Figure 44: Pregnancy Intention in Next Year Example

```
<observation classCode="OBS" moodCode="INT">
  <!-- [C-CDA PREG] Pregnancy Intention in Next Year -->
  <templateId root="2.16.840.1.113883.10.20.22.4.281" extension="2023-05-01" />
  <id root="b06f4c63-5d18-48d3-9c75-f10bba135525" />
  <code code="86645-9" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"
    displayName="Future pregnancy intention Reported"/>
  <statusCode code="completed"/>
  <effectiveTime>
    <low value="20170107"/>
    <!-- High value should be 1 year from low date -->
    <high value="20180107"/>
  </effectiveTime>
  <value xsi:type="CD" code="454401000124105"
    codeSystem="2.16.840.1.113883.6.96"
    codeSystemName="SNOMED CT"
    displayName="No desire to become pregnant"/>
</observation>
```

3.19 Problem Observation (V4)

```
[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.22.4.4:2022-06-01
(open)]
```

Table 68: Problem Observation (V4) Contexts

Contained By:	Contains:
	Date of Diagnosis Act (optional)

This template reflects a discrete observation about a patient's problem. Because it is a discrete observation, it will have a statusCode of "completed". The effectiveTime, also referred to as the "clinically relevant time" is the time at which the observation holds for the patient. For a provider seeing a patient in the clinic today, observing a history of heart attack that occurred five years ago, the effectiveTime is five years ago.

The effectiveTime of the Problem Observation is the definitive indication of whether or not the underlying condition is resolved. If the problem is known to be resolved, then an effectiveTime/high would be present. If the date of resolution is not known, then effectiveTime/high will be present with a nullFlavor of "UNK".

Table 69: Problem Observation (V4) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.4:2022-06-01)					
@classCode	1..1	SHALL		4515-9041	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		4515-9042	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
@negationInd	0..1	MAY		4515-10139	
templateId	1..1	SHALL		4515-14926	
@root	1..1	SHALL		4515-14927	2.16.840.1.113883.10.20.22.4.4
@extension	1..1	SHALL		4515-32508	2022-06-01
id	1..*	SHALL		4515-9043	
code	1..1	SHALL		4515-9045	urn:oid:2.16.840.1.113883.3.88.12.3221.7.2 (Problem Type (SNOMEDCT))
statusCode	1..1	SHALL		4515-9049	
@code	1..1	SHALL		4515-19112	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
effectiveTime	1..1	SHALL		4515-9050	
low	1..1	SHALL		4515-15603	
high	0..1	MAY		4515-15604	
value	1..1	SHALL	CD	4515-9058	urn:oid:2.16.840.1.113883.3.88.12.3221.7.4 (Problem)
@code	0..1	MAY		4515-31871	
qualifier	0..*	MAY		4515-31870	
translation	0..*	MAY		4515-16749	
@code	0..1	MAY		4515-16750	urn:oid:2.16.840.1.113883.6.90 (ICD-10-CM)
author	0..*	SHOULD		4515-31147	Author Participation (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.119
entryRelationship	0..1	MAY		4515-9059	

XPath	Card.	Verb	Data Type	CONF#	Value
@typeCode	1..1	SHALL		4515-9060	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = SUBJ
@inversionInd	1..1	SHALL		4515-9069	true
observation	1..1	SHALL		4515-15590	Age Observation (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.31
entryRelationship	0..1	MAY		4515-29951	
@typeCode	1..1	SHALL		4515-31531	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = REFR
observation	1..1	SHALL		4515-29952	Prognosis Observation (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.113
entryRelationship	0..*	MAY		4515-31063	
@typeCode	1..1	SHALL		4515-31532	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = REFR
observation	1..1	SHALL		4515-31064	Priority Preference (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.143
entryRelationship	0..1	MAY		4515-9063	
@typeCode	1..1	SHALL		4515-9068	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = REFR
observation	1..1	SHALL		4515-15591	Problem Status (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.6:2019-06-20
entryRelationship	0..*	MAY		4515-32965	
@typeCode	1..1	SHALL		4515-32968	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = SPRT
act	1..1	SHALL		4515-32966	Entry Reference (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.122
entryRelationship	0..*	MAY		4515-32953	
@typeCode	1..1	SHALL		4515-32955	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = SPRT
observation	1..1	SHALL		4515-	Assessment Scale Observation

XPath	Card.	Verb	Data Type	CONF#	Value
				32954	(identifier: urn:oid:2.16.840.1.113883.10.20.22.4.69
entryRelationship	0..*	MAY		4515-33012	
@typeCode	1..1	SHALL		4515-33014	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
act	1..1	SHALL		4515-33013	Date of Diagnosis Act (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.502:2022-06-01

1. Conforms to Problem Observation (V3) template (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.4:2015-08-01).
2. **SHALL** contain exactly one [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4515-9041).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4515-9042).

The negationInd is used to indicate the absence of the condition in observation/value. A negationInd of "true" coupled with an observation/value of SNOMED code 64572001 "Disease (disorder)" indicates that the patient has no known conditions.

4. **MAY** contain zero or one [0..1] **@negationInd** (CONF:4515-10139).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:4515-14926) such that it
   a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.4" (CONF:4515-14927).
   b. **SHALL** contain exactly one [1..1] **@extension**="2022-06-01" (CONF:4515-32508).
6. **SHALL** contain at least one [1..*] **id** (CONF:4515-9043).
7. **SHALL** contain exactly one [1..1] **code**, which **SHOULD** be selected from ValueSet **Problem Type (SNOMEDCT)** urn:oid:2.16.840.1.113883.3.88.12.3221.7.2 **DYNAMIC** (CONF:4515-9045).
   a. If code is selected from ValueSet Problem Type (SNOMEDCT) urn:oid:2.16.840.1.113883.3.88.12.3221.7.2 **DYNAMIC**, then it **SHALL** have at least one [1..*] translation, which **SHOULD** be selected from ValueSet Problem Type (LOINC) urn:oid:2.16.840.1.113762.1.4.1099.28 **DYNAMIC** (CONF:1198-32950) (CONF:4515-32950).
8. **SHALL** contain exactly one [1..1] **statusCode** (CONF:4515-9049).
   a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14 **STATIC**) (CONF:4515-19112).

If the problem is known to be resolved, but the date of resolution is not known, then the high element **SHALL** be present, and the nullFlavor attribute **SHALL** be set to 'UNK'. Therefore, the existence of a high element within a problem does indicate that the problem has been resolved.

9. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:4515-9050).

The effectiveTime/low (a.k.a. "onset date") asserts when the condition became clinically active.

    a. This effectiveTime **SHALL** contain exactly one [1..1] **low** (CONF:4515-15603).

The effectiveTime/high (a.k.a. "resolution date") asserts when the condition became clinically resolved.

    b. This effectiveTime **MAY** contain zero or one [0..1] **high** (CONF:4515-15604).

    c. When an observation/value code concept name has a temporal aspect, ensure that observation/effectiveTime/value aligns with the temporal aspect of the code. Most often, a single time is appropriate, rather than low and high values. An example SNOMED CT code is 714093000 | Sexually active in last six months (finding) (CONF:4515-32964).

10. **SHALL** contain exactly one [1..1] **value** with @xsi:type="CD", where the code **SHOULD** be selected from ValueSet **Problem** urn:oid:2.16.840.1.113883.3.88.12.3221.7.4 **DYNAMIC** (CONF:4515-9058).

A negationInd of "true" coupled with an observation/value/@code of SNOMED code 64572001 "Disease (disorder)" indicates that the patient has no known conditions.

    a. This value **MAY** contain zero or one [0..1] **@code** (CONF:4515-31871).

        i. When the Problem is Social Determinant of Health Observation, the observation/value **SHOULD** be a SNOMED code selected from ValueSet **Social Determinant of Health Conditions 2.16.840.1.113762.1.4.1196.788DYNAMIC** (CONF:4515-32951).

The observation/value and all the qualifiers together (often referred to as a post-coordinated expression) make up one concept. Qualifiers constrain, or provide greater specificity to, the meaning of the primary code, and cannot negate it or change its meaning. Qualifiers can only be used according to well-defined rules of post-coordination and only if the underlying code system defines the use of such qualifiers or if there is a third code system that specifies how other code systems may be combined.

For example, in cases where SNOMED CT does not have a precoordinated code that would be appropriate for the problem list, concept post coordination may be used in CDA following the principles outlined in [HL7 Version 3 Implementation Guide: TermInfo - Using SNOMED CT in CDA R2 Models, Release 1 |https://www.hl7.org/documentcenter/public/standards/dstu/V3_IG_SNOMED_R1_DSTU_2 015DEC.pdf] using the V3 CD Data type 1 style. This is shown in the Problem Observation Post-coordinated Problem Example. This example represents a family history condition that was also elevated to the problem list to avoid missing pertinent data that may or may not be present in the Family History Section.

    b. This value **MAY** contain zero or more [0..*] **qualifier** (CONF:4515-31870).

    c. This value **MAY** contain zero or more [0..*] **translation** (CONF:4515-16749) such that it

        i. **MAY** contain zero or one [0..1] **@code** (CodeSystem: ICD-10-CM urn:oid:2.16.840.1.113883.6.90 **STATIC**) (CONF:4515-16750).

            1. When the Problem is Social Determinant of Health Observation, the observation/value/translation **SHOULD** be an ICD10 code selected

from ValueSet Social Determinant of Health Conditions
2.16.840.1.113762.1.4.1196.788 DYNAMIC (CONF:4515-32952).

11. **SHOULD** contain zero or more [0..*] Author Participation (identifier:
    urn:oid:2.16.840.1.113883.10.20.22.4.119) (CONF:4515-31147).

12. **MAY** contain zero or one [0..1] **entryRelationship** (CONF:4515-9059) such that it
    a. **SHALL** contain exactly one [1..1] **@typeCode**="SUBJ" Has subject (CodeSystem:
       HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**)
       (CONF:4515-9060).
    b. **SHALL** contain exactly one [1..1] **@inversionInd**="true" True (CONF:4515-9069).
    c. **SHALL** contain exactly one [1..1] Age Observation (identifier:
       urn:oid:2.16.840.1.113883.10.20.22.4.31) (CONF:4515-15590).

13. **MAY** contain zero or one [0..1] **entryRelationship** (CONF:4515-29951) such that it
    a. **SHALL** contain exactly one [1..1] **@typeCode**="REFR" Refers to (CodeSystem:
       HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-31531).
    b. **SHALL** contain exactly one [1..1] Prognosis Observation (identifier:
       urn:oid:2.16.840.1.113883.10.20.22.4.113) (CONF:4515-29952).

14. **MAY** contain zero or more [0..*] **entryRelationship** (CONF:4515-31063) such that it
    a. **SHALL** contain exactly one [1..1] **@typeCode**="REFR" Refers to (CodeSystem:
       HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-31532).
    b. **SHALL** contain exactly one [1..1] Priority Preference (identifier:
       urn:oid:2.16.840.1.113883.10.20.22.4.143) (CONF:4515-31064).

15. **MAY** contain zero or one [0..1] **entryRelationship** (CONF:4515-9063) such that it
    a. **SHALL** contain exactly one [1..1] **@typeCode**="REFR" Refers to (CodeSystem:
       HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-9068).
    b. **SHALL** contain exactly one [1..1] Problem Status (identifier:
       urn:hl7ii:2.16.840.1.113883.10.20.22.4.6:2019-06-20) (CONF:4515-15591).

When an Entry Reference template is contained in a Problem Template instance that is a Social
Determinant of Health problem, that Entry Reference **MAY** reference an Assessment Scale
Observation elsewhere in the document. That Assessment Scale **MAY** contain assessment scale
observations that represent LOINC question and answer pairs from SDOH screening
instruments.

16. **MAY** contain zero or more [0..*] **entryRelationship** (CONF:4515-32965) such that it
    a. **SHALL** contain exactly one [1..1] **@typeCode**="SPRT" Has support (CodeSystem:
       HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-32968).
    b. **SHALL** contain exactly one [1..1] Entry Reference (identifier:
       urn:oid:2.16.840.1.113883.10.20.22.4.122) (CONF:4515-32966).

When an Assessment Scale Observation is contained in a Problem Template instance that is a
Social Determinant of Health problem, that Assessment scale **MAY** contain assessment scale

observations that represent LOINC question and answer pairs from SDOH screening instruments.

17. **MAY** contain zero or more [0..*] **entryRelationship** (CONF:4515-32953) such that it

    a. **SHALL** contain exactly one [1..1] **@typeCode**="SPRT" Has support (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-32955).

    b. **SHALL** contain exactly one [1..1] Assessment Scale Observation (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.69) (CONF:4515-32954).

18. **MAY** contain zero or more [0..*] **entryRelationship** (CONF:4515-33012) such that it

    a. **SHALL** contain exactly one [1..1] **@typeCode**="COMP" has Component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4515-33014).

    b. **SHALL** contain exactly one [1..1] **Date of Diagnosis Act** (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.502:2022-06-01) (CONF:4515-33013).

Figure 45: Problem Observation Example

```xml
<observation classCode="OBS" moodCode="EVN">
    <!-- ** Problem Observation ** -->
    <templateId root="2.16.840.1.113883.10.20.22.4.4" />
    <templateId root="2.16.840.1.113883.10.20.22.4.4" extension="2015-08-01" />
    <templateId root="2.16.840.1.113883.10.20.22.4.4" extension="2022-06-01" />
    <id root="ab1791b0-5c71-11db-b0de-0800200c9a66" />
    <code code="64572001" displayName="Condition"
          codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT">
        <translation code="75323-6"
           codeSystem="2.16.840.1.113883.6.1"
           codeSystemName="LOINC"
           displayName="Condition"/>
    </code>
    <!-- The statusCode reflects the status of the observation itself -->
    <statusCode code="completed" />
    <effectiveTime>
        <!-- The low value reflects the date of onset -->
        <!-- Based on patient symptoms, presumed onset is July 3, 2013 -->
        <low value="20130703" />
        <!-- The high value reflects when the problem was known to be resolved -->
        <!-- Based on signs and symptoms, appears to be resolved on Aug 14, 2013 -->
        <high value="20080814" />
    </effectiveTime>
    <value xsi:type="CD"
         code="233604007"
         codeSystem="2.16.840.1.113883.6.96"
         displayName="Pneumonia" />
    <author typeCode="AUT">
        <templateId root="2.16.840.1.113883.10.20.22.4.119" />
        <time value="200808141030-0800" />
        <assignedAuthor>
            <id extension="555555555" root="2.16.840.1.113883.4.6" />
            <code code="207QA0505X"
            displayName="Adult Medicine"
            codeSystem="2.16.840.1.113883.6.101"
            codeSystemName="Healthcare Provider Taxonomy (HIPAA)" />
        </assignedAuthor>
    </author>
</observation>
```

Figure 46: Social Determinant of Health Problem Observation Example

```xml
<!-- SDOH Problem -->
<observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.22.4.4"/>
    <templateId root="2.16.840.1.113883.10.20.22.4.4" extension="2015-08-01"/>
    <templateId root="2.16.840.1.113883.10.20.22.4.4" extension="2022-06-01"/>
    <id extension="68993"
            root="1.2.840.114350.1.13.6289.1.7.2.768076"/>
    <id root="093A5380-00CE-11E6-B4C5-0050568B000B" extension="1.1"/>
    <code code="55607006" codeSystem="2.16.840.1.113883.6.96"
            codeSystemName="SNOMED CT" displayName="Problem">
        <originalText>
            <reference value="#ProblemObs_1_PT1"/>
        </originalText>
        <translation code="75326-9"
                codeSystem="2.16.840.1.113883.6.1"
                codeSystemName="LOINC" displayName="Problem"/>
    </code>
    <text>
        <reference value="#ProblemObs1"/>
    </text>
    <statusCode code="completed"/>
    <effectiveTime>
        <low value="20140909"/>
    </effectiveTime>
    <value xsi:type="CD" code="445281000124101" displayName="Nutrition impaired due to
limited access to healthful foods (finding)" codeSystem="2.16.840.1.113883.6.96"
codeSystemName="SNOMED CT">
        <translation code="Z59.48" codeSystem="2.16.840.1.113883.6.90" codeSystemName="ICD-
10-CM" displayName="Other specified lack of adequate food"/>
    </value>
</observation>
```

Figure 47: Problem Observation Post-Coordinated Problem Example

```
<!-- Name/value pair problem example -->
<observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.22.4.4"
        extension="2022-06-01"/>
    <id root="093A5380-00CE-11E6-B4C5-0050568B000B" extension="1.1"/>
    <code code="55607006" codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" displayName="Problem">
        <originalText>
            <reference value="#ProblemConcern_1_PT1"/>
        </originalText>
        <translation code="75326-9" codeSystem="2.16.840.1.113883.6.1"
codeSystemName="LOINC" displayName="Problem"/>
    </code>
    <text>
        <reference value="#ProblemConcern_1"/>
    </text>
    <statusCode code="completed"/>
    <effectiveTime>
        <low value="20140909"/>
    </effectiveTime>
    <!-- Example of a problem from problem list, that is not present in SNOMED CT as a
precoordinated concept -->
    <value xsi:type="CD" code="281666001" codeSystem="2.16.840.1.113883.6.96"
displayName="Family history of disorder">
        <qualifier>
            <name code="246090004" displayName="Associated finding"/>
            <value code="254167000" displayName="Bullous ichthyosiform erythroderma"/>
        </qualifier>
    </value>
    <author>
        <time value="20160412161448+0000"/>
        <assignedAuthor>
            <id extension="1" root="1.2.840.114350.1.13.6289.1.7.2.697780"/>
            <addr>
                <streetAddressLine>123 Anywhere
                    St.</streetAddressLine>
                <city>Verona</city>
                <state>WI</state>
                <postalCode>53753</postalCode>
            </addr>
            <telecom use="WP" value="tel:555-5555"/>
            <assignedPerson>
                <name>
                    <given>Andrew</given>
                    <family>Moreland</family>
                </name>
            </assignedPerson>
        </assignedAuthor>
    </author>
</observation>
```

3.20 Procedure Activity Procedure (V3)

```
[procedure: identifier urn:hl7ii:2.16.840.1.113883.10.20.22.4.14:2022-06-01
(open)]
```

The common notion of "procedure" is broader than that specified by the HL7 Version 3 Reference Information Model (RIM). Therefore procedure templates can be represented with various RIM classes: act (e.g., dressing change), observation (e.g., EEG), procedure (e.g., splenectomy).

This template represents procedures whose immediate and primary outcome (post-condition) is the alteration of the physical condition of the patient. Examples of these procedures are an appendectomy, hip replacement, and a creation of a gastrostomy.

This template can be used with a contained Product Instance template to represent a device in or on a patient. In this case, targetSiteCode is used to record the location of the device in or on the patient's body. Equipment supplied to the patient (e.g., pumps, inhalers, wheelchairs) is represented by the Non-Medicinal Supply Activity (V2) template.

Procedure Activity Procedure V3 Usage Note: Common practice in the industry has shown that Procedure Activity Procedure is the usually implemented CDA template for any type of intervention or procedure regardless of if the "immediate and primary outcome (post-condition) is the alteration of the physical condition of the patient" or not. As a result, it is recommended to use Procedure Activity Procedure when sending procedures also thought of as "interventions" such as "Home Environment Evaluation" or "Assessment of nutritional status".