start		1..1		<b>This version of the profile requires at least a start time for the CareTeam.</b>
... participant	I	0..*	Members of the team	<b>It is possible for a care team to be set up with roles specified only, before actual participants are invited into or identified as team members</b>
.... role	Σ	0..*	Type of involvement	
.... member	Σ	1..1	Who is involved	Need to know who the member is if participant is specified. This version of the profile requires that a DynamicCareTeam be referenced when the member is a care team.
.... onBehalfOf	Σ	0..1	Organization of the practitioner	
.... period		1..1	Time period of participant	This version of the profile requires period to indicate how current the participant is.
... reasonCode		0..*	Why the care team exists	
... reasonReference		0..*	Why the care team exists	
... managingOrganization	Σ	0..*	Organization responsible for the care team	
... telecom		0..*	A contact detail for the care team (that applies to all members)	
... note		0..*	Comments made about the CareTeam	

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

### 6.6.7 dctmSubscription

2165 The following table documents the CareTeamSubscription, which constrains the Subscription resource. Changes to the base Subscription resource are shown in bold. The below table is a conceptual representation of the FHIR StructureDefinition.

**Table 6.6.7-1: Subscription resource**

Name	Flags	Card.	Description	Comments
.. Subscription	Σ		A server push subscription criteria	
...status	?! Σ	1..1	requested   active   off   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	<b>rest-hook</b>	<b>This version of the profile constrains the channel type to rest-hook.</b>
....endpoint	Σ	1..1	Where the channel points to	<b>This version of the profile constrains the channel type to rest-hook, the endpoint must be a valid URL for the Provide Care Team [PCC-49] transaction.</b>
....payload	Σ	1..1	Mimetype to send	<b>This version of the profile constrains the channel payload to a non-blank value - the CareTeam resource must be the payload.</b>
....header	Σ	0..*	Usage depends on the channel type	

2170 A FHIR StructureDefinition can be found in implementation materials – see ITI TF-2x: Appendix W for instructions on how to get to the implementation materials.

# Appendices

## Appendix D – DCP Proposed Mapping to XDW Profiles

2175 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.

2180 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”.

2185 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

2190 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.
- 2195 3. The FHIR Care Plan use of the FHIR Task resource can be correlated with XDW Workflow Document as defined in XDW Profile.
- 2200 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 Section 6.6.5).

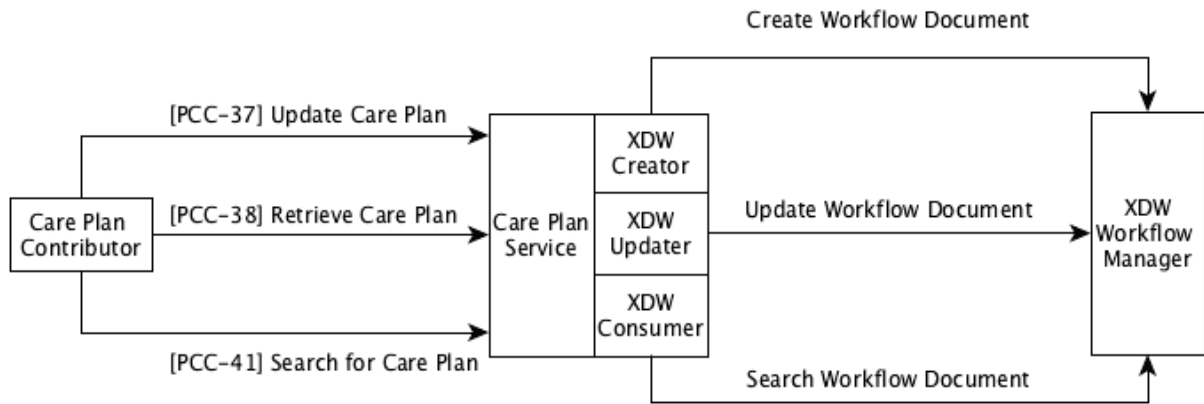
### D.2 DCP to XDW Concept Mapping

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

- 2205 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.

- 2210
2. [PCC-38] Retrieve Care Plan transaction can be mapped to the retrieve of a Workflow Document.
  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

2215 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.

2220 **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	

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CarePlan resource elements	Description	XDW.Workflow Document elements	Notes
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)	workflowDefinitionReference (urn:oid: that defines the kind of Workflow Document)	Could be the solution for FHIR typeCode
identifier	External Ids for this plan. This version of the profile requires at least one identifier	workflowInstanceId	
instantiatesCanonical	Instantiates FHIR protocol or definition	TaskList/XDWTask/TaskData/input/part/attachmentInfo/identifier for the first task with FHIR resource PlanDefinition	If a FHIR protocol or definition is used
instantiatesUri	Instantiates external protocol or definition	TaskList/XDWTask/TaskData/input/part/attachmentInfo/identifier for the first task with FHIR resource PlanDefinition	If external protocol or definition is used
basedOn	Fulfills care plan (reference carePlan). This version of the profile requires that a related DynamicCarePlan be referenced when basedOn	TaskList/XDWTask/TaskData/part/attachmentInfo/identifier 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/part/attachmentInfo/identifier 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/part/attachmentInfo/identifier for the first task with FHIR resource CarePlan	
status	draft   active   suspended   completed   entered-in-error   cancelled   unknown	workflowStatus	OPEN in XDW -> active in CarePlan CLOSED in XDW -> completed in CarePlan
intent	proposal   plan   order   option	no mapping	
category	Type of plan. This version of the profile fixes the code system to SNOMED CT; <a href="http://snomed.info/sct">http://snomed.info/sct</a>	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	

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CarePlan resource elements	Description	XDW.Workflow Document elements	Notes
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	Doesn't contain the identifier of the patient but the identifier of the resource. Should be changed with a generic "identifier"
encounter	Encounter created as part of.	no mapping	
period	Time period plan covers. This version of the profile requires at least a start time for the CarePlan	no mapping	
created	Date record was first recorded	workflowStatusHistory/documentEvent/eventTime of the event that led to the opening of the Workflow Document.	
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	
contributor	Who provided the content of the care plan	author/assignedAuthor. author/assignedAuthor/id element can be found in the resource referenced in CarePlan/author element	Are there differences between authors of the Workflow Document? If not, it could be omitted.
careTeam	Who is 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	Every activity should represent a single task
... 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	

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CarePlan resource elements	Description	XDW.Workflow Document elements	Notes
... 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 <b>Table 7.3.3-1</b> )	
... detail	In-line definition of activity	General details of Task resource. Mapping is on children elements.	
.... kind	diet   drug   encounter   observation   procedure   supply   other  CarePlanActivityCategory (Example)	no mapping	
....instantiatesCanonical	Instantiates FHIR protocol or definition	TaskList/XDWTask/TaskData/input with FHIR resource ActivityDefinition	part/attachmentInfo/identifier
....instantiatesUri		no mapping	
.... 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	
.... 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	
.... doNotPerform	If true, activity is prohibiting action	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	



CarePlan resource elements	Description	XDW.Workflow Document elements	Notes
.... product[x]	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

2225 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 created. A documentEvent element is then added whenever the workflowStatus of the workflow document changes.	Mapping defined on children elements	
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	Task/identifier of the Task resource that has led to the CarePlan/status change	

XDW Workflow Document history		Description	CarePlan or Task resource	Notes
		taskEvent/identifier of the taskEvent of reference		
	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.

2230

**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	
instantiatesCanonical	Formal definition of task.	TaskList/XDWTask/TaskData/input	
instantiatesUri	Formal definition of task.	no mapping	
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	

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Task resource elements	Description	XDW.Workflow Document elements	Notes
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	
encounter	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	
performerType	requester   dispatcher   scheduler   performer   monitor   manager   acquirer   reviewer	no mapping	
owner	Responsible individual	TaskList/XDWTask/TaskData/TaskDetails/actualOwner	
location	Where task occurs.	no mapping	
reasonCode	Why task is needed	no mapping	
reasonReference	Why task is needed	no mapping	
insurance	Associated insurance coverage	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
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**

2235 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	id for the taskEvent	no mapping	Shall be defined or can be set when element is created? (defined when the taskEvent is added to the workflow (every status change))
	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)	

2240 **Namespace Additions for Volume 3**

*Add the following terms to the IHE Namespace:*

None

2245

## Volume 4 – National Extensions

*Add appropriate Country section*

None