**Integrating the Healthcare Enterprise**

# IHE Patient Care Coordination Technical Framework Supplement

# Dynamic Care Team Management (DCTM)

FHIR® STU 3

Using Resources at FMM Level 2-3

# Rev. 1.1 – Trial Implementation


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**Please verify 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

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

This supplement is published on September 8, 2017 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 Coordination Technical Framework. Comments are invited and can be submitted at 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.

| *Amend Section X.X by the following:* |
|---|

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

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

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

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

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

 

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## Introduction to this Supplement

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

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

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

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

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

| FHIR Resource Name | FMM Level |
|---|---|
| CareTeam | 2 |
| Subscription | 3 |

The Dynamic Care Team Management (DCTM) Profile will provide a mechanism to facilitate system interactions to support care team membership such as:

- Discovering Care Teams
- Creating/updating Care Teams
- Listing Care Teams

DCTM Profile provides the structures and transactions for care team management and sharing information about care teams that meet the needs of many, such as providers, patients and payers. Care teams can be dynamically updated as the patient interacts with the healthcare

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

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

system. HL7 FHIR resources and transactions are used by this profile. This profile does not define, nor assume, a single care team for a patient.

## Open Issues and Questions

1. Seeking feedback: Should we add email as channel type to subscription resource? Is email a useful subscription type for care team in addition to rest-hook?
2. Seeking feedback: How should logical IDs for the CareTeam resource be handled? Should a logical ID be used or a conditional update?

## Closed Issues

1. [Closed 07/19/2017] Seeking feedback: Do we need do something to tag the care team as an IHE PCC dynamic CareTeam? Comparable to templateIDs in CDA to show conformance. How are others doing this when they profile FHIR resources?

   Response: added an id element to identify this profile as a IHE PCC Dynamic Care Team profile (see 6.6.1 dctmCareTeam)

2. [Closed 07/17/2017] Due to a delay in the availability of the tool used to construct the StructureDefinitions for CareTeam resource profile and subscription resource profile, the StructureDefinitions are not completed. Please see a conceptual representation of the sturctureDefinitions at 6.6.4 (dctmCareTeam) and 6.6.5 (dctmSubscription). Update: Tool has been updated and is available for use.
3. [Closed 07/17/2017] Seeking feedback: Can a care team get created without participants? Should we constrain CareTeam.participant to 1..* or leave it at 0..*? Feedback: 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 so constrained at 0..*.
4. [Closed April 24, 2017] Should there be explicit instructions in here on how to delete a subscription?
   a. Response: the subscription resource ‘end’ element is used to delete the subscription
5. [Closed April 24, 2017] How would a subscriber discover the id of a subscription if it lost it?
   a. Response: By querying for any part of the subscription resource. Will need to know the query parameters.
6. [Closed April 24, 2017] Does the Service have the ability to implement a policy that says something like (for example):

   *All subscriptions will be terminated after 30 days of inactivity. Subscribers will be informed of the cancellation (or not).*

   a. Response: the subscription after 30 days of inactivity. Subscribers will be informed of the canceldateTime to end.

7. [Closed April 24, 2017] Need to differentiate this profile from XDW- WD concept: Definition of Care Team Contributor and Care Team Service: These are very close to the more specific terms HT Participant and HT Manager found in XCHT-WD. I know the technologies differ and there are some differences in responsibilities. However, the responsibilities are close enough that common terms should be used in both profiles. Can you just change the supplement and put it out again for Public Comment? Or it may require a CP to the XCHT-WD supplement.
    a. Response: XDW-WD HT Participant and HT Manager would be a special case that would be participants on a Care Team. Suggestion made that PCC may need to re-visit the PCC actors and how they relate to each other and provide follow-up as future analysis.
8. [Closed April 24, 2017] Does a Care Team Service have to support the model where someone creates a Care Team with a single contributor and then adds individual contributors sequentially? I would think the answer is yes
    a. Response: Yes, see X.4.1 Concepts.
9. [Closed April 24, 2017] What about the model where someone wants to create a Care Team with zero contributors and then add individual contributors sequentially?
    a. Response: This version of the profile requires at least one participant – See 6.6.1 Care Team.
    b. Feedback from public comment that 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
10. [Closed April 24, 2017] – Section X.5 Security Considerations – Steve Moore wrote a CP to ITI for them to include general Volume 1, Section X.5 security information in an appendix. If they accept that CP (with modifications), you will be able to reference it and only add deltas that are important to the current work.
    a. Response: updated X.5 Security Considerations to reference ITI Appendix Z
11. [Closed February 9, 2017] Need to determine the FHIR version that will be used and what do about future updates and HL7 work groups plans for addressing resource updates.
    a. HL7 FHIR STU3 will be used (see http://hl7.org/fhir/STU3/index.html)
    b. Future updates of FHIR resources will be handled via IHE Change Proposals.
12. [Closed March 13, 2017] Need to examine HPD for care team functionality and determine if we should include in this profile.
    a. Response: Care teams are not supported by IHE HPD Profile. Per HPD Profile, "Provider Information Directory - Supports a directory of healthcare providers. The directory can include:
        - Only Individual Providers

- Only Organizational Providers
- Organizational Providers and Individual Providers" [3]

13. [Closed February 9, 2017] How are care team members removed from the care team?
    a. Response: See 3.45 Update Care Team [PCC-45]
14. [Closed February 9, 2017] How will Care Team updates occur? If doing this real time need a way to keep the updates.
    a. Response: See 3.45 Update Care Team [PCC-45]
15. [Closed March 13, 2017] Who's the entity that is responsible for the updates to the care team – what actor? Who is responsible for adding folks to the care team? Concerns about data compete …
    a. Response: See X.1.1.1 Care Team Contributor Actor
16. [Closed March 13, 2017] Continuation of care – who is actively involved with the patient and need to be the one that is contacted – who to call?
    a. Response: This is handled by Careteam resource participant - CareTeam.participant.role
17. [Closed February 9, 2017] Is this profile meant to capture the ability to have real- time communication with care team members (like IM)?
    a. Response: Care Team communication capability as intended by the Coordination of Care Services (CCS) functional model is not supported by this profile at this time.
18. [Closed March 13, 2017] If you subscribed and have provided an update, do you receive provide care team transaction?
    a. Response: Yes, because you've subscribed, you will get all updates. See 3.48.4.1 Subscribe to Care Team Updates

[3] Retrieved March 13, 2017 from http://ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_Suppl_HPD.pdf

## General Introduction

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

## Appendix A – Actor Summary Definitions

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

| Actor | Definition |
|---|---|
| Care 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

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

None

## Glossary

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

| 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.[4] |
| 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.[5] |
| 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.[6]<br><br>As a point of differentiation, note that care team management is a process, whereas care manager is a participant role. |

[4] Retrieved 07/18/2017 from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=452

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

[6] 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

| Glossary Term | Definition |
|---|---|
| Coordination of Care Services Functional Model: Care Team Capability | A working care team is the foundation of effective communication, interaction channels and maintenance of current clinical context awareness. Care team, communication and interactions are the heart of collaborative coordination of care.[7] |
| Encounter-focused Care Team | This type of team focuses on one specific encounter. The encounter is determined by the context of use.[8] |
| 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.[9] |
| Condition-focused Care Team | This type of team focuses on one specific condition. The condition is determined by the context of use.[10] |
| 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.[11] |
| 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.[12] |
| 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.[13] |

[7] Retrieved 03/05/2017 from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=452

[8] Retrieved 04/12/2017 http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx

[9] Retrieved 04/12/2017 http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx

[10] Retrieved 04/12/2017 http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx

[11] Retrieved 04/12/2017 http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx

[12] Retrieved 04/12/2017 http://wiki.hl7.org/images/d/db/HL7_Care-Team-Types-v009_2017-01-09.pptx

[13] Retrieved 12/15/2016 from https://www.merriam-webster.com/dictionary/utilization%20review

# Volume 1 – Profiles

## Copyright Licenses

NA

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

## Domain-specific additions

NA

*Add Section X*

## X Dynamic Care Team Management (DCTM) Profile

The Dynamic Care Team Management (DCTM) Profile provides the means for sharing care team information about a patient's care teams that meet the needs of many users, such as providers, patients and payers. A patient and providers may be associated with multiple types of care teams at any given time. Patients are suffering from an increasing number of complex or chronic health conditions which require frequent episodes of care involving multiple care providers. With this complexity, it is difficult to identify and coordinate care amongst providers and caregivers. The ability to inform providers and patients with care team information and the functions to support improving care provision is needed.

The World Health Organization (WHO) stipulates approximately 63% of all annual deaths are due to non-communicable or chronic diseases. The US Medicare and Medicaid Services (CMS) department's claims data show that $17.4 billion dollars was spent on re-admissions to hospital within 30 days of discharge in 2004.[14]

Effective collaboration and communication is needed to support the provision of patient-centered care. DCTM would enable the efficient provision of health information that is needed for effective care planning and collaboration between applicable care team members and the patient.

The DCTM Profile provides the structures and transactions for sharing Care Team information dynamically as the patient interacts with the healthcare system. FHIR resources and transactions are used by this profile. This profile does not define, nor assume, a single care team for a patient. The care team functionalities are derived from the HL7 Service Functional Model; Coordination of Care Service (CCS)[15] care team membership sub-capabilities. Request participation sub-

[14] 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.

[15] Retrieved February 8, 2017 from http://www.hl7.org/implement/standards/product_brief.cfm?product_id=452

capability which invites or requests care team member(s) to be added to a care team is not supported by this profile at this time.

This profile utilizes the following sub-capabilities used in CCS Care Team Membership Capability:

- Add Care Team Member - Supports the ability to directly add members to the care team.
- List my Care Teams - Supports the ability of an individual to list all care teams for which they (or the patient) have an active membership.
- Remove Care Team Member - Supports the ability to either permanently remove or inactivate an individual from the care team
- Discover Care Teams - Supports the ability to determine who the other Care Teams are and their members in order to engage them in communication, negotiation, harmonization and coordinated execution of the plan (via other CCS capabilities not utilized in this profile)

The above sub-capabilities are accomplished by performing operations on, including creation or update of one or more CareTeam (http://hl7.org/fhir/careteam.html) FHIR resources through the RESTful FHIR API (http://hl7.org/fhir/http.html).

The terms 'CareTeam resource' used in this profile, refers to the FHIR resource that represents the Care Team. Since it is easy to confuse the phrase Care Team with the FHIR CareTeam resource which is the 'technical' representation of the Care Team, the FHIR resource will always be written as 'CareTeam resource' as opposed to Care Team or care team.

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

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

Figure X.1-1 shows the actors directly involved in the DCTM 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 that have a mandatory grouping are shown in conjoined boxes.

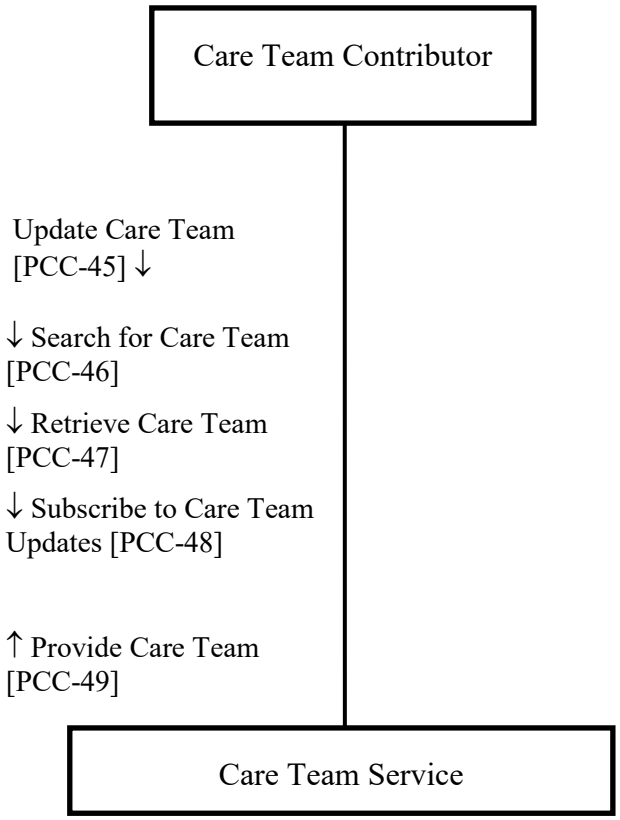



**Figure X.1-1: DCTM Actor Diagram**

355 **Table X.1-1: DCTM Profile - Actors and Transactions**

| Actors | Transactions | Optionality | Reference |
|---|---|---|---|
| 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 Note 1 | PCC TF-2: 3.48 |
| | Provide Care Team | C | PCC TF-2: 3.49 |
| 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 |

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

Table X.1-1 lists the transactions for each actor directly involved in the DCTM 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.

#### X.1.1.1 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.1.1.2 Care Team Service

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.

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.

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

## X.2 DCTM Actor Options

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

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

| Actor | Option Name | Reference |
|---|---|---|
| Care Team Contributor | Subscribe to Care Team Updates | 3.48 |
| Care Team Service | No options defined | -- |

### X.2.1 Subscribe to Care Team Updates

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 DCTM Required Actor Groupings

**Table X.3-1: DCTM - Required Actor Groupings**

| DCTM Actor | Actor to be grouped with | Reference | Content Bindings Reference |
|---|---|---|---|
| Care Team Contributor | none | | |
| Care Team Service | none | | |

## X.4 DCTM Overview

Patient centered collaborative focused care teams are needed for effective care planning to occur. 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 care as they receive care from multiple care providers and care settings. These care providers make up patient centered collaborative focused care teams. Effective care planning and care coordination amongst care teams for patient with complex health problems

and needs are needed throughout the world. Both the European Union and the United States are currently working to encourage more effective use of information and 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.[16]

In the United States, providers and payers are interested in ensuring that patients are receiving effective and efficient care. The CMS EHR incentive programs provide financial incentives to care providers for the meaningful use of certified EHR technology that supports care coordination.[17] 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, 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."[18]

This profile depicts how information about multiple care teams can be shared and used to coordinate care.

### X.4.1 Concepts

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.

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.

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-

[16] 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

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

[18] 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

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

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 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[19] 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 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 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 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 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 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.

[19] Retrieved April 10, 2017 from http://wiki.hl7.org/index.php?title=Patient-Centered_Care_Team_Domain_Analysis_Model

### X.4.2 Use Cases

This profile reuses the HL7 Care Plan Domain Analysis Model specification storyboard 2: Chronic Conditions[20] with permission from HL7 Patient Care Work Group. Slight modifications have been made to the storyboard in order to depict care team management needed for chronic disease management as well as transition of care episodes.

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 need for a care team is identified, created or updated during care provision. For a process flow diagram of this entire use case, see the diagram at: ftp://ftp.ihe.net/TF_Implementation_Material/PCC/DCTM/

##### X.4.2.1.1 DCTM Use Case Description

The purpose of the HL7 chronic conditions storyboard (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 is sub-divided to reflect HL7 Care Team Definition Project's classification of types of care teams:

Encounter-focused Care Team

- Primary Care Physician (PCP)
- Patient

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

- PCP
- Specialists
- Allied Health Care Providers
- Patient

Episode-focused Care Team

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

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

- Care Providers
- Discharge Planner
- Patient

Care-coordination focused Care Team

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

The use case contains the following actors and roles.

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

- 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

#### X.4.2.1.1.1 Encounter-focused Care Team: Primary Care Physician; Patient

**Pre-conditions:** Patient Mr. Bob Anyman relocated to a new city a year ago and has identified a new primary care physician (PCP). He attends his primary care physician clinic because he has been feeling generally unwell in the past 7-8 months. His recent blood test results reveal abnormal glucose challenge test profile.

**Description of Care:** Dr. Patricia Primary reviews Mr. Anyman's medical history, presenting complaints and the oral glucose tolerance test results and concludes the patient suffers from Type II Diabetes Mellitus (Type II DM). Dr. Primary accesses Mr. Anyman's medical record, and records the clinical assessment findings and the diagnosis. Dr. Primary discusses with Mr. Anyman the identified problems, potential risks, goals, management strategies and intended outcomes. 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.

**Post Condition:** Dr. Primary draws up a customized chronic condition (Type II DM) care plan identifying the need for a condition-focused care team.

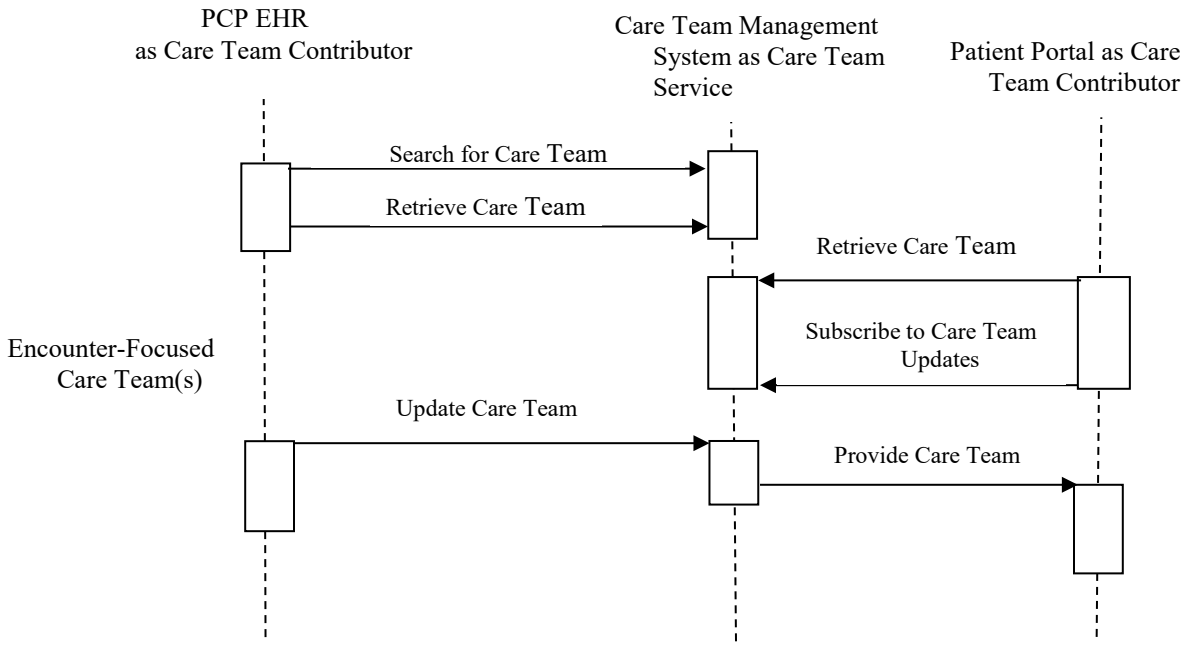



**Figure X.4.2.1.1.1-1: Encounter-focused Care Team: Basic Process Flow in DCTM Profile**

### X.4.2.1.1.2 Condition-focused Care Team: Primary Care Physician; Allied Health Care Providers; Specialists; Patient

**Pre-conditions:** Dr. Primary generates a set of referrals to these allied health care providers and specialists needed to treat Mr. Anyman's diabetic condition. Scheduling of consultations with diabetic educator, dietitian, physical therapist, community pharmacist, optometrist, and podiatrist (allied health care providers) is discussed and agreed to by the patient. The frequency of visit to allied health care providers is scheduled according to the national professional recommendation for collaborative diabetes care. Dr. Primary also notices signs and symptoms of mood changes in the patient after the diagnosis is made. She recommends that the patient may benefit from seeing a clinical psychologist to which the patient also agrees.

The allied health care providers and specialists accept the referral and schedule a first visit with the patient – Mr. Bob Anyman.

The case is assigned to the following individual allied health care providers and referrals made to the applicable specialists for provision of applicable services:

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

C. Physical Therapy Services: Mr. Ed Active (Physical Therapist) for development and implementation of an exercise regime.

D. Pharmacy Services: 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.

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

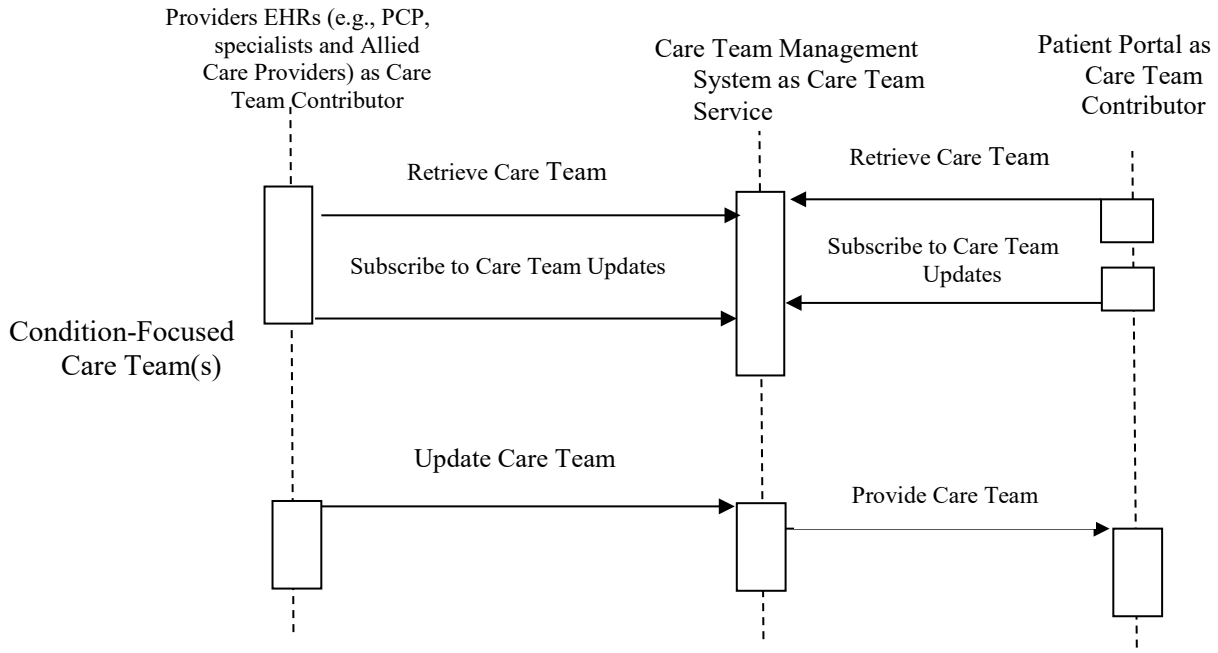
F. Optometry Services: Dr. Victor Vision (Optometrist) for regular (e.g., 6 monthly) visual and retinal screening and to educate patient on the eye care and how best to prevent/minimize the risks of ocular complications.

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

**Description of Care:** The patient is registered in the health care record system operated by the allied health provider clinics. Any additional or new information provided by the patient is recorded in the health care record system. The allied health care provider and specialists update 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.

**Post Condition:** Any updates or changes to the various care teams are recorded in their health care record system.




625 **Figure X.4.2.1.1.2-1: Condition-focused Care Team: Basic Process Flow in DCTM Profile**

### X.4.2.1.1.3 Episode-focused Care Team: ED Visit and Hospital Admission

**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

630 **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 mmol/l) as complications. He suffers from increasing shortness of breath
635 and suffers a fall on a Saturday afternoon.

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

**Description of Care:** Mr. Anyman is initially seen in the emergency department (ED) by Dr. Eddie Emergent and is later admitted to the hospital. Upon arrival in the ED, the patient is
640 registered and all care provided is documented in the ED health care record system. Bob is subsequently admitted to the hospital and placed under the care of physicians from the general medicine clinical unit. During the hospitalization, Bob is provided care services by various clinical care teams which include medical services, nursing services, nutrition and dietary

services, physical therapy services, and respiratory services. Non-clinical services are also provided by ancillary care teams.

Bob's medical care includes a course of IV antibiotics and insulin injections to stabilize the blood glucose level. Bob also suffered a joint injury as a result of the fall he had. Nursing services includes administration of Bob's medications and educating Bob about his condition and treatment. Bob is provided physical therapy services to improve his recovery from his joint injury. Bob is assessed by the hospital attending physician, Dr. Allen Attend, as medically fit for discharge. All care provided is documented in the hospital health care record system.

Planning for discharge is initiated 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.

**Post Condition:** The discharge plan is finalized on the day of discharge by the discharge planner, Debra Discharge. Discharge plans include continuation of Bob's care after he leaves the hospital with care teams at the next level of care. Bob will need medical, nursing, and physical therapy services post discharge. Debra Discharge confirms that the applicable teams that will provide these services post discharge are made aware when Bob is discharged.

Note: The process flow pattern for this episode-focused care team is the same as encounter-focused care team. See Figure X.4.2.1.1.1-1.

#### X.4.2.1.1.4 Care Coordination Focused Care Team: Primary Care, Nursing and Physical Therapy Follow-up Visits

**Pre-Condition:** Patient Mr. Bob Anyman is scheduled for a post-hospital discharge consultation with his primary care provider, Dr. Primary. Bob is also scheduled to receive nursing and physical therapy services at his home post discharge.

**Description of Care:** Home health case manager, Nurse Nancy Case reviews patient Mr. Anyman's hospital discharge summary and discharge orders. She discusses Bob's care plan with him and makes it available for Bob's PCP, Dr. Primary to review. Bob's care plan includes orders for home health nursing and physical therapy services. Nurse Nancy Case arranges nursing services with the home health nursing team and physical therapy services with the home health physical therapy team. Bob is seen by Nurse Angie Able for his nursing care and by PT Peter Physical for his physical therapy.

A week after discharge, Bob is seen and evaluated by his PCP, Dr. Primary.

Bob needs assistance with activities of daily living (ADLs). He hires a personal care assistant to provide needed services. This information is documented in the home health care record system.

**Post Condition**: Dr. Primary is the physician of record for the care provided by the home health nurse and the physical therapist. She updates Bob's Diabetes care team providers of the change in Bob's condition and the services he is currently receiving. The home health providers are

made aware of Bob's diabetes care team providers and will contact them if needed. All home care services are documented in the home health care record system.

Note: The process flow pattern for this care coordination care team is the same as condition-focused care team. See Figure X.4.2.1.1.2-1.

#### X.4.2.1.1.5 Research Focused Care Team: Diabetes Research Participation

**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 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.

**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.4.2.1.1.2-1.

## X.5 DCTM Security Considerations

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

## X.6 DCTM Cross Profile Considerations

A Content Consumer in Patient Care Coordination might be grouped with a Care Team Contributor to enable the filtering and display of care team content. A Content Creator might be grouped with a Care Team Contributor to enable the creation or update of clinical content. A Reconciliation Agent might be grouped with a Care Team Contributor and also with a Care Team Service to facilitate the reconciliation processes. As mentioned in the security considerations section, a Secure Node in the ATNA Profile might be grouped with any and all of the actors in this profile. Note that CareTeam resources may be referenced from zero or more CarePlan resources. Please see Section X.4 DCTM Overview for a description of the relationship between care planning and care teams.

# Appendices

# Volume 2 – Transactions

*Add Section 3.45*

## 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

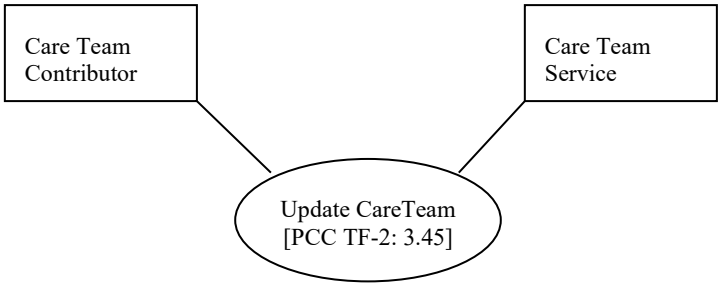



**Figure 3.45.2-1: Use Case Diagram**

**Table 3.45.2-1: Actor Roles**

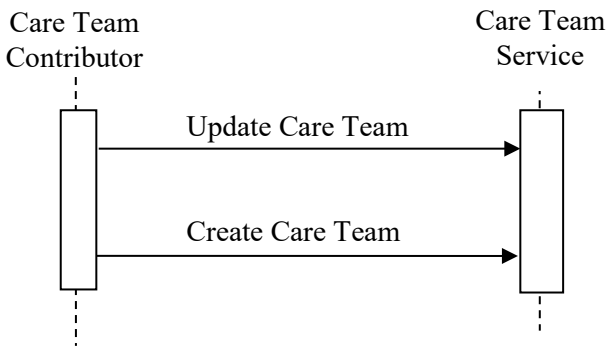
| | |
|---|---|
| **Actor:** | Care Team Contributor |
| **Role:** | The Care Team Contributor submits a CareTeam resource that is updated, or needs to be created. |
| **Actor:** | Care Team Service |
| **Role:** | The Care Team Service receives submitted CareTeam resources for management as per FHIR Resource Integrity management. |

### 3.45.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

### 3.45.4 Interaction Diagram




#### 3.45.4.1 Update Care Team

730 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

An existing CareTeam resource has been edited, and the set of attributes for the CareTeam
735 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, as constrained by this profile. Being an update, the client must specify the logical id.

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

740 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

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

745 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.

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.

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.

##### 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, as constrained by this profile.

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

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

### 3.45.5 Security Considerations

See X.5 DCTM Security Considerations

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

### 3.46.1 Scope

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

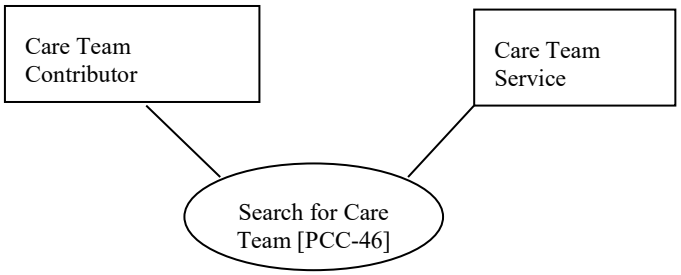



**Figure 3.46.2-1: Use Case Diagram**

780 **Table 3.46.2-1: Actor Roles**

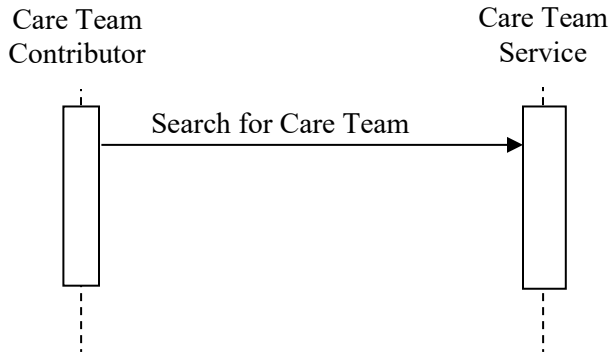
| | |
|---|---|
| **Actor:** | Care Team Contributor |
| **Role:** | The Care Team Contributor initiates Search for Care Team in order to locate a CareTeam resource of interest. |
| **Actor:** | Care Team Service |
| **Role:** | The Care Team Service responds to the Search for CareTeam resource according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

### 3.46.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

### 3.46.4 Interaction Diagram

785




790

#### 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:

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

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://build.fhir.org/careteam.html#search

##### 3.46.4.1.3 Expected Actions

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.

### 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

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

### 3.47.2 Actor Roles

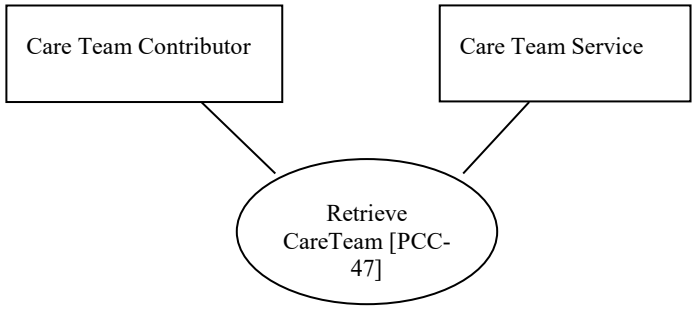



**Figure 3.47.2-1: Use Case Diagram**

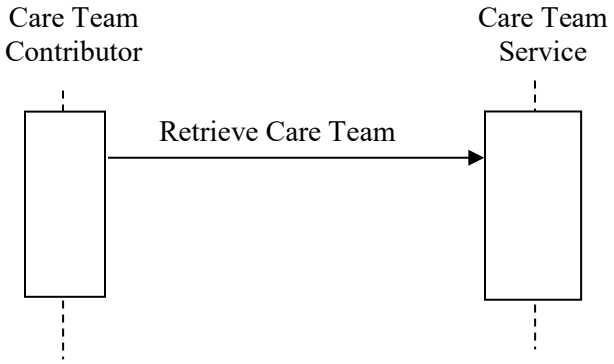
**Table 3.47.2-1: Actor Roles**

| | |
|---|---|
| **Actor:** | Care Team Contributor |
| **Role:** | The Care Team Contributor requests a specific CareTeam resource using the CareTeam resource id |
| **Actor:** | Care Team Service |
| **Role:** | The Care Team Service returns the requested CareTeam resource, or an error if the requested resource does not exist. |

### 3.47.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

### 3.47.4 Interaction Diagram



#### 3.47.4.1 Retrieve Care Team

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

##### 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

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

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.

## 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.

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

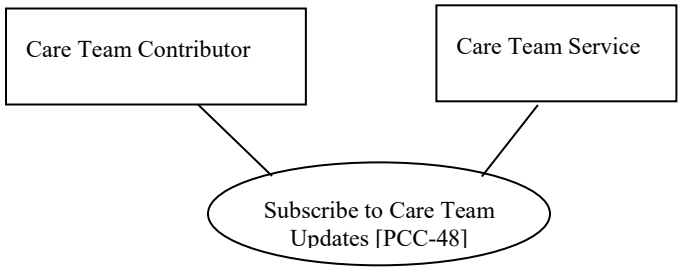



**Figure 3.48.2-1: Use Case Diagram**

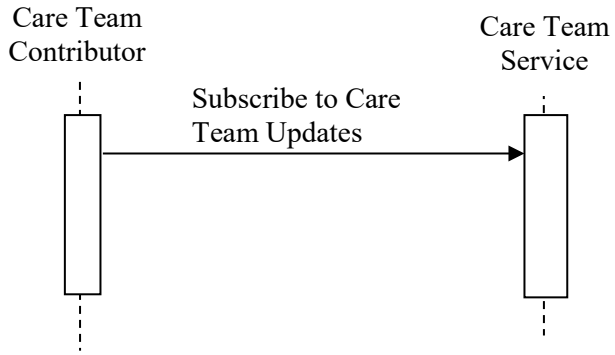
**Table 3.48.2-1: Actor Roles**

| | |
|---|---|
| **Actor:** | Care Team Contributor |
| **Role:** | The Care Team Contributor subscribes to updates based upon changes to a CareTeam resource. |
| **Actor:** | Care Team Service |
| **Role:** | 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 release 3 (STU)

### 3.48.4 Interaction Diagram




#### 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.

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.

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.

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, as constrained by this profile.

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.

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.

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

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

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, as constrained by this profile. Using the update requires the client to specify the logical id.

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

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

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.

### 3.49.2 Actor Roles

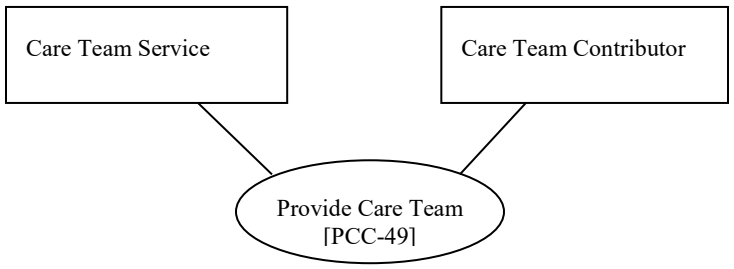



**Figure 3.49.2-1: Use Case Diagram**

**Table 3.49.2-1: Actor Roles**

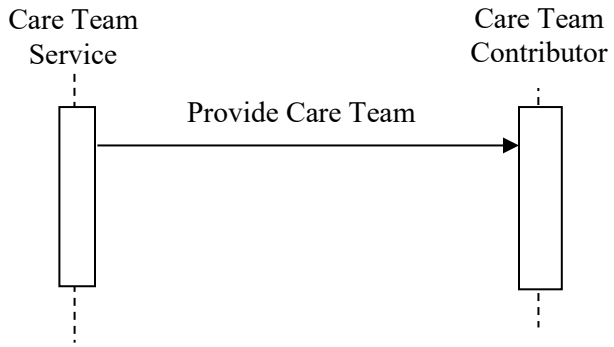
| | |
|---|---|
| **Actor:** | Care Team Service |
| **Role:** | The Care Team Service provides updated CareTeam resources to subscribed Care Team Contributors. |
| **Actor:** | Care Team Contributor |
| **Role:** | The Care Team Contributor that has Subscribed to Care Team Updates receives updates of changed CareTeam resources. |

### 3.49.3 Referenced Standards

HL7 FHIR standard release 3 (STU)

### 3.49.4 Interaction Diagram




#### 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

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, as constrained by this profile.

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

Where the body of the transaction contains the CareTeam resource.

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

##### 3.49.4.1.3 Expected Actions

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.

### 3.49.5 Security Considerations

See Section X.5 DCTM Security Considerations

# Appendices

None

## Volume 2 Namespace Additions

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

None

# Volume 3 – Content Modules

# 5 Namespaces and Vocabularies

*Add to Section 5 Namespaces and Vocabularies*

NA

*Add to Section 5.1.1 IHE Format Codes*

NA

*Add to Section 5.1.2 IHE ActCode Vocabulary*

NA

*Add to Section 5.1.3 IHE RoleCode Vocabulary*

NA

# 6 Content Modules

### 6.3.1 CDA®[21] Content Modules

NA

## 6.6 HL7 FHIR Content Module

### 6.6.1 dctmCareTeam

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 StuctureDefinition.

**Table 6.6.1-2: CareTeam resource**

| Name | Card. | Description & Constraints | Comments |
|---|---|---|---|
| .. CareTeam | | Planned participants in the coordination and delivery of care for a patient or group | |
| ... identifier | 1..* | External Ids for this team | **This version of the profile requires at least one identifier.** |
| ... identifier.value | 1..1 | | **This version of the profile requires an ID identifying this profile as an IHE PCC Dynamic Care Team** |
| ... status | 1..1 | proposed \| active \| suspended \| inactive \| entered-in-error | **This version of the profile requires the status of the care team.** |
| ... category | 0.. * | Type of team | |
| ... name | 1..1 | Name of the team | **This version of the profile requires the name of the care team.** |
| ... subject | 1..1 | The patient who care team is for | **For this version of the profile, the use of group is not supported.** |
| ... context | 0..1 | Encounter or episode associated with CareTeam | **This profile allows for CareTeam creation outside of the context of an encounter or episode.** |
| ... period | 1..1 | Time period team covers | **This version of the profile requires period for the CareTeam.** |

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

| Name | Card. | Description & Constraints | Comments |
|---|---|---|---|
| …. start | 1..1 | | **This version of the profile requires at least a start time for the CareTeam.** |
| ... participant | 0..* | Members of the team | **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** |
| .... role | 0..1 | Type of involvement | |
| .... member | 1..1 | Who is involved | Need to know who the member is if participant is required.<br>This version of the profile requires that a DynamicCareTeam be referenced when the member is a care team. |
| .... onBehalfOf | 0..1 | Organization of the practitioner | |
| .... period | 0..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 | 0.. * | Organization responsible for the care team | |
| ... note | 0.. * | Comments made about the CareTeam | |

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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.

### 6.6.2 dctmSubscription

The following table documents the CareTeamSubscription, which constrains the Subscription
1010 resource. Changes to the base Subscription resource are shown in bold. The below table is a conceptual representation of the FHIR StuctureDefinition.

**Table 6.6.2-1: Subscription resource**

| Name | Card. | Description | Comments |
|---|---|---|---|
| .. Subscription | | A server push subscription criteria | |
| ...status | 1..1 | requested \| active \| off \| off | |
| ...contact | 0..* | Contact details for source (e.g., troubleshooting) | |

 

| Name | Card. | Description | Comments |
|---|---|---|---|
| …end | 0..1 | When to automatically delete the subscription | |
| ...reason | 1..1 | Description of why this subscription was created | |
| …criteria | 1..1 | Rule for server push criteria | |
| ...error | 0..1 | Latest error note | |
| ...channel | 1..1 | The channel on which to report matches to the criteria | |
| ....type | 1..1 | **rest-hook** | **This version of the profile constrains the channel type to rest-hook.** |
| ....endpoint | 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 Team [PCC-49] transaction.** |
| ....payload | 1..1 | Mimetype to send | **This version of the profile constrains the channel payload to a non-blank value - the CareTeam resource must be the payload.** |
| ....header | 0..* | Usage depends on the channel type | |
| ...tag | 0..* | A tag to add to matching resources | |

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

NA

## Volume 3 Namespace Additions

*Add the following terms to the IHE Namespace:*

None

# Volume 4 – National Extensions

*Add appropriate Country section*

None

 