**Integrating the Healthcare Enterprise**



**IHE Patient Care Coordination**

**Technical Framework Supplement**

**Dynamic Care Planning   
(DCP)**

**Draft in preparation for Public Comment**

<The IHE Documentation Specialist will change the title to just “Draft for Public Comment” upon publication for public comment; leave “as is” until then.>

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*<This Supplement Template includes templates for Volumes 1 (Profiles), 2 (Transactions), 3 (Content Modules), and 4 (National Extensions).>*

*<Volumes 1, 2, and/or 3 are developed together for Public Comment and Trial Implementation submission. Volume 4, National Extensions, is typically developed at a later point in time, usually at Trial Implementation or later. Templates for all four volumes are included in this document for the sake of completeness. If you are beginning a new profile, you are strongly discouraged from using National Extensions and should instead focus on optional data sets or other alternatives. For more information, see* [*http://wiki.ihe.net/index.php?title=National\_Extensions\_Process*](http://wiki.ihe.net/index.php?title=National_Extensions_Process)*.>*

**Foreword**

This is a supplement to the IHE PCC Technical Framework <VX.X>. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

*<For Public Comment:>* This supplement is published on <Month XX, 201x> for Public Comment. Comments are invited and may be submitted at [http://www.ihe.net/<domain>/<domain>comments.cfm](http://www.ihe.net/Technical_Framework/public_comment.cfm). In order to be considered in development of the Trial Implementation version of the supplement, comments must be received by <Month XX, 201X>.

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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.

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# Introduction to this Supplement

The Dynamic Care Planning (DCP) profile provides the structures and transactions for care planning, using a shared Care Plan that meets the needs of many, such as providers, patients and payers. This shared Care Plan can be dynamically updated as the patient interacts with the healthcare system. FHIR resources and transactions are used by this profile.

## Open Issues and Questions

1. Need to determine the FHIR version and what to do about future updates.
2. (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.
3. Care Plan Contributor vs Care Plan Creator
4. Is an ATNA Grouping required? If so, how does that impact potential mobile uses of this profile?
5. When profiling the FHIR Resource make sure we can make references to existing documents.
6. Should the FHIR CarePlan.subject be restricted to Patient?
   1. What does CarePlan.subject of type Group mean?
7. (closed 3/28/16) Does FHIR Search using POST create a resource when the search fails to match on the search criteria?

## Closed Issues

1. 2/15/16 Scope: This profile will not attempt to ‘discover’ all possible providers that have provided care for the patient. …this means that information on the location of actors is not profiled and is obtained by methods outside of the scope of this profile (similar to how XDS actors know with whom they communicate).
2. (2/16/16) The Care Plan Contributor should use the following pattern, from <http://hl7.org/fhir/http.html#transactional-integrity>

* The server provides a [read](http://hl7.org/fhir/http.html#read) interaction for any resource it accepts [update](http://hl7.org/fhir/http.html#update) interactions on
* Before updating, the client [reads](http://hl7.org/fhir/http.html#read) 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](http://hl7.org/fhir/extensibility.html#exchange) around this)
* The client writes the result back as an [update](http://hl7.org/fhir/http.html#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.

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.

1. (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.

# General Introduction

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

Appendix A - Actor Summary Definitions

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

|  |  |
| --- | --- |
| Actor | Definition |
| Care Plan Contributor | This actor creates and updates Care Plans by submitting a new or updated Care Plan to a Care Plan Manager. |
| Care Plan Consumer | This actor reads a Care Plan from a Care Plan Manager. This actor may subscribe to receive updated Care Plans. |
| Care Plan Manager | This actor manages Care Plans received from Care Plan Contributors, and provides updated Care Plans to subscribed Care Plan Consumers. |

Appendix B - Transaction Summary Definitions

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

|  |  |
| --- | --- |
| Transaction | Definition |
| Update Care Plan | Update an existing or create a new Care Plan. |
| Retrieve Care Plan | Retrieve a Care Plan. |
| Subscribe to Care Plan Updates | Subscribe to receive updated Care Plans for specific patients. |
| Provide Care Plan | Provide updated Care Plans to subscribers. |

Glossary

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

|  |  |
| --- | --- |
| Glossary Term | Definition |
| Care Plan Domain Analysis Model | A common reference used to support the development of implementable care plan models[[1]](#footnote-1) |
| 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.[[2]](#footnote-2) |
| Care Plan (as used in this profile) | Tool used by clinicians to plan and coordinate care for an individual patient. It aids in understanding and coordinating the actions that need to be performed for the target of care. The care plan is known by several similar and often interchangeable names such as the plan of care and treatment plan.[[3]](#footnote-3) |

Volume 1 – Profiles

## <*Copyright Licenses>*

<General copyright licenses and permissions are listed in the IHE Technical Frameworks General Introduction. Add information on any standards referenced in the profile that are not already addressed in the permission section.>

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

## <*Domain-specific additions>*

<Some domains have specific sections, added as subsections to Sections 1 or 2, in their Technical Frameworks. These types of additions are allowed as long as they do not adjust the overall numbering scheme which needs to remain consistent across domains. If there are such additions, they should be included here.>

Add to Section …

<Reserve a subsequent section number in the current domain Technical Framework Volume 1 (DOM TF-1). Replace the letter “X” with that section heading number. This number should not change when this supplement is added to the Final Text Technical Framework. In this manner, references should be able to be maintained going forward.>

# X Dynamic Care Planning (DCP) Profile

The Dynamic Care Planning (DCP) profile provides the structures and transactions for care planning, using a shared Care Plan that meets the needs of many, such as providers, patients and payers. This shared Care Plan can be dynamically updated as the patient interacts with the healthcare system. FHIR resources and transactions are used by this profile.

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.[[4]](#footnote-4)

The numbers of service delivery encounters required by individuals, as well as, the failure to deliver and coordinate needed services, are significant sources of frustration and errors, and are drivers of health care expenditures. Providing person-centered care is particularly important for medically-complex and/or functionally impaired individuals given the complexity, range, and on-going and evolving nature of their health status and the services needed. Effective, collaborative partnerships between service providers and individuals are necessary to ensure that individuals have the ability to participate in planning their care and that their wants, needs, and preferences are respected in health care decision making.

The ability to target appropriate services and to coordinate care over time, across multiple clinicians and sites of service, with the engagement of the individual (i.e. longitudinal coordination of care) is essential to alleviating fragmented, duplicative and costly care for these medically-complex and/or functionally impaired persons.

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

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

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.

Update Care Plan [PCC-Y1] ↓

Transaction 1 [1] ↓

↓ Search for Care Plan [PCC-Y5]

↓ Retrieve Care Plan [PCC-Y2]

↓ Subscribe to Care Plan Updates [PCC-Y3]

↑ Provide Care Plan [PCC-Y4]

Care Plan Manager

Actor F

Care Plan Consumer

Actor B

Care Plan Contributor

Actor A

Figure X.1-1: DCP Actor Diagram

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.Y1 |
| Care Plan Consumer | Search for Care Plan | R | PCC TF-2: 3.Y5 |
| Retrieve Care Plan | R | PCC TF-2: 3.Y2 |
| Subscribe to Care Plan Updates | O | PCC TF-2: 3.Y3 |
| Provide Care Plan | O (as receiver) (Note 1) | PCC TF-2: 3.Y4 |
| Care Plan Manager | Search for Care Plan | R | PCC TF-2: 3.Y5 |
| Update Care Plan | R | PCC TF-2: 3.Y1 |
| Retrieve Care Plan | R | PCC TF-2: 3.Y2 |
| Subscribe to Care Plan Updates | R | PCC TF-2: 3.Y3 |
| Provide Care Plan | R (as initiator) | PCC TF-2: 3.Y4 |

Note 1: required when supported.

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.

#### X.1.1.1 Care Plan Contributor

This actor creates and updates Care Plans by submitting a new or updated Care Plan to a Care Plan Manager. This actor is grouped with a Care Plan Consumer.

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

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

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

#### X.1.1.2 Care Plan Consumer

This actor reads a Care Plan from a Care Plan Manager. This actor may subscribe to receive updated Care Plans.

#### X.1.1.3 Care Plan Manager

This actor manages Care Plans received from Care Plan Contributors, and provides updated Care Plans to subscribed Care Plan Consumers.

As described above under the Care Plan Contributor, the Care Plan Manager receives a Care Plan and manages versions of the Care Plan as a whole.

## X.2 DCP 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: DCP - Actors and Options

| Actor | Option Name | Reference  *<either reference TF-3 or the applicable X.2.x subsection below table>* |
| --- | --- | --- |
| Care Plan Contributor | No options defined | -- |
| Care Plan Consumer | No options defined | -- |
| Care Plan Manager | No options defined | -- |

Note: *<Conditional or required options must be described in this SHORT note, for longer notes use section X.2.1.>,*

### X.2.1 <Option Name>

## X.3 DCP Required Actor Groupings

## A Care Plan Contributor shall be grouped with a Care Plan Consumer.

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

| DCP Actor | Actor to be grouped with | Reference | Content Bindings Reference |
| --- | --- | --- | --- |
| Care Plan Contributor | Care Plan Consumer |  |  |
| Care Plan Consumer | none |  |  |
| Care Plan Manager | none |  | -- |

.

## X.4 DCP Overview

Care planning is needed to manage medically complex and/or functionally impaired individuals as they interact with the health care system. Often, these individuals require real time coordination of the care as they receive care from multiple care providers and care settings. HL7 Care Plan Domain Analysis Model depicts the care plan as a tool used by clinicians to plan and coordinate care[[5]](#footnote-5). Effective care planning and care coordination for patient with complex health problems and needs are needed throughout the world. Both the European Union and the United States are currently working to encourage more effective use of information and 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.[[6]](#footnote-6)

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[[7]](#footnote-7). 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.”[[8]](#footnote-8)

This profile depicts how multiple care plans can be shared and used to plan and coordinate care.

### X.4.1 Concepts

Care plans have many different meanings to many different people. Each discipline has its own definition of what a care plan is and what it contains. This profile uses the term ‘care planning’ for the process of sharing care plans for the patient. 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 communicate their plans of care, treatment plans, health issues, interventions and goals/outcomes, etc. for the patient.

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. This profile will address many of the needs not met in many document based static use case specific care plans:

* A shared dynamic care plan that meets the needs of many stakeholders (providers, patients, payers, etc);
* A method to consolidate the many care plans that can be attached to a patient;
* Provide a framework for centralized dynamic care planning.

### X.4.2 Use Case

This profile reuses the HL7 Care Plan Domain Analysis Model specification storyboard 2: Chronic Conditions[[9]](#footnote-9) with permission from HL7 Patient Care Work Group. The storyboard includes chronic disease management as well as a transition of care episode.

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.

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

The purpose of the HL7 chronic conditions care plan storyboard (use case) is to illustrate the communication flow and documentation of a care plan between a patient, his or her primary care provider, ancillary providers and specialists involved in the discovery and treatment of a case of Type II Diabetes Mellitus. It consists of five 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

Encounter(s) C: ED Visit with hospital admission (inpatient stay)

Encounter D: Primary Care Follow-up post hospital discharge Visit

The use case contains the following actors and roles.

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

###### X.4.2.1.1.1 Encounter A: Primary Care Physician Initial Visit

**Pre-conditions:** Patient Mr. Bob Anyman attends his primary care physician (PCP) clinic because he has been feeling 775 generally unwell in the past 7-8 months. His recent blood test results reveal abnormal glucose challenge test profile.

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

Dr. Primary discusses with Mr. Anyman the identified problems, potential risks, goals, management strategies and intended outcomes. After ensuring that these are understood by the patient, Dr. Primary begins to draw up a customized chronic condition (Type II DM) care plan based on a standardized multi-disciplinary Type II DM care plan adopted for use by her practice. Agreed goals and scheduled activities specific for the care of Mr. Anyman are entered into the care plan.

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

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

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

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

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

Figure X.4.2.1.1.1-1: Encounter A: Basic Process Flow in DCP Profile

Encounter A

Transaction\_1 [1]

PCP EHR  
as Care Plan Updater and Care Plan Consumer

Actor D/

Actor E

Care Plan Management System as Care Plan Manager

Actor A /

Actor B

Patient Portal as Care Plan Consumer

Update Care Plan

Transaction-B [B]

Provide Care Plan

Transaction-B [B]

Retrieve Care Plan

Transaction-B [B]

Subscribe to Care Plan Updates

Transaction-B [B]

Retrieve Care Plan

Transaction-B [B]

Search for Care Plan

Transaction-B [B]

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

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

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

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

1. 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.
2. 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.
3. Mr. Ed Active (Exercise Physiologist) for development and implementation of an exercise regime.
4. 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.
5. 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.
6. 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.
7. Dr. Barry Bunion (Podiatrist) for education on the risks of foot complications and to develop and implement an effective foot care program including regular self-assessment, care of the feet and follow-up visits.

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

During the first consultation, the allied health care provider/specialist reviews the referral and care plan provided by Dr. Primary.

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

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Provider / Allied Health Provider** | **Encounter Activities** | **Outcomes** | **Communications** |
| Diabetic Educator | Review referral/patient progress  assess learning needs and strategy  discuss and finalize education plan | Develop/update education plan  Update clinical notes  Generate progress notes | New/updated education plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, |
| Dietitian/Nutritionist | Review referral/patient progress  Assess diet management needs and strategies  Discuss and finalize diet management plan | Develop/update diet plan  Weight assessment; Exercise plan  Diet management plan;  Referral to educator and exercise therapy if necessary  Update clinical notes  Generate progress notes | New/updated care plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, e.g. diabetic educator, exercise physiologist, etc. |
| Exercise Physiologist | Review referral/patient progress  Assess exercise/activity needs and strategies  Discuss and finalize exercise plan | Develop/update exercise plan:  Weight assessment; exercise plan  Update clinical notes  Generate progress notes | New/updated exercise plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, e.g. diabetic educator, dietitian, etc.. |
| Community Pharmacist | Review patient medication profile  Assess medication management (education, conformance, etc.) needs and strategies  Discuss and finalize medication management plan | Develop/update medication management plan:  patient current medication list assessment result;  recommendation on meds management; referral to other provider(s) if necessary  dispense record on dispensed meds  Update clinical notes  Generate progress notes | New/updated medication management plan to patient  Summary care plan and progress note shared with primary care provider and to other care providers, e.g. diabetic educator, dietitian, etc. |
| Clinical Psychologist | Review referral/patient progress  Assess emotional status, coping mechanisms and strategies  Discuss and finalize psychological management plan | Develop/update psychological management plan:  Emotion assessment;  Psychotherapy session plan  Update clinical notes  Generate progress notes | New/updated psychological management plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, e.g. diabetic educator, dietitian, etc. |
| Optometrist | Review referral/patient progress  Assess eye care needs and strategies  Discuss and finalize eye care plan | Develop/update eye care plan:  Regular eye checks for early detection of Diabetic retinopathy (1yearly to 2 yearly depending on national protocol and how advanced is DM)  Stop smoking (prevent smoking related damage to eye cells)  Wear sun glasses when in sun (prevent UV accelerating eye damage) – dispense prescription sun glasses if necessary;  Referral to Dietitian/Nutritionist for counseling on diet rich in fruits and green leafy veg and Omega 3 fats along with effective weight control  Update clinical notes  Generate progress notes | New/updated eye care plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, e.g. diabetic educator, dietitian, etc.. |
| Podiatrist | Review referral/patient progress  Assess foot care needs and strategies  Discuss and finalize foot care plan | Develop/update foot care plan  Foot assessment  Foot care plan  Update clinical notes  Generate progress notes | New/updated foot care plan to patient  Summary care plan and progress note shared with primary care provider and other care providers, e.g. diabetic educator, dietitian, pharmacist, etc. |

Table 2. Allied Health Professionals/Specialists Encounters – Activities and Outcomes

**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.

At the end of each consultation a progress note is written by the allied health provider/specialist which documents the outcomes of the assessment, any new risks identified and changes to or new management strategies that have been included in the updated care plan. This allied health domain specific progress note is shared with the patient’s primary care provider, Dr. Primary. Any care coordination responsibilities required of Dr. Primary is also communicated. The progress note is also 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, progress note from a dietitian/nutritionist may contain clinical information that may need to be considered by the diabetic educator.

Encounter(s) B

Transaction\_1 [1]

Providers EHRs (e.g. specialists and Allied Care Providers) as Care Plan Updater / Care Plan Consumer

Actor D/

Actor E

Care Plan Management System as Care Plan Manager

Patient Portal as Care Plan Consumer

Update Care Plan

Transaction-B [B]

Provide Care Plan

Transaction-B [B]

Retrieve Care Plan

Transaction-B [B]

Subscribe to Care Plan Updates

Transaction-B [B]

Subscribe to Care Plan Updates

Transaction-B [B]

Retrieve Care Plan

Transaction-B [B]

**Figure X.4.2.1.1.2-1: Encounter(s) B: Basic Process Flow in DCP Profile**

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

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

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

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

During the hospitalization, the patient is given a course of IV antibiotics, 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.

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

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

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

A discharge summary with summary of the discharge plan is shared with to 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** Figure X.4.2.1.1.2-1

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

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

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

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

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

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

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

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

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

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

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

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 Figure X.4.2.1.1.1-1

### X.5 DCP Security ConsiderationsX.5 DCP Security Considerations

In many other uses of the HTTP/REST pattern, applications are accessing far less sensitive information than patient identifiers and protected health information. When the mobile environment comes into use, the challenges of security and privacy controls are unique, simply because the devices are harder to physically control. The DCP Profile provides access to the patient identifiers and other protected health information managed in healthcare. These factors present a unique and difficult challenge for the security model. It is recommended that application developers utilize a Risk Assessment in the design of the applications, and that the operational environment utilize a Risk Assessment in the design and deployment of the operational environment. See FHIR DSTU2 Security http://hl7.org/fhir/DSTU2/security.html.

There are many reasonable methods of security for interoperability transactions, which can be implemented without modifying the characteristics of the DCP Profile transactions. The use of TLS is encouraged, as is the use of the ATNA Profile (see ITI TF-1:9).

User authentication on mobile devices and browsers is typically handled by more lightweight authentication schemes such as HTTP Authentication, OAuth, or OpenID Connect. IHE has a set of profiles for user authentication including: Enterprise User Authentication (EUA) on devices using HTTP and Internet User Authorization (IUA) for REST-based authentication. In all of these cases, the network communication security, and user authentication are layered in the HTTP transport layer and do not modify the interoperability characteristics defined in the DCP Profile. The use of strong trust keys is encouraged.

Actors in the DCP Profile should make use of the audit logging (ATNA) Profile. However, support for ATNA-based audit logging on mobile devices and lightweight browser applications may be beyond their ability. The operational environment must choose how to mitigate the risk of relying only on the service-side audit logging on the Care Plan Manager. It is recommended that DCP Actors implement the Internet User Authentication (IUA) Profile, incorporating the subject of the IUA token in audit messages.

The Resource URL pattern defined in this profile means many requests may include Patient ID, names, or other demographic data as parameters for query. The advantage of this pattern is ease of implementation and clear distinction of a patient’s identity. The URL pattern does present a risk when using typical web server audit logging of URL requests and browser history. In both of these cases the URL with the Patient ID or Name query parameters is clearly visible. To mitigate the risks of PHI exposure when searching for care plans, this profile restricts the query to the use of the HTTP POST protocol.

## X.6 DCP Cross Profile Considerations

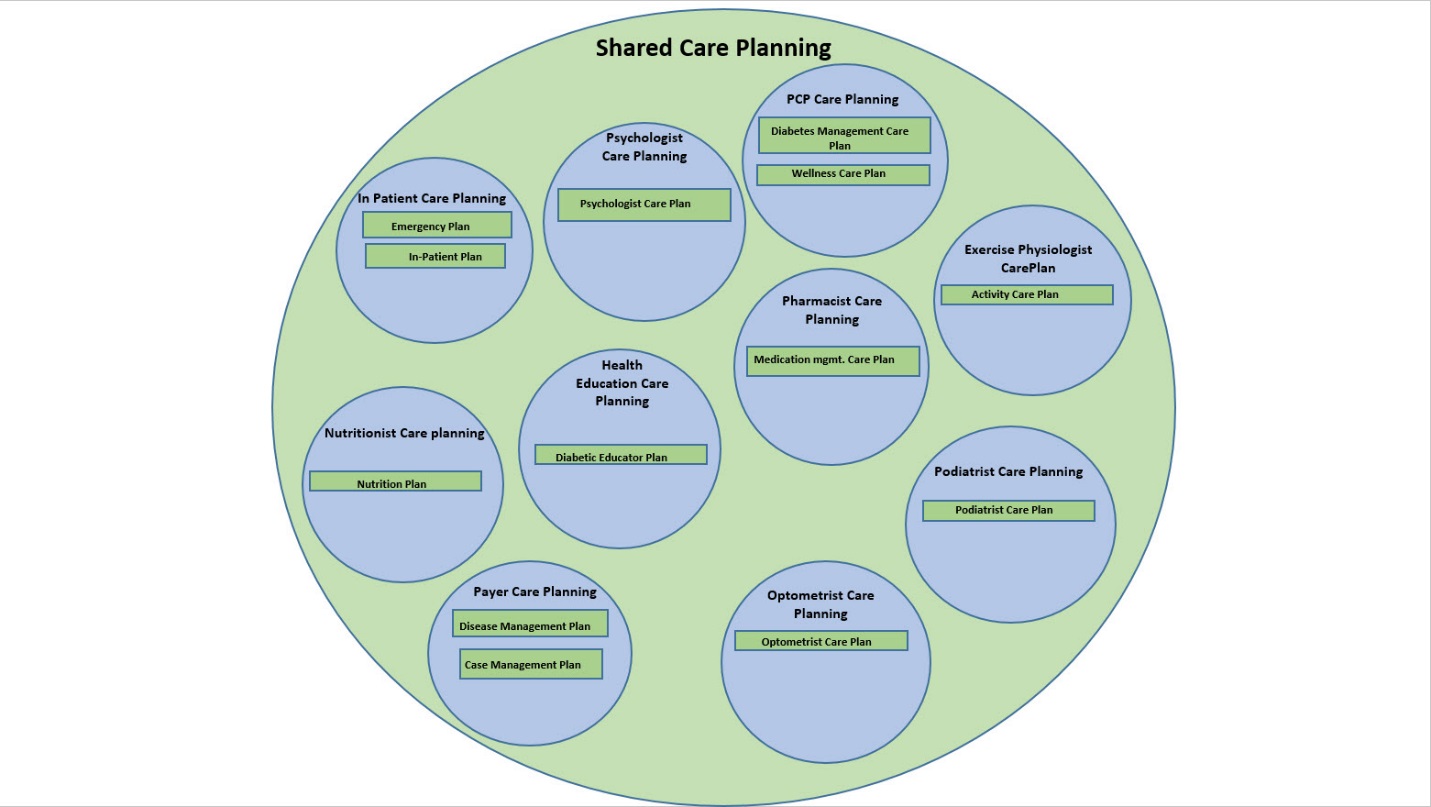
A Content Consumer in Patient Care Coordination might be grouped with a Care Plan Consumer to enable the filtering and display of Care Plan content. A Content Creator might be grouped with a Care Plan Updater to enable the creation or update of clinical content. A Reconciliation Agent might be grouped with a Care Plan Consumer and also with a Care Plan Creator 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.

# Appendices

<Add Appendices to this Profile here. Examples of an appendix include HITSP mapping to IHE Use Cases or long use case definitions.>

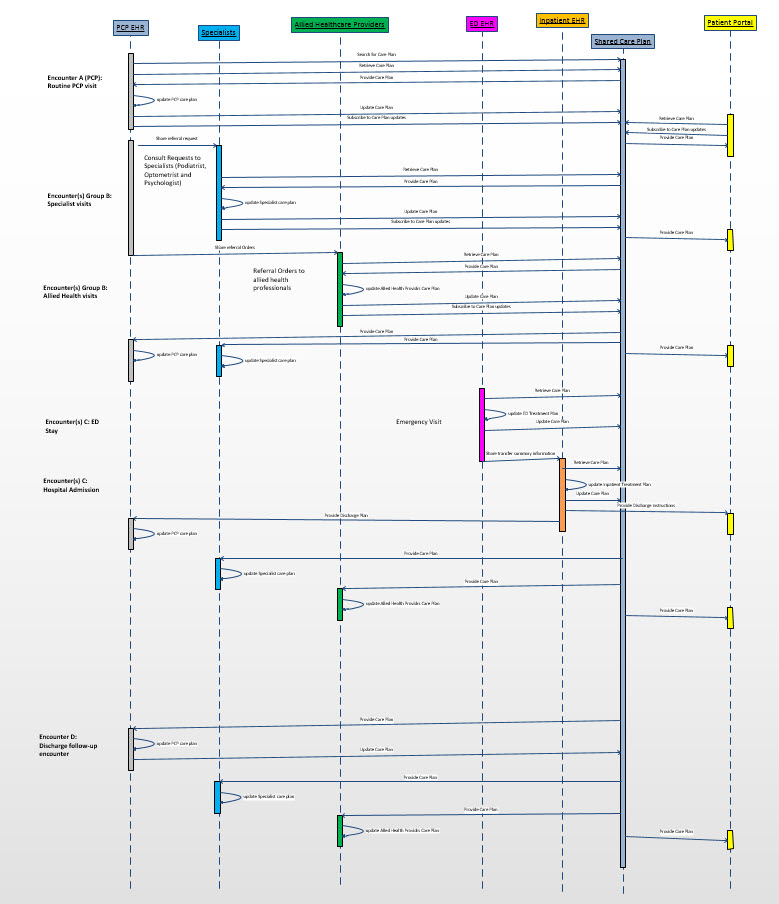
<Volume 1 Appendices are informational only. No “SHALL” language is allowed in a Volume 1 appendix.>

## Appendix A – DCP Structure of Shared Care Planning



## Appendix B – DCP Chronic Condition Use Case

The following diagram depicts the chronic condition use case flow of interactions between care providers EHRs, the patient’s PHR and Dynamic Care Planning.

Volume 2 – Transactions

Add section 3.Y

# 3.Y

## 3.Y1 Update Care Plan [PCC-Y1]

### 3.Y1.1 Scope

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

### 3.Y1.2 Actor Roles

Care Plan Contributor

Actor ABC

Carre Plan Manager

Actor DEF

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

Table 3.Y.2-1: Actor Roles

|  |  |
| --- | --- |
| **Actor:** | Care Plan Contributor |
| **Role:** | The Care Plan Contributor submits a care plan that is updated, or newly created. |
| **Actor:** | Care Plan Manager |
| **Role:** | The Care Plan Manager receives submitted care plans for management as per FHIR Resource Integrity management. |

### 3.Y1.3 Referenced Standards

HL7® Fast Healthcare Information Resources (FHIR®) DSTU 2.0

### 3.Y1.4 Interaction Diagram

Care Plan Contributor

Actor A

Update Care Plan

Message 1

Care Plan Manager

Actor D

#### 3.Y1.4.1 Update Care Plan

The Care Plan Contributor submits a care plan that has been newly created or edited to a Care Plan Manager. The Care Plan Contributor shall be grouped with a Care Plan Consumer in order to perform a Retrieve Care Plan prior to performing the Update Care Plan transaction. The Care Plan Manager handles the FHIR CarePlan Resource according to FHIR Resource integrity.

##### 3.Y1.4.1.1 Trigger Events

A care plan has been newly created or an existing care plan has been edited, and the set of activity for the care plan are to be committed to a Care Plan Manager.

##### 3.Y1.4.1.2 Message Semantics

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

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

Where the body of the transaction contains the CarePlan resource.

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

##### 3.Y1.4.1.3 Expected Actions

The Care Plan Contributor is grouped with a Care Plan Consumer in order to perform a Retrieve Care Plan before updating an existing care plan. When updating an existing care plan, the Care Plan Contributor shall merge changes into a recently received CarePlan, leaving unchanged content unaltered.

If the Care Plan Manager 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. (add FHIR reference)

### 3.Y1.5 Security Considerations

<Description of the transaction specific security consideration; such as use of security profiles.>

#### 3.Y1.5.1 Security Audit Considerations

<This section should identify any specific ATNA security audit event that is associated with this transaction and requirements on the encoding of that audit event. >

##### 3.Y1.5.1.(z) <Actor> Specific Security Considerations

<This section should specify any specific security considerations on an Actor by Actor basis.>

## 3.Y2 Retrieve Care Plan [PCC-Y2]

### 3.Y2.1 Scope

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

### 3.Y2.2 Actor Roles

Care Plan Consumer

Actor ABC

Care Plan Manager

Actor DEF

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

Table 3.Y2.2-1: Actor Roles

|  |  |
| --- | --- |
| **Actor:** | Care Plan Consumer |
| **Role:** | The Care Plan Consumer requests a specific care plan using the CarePlan id |
| **Actor:** | Care Plan Manager |
| **Role:** | The Care Plan Manager returns the requested CarePlan resource, or an error if the requested id does not exist. |

### 3.Y2.3 Referenced Standards

HL7® Fast Healthcare Information Resources (FHIR®) DSTU 2.0

### 3.Y2.4 Interaction Diagram

Care Plan Consumer

Actor A

Retrieve Care Plan

Message 1

Care Plan Manager

Actor D

#### 3.Y2.4.1 Retrieve Care Plan

The Care Plan Consumer retrieves a specific care plan from the Care Plan Manager.

##### 3.Y2.4.1.1 Trigger Events

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

##### 3.Y2.4.1.2 Message Semantics

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

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

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

##### 3.Y2.4.1.3 Expected Actions

The Care Plan Consumer initiates the retrieve request using HTTP or HTTPS GET, and the Care Plan Manager responds according to the [FHIR GET specification](http://hl7.org/fhir/search.html) with the requested care plan or an error message.

### 3.Y2.5 Security Considerations

No PHI are provided with this transaction so there are no additional HTTP or HTTPS GET concerns.

#### 3.Y2.5.1 Security Audit Considerations

<This section should identify any specific ATNA security audit event that is associated with this transaction and requirements on the encoding of that audit event. >

##### 3.Y2.5.1.(z) <Actor> Specific Security Considerations

<This section should specify any specific security considerations on an Actor by Actor basis.>

## 3.Y3 Subscribe to Care Plan Updates [PCC-Y3]

### 3.Y3.1 Scope

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

### 3.Y3.2 Actor Roles

Care Plan Consumer

Actor ABC

Care Plan Manager

Actor DEF

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

Table 3.Y3.2-1: Actor Roles

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

### 3.Y3.3 Referenced Standards

HL7® Fast Healthcare Information Resources (FHIR®) DSTU 2.0

### 3.Y3.4 Interaction Diagram

Care Plan Consumer

Actor A

Subscribe to Care Plan Updates

Message 1

Care Plan Manager

Actor D

#### 3.Y3.4.1 Subscribe to Care Plan Updates

A Care Plan Consumer may choose to receive updates as CarePlan resources are changed by using the Subscribe to Care Plan Updates transaction. Alternatively, a Care Plan Consumer could periodically query for a CarePlan resource history and determine that a Retrieve Care Plan was necessary.

##### 3.Y3.4.1.1 Trigger Events

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

The Subscription criteria, used to trigger updates, may be simple and a subscription would be only for updates to an individual CarePlan resource. However, the criteria may be complex, with chained parameters about references referenced within the CarePlan, such as referenced goals, and then the updates would be triggered by changes to referenced resources or to the CarePlan itself.

##### 3.Y3.4.1.2 Message Semantics

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

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

Where the body of the transaction contains the Subscription resource.

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

##### 3.Y3.4.1.3 Expected Actions

The Care Plan Consumer shall check the response from the Care Plan Manager.

The Care Plan Manager shall check that the Subscription resource meets the constraints defined by this profile.

A rejected Subscription resource results in ….TODO

When a Subscription resource is accepted, the Care Plan Manager 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 Content Consumer.

### 3.Y3.5 Security Considerations

<Description of the transaction specific security consideration; such as use of security profiles.>

#### 3.Y3.5.1 Security Audit Considerations

<This section should identify any specific ATNA security audit event that is associated with this transaction and requirements on the encoding of that audit event. >

##### 3.Y3.5.1.(z) <Actor> Specific Security Considerations

<This section should specify any specific security considerations on an Actor by Actor basis.>

## 3.Y4 Provide Care Plan [PCC-Y4]

### 3.Y4.1 Scope

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

### 3.Y4.2 Actor Roles

Care Plan Manager

Actor ABC

Care Plan Consumer

Actor DEF

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

Table 3.Y4.2-1: Actor Roles

|  |  |
| --- | --- |
| **Actor:** | Care Plan Manager |
| **Role:** | The Care Plan Manager provides updated CarePlan resources to subscribed Care Plan Consumers. |
| **Actor:** | Care Plan Consumer |
| **Role:** | The Care Plan Consumer that has subscribed to care plan updates receives updates of changed CarePlan resources. |

### 3.Y4.3 Referenced Standards

HL7® Fast Healthcare Information Resources (FHIR®) DSTU 2.0

### 3.Y4.4 Interaction Diagram

Care Plan Manager

Actor A

Provide Care Plan

Message 1

Care Plan Consumer

Actor D

#### 3.Y4.4.1 Provide Care Plan

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

##### 3.Y4.4.1.1 Trigger Events

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

##### 3.Y4.4.1.2 Message Semantics

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

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

Where the body of the transaction contains the CarePlan resource.

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

##### 3.Y4.4.1.3 Expected Actions

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

### 3.Y4.5 Security Considerations

<Description of the transaction specific security consideration; such as use of security profiles.>

#### 3.Y4.5.1 Security Audit Considerations

<This section should identify any specific ATNA security audit event that is associated with this transaction and requirements on the encoding of that audit event. >

##### 3.Y4.5.1.(z) <Actor> Specific Security Considerations

<This section should specify any specific security considerations on an Actor by Actor basis.>

## 3.Y5 Search for Care Plan [PCC-Y5]

### 3.Y5.1 Scope

This transaction is used to find a care plan. The Care Plan Consumer searches for a care plan of interest. A care plan located by search may then be retrieved for viewing, shared with a Care Plan Contributor when updates are needed, and the Care Plan Consumer may subscribe to receive updates for the care plan.

### 3.Y5.2 Actor Roles

Care Plan Consumer

Actor ABC

Care Plan Manager

Actor DEF

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

Table 3.Y5.2-1: Actor Roles

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

### 3.Y5.3 Referenced Standards

HL7® Fast Healthcare Information Resources (FHIR®) DSTU 2.0

### 3.Y5.4 Interaction Diagram

Care Plan Consumer

Actor A

Search for Care Plan

Message 1

Care Plan Manager

Actor D

#### 3.Y5.4.1 Search for Care Plan

The Search for Care Plan is implemented through the FHIR search operation using the REST platform constrained to the HTTP or HTTPS POST protocol in order to provide additional protection against the exposure of PHI.

##### 3.Y5.4.1.1 Trigger Events

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

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

##### 3.Y5.4.1.2 Message Semantics

This is a standard FHIR search operation on the CarePlan resource. It SHALL use the HTTP or HTTPS POST protocol in order to provide additional protection of PHI that may be used as a part of the search parameters.

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

See the FHIR [CarePlan resource Search Parameters](http://hl7.org/fhir/careplan.html#search)

##### 3.Y5.4.1.3 Expected Actions

The Care Plan Consumer initiates the search using HTTP or HTTPS POST, and the Care Plan Manager responds according to the [FHIR Search specification](http://hl7.org/fhir/search.html) with zero or more care plans that match the search parameter values supplied with the search message. Specifically, the Care Plan Manager returns a [bundle](http://hl7.org/fhir/bundle.html) as the HTTP Response, where the bundle includes the resources that are the results of the search.

### 3.Y5.5 Security Considerations

The typical FHIR search operation uses HTTP GET with name/value pairs of query parameters and values. Since this might expose PHI, this profile restricts the Search for Care Plan to the use of HTTP or HTTPS POST.

#### 3.Y5.5.1 Security Audit Considerations

<This section should identify any specific ATNA security audit event that is associated with this transaction and requirements on the encoding of that audit event. >

##### 3.Y5.5.1.(z) <Actor> Specific Security Considerations

<This section should specify any specific security considerations on an Actor by Actor basis.>

Appendices

<Detailed cross transaction relationships or mapping details are described in an appendix in Volume 2x. Volume 2 appendices may be informational or normative. Immediately after the title of a Volume 2 appendix, provide a very explicit statement defining whether this new appendix is informative or normative.>

Appendix A – <Appendix A Title>

Appendix A text goes here.

* 1. <Add Title>

Appendix A.1 text goes here

Appendix B – <Appendix B Title>

Appendix B text goes here.

* 1. <Add Title>

Appendix B.1 text goes here.

Volume 2 Namespace Additions

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

<Please explicitly identify all new OIDs, UIDs, URNs, etc., defined specifically for this profile. These will be added to the IHE TF General Introduction namespace appendix when it becomes available. These items should be collected from the sections above, and listed here as additions when this document is published for Trial Implementation. This section will be deleted prior to inclusion into the Technical Framework as Final Text, but should be present for publication of Public Comment and Trial Implementation.>

Volume 3 – Content Modules

<The current version of the supplement template only addresses HL7 v3 CDA Content Modules. All CDA Content Modules will go in Section 6 of Volume 3 of each domain’s Technical Framework document. In the future, this supplement template may have additional sections for DICOM Content Modules (section 7 of Volume 3) and other types of Content Modules (section 8, etc., of Volume 3).

<Please note that prior to the release of the new template set, some domains may have defined CDA Content Modules in Volume 2 (e.g., PCC); however, going forward CDA Content Modules will be defined in Volume 3.>

# 5. Namespaces and Vocabularies

Add to section 5 Namespaces and Vocabularies

<Note that the code systems already defined in the Technical Framework of this domain may (but not required) be replicated here just to aid in the supplement review as a standalone document. Also note that the Section 5 table numbers and names are already defined in the TF Volume 3.>

| codeSystem | codeSystemName | Description |
| --- | --- | --- |
| <oid or uid> | <code system name> | <short description or pointer to more detailed description> |
| <oid or uid> | <code system name> | <short description or pointer to more detailed description> |
| <oid or uid> | <code system name> | <short description or pointer to more detailed description> |

Add to section 5.1.1 IHE Format Codes

| Profile | Format Code | Media Type | Template ID |
| --- | --- | --- | --- |
| <Profile name (profile acronym)> | <urn:ihe: > |  | <oids> |
|  |  |  |  |
|  |  |  |  |

Add to section 5.1.2 IHE ActCode Vocabulary

|  |  |
| --- | --- |
| Code | Description |
| <Code name> | <short one sentence description or reference to longer description (not preferred)> |
| <Code name> | <short one sentence description or reference to longer description (not preferred)> |
| <Code name> | <short one sentence description or reference to longer description (not preferred)> |

Add to section 5.1.3 IHE RoleCode Vocabulary

| Code | Description |
| --- | --- |
| <name of role> | <Short, one sentence description of role or reference to more info.> |
| <name of role> | <Short, one sentence description of role or reference to more info.> |
| <name of role> | <Short, one sentence description of role or reference to more info.> |

# 6. Content Modules

<Authors’ notes: This section of the supplement template is only for HL7 v3 CDA Content Module definitions. Please delete the entire section 6.3.1 if the Content Module is based on DICOM or another standard.

Please note that the template for DICOM or other types of content modules (other than CDA) has not yet been defined, although DICOM modules will eventually go into Volume 3 Section 7; yet another type of content module will go into Volume 3 Section 8, etc.>

## 6.3.1 CDA Document Content Modules

<Authors’ instructions: The understanding of content module grouping, options, and bindings are critical to CDA content modules. It is strongly recommended that the author review the IHE Technical Frameworks General Introduction section 10.3 and the Patient Care Coordination (PCC) Technical Framework Volume 2 sections 3 and 4 (PCC TF-2:3 and 4) prior to continuing. A critical understanding of CDA definitions for cardinality, optionality, coded terminology values, and CDA content module structure, as well as IHE CDA formatting conventions is also necessary. It is strongly recommended that the author is also conversant with the IHE Technical Frameworks General Introduction Appendix E “Conventions”.>

<This CDA Content Module template is divided into four parts:

D – Document –“D” will be replaced with a sub-section number when added to the Technical Framework

H – Header - “H” will be replaced with a sub-section number when added to the Technical Framework

S – Section - “S” will be replaced with a sub-section number when added to the Technical Framework

E – Entry - “E” will be replaced with a sub-section number when added to the Technical Framework

It is expected that the author will replicate each of these four parts as necessary within a supplement.>

All examples should be deleted after the example has been read and understood.>

Add to section 6.3.1.D Document Content Modules

<Authors’ note: replicate section 6.3.1.D for every CDA Document defined in this profile.>

#### 6.3.1.D <Content Module Name (Acronym)> Document Content Module

##### 6.3.1.D.1 Format Code

The XDSDocumentEntry format code for this content is **urn:ihe:xxx:xxx:year** <*e.g., urn:ihe:card:imaging:2011>*

##### 6.3.1.D.2 Parent Template

<The following text is common, so it is left here for consistency. If it is not relevant, then change the text to the accurate information, but retain the formatting convention. Be sure to include all parent templates.>

<e.g., This document is a specialization of the IHE PCC Medical Document template (OID = 1.3.6.1.4.1.19376.1.5.3.1.1.1).>

<e.g., Note: The Medical Document includes requirements for various header elements; name, addr and telecom elements for identified persons and organizations; and basic participations record target, author, and legal authenticator.>

<e.g., This document is a specialization of the HL7 Procedure Note template (OID = 2.16.840.1.113883.10.20.18.1).>

<e.g., Note: This document is not a specialization of the HL7 Basic Diagnostic Imaging Report template due to conflicts with two Procedure Note requirements (format of serviceEvent/effectiveTime, and title on DICOM Catalogue section). When and if these are resolved, an instance may also comply to the Diagnostic Imaging Report.>

##### 6.3.1.D.3 Referenced Standards

<Identify ALL standards referenced by THIS content module.>

All standards which are reference in this document are listed below with their common abbreviation, full title, and link to the standard.

Table 6.3.1.D.3-1: <Document Name> - Referenced Standards

| Abbreviation | Title | URL |
| --- | --- | --- |
| <abbreviated name of standard> | <full name of standard> | <link to standard> |
| <abbreviated name of standard> | <full name of standard> | <link to standard> |
| <e.g., CDA-PN> | <e.g., HL7 Implementation Guide for CDA Release 2: Procedure Note (Universal Realm) (DSTU)> | <e.g., http://www.hl7.org/documentcenter/public/standards/dstu/CDAR2\_IG\_PROCNOTE\_DSTU\_R1\_2010JUL.zip> |

##### 6.3.1.D.4 Data Element Requirement Mappings to CDA

This section identifies the mapping of data between referenced standards into the CDA implementation guide.

<Any required data mappings should be listed in this section (mark NA if not needed). Delete SAMPLE table before publishing.>

*<To complete Table 6.3.1.D.4-1, the author should add the referenced standards abbreviations in the first row/title bar. Add or delete columns and sub-rows as necessary. If this table is more than 8 to 10 rows long, consider putting this table into an appendix of this supplement. A brief sample follows.>*

SAMPLE

| ACC Key Data Element (KDECI) | CDA-DIR |
| --- | --- |
|  | DICOM Object Catalog (5) |
| Administrative  Facility (5)  Data Source (1)  Priority (1)  Accreditation (2)  Insurance (1) | CDA Header  General (10)  Document (19)  Participants (20)  Order (1)  Service Event (12)  Encounter (10) |
| Study Referral Data (2) | Request |
| History and Risk Factors  Vital Signs (4)  Labs (2)  Problems (14)  Chest Pain (5)  Family History (1)  Tobacco Use (1)  Risk Estimates (6) | History |

*>*

Table 6.3.1.D.4-1: < Document Name Acronym> - Data Element Requirement Mappings to CDA

| Clinical Data Element <source> | < this document acronym> |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

<**Very important note:** From this point forward, the author may select one of two formats to represent the same data. The first format is a tabular format as was implemented in the Cardiology CIRC profile. The advantages to this format include that large amounts of data may be represented more concisely and that it is sometimes visually easier to determine if any information is missing. The second format is more similar to the current Consolidated CDA (C-CDA format). This format may be more verbose but may also be more recognizable to implementers familiar with other HL7 CDA Implementation Guides and may be easier for implementers to design and test with discrete conformance assertions.

The format that you select must be consistent through this supplement (do not mix and match formats). The format changes are identified by ###Begin Tabular format ###End CDA Tabular format and ###Begin Discrete Conformance format ###End Discrete Conformance format. Delete all references to the format which was not selected between the hash marks. Also, a domain may decide on a single format for all new supplements within that domain.>

##### 6.3.1.D.5 <Content Module Name (Acronym, if applicable)> Document Content Module Specification

This section specifies the header, section, and entry content modules which comprise the <Content Module Name (Acronym)> Document Content Module, using the Template ID as the key identifier.

Sections that are used according to the definitions in other specifications are identified with the relevant specification document. Additional constraints on vocabulary value sets, not specifically constrained within the section template, are also identified.

<Authors’ note: A critical understanding of CDA definitions for cardinality, optionality, coded terminology values, and CDA content module structure, as well as IHE CDA formatting conventions is necessary. It is strongly recommended that the author is also conversant with the IHE Technical Frameworks General Introduction Appendix E “Conventions”. >

###Begin Tabular format - Document

**Table 6.3.1.D.5-1 <Content Module Name (Acronym)> Document Content Module Specification**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Template Name | | <Template Name (Acronym, if applicable)> | | | |
| Template ID | | <oid/uid> | | | |
| Parent Template | | <Parent Template Name oid/uid [Domain Reference]>  <Parent Template Name oid/uid [Domain Reference]> <delete 2nd/additional parent templates if not applicable> | | | |
| General Description | | <short textual description> | | | |
| Document Code | | <MAY or SHALL> be < code/oid/uid, Code System, “Value Set name”> | | | |
| Opt and Card | Condition | Header Element or Section Name | Template ID | Specification Document | Vocabulary Constraint |
| **Header Elements** | | | | | |
| x [?..?] |  | <Header Element name> | <oid> | <reference to section of TF or supplement document for details> | <reference to section of TF or supplement document for explanation, if applicable> |
| <e.g., R [0..1] |  | Order | 1.3.6.1.4.1.19376.1.4.1.3.2 | CARD TF-3 6.3.2.H> |  |
| <e.g., M [1..1] |  | Patient Demographics | 1.3.6.1.4.1.19376.1.4.1.3.3 | CARD TF-3 6.3.2.H | CARD TF-3 6.3.1.D.5.1> |
| Sections | | | | | |
| x [?..?] |  | <Section name> | <oid> | <reference to section of TF or supplement document for details> | <reference to section of TF or supplement document for explanation, if applicable> |
| <e.g., M [1..1] |  | Medications | 1.3.6.1.4.1.19376.1.5.3.1.3.19 | PCC TF-2 | CARD TF-3 6.3.1.D.5.2> |
| <e.g., R [1..1] |  | Coded Social History | 1.3.6.1.4.1.19376.1.5.3.1.3.16.1 | CARD TF-3 6.3.3.S | CARD TF-3 6.3.1.D.5.3> |
| <e.g., O [0..1] |  | Physical Examination | 2.16.840.1.113883.10.20.2.10 | CDA-PN> |  |
| <e.g., C [1..1] | CARD TF-3 6.3.1.D.5.4 | DICOM Object Catalog | 1.3.6.1.4.1.19376.1.4.1.2.15 | CDA-PN> |  |

<For each (1:1 correspondence) Vocabulary Constraint or Condition listed in the table above, create an additional section/reference below. Add the Header Element or Section Name and then select either “Vocabulary Constraint” or “Condition” and delete the other word.>

<Note that every Conditional element MUST have an explanatory paragraph referenced below.>

<It is required to use SHALL, SHOULD, or MAY in each definition as defined in Appendix E of the Technical Frameworks General Introduction.>

###### 6.3.1.D.5.1 <Header Element or Section Name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., The value for serviceEvent / code SHOULD be drawn from value set 1.3.6.1.4.1.19376.1.4.1.5.2 Cardiac Imaging Procedures.>

###### 6.3.1.D.5.2 <Header Element or Section Name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., Within the Medications section the Content Creator SHALL be able to create a Medications entry (templateID 1.3.6.1.4.1.19376.1.5.3.1.4.7 [PCC TF-2]) for each of the cardiac relevant medications identified in Value Set 1.3.6.1.4.1.19376.1.4.1.5.14 Cardiac Drug Classes, encoding the value in substanceAdministration/consumable/ManufacturedProduct/Material/code.>

###### 6.3.1.D.5.3 <Header Element or Section Name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., Within the Allergies and Other Adverse Reactions section the Content Creator SHALL be able to create an Allergies and Intolerances Concern Entry (templateID 1.3.6.1.4.1.19376.1.5.3.1.4.5.3 [PCC TF-2]) for each of the cardiac imaging agent classes identified in Value Set 1.3.6.1.4.1.19376.1.4.1.5.10 Contrast Agents Classes for Adverse Reactions, encoding the value in observation/participant/participantRole/playingEntity/code.>

###### 6.3.1.D.5.4 <Header Element or Section Name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., A DICOM Object Catalog Section SHALL be present if other document sections contain references to DICOM SOP Instances (images, structured report measurements, or other information objects), and MAY be present otherwise.>

###End Tabular Format - Document

###Begin Discrete Conformance Format - Document

*<Delete the example information contained in the material below (from Cardiology CRC)>*

<e.g., The complete set of body constraints, including those from C-CDA section/entry definitions are:

1. **SHALL** contain exactly one [1..1] **component** (CONF:9588).
   1. A Cath Report Content SHALL have a structuredBody (CONF:9589-CRC).
      1. A Cath Report Content SHALL conform to CDA Level 3 (structuredBody containing sections that contain a narrative block and coded entries). In this template (templateId 2.16.840.1.113883.10.20.22.1.6), coded entries are optional. (CONF:9590-CRC).
   2. The component/structuredBody SHALL conform to the section constraints below (CONF:9595-CRC).
      1. Each **section** SHALL have a **title** and the **title** SHALL not be empty (CONF:9937).>

<The following table shows relationships among the templates in the body of a Cath Report Content document.>

Table 6.3.1.D.5-1 <Content Module Name (Acronym)> Document Content Module Specification

| Template Title | Opt and Card | Condition | Template Type | templateId | Vocabulary  Constraints |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Delete this row and the example information in the rows below. | | | | | |
| <e.g., Cath Report Content | R[1..1] |  | document | 1.3.6.1.4.1.19376.1.4.1.1.2 | 6.3.1.D.5.1 |
| Document Summary-Cardiac Section | O[0..1] |  | section | 1.3.6.1.4.1.19376.1.4.1.2.16 |  |
| Medical History - Cardiac Section | R[1..1] |  | section | 1.3.6.1.4.1.19376.1.4.1.2.17 |  |
| Procedure Activity Observation | O[0..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.13 |  |
| Procedure Activity Procedure | O[0..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.14 |  |
| Problem Observation - Cardiac | O[0..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.4 |  |
| Age Observation | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.31 |  |
| Health Status Observation | O[0..1] | 6.3.1.D.5.2 | entry | 2.16.840.1.113883.10.20.22.4.5 |  |
| Problem Status | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.6 |  |
| Severity Observation | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.8 |  |
| Allergies Section | R[1..1] |  | section | 2.16.840.1.113883.10.20.22.2.6 |  |
| Allergy Problem Act | O[0..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.30 |  |
| Allergy Observation | R[1..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.7 |  |
| Allergy Status Observation | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.28 |  |
| Reaction Observation | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.9 |  |
| Severity Observation | O[0..1] |  | entry | 2.16.840.1.113883.10.20.22.4.8 |  |
| Family History – Cardiac Section | O[0..1] |  | section | 1.3.6.1.4.1.19376.1.4.1.2.18 |  |
| Problem Observation - Cardiac | O[0..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.4 |  |
| Social History Section | O[0..1] |  | section | 2.16.840.1.113883.10.20.22.2.17 |  |
| Physical Exam Section | R[1..1] |  | section | 2.16.840.1.113883.10.20.2.10 |  |
| Vital Signs | R[1..1] |  | section | 2.16.840.1.113883.10.20.22.2.4.1 |  |
| Vital Signs Organizer | R[1..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.26 |  |
| Vital Sign Observation | R[2..\*] |  | entry | 2.16.840.1.113883.10.20.22.4.27> |  |

<For each (1:1 correspondence) Vocabulary Constraint or Condition listed in the table above, create an additional section/reference below. Add the Header Element or Section Name and then select either “Vocabulary Constraint” or “Condition” and delete the other word.>

<Note that every Conditional element MUST have an explanatory paragraph referenced below.>

<It is required to use SHALL, SHOULD, or MAY in each definition as defined in Appendix E of the Technical Frameworks General Introduction.>

###### 6.3.1.D.5.1 <Template Title name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., The value for serviceEvent / code SHOULD be drawn from value set 1.3.6.1.4.1.19376.1.4.1.5.2 Cardiac Imaging Procedures.>

###### 6.3.1.D.5.2 <Template Title name> <Vocabulary Constraint or Condition>

<add vocabulary constraint or condition definition>

<remove example below prior to public comment:>

<e.g., Within the Medications section the Content Creator SHALL be able to create a Medications entry (templateID 1.3.6.1.4.1.19376.1.5.3.1.4.7 [PCC TF-2]) for each of the cardiac relevant medications identified in Value Set 1.3.6.1.4.1.19376.1.4.1.5.14 Cardiac Drug Classes, encoding the value in substanceAdministration/consumable/ManufacturedProduct/Material/code.>

###End Discrete Conformance Format - Document

##### 6.3.1.D.6 <Document and Acronym Name> Conformance and Example

<This section is the same, independent of whether the tabular or discrete conformance formats were chosen.>

<Describe the conformance of this Document in terms of inheritance from other template(s). Use the OIDs of those templates for clarity. A complete example of this document MUST be placed on the IHE ftp server as part of the Public Comment process of a Content Module supplement. WHERE ON THE FTP SERVER? The file naming convention for these files should be PCC\_DCP\_CDA-sample\_<version number>.xml>.

CDA Release 2.0 documents that conform to the requirements of this document content module shall indicate their conformance by the inclusion of the <templateId> XML elements in the header of the document.

A CDA Document may conform to more than one template. This content module inherits from the *<template name(s) and template ID(s)>* <e.g., CDA-PN, 2.16.840.1.113883.10.20.18.1, and the PCC TF Medical Document, 1.3.6.1.4.1.19376.1.5.3.1.1.1, content modules> and so must conform to the requirements of those templates as well this document specification, *<templateName and templateID>* <e.g., Cardiac Imaging Report template, 1.3.6.1.4.1.19376.1.4.1.1.1>.

A complete example of the <Content Module Name and Acronym> Document Content Module is available on the IHE ftp server at: <indicate location here>.

Note that this is an example and is meant to be informative and not normative. This example shows the <templateId (OIDs)> elements for all of the specified templates.

Add to section 6.3.2 Header Content Modules

## 6.3.2 CDA Header Content Modules

#### 6.3.2.H <Header Element Module Name> Header Content Module

<Replicate this section/table for as many new Header Elements are added in this supplement.>

###Begin Tabular Format - Header

<Either the Parent Template OR the Header Element may constrain this Header Element, not both. One should be “N/A”.>

<The values in the column “Participations and Act Relationships” must come from the defined terms in the CDA schema. See the IHE Technical Frameworks General Introduction, Appendix E, CDA Conventions.>

**Table 6.3.2.H-1 <Content Module Name (Acronym)> Header**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Template Name | | <Template Name> | | | | |
| Template ID | | <oid> | | | | |
| Parent Template | | <Name and oid of parent template or N/A> | | | | |
| Header Element | | <CDA Header Elements participant or componentOf or N/A>  e.g., componentOf / encompassingEncounter | | | | |
| General Description | | <short textual description. Short paragraph at most.> | | | | |
| Opt and Card | Participation/ Act Relationship | Description | Template | Specification Document | Vocabulary Con-straint |
| x [?..?] | <select from defined part /act relationship terms; App E> | <Header Content description name> | <oid> | <document reference, if applicable> | <Vocab constraint, if applicable> |
|  |  |  |  |  |  |
| <e.g., R [1..1] | RESP | Responsible Party |  | CARD TF-3: 6.3.2.H.1> |  |
| <e.g., R [1..1] | LOC | Health Care Facility |  | CARD TF-3: 6.3.2.H.2> |  |
| <e.g., O [0..1] | REF | Referring Provider |  | CARD TF-3: 6.3.2.H.3> |  |
| <e.g., C [0..1] | ATND | Physician of Record | 2.16.840.1.113883.10.20.6.2.2 | CDA-DIR | CARD TF-3: 6.3.2.H.4> |

*<For each Vocabulary Constraint or Specification Document listed in the table above, create an additional section/reference below. Add the Description Name and then select either “Vocabulary Constraint” or “Spec Document” and delete the other word.>*

*<It is required to use SHALL, SHOULD, or MAY in each definition as defined in Appendix E of the Technical Frameworks General Introduction.>*

*<Also note that the Spec Document link can be a link to an outside document/reference. Do not replicate (cut and paste) sections of other documents into this document since they could become out of sync.>*

##### 6.3.2.H.1 <Description Name> <e.g., Responsible Party> <Specification Document *or* Vocabulary Constraint>

<Describe constraints or other info. This specification may include more information on conditions or cardinality, additions elements, data mappings, or data types, or other information.>

<Delete the example below prior to publishing for Public Comment.>

<e.g., The responsible party element represents only the party responsible for the encounter, not necessarily the entire episode of care.>

<e.g., The responsibleParty element MAY be present. If present, responsibleParty/ assignedEntity SHALL have at least one assignedPerson or representedOrganization element present.>

<e.g., Note: This is identical to CDA-DIR CONF-DIR-67>

<e.g., responsibleParty assignedEntity id SHALL be present with the responsible physician’s identifier.>

<e.g., assignedEntity code SHOULD be present with the responsible physician’s specialty.>

<e.g., assignedEntity MAY include an accreditation element from the **urn:ihe:card** namespace to provide physician accreditation status.>

<e.g., The accreditation element SHALL use the character string (ST) data type.

The accreditation element SHALL appear after the defined elements of the Role class, and before any scoper or player entity elements.>

<e.g., assignedEntity assignedPerson name SHALL be present with the responsible physician’s name.>

##### 6.3.2.H.2 <Description Name> <Specification Document OR Vocabulary Constraint>

##### 6.3.2.H.3 <Description Name> <Specification Document OR Vocabulary Constraint>

###End Tabular Format – Header

###Begin Discrete Conformance Format – Header

The header for the <*Document Name*> document shall support the following header constraints as noted in this section. Note that this content profile is realm agnostic. These header constraints are based on the C-CDA header constraints but all references to US Realm specific types have been removed.

<An example is provided to demonstrate the desired consistent use and format. Delete this example prior to publication for Public Comment. The statement must be numbered, begin with SHALL/SHOULD/MAY, identify the cardinality using [n..n], the name of the element, and a subitem which describes the value or source of the information.>

<e.g.,

1. **SHALL** contain exactly one [1..1] **typeId** (CONF:5361).
   1. This typeId **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.1.3" (CONF:5250).
   2. This typeId **SHALL** contain exactly one [1..1] **@extension**="POCD\_HD000040" (CONF:5251).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:5252) such that it
   1. **SHALL** contain exactly one [1..1] **@root**="1.3.6.1.4.1.19376.1.4.1.1.2" for the Cath Report Content document template (CONF:CRC-xxx).
3. **SHALL** contain exactly one [1..1] **id** (CONF:5363).
   1. This id SHALL be a globally unique identifier for the document (CONF:9991).
4. **SHALL** contain exactly one or two [1..2] **code** (CONF:5253-CRC).
   1. **SHALL** be selected from ValueSet ProcedureNoteDocumentTypeCodes 2.16.840.1.113883.11.20.6.1 DYNAMIC (CONF:8497). Either or both of the following codes should be included:

|  |  |  |  |
| --- | --- | --- | --- |
| Value Set: ProcedureNoteDocumentTypeCodes 2.16.840.1.113883.11.20.6.1 DYNAMIC  Code System: LOINC 2.16.840.1.113883.6.1 | | | |
| LOINC Code | Type of Service ‘Component’ | Setting ‘System’ | Specialty/Training/Professional Level ‘Method\_Type’ |
| 18745-0 | Study report | Heart | Cardiac catheterization |
| 34896-1 | Interventional procedure note | {Setting} | Cardiology |

1. **SHALL** contain exactly one [1..1] **title** (CONF:5254).
   1. Can either be a locally defined name or the display name corresponding to clinicalDocument/code (CONF:5255).>

###End Discrete Conformance Format – Header

## 6.3.3 CDA Section Content Modules

Add to section 6.3.3.10 Section Content Modules

<Replicate this section/table for as many new Sections as are added in this supplement.>

<Authors’ notes: Section naming instructions: If a Section is a specialization of an existing Section, begin the name with the original section name. For example, if Cardiology is creating a specialization of the “Medical History Section”, the new section should be named “Medical History Section – Cardiac” and not “Cardiac Medical History Section”.>

###Begin Tabular Format - Section

<Delete examples in rows of table below prior to Public Comment.>

#### 6.3.3.10.S <Section Module Name> - Section Content Module

Table 6.3.3.10.S-1 <Section Module Name> Section

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Template Name | | <exact same Section Module name listed above> | | | |
| Template ID | | <oid> | | | |
| Parent Template | | <Parent Template Name oid/uid [Domain - Reference]> | | | |
| General Description | | <brief textual description, one paragraph> | | | |
| Section Code | | <Code, Code Scheme, “Section Code Name”> | | | |
| Author | | <If inherited from encompassing content module use “current recordTarget”, unless otherwise specified. Role and entity must be specified if not inherited. > | | | |
| Informant | | <If inherited from encompassing content module use “current recordTarget”, unless otherwise specified.> | | | |
| Subject | | <If inherited from encompassing content module use “current recordTarget”, unless otherwise specified.> | | | |
| Opt and Card | Condition | Data Element or  Section Name | Template ID | Specification Document | Vocabulary  Constraint |
| Subsections | | | | | |
| x [?..?] | <ref or link to cond section below, if applicable> | <name of subsection> | <oid> | <reference or link to specification document location, if applicable> | <reference or link to vocab constraint, if applicable> |
| <e.g., O [0..1] |  | Active Problems | 1.3.6.1.4.1.19376.1.5.3.1.3.6 | PCC TF-3> |  |
| <e.g., O [0..1] |  | History of Present Illness | 1.3.6.1.4.1.19376.1.5.3.1.3.4 | PCC TF-3> |  |
| <e.g., O [0..1] |  | History of Past Illness | 2.16.840.1.113883.10.20.2.9 | CDA-PN> |  |
| Entries | | | | | |
| x [?..?] | <ref or link to cond section below, if applicable> | <name of entry> | <oid> | <reference or link to specification document location, if applicable> | <reference or link to vocab constraint, if applicable> |
| <e.g., C [1..\*] | CARD TF-3 6.3.3.x.S.1 | Problem Concern Entry | 1.3.6.1.4.1.19376.1.5.3.1.4.5.2 | PCC TF-3> |  |
| <e.g., C [1..1] |  | Diabetes Problem Entry | 1.3.6.1.4.1.19376.1.4.1.4.1 | CARD TF-3 6.3.3.1> |  |
| <e.g., C [1..1] |  | Angina Problem Entry | 1.3.6.1.4.1.19376.1.4.1.4.2 | CARD TF-3 6.3.3.1> |  |
| <e.g., C [1..\*] | CARD TF-3 6.3.3.x.S.1 | Simple Observation | 1.3.6.1.4.1.19376.1.5.3.1.4.13 | PCC TF-3 | CARD TF-3 6.3.3.x.S.2> |

##### 6.3.3.10.S.1 <Data Element or Section Name> <Condition, Specification Document, or Vocabulary Constraint>

<Describe constraints; refer to other Specification Document, condition, or other info. This specification may include more information on conditions or cardinality, additions elements, data mappings, or data types, or other information.>

<Delete the example below prior to publishing for Public Comment.>

<e.g., The Medical History Section SHALL contain at least one Problem Concern Entry or at least one Simple Observation.

Note: Problems MAY be recorded directly in the Medical History Section, or in one or more subsections such as Active Problems, History of Present Illness, or History of Past Illness.>

##### 6.3.3.10.S.2 <Data Element or Section Name> <Condition, Specification Document, or Vocabulary Constraint>

<Describe constraints, refer to other Specification Document, condition, or other info. This specification may include more information on conditions or cardinality, additions elements, data mappings, or data types, or other information.>

<Delete the example below prior to publishing for Public Comment.>

<e.g., A Content Creator SHALL be able to include a Problem Concern Entry for each of the conditions identified in Value Set [1.3.6.1.4.1.19376.1.4.1.5.4 Cardiac Problems/Concerns](#_1.3.6.1.4.1.19376.1.4.1.5.4__Cardia), encoding the value in act/entryRelationship/observation/code.

A Problem Concern Entry for {73211009, SNOMED CT, diabetes} SHALL use the specialized Diabetes Problem Entry (OID = 1.3.6.1.4.1.19376.1.4.1.4.1).

A Problem Concern Entry for {194828000, SNOMED CT, angina} SHALL use the specialized Angina Problem Entry (OID = 1.3.6.1.4.1.19376.1.4.1.4.2).>

##### 6.3.3.10.S.3 <Data Element or Section Name> <Condition, Specification Document, or Vocabulary Constraint>

###End Tabular Format – Section

###Begin Discrete Conformance Format – Section

<An example is provided to demonstrate the desired consistent use and format. Delete this example prior to publication for Public Comment. The statements must be numbered, begin with SHALL/SHOULD/MAY identify the cardinality using [n..n], the name of the element, and a subitem which described the value or source of the information.>

<e.g.,

#### 6.3.3.10.S Medical History - Cardiac Section 11329-0

[section: templateId 1.3.6.1.4.1.19376.1.4.1.2.17(open)]

[section: templateId 2.16.840.1.113883.10.20.22.2.39(open)]

The Medical History section describes all aspects of the medical history of the patient even if not pertinent to the current procedure, and may include chief complaint, past medical history, social history, family history, surgical or procedure history, medication history, and other history information. The history may be limited to information pertinent to the current procedure or may be more comprehensive. The history may be reported as a collection of random clinical statements or it may be reported categorically. Entries for History of Past Illness and History of Present Illness have been consolidated into this section. Social and Family History are discussed in their own sections. For this Cath Report Content profile, this section may also contain history about specific relevant problems as problem observations.

In the event that the patient was transferred from another facility where there was a problem indication that the patient was determined to need a cath procedure, this will be noted as a problem observation in this medical history section as text in the narrative for now until there is a code representing this.

1. SHALL contain exactly two [2..2] templateId (CONF:8160) such that it
   1. SHALL contain exactly one [1..1] @root="1.3.6.1.4.1.19376.1.4.1.2.17" (CONF:10403-CRC).
   2. SHALL contain exactly one [1..1] @root="2.16.840.1.113883.10.20.22.2.39" (CONF:10403).
2. SHALL contain exactly one [1..1] code/@code="11329-0" Medical (General) History (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:8161).
3. SHALL contain exactly one [1..1] title (CONF:8162).
4. SHALL contain exactly one [1..1] text (CONF:8163).
5. MAY contain zero or more [0..\*] entry (CONF:CRC-xxx) such that it
   1. SHALL contain exactly one [1..1] Problem Observation - Cardiac (1.3.6.1.4.1.19376.1.4.1.4.9) (CONF:CRC-xxx).
6. **MAY** contain zero or more [0..\*] **entry** (CONF:CRC-xxx) such that it
   1. **SHALL** contain exactly one [1..1] **Procedure Activity Observation** (2.16.840.1.113883.10.20.22.4.13) (CONF:CRC-xxx).
7. MAY contain zero or more [0..\*] entry (CONF:CRC-xxx) such that it
   1. SHALL contain exactly one [1..1] Procedure Activity Procedure (2.16.840.1.113883.10.20.22.4.14) (CONF:CRC-xxx).

<section>

<templateId root="1.3.6.1.4.1.19376.1.4.1.2.17"/>

<templateId root="2.16.840.1.113883.10.20.22.2.39"/>

<code code="11329-0" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="MEDICAL (GENERAL) HISTORY"/>

<title>MEDICAL (GENERAL) HISTORY</title>

<text>

<list listType="ordered">

<item>Patient has had a recent issue with chest pain that does not seem to be related to any particular cause.</item>

<item>Previous concerns of heart disease were actually related to other causes.</item>

<item>Patient had recent weight gain due to sedentary lifestyle and

new job.</item>

</list>

</text>

<entry>

<observation classCode=”OBS” moodCode=”EVN”>

<templateId root=”1.3.6.1.4.1.19376.1.4.1.9”/>

<id root=”xyz”/>

…

</observation>

</entry>

</entry>

<observation classCode="PROC" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.4.14"/>

<!-- Procedure Activity Procedure template -->

...

</observation>

</entry>

</entry>

<observation classCode="OBS" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.4.13"/>

<!-- Procedure Activity Observation template -->

...

</observation>

</entry>

</section>

Figure Example: Example Section example>

###End Discrete Conformance Format - Section

## 6.3.4 CDA Entry Content Modules

Add to section 6.3.4.E Entry Content Modules

#### 6.3.4.E <Entry Content Module Name> Entry Content Module

<Replicate the Entry Content Module as many times as needed for this supplement.>

<If this entry has subsidiary/child entries, these entries are referenced in the table below. Create one row for each subsidiary/child entry.>

### Begin Tabular Format - Entry

Table 6.3.4.E-1 <Entry Module Name> Entry

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Template Name | | | | <Template name> | | | | | | |
| Template ID | | | | <oid> | | | | | | |
| Parent Template | | | | <Parent Template Name oid/uid [Domain - Reference]> | | | | | | |
| General Description | | | | <brief textual description, one paragraph> | | | | | | |
| Class/Mood | | Code | | | | Data Type | Value | | | |
| <use one of defined Class/Mood see General Intro App E> | | <Code, code system, code meaning e.g., 18118-0, LOINC, “LV Wall Motion Segmental Findings”> | | | | <Applies only if the Class/ Mood is OBS/EVN. Enumerated in HL7 V3 Data Types R1.> | <If the Class/Mood is OBS/EVN, then this Value field is the constraint on Observation Value. Otherwise, this field should be “N/A”.> | | | |
| Opt and Card | entryRelationship | | Description | | Template ID | | | Specification Document | Vocabulary Constraint |
| <e.g., x [?..?]> |  | | Simple Observation | | oid | | | reference to document e.g., PCC-TF-3 | <reference/link to definition of constraint, often in next paragraph/ subsection e.g., CARD TF-3 6.3.3.4.9.10> |
| <e.g., C [1..\*] | COMP | | Simple Observation | | 1.3.6.1.4.1.19376.1.5.3.1.4.13 | | | PCC TF-2 | CARD TF-3 6.3.4.E.1 (Wall morphology)> |
| <e.g., O [0..1] | COMP | | Simple Observation | | 1.3.6.1.4.1.19376.1.5.3.1.4.13 | | | PCC TF-2 | CARD TF-3 6.3.4.E.2 (Viability)> |
| <e.g., O [0..1] | COMP | | observationMedia Entry | | 1.3.6.1.4.1.19376.1.4.1.4.7 | | | CARD TF-3 6.3.1.6> |  |

##### 6.3.4.E.1 Simple Observation (wall motion) Vocabulary Constraints

<Describe constraints, refer to other Specification Document, condition, or other info. This specification may include more information on conditions or cardinality, additions elements, data mappings, or data types, or other information.>

<Can be in a tabular format or textual description.>

<Delete the example below prior to publishing for Public Comment.>

<e.g., The conditional entries specified in this table SHALL be present based on the exam type as specified in the CDA Header in the documentationOf / serviceEvent / code element.>

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Opt and Card | Condition | observation/code | Data Type | Unit of Measure | Value Set |
| <e.g., C [1..\*] | <Identifies the predicate and the if the predicate evaluates as true, then indicate whether mandatory, required or optional  e.g., Required if “exam type” is “LVG” (left ventriculogram)>  R: LVG | 60797005, SNOMED CT, “Cardiac Wall Motion”  <”+” = May be post-coordinated with priorityCode, methodCode, targetSiteCode . See HL7 V3. Include a value directly or include a link to a value set, if applicable.>  e.g., + targetSiteCode from 1.2.840.10008.6.1.219 DICOM CID 3718 Myocardial Wall Segments in Projection | CD | n/a unless the Data Type is PQ or IVL<PQ> | <include link to value set, e.g., 1.3.6.1.4.1.19376.1.4.1.5.20 Wall motion  OR, include value directly as e.g.,  <The Observation Value may also have a post-coordinated interpretation such as:>  +interpretationCode  +negationInd > |
| <e.g., C [1..\*] | R: SPECT, TTE, TEE, CMR  O:CCTA | 60797005, SNOMED CT, “Cardiac Wall Motion”  + targetSiteCode from 1.2.840.10008.6.1.218 DICOM CID 3717 Myocardial Wall Segments | CD | n/a | 1.3.6.1.4.1.19376.1.4.1.5.20 Wall motion > |

##### 6.3.4.E.2 Simple Observation (wall morphology) Constraints

<Describe constraints; refer to other Specification Document, condition, or other info. This specification may include more information on conditions or cardinality, additions elements, data mappings, or data types, or other information.>

<Can be in a tabular format or textual description.>

<Delete the example below prior to publishing for Public Comment.>

<e.g., The conditional entries specified in this table SHALL be present based on the exam type as specified in the CDA Header in the documentationOf / serviceEvent / code element.>

| Opt and Card | Condition | observation/code | Data Type | Unit of Measure | Value Set |
| --- | --- | --- | --- | --- | --- |
| <e.g., C [1..\*] | R: Cath with LVG | 72724002, SNOMED CT, “Morphology findings”  + targetSiteCode from 1.2.840.10008.6.1.219 DICOM CID 3718 Myocardial Wall Segments in Projection | CD | n/a | 1.3.6.1.4.1.19376.1.4.1.5.19 Myocardium Assessments> |
| <e.g., C [1..\*] | R: SPECT, echo, CMR  O:CCTA | 72724002, SNOMED CT, “Morphology findings”  + targetSiteCode from 1.2.840.10008.6.1.218 DICOM CID 3717 Myocardial Wall Segments | CD | n/a | 1.3.6.1.4.1.19376.1.4.1.5.19 Myocardium Assessments> |

<e.g., The observation/value MAY be a null flavor.>

<e.g., morphological assessment observation MAY have a subsidiary Severity observation (templateID 1.3.6.1.4.1.19376.1.5.3.1.4.1 [PCC TF-2]).>

### End Tabular Format - Entry

### Begin Discrete Conformance Format – Entry

<An example is provided to demonstrate the desired consistent use and format. Delete this example prior to publication for Public Comment. The statements must be numbered, begin with SHALL/SHOULD/MAY identify the cardinality using [n..n], the name of the element, and a subitem which described the value or source of the information.>

##### <e.g.,6.3.4.E Result Observation - Cardiac

[observation: templateId 1.3.6.1.4.1.19376.1.4.1.4.16 (open)]

A result observation is a clinical statement that a clinician has noted during the Cath Lab procedure. This entry is used to describe the specific procedure findings that were observed during the specific Cath Lab procedure.

The specific result observations are defined in 1.3.6.1.4.1.19376.1.4.1.5.38 Procedure Findings Constraints/ValueSet.

1. SHALL contain exactly one [1..1] @classCode="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:7130).
2. SHALL contain exactly one [1..1] @moodCode="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:7131).
3. SHALL contain exactly one [1..1] templateId (CONF:7136) such that it
   1. SHALL contain exactly one [1..1] @root="2.16.840.1.113883.10.20.22.4.2" (CONF:9138).
4. SHALL contain at least one [1..\*] id (CONF:7137).
   1. The first id represents this specific globally unique result observation.
   2. The second id represents the lesion ID which should be an assigned numeric code that identifies lesions within a specific targetSiteCode.This lesion ID is used to link lesion specific data in this Result Observation – Cardiac with Procedure Activity Procedure - Cardiac.
5. SHALL contain exactly one [1..1] code (CONF:7133).
   1. SHOULD be from LOINC (CodeSystem: 2.16.840.1.113883.6.1) or SNOMED CT (Value Set: 1.3.6.1.4.1.19376.1.4.1.5.38) (CONF:7166-CRC).
6. SHOULD contain zero or one [0..1] text (CONF:7138).
   1. The text, if present, SHOULD contain zero or one [0..1] reference/@value (CONF:7139).
      1. This reference/@value SHALL begin with a '#' and SHALL point to its corresponding narrative (using the approach defined in CDA Release 2, section 4.3.5.1) (CONF:9119).
7. SHALL contain exactly one [1..1] statusCode="completed" Completed (CodeSystem: ActStatus 2.16.840.1.113883.5.14) (CONF:7134).
8. SHALL contain exactly one [1..1] effectiveTime (CONF:7140).
   1. represents clinically effective time of the measurement, which may be when the measurement was performed (e.g., a BP measurement), or may be when sample was taken (and measured some time afterwards) (CONF:7141).
9. SHALL contain exactly one [1..1] value with @xsi:type="ANY" (CONF:7143).
10. SHOULD contain zero or more [0..\*] interpretationCode (CONF:7147).
11. MAY contain zero or one [0..1] methodCode (CONF:7148).
12. MAY contain zero or one [0..1] targetSiteCode (CONF:7153).
    1. The targetSiteCode, if present, SHALL contain exactly one [1..1] code where the @code SHALL be selected from ValueSet Body Site 1.3.6.1.4.1.19376.1.4.1.5.32 STATIC (CONF:CRC).
13. MAY contain zero or one [0..1] author (CONF:7149).
14. SHOULD contain zero or more [0..\*] referenceRange (CONF:7150).
    1. The referenceRange, if present, SHALL contain exactly one [1..1] observationRange (CONF:7151).
       1. This observationRange SHALL NOT contain [0..0] code (CONF:7152).
15. SHOULD contain zero or one [0..1] entryRelationship (CONF:CRC-xxx) such that it
    1. SHALL contain exactly one [1..1] @typeCode="SUBJ" Has subject (CodeSystem: HL7ActRelationshipType 2.16.840.1.113883.5.1002) (CONF:CRC-xxx).
    2. SHALL contain exactly one [1..1] @inversionInd="true" TRUE (CONF:CRC-xxx).
    3. SHALL contain exactly one [1..1] Severity Observation (2.16.840.1.113883.10.20.22.4.8) (CONF:CRC-xxx).

<observation classCode="OBS" moodCode="EVN">

<templateId root="1.3.6.1.4.1.19376.1.4.1.4.16"/>

<!-- Result Observation template -->

<id root="c6f88321-67ad-11db-bd13-0800200c9a66"/>

<!-- This second ID represents the lesion ID -->

<id root="107c2dc0-67a5-11db-bd13-0800200c9a66" extension="1"/>

<code code="233970002"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT"

displayName="Post procedure stenosis"/>

<text><reference value="1"/></text>

<statusCode code="completed"/>

<effectiveTime value="19991114"/>

<targetSiteCode code="41879009" codeSystem="1.3.6.1.4.1.19376.1.4.1.5.32"

displayName="Distal RCA"/>

<value xsi:type="PQ" value="0" unit="%"/>

<interpretationCode code="N" codeSystem="2.16.840.1.113883.5.83"/>

</observation>

e.g., Figure 6.3.4.E-1: Result observation example >

### End Discrete Conformance Format - Entry

Add to sections 6.4 and 6.5 Value Sets

## Section not applicable

This heading is not currently used in a CDA document.

## PCC Value Sets

<Replicate the Value Set 6.5.x section as many times as needed for this supplement.>

<It is preferable to use tabular format. Add notes as needed. Be aware of potential national licensing issues of coding schemes.>

### 6.5.x <Value Set Name> <oid>

<Add description or clarifications here if necessary.>

|  |  |
| --- | --- |
| Coding Scheme  Concept | <Coding Scheme Name> |
|  |  |
|  |  |
|  |  |
|  |  |

Note: <as necessary, applicable>

<Delete the example below prior to publication for Public Comment.>

### <e.g.,6.5.1 Drug Classes Used in Cardiac Procedure 1.3.6.1.4.1.19376.1.4.1.5.15

|  |  |  |
| --- | --- | --- |
| Coding Scheme  Concept | SNOMED CT | NDF-RT |
| Calcium channel blockers | 48698004 | N0000029119 |
| Beta-blockers | 33252009 | N0000029118 |
| Nitrates | 31970009 | N0000007647 |
| Aminophylline | 55867006 | N0000146397 |

Note: As described in Section 6.1.2.4, the selection of the appropriate coding system for use may be based on local policy or national regulation.>

## HL7 FHIR Content Modules

Appendices

Appendix A –

Appendix B –

Volume 3 Namespace Additions

Add the following terms to the IHE Namespace:

<Please explicitly identify all new OIDs, UIDs, URNs, etc., defined specifically for this profile. These will be added to the IHE TF General Introduction namespace appendix when it becomes available. These items should be collected from the sections above by the author, and listed here as additions when this document is published for Trial Implementation. This section will be deleted prior to inclusion into the Technical Framework as Final Text, but should be present for publication of Public Comment and Trial Implementation.>

Volume 4 – National Extensions

Add appropriate Country section

4 National Extensions

4.I National Extensions for <Country Name or IHE Organization>

<A template for Volume 4 is included in this document for completeness; however, National Extensions are typically developed after a profile has been published for Trial Implementation. If you are developing a new profile for Public Comment, it is recommended that this section be marked “Not Applicable”.>

<Avoid using this section if you can, this is “only if absolutely necessary”. Differences add cost to implementation and testing and can reduce interoperability. Review carefully to determine if the national use case truly requires a difference in the profile mechanisms rather than just differences in system configuration.>

< National Extensions can add requirements above and beyond IHE, but NOT relax requirements. This would prevent Connectathon results based on national testing being recognized elsewhere. For more information, see <http://wiki.ihe.net/index.php?title=National_Extensions_Process>.>

The format of this section is not strongly specified due to the varying nature of national extensions. For an example of National Extensions, see Radiology TF Volume 4.>

4.I.1 Comment Submission

This national extension document was authored under the sponsorship and supervision of <sponsor name>, who welcome comments on this document and the IHE <country> initiative. Comments should be directed to:

<Name, organization, title, email address>

4.I.2 <Profile Name> <(Profile Acronym)>

<Add info or tables>

#### 4.I.2.1DCP <Type of Change>

<Add info or tables>

#### 4.I.2.2DCP <Type of Change>

<Add info or tables>

# 4.I+1.1 National Extensions for <Country Name or IHE Organization>

*<Repeat (and increment) the section above as needed for additional National Extensions>*

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

   Care Plan Domain Analysis Model (DAM) Documents [↑](#footnote-ref-1)
2. Care Coordination Capabilities. (2014, February 8). Retrieved February 15, 2016, from http://wiki.hl7.org/index.php?title=Care\_Coordination\_Capabilities [↑](#footnote-ref-2)
3. Care Plan Project - PCWG. (2015, November 5). Retrieved February 15, 2016, from <http://wiki.hl7.org/index.php?title=Care_Plan_Project_-_PCWG>

   Care Plan Domain Analysis Model (DAM) Documents [↑](#footnote-ref-3)
4. 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. [↑](#footnote-ref-4)
5. Care Plan Domain Analysis Model. (2015, November 5). Retrieved February 12, 2016, from <http://wiki.hl7.org/images/1/1d/PCWG_Care_Plan_DAM_Specification_-_Part_1_-_Draft_2015-11-04.pdf> [↑](#footnote-ref-5)
6. 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 [↑](#footnote-ref-6)
7. Health IT Regulations: Meaningful Use Regulations. (2015, March 20). Retrieved February 12, 2016, from <https://www.healthit.gov/policy-researchers-implementers/meaningful-use-regulations> [↑](#footnote-ref-7)
8. 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> [↑](#footnote-ref-8)
9. HL7 Care Plan Domain Analysis Model specification retrieved from http://wiki.hl7.org/images/1/1d/PCWG\_Care\_Plan\_DAM\_Specification\_-\_Part\_1\_-\_Draft\_2015-11-04.pdf on December 20, 2015 from [↑](#footnote-ref-9)