FHIM Behavioral Health Domain

Modeling Facilitator: Ioana Singureanu, Eversolve, LLC

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Behavioral Health Domain

The purpose of this model is to describe the main information classes required to support continuity of care across specialties including information to and from behavioral health facilities. This model describes the information and the most important coded concepts required for semantic interoperability regardless of platform or exchange mechanism (e.g. HL7 CDA, ASTM, NIEM).

Change Log

The following are the changes and revisions applied to this domain model:

1. Peer Review - May 28th, 2010

Peer Review, initial version which includes analysis of Behavioral Health use cases for information exchange.

2. Final Draft - July 7th, 2010

This version addresses the peer review comments as well as full alignment with FHIM style and makes use of the vocabulary binding extensions in the HDF UML profile.

A. UML Notation Reference

The following document makes use of class diagrams and use case diagrams to convey the scope of information as well as the structure and semantics of this domain information model. Therefore this section provides a convenient guide to how UML is applied throughout this domain and across FHIM.

A.1. HL7 Version 3 RIM Considerations

The FHIM model relies on the Reference Information Model (RIM), on the abstract datatypes, and vocabulary specifications. The following is a summary of conventions based on the application of HL7 Version design principles to the development of FHIM information domains.

1. Stereotypes based on HL7 V3 RIM Classes

A stereotype is one of three types of extensibility mechanisms in the Unified Modeling Language (UML). They allow designers to extend the vocabulary of UML in order to create new model elements, derived from existing ones, but that have specific properties that are suitable for a particular problem domain or otherwise specialized usage. The nomenclature is derived from the original meaning of stereotype, used in printing. For example, when modeling a network we could symbols for representing routers and hubs. By using stereotyped nodes you can make these things appear as primitive building blocks. Graphically, a stereotype is rendered as a name enclosed by guillemets (« ») and placed above the name of another element. In addition or alternatively it may be indicated by a specific icon. The icon image may even replace the entire UML symbol.

2. Terminology Binding

The HL7 vocabulary model allows us to associate a coded attribute with a coded concept, a coding system, a value set consisting of allowable coded concepts.

A.2 Information Modeling Notation Overview

This section is intended to provide an overview of the Unified Modeling Language (UML) used throughout FHIMS to describe the information.

A.2: Class Diagram Notation and HL7 Reference Information Model Example

Figure A.2 shows how the UML graphical notation elements for class diagrams (e.g. classs, associations, attributes) are used to represent a specific set of data (e.g. air flight scheduling and operation) using the HL7 Version 3 Reference Information Model (RIM) pattern and the associated conventions specified by the FHIM model. Note that the the HL7 RIM classes are color coded acording their main types/stereotypes.

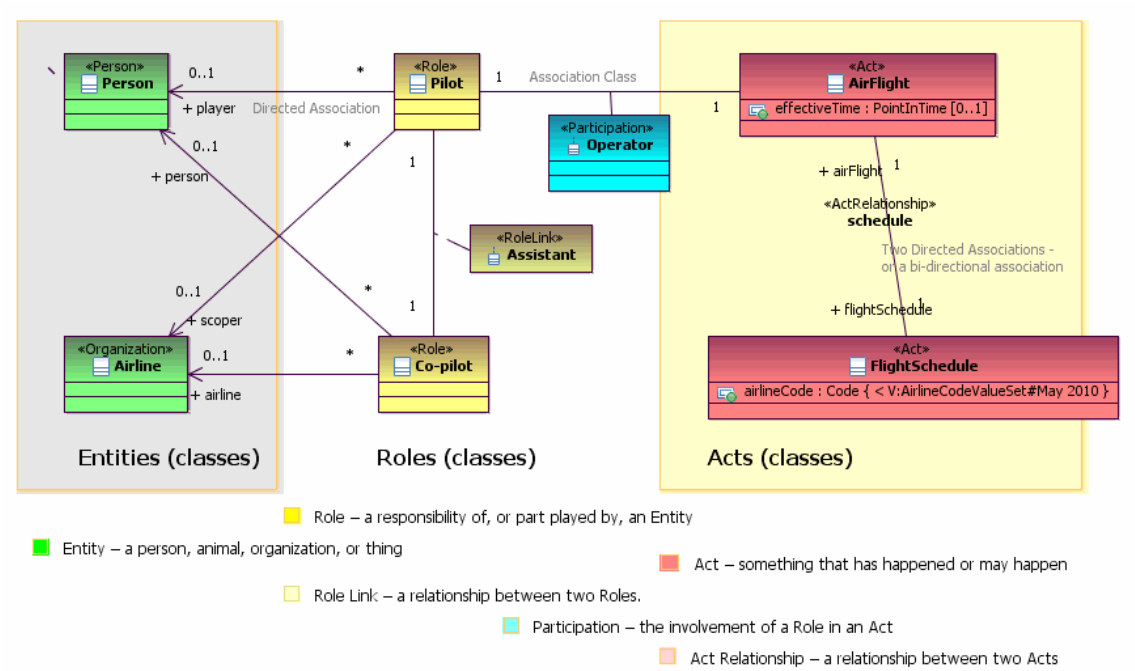

Figure A.2: Class Diagram Notation and HL7 Reference Information Model Example

«Act» Class: AirFlight

This class represents an example 'Act' class declaration as indicated by the stereotype «Act». The HL7 Version Reference Information Model specifies the attributes of any classes intended to as 'a record of something that is being done, has been done, can be done, or is intended or requested to be done. For example, in this case an Act class is used document an air flight.

Attribute 'AirFlight.effectiveTime' of type ' PointInTime' with cardinality of [0..1]

This is an example attribute declaration. As seen here the attribute name is 'effectiveTime' and the type of that attribute is 'PointInTime'. PointInTime is a concrete/implementable class defined in the FHIM Datatypes package. The Class notation identifies that PointInTime is a UML class. FHIM domain models reuse the data types defined the HL7 Abstract Data Type specification. The stereotype «TS» specifies that the PointInTime class uses the extensions required for an HL7 TS abstract data type. The [0..1] notation specifies the cardinality/multiplicity allowed for the effectiveTime attribute by specifying the minimum and maximum number of occurrences for this attribute (e.g. minimum 0 and maximum 1 in this case). To specify that an attribute or association can repeat any number of time, the * notation is used for example [0..*] would specify that a an attribute may be omitted or it may be repeated without a limit. The Default is a cardinality is [1..1] if not otherwise specified.

Association 'AirFlight.flightSchedule' of type ' FlightSchedule' with cardinality of [1]

This represents an association to a FlightSchedule. The association will appear as a property of a class and named for the far end of the association.

«Organization» Class: Airline

This class represents an entity, 'a physical thing, group of physical things or an organization capable of participating in Acts while playing a specific role'

«Role» Class: Co-pilot

This class illustrates how a role (specified by the «Role» stereotype and color coded according to the HL7 RIM convention) may specified in an information model. A role is specified in the HL7 Version 3 RIM as 'a competency of the Entity that plays the Role as identified, defined, guaranteed, or acknowledged by the Entity that scopes the Role'.

«Act» Class: FlightSchedule

This is an example act class that is used to specify the properties of a flight schedule.

Attribute 'FlightSchedule.airlineCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: AirlineCodeSystem , Code System Id: 1.2.4.78.43.1 (Airline Codes for Scheduling) May 2010
Value Set: AirlineCodeValueSetMay 2010 , Value Set Id: 1.2.4.78.43.2
Concept Domain: Airline

This is an example coded attribute with an identified binding to a coding system. If the coding system is not specified here it may be specified at runtime. This example shows how a coding system, coded concept, and value set may be assigned to a coded attribute. Note that if only a coding system is specified, then the graphical representation for the vocabulary binding will identify the coding system (preceded by the prefix 'C:' on the diagram). If, however, a specific value set is assigned, then the value

set will be identified on the class diagram (preceded by the prefix 'V:').

«Person» Class: Person

This is a entity class with a stereotype of «Person». Other entity stereotypes describe other types of physical objects: materials, organizations, etc. In UML stereotypes are used to specify extensions. The stereotypes used in this sample diagram are based on the HL7 RIM profile for UML developed by Open Health Tools MDHT project.

«Role» Class: Pilot

This class is used to specify the role of pilot.

Association 'Pilot.player' of type ' Person' with cardinality of [0..1]

The association to the entity that plays the role specified by the 'Pilot' role class is identified by the association end.

Association 'Pilot.scoper' of type ' Airline' with cardinality of [0..1]

The association to the entity that defines the role specified by the 'Pilot' role class is identified by the association end.

«ActRelationship»schedule

This is a bi-directional association and it is an ActRelationship as specified by the HL7 V3 RIM.

A.3 Use Case Notation Overview

The following is a brief summary of the UML used to communicate graphically the structure, content, and vocabulary semantics of this domain as well as other FHIM domains.

A.3: Actors, Use Cases, and Relationships

Figure A.3 shows the use of the UML diagram to identify actors, systems and use cases. As seen here, the actor uses a capability implemented by a system. The capabilities supported by the system are directly based on the business use cases analyzed as a part of domain analysis. Those use cases that require interoperability are elaborated further and described using sequence diagrams.

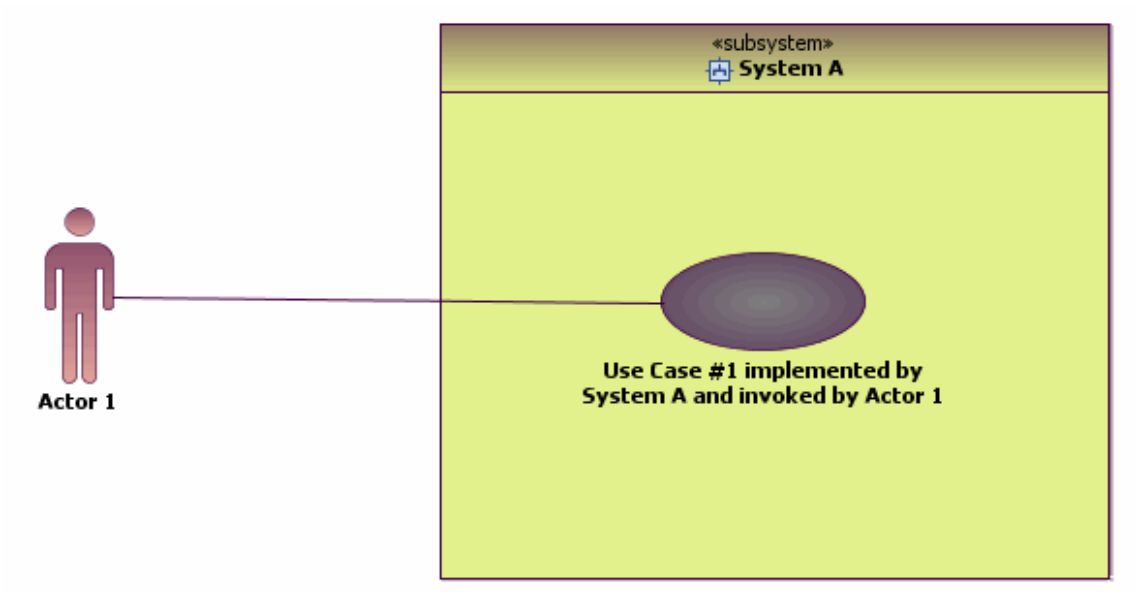

Figure A.3: Actors, Use Cases, and Relationships

Actor 1

An actor in the Unified Modeling Language (UML) specifies a role played by a user or any other system that interacts with the subject (e.g. subsystem). Actors may represent roles played by human users, external hardware, or other subjects. Note that an actor does not necessarily represent a specific physical entity but merely a particular facet (i.e., “role”) of some entity that is relevant to the specification of its associated use cases. Thus, a single physical instance may play the role of several different actors and, conversely, a given actor may be played by multiple different instances. Even though UML 2 does not permit associations between actors, generalization/specialization relationship between actors is useful in modeling overlapping behaviors.

«subsystem»System A

This is an example subsystem (specified by the «subsystem» stereotype) that implements a specific use case as a set of functionality used by business users (i.e. actors). It represents independent, behavioral units in a system. Subsystems are used in class, component, and use case diagrams to represent large-scale components in the system at the center of a interoperability use case. An entire system may be represented as a hierarchy of subsystems. You can also define the behavior that each subsystem represents by specifying interfaces to the subsystems and the operations that support the interfaces.

Use Case #1 implemented by System A and invoked by Actor 1

A use case describes a sequence of actions that provide something of measurable value to an actor and is drawn as a horizontal ellipse. A use case in software engineering and systems engineering is a description of a system’s behavior as it responds to a request that originates from outside of that system. In other words, a use case describes 'who' can do 'what' with the system in question. The use case technique is used to capture a system's behavioral requirements by detailing scenario-driven threads through the functional requirements.

1. FHIM Common Classes

The following section identifies the common FHIM classes that are reused throughout the FHIM Behavioral Health Domain.

1: FHIM Common Classes

The following diagram identifies the classes used in this domain but are declared in other domains. These classes are used in this model by reference. They are referenced from their original namespaces/domain and reused in the context of substance abuse and mental health treatment .

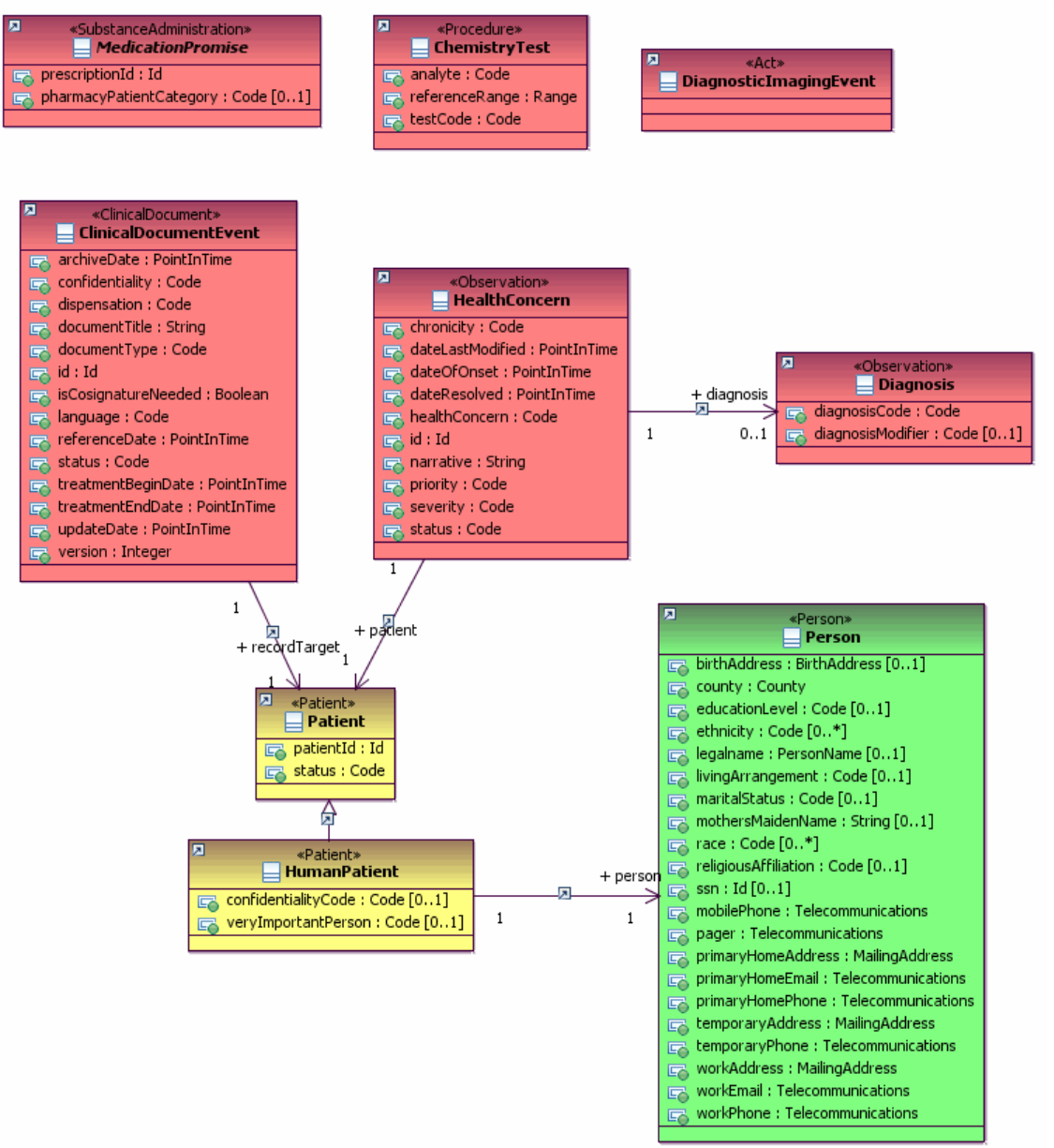

Figure 1: FHIM Common Classes

2. Behavioral Health: Information Model

This section describes the information classes and data elements required to support those interoperability use cases specified in the scope of this domain. The classes identified here are deemed sufficient to support the use cases described in the 'Use Cases' of this document.

2.1 Common Behavioral Health Classes

The following classes are reused across this domain and represent specialization/restrictions of common FHIM classes or classes declared in other FHIM domains.

2.1: Behavioral Health Common Classes

The following diagram displays those classes that are reused to support the use cases identified in this domain. The specializations shown here are intended to extended the common classes with those traits or terminology specific to Behavioral Health information.

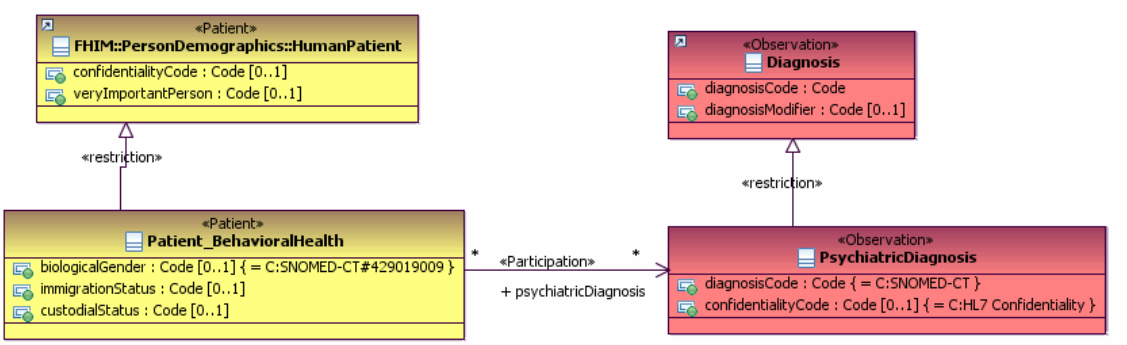

Figure 2.1: Behavioral Health Common Classes

«Patient» Class: Patient_BehavioralHealth

This class represents a specialization of the Patient role declared in the FHIM Patient Demographics domain.

Attribute 'Patient_BehavioralHealth.biologicalGender' of type ' Code' with cardinality of [0..1]

Vocabulary Binding:

Code System: SNOMED-CT , Code Value: 429019009

This attribute is currently in this domain but it will be moved to 'Person'. It specifies the biological gender of a person/patient. This attribute is optional (i.e. cardinality [0..1]).

Attribute 'Patient_BehavioralHealth.custodialStatus' of type ' Code' with cardinality of [0..1]

Clarification needed: this attribute may indicate: 1) that the patient is not able to care for

oneself. 2) it refers to legal custody, or 3) incarceration or parole. We need clear definition of this attribute. This attribute is optional (i.e. cardinality [0..1]).

Association 'Patient_BehavioralHealth.historyOfAbuse/Neglect' of type ' HistoryOfAbuse/NeglectRecord' with cardinality of [0..1]

This is an association between the patient and their history of abuse or neglect history records.

Attribute 'Patient_BehavioralHealth.immigrationStatus' of type ' Code' with cardinality of [0..1]

The immigration status may be used to determine eligibility for Behavioral Health services. We need specify whether this refers strictly to visa status (citizen, permanent resident, immigrant, or non-immigrant). This attribute is optional (i.e. cardinality [0..1]).

Attribute 'Patient_BehavioralHealth.problem' of type ' HealthConcern' with cardinality of [*]

This is an association between the patient and their problem list. The cardinality of this association is * to allow zero or more problems to be specified.

Association 'Patient_BehavioralHealth.psychiatricDiagnosis' of type ' PsychiatricDiagnosis' with cardinality of [*]

This is an association between the patient and their psychiatric diagnoses. The cardinality of this association is * to allow zero or more psychiatric diagnoses to be specified.

Association 'Patient_BehavioralHealth.suicidalIdeation' of type ' SuicidalIdeationObservation' with cardinality of [0..1]

This is an association between the patient and their records of suicidal ideation, suicide attempts, and alerts.

«Observation» Class: PsychiatricDiagnosis

This class is intended to specialize a generic diagnosis class by adding support for Diagnostic and Statistical Manual of Mental Disorders (DSM) codes and supports any extensions required to communicate information about Behavioral Health diagnoses between organizations and providers.

Attribute 'PsychiatricDiagnosis.confidentialityCode' of type ' Code' with cardinality of [0..1]

Vocabulary Binding:

Code System: HL7 Confidentiality , Code System Id: 2.16.840.1.113883.5.25 (Confidentiality) May 2010

This code may be used to specify whether the diagnosis is sensitive (e.g. carries a social stigma). This attribute relies on the sensitivity value set specified by HL7 Confidentiality coding system.

Attribute 'PsychiatricDiagnosis.diagnosisCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: SNOMED-CT

This attribute is intended to store the code for the diagnosis in SNOMED-CT. Since both the DSM IV and the ICD codes corresponding to the psychiatric diagnosis are mapped to SNOMED-CT should

be sufficient to represent psychiatric diagnoses.

2.2 Behavioral Health Assessment Exchange Classes

This section focuses on those classes required to exchange either summary or details of a Behavioral Health assessment

2.2.a: Behavioral Health Assessment Classes

Diagram 2.2.a describes the type of information that will be exchanged with behavioral health practitioners when all the details of an assessment are required. The assessments may be exchanged between providers in order to elminate redunant assessments. Note that this diagram identifies the structure of an assessment, the type, the outcome and also the clinical information inferred from the assessment responses.

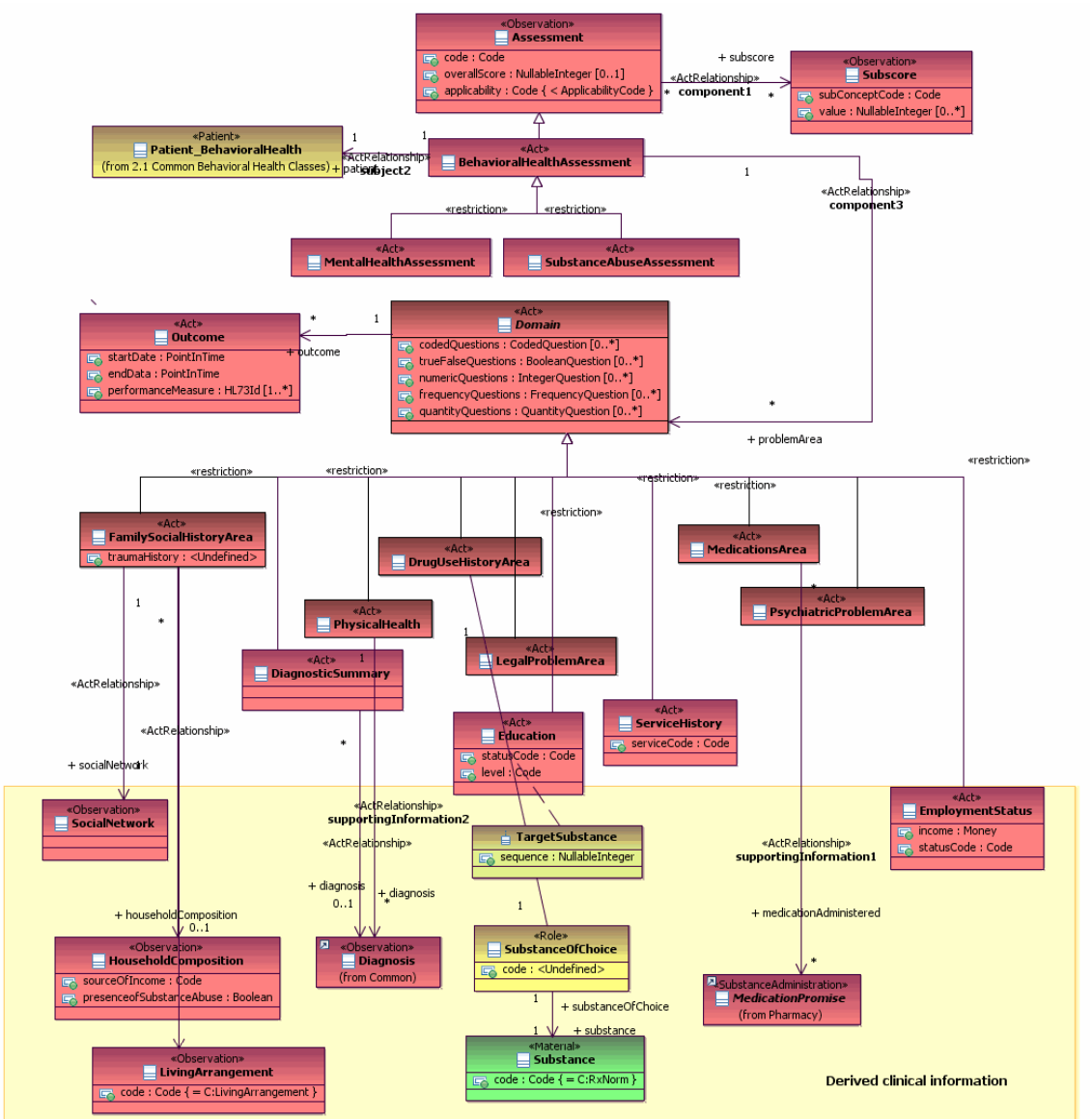

Figure 2.2.a: Behavioral Health Assessment Classes

2.2.b: Assessment Question and Answer Types

The following diagram details the questions and answers that may be used an in an assessment. A domain may contain any subset of code, true/false, numeric, frequency, or quantity related questions and the associated answers.

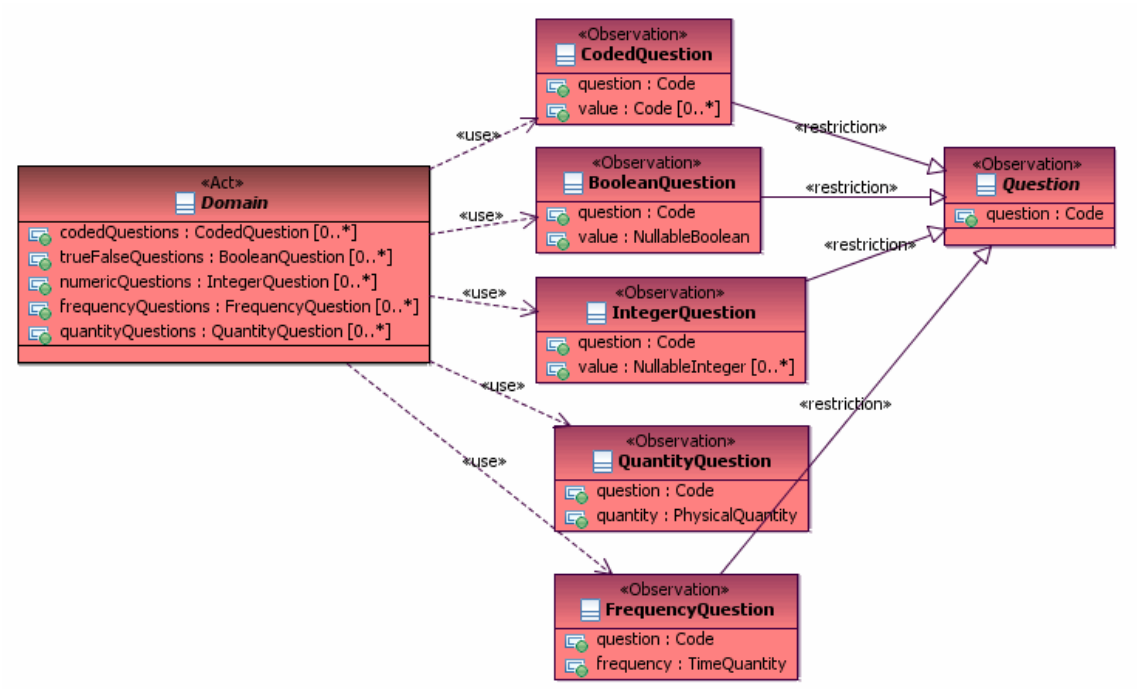

Figure 2.2.b: Assessment Question and Answer Types

«Observation» Class: Assessment

This class describes any type of assessment (e.g. behavioral health issues) that is administered to a patient. Standardized assessment tools create scores and subscores used to determine the optimal placement and treatment plans for a patient. Standardized assessment tools facilitate the collection of accurate information in a reliable and consistent manner provide clinicians and treatment agencies with increased accountability and to identify patient progress over time and help adjust treatment plans.

Attribute 'Assessment.applicability' of type ' Code' with cardinality of [1]

This attribute is intended to specify the whether the assessment is used of clinical, research, or program evaluation.

Association 'Assessment.assessmentPlacementTools' of type ' BehavioralHealthAssessment/PlacementTool' with cardinality of [0..1]

Assessments are created using specific tools. While the assessment may identify the type of tools used, the tool used and its characteristics are out of scope.

Attribute 'Assessment.code' of type ' Code' with cardinality of [1]

This attribute specifies the code association with the main concept that is evaluated by the assessment. The code includes a text description of the concept along with the standard-based code.

Attribute 'Assessment.overallScore' of type ' NullableInteger' with cardinality of [0..1]

This attribute represents the overall score computed by the assessment tool based on the

patient's responses. The value of the score is used to create a care/treatment plan to meet the needs of the client/patient.

«Act» Class: BehavioralHealthAssessment

This is class describes a Behavioral Health Assessment containing both mental health and substance abuse related questions.

Association 'BehavioralHealthAssessment.problemArea' of type ' Domain' with cardinality of [*]

This association is used to identify the logical problem areas contained in the assessment.

«Observation» Class: BooleanQuestion

This class represents a question that requires a true of false answer. Both the question and the answer are identified. Ideally, the question code would identify the issue or assertion confirmed or denied by the answer.

Attribute 'BooleanQuestion.value' of type ' NullableBoolean' with cardinality of [1]

This attribute represents response as a boolean (true/false) to a specific assessment question. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

«Observation» Class: CodedQuestion

This class represents a question that requires an answer based on a predefined terminology/value set.

Attribute 'CodedQuestion.value' of type ' Code' with cardinality of [*]

This attribute represents response as a coded value to a specific assessment question. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

«Act» Class: Domain (Abstract)

This class refers to a group of related questions intended to define a set of issues regarding behavioral health issues. This class is container for a set of questions and answers. This class description is consistent with the 'HL7 Implementation Guide for CDA Release 2: CDA Framework for Questionnaire Assessments, Release 1 '.

Attribute 'Domain.codedQuestions' of type ' CodedQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a coded response.

«Act» Class: DrugUseHistoryArea

his class is intended to specify the information exchanged to describe drug use history.

«Act» Class: Education

This class is used to record the answers related to the education situation of the patient (e.g. education level as well as enrollment for those who should be enrolled in school).

Attribute 'Education.level' of type ' Code' with cardinality of [1]

This attribute is used to specify the highest education level achieved by the patient.

Attribute 'Education.statusCode' of type ' Code' with cardinality of [1]

This coded attribute is used to specify whether patients are enrolled, not enrolled, or has completed their education.

«Act» Class: FamilySocialHistoryArea

This area of the assessment is used to record answers related to family history that may predispose the patient to a specific type of problem. This includes living arrangement.

Attribute 'FamilySocialHistoryArea.traumaHistory' of type ' ' with cardinality of [1]

Specifies whether the patient may have a history of physical or mental trauma even thought it has not manifested as a diagnosis.

«Observation» Class: FrequencyQuestion

This class represents a question that requires an answer specifying the number a times (repetitions) an event occurred during a unit of time (e.g. number of drinks per week).

Attribute 'FrequencyQuestion.frequency' of type ' TimeQuantity' with cardinality of [1]

This attribute is used to specify the number of occurrences within a given period of time. In combination with the code it specifies the frequency of an event. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

Attribute 'FrequencyQuestion.question' of type ' Code' with cardinality of [1]

The coded value of the substance (e.g. alcohol) or event (e.g. violent incident).

«Observation» Class: HouseholdComposition

This section may identify specific traits of the household of the patient. This section may help identify whether substance abuse is present in the household since it often a pre-condition to staying sober. Other traits of a household (e.g.primary source of income) are specifically derived from this section of an assessment.

Attribute 'HouseholdComposition.presenceofSubstanceAbuse' of type ' Boolean' with cardinality of

[1]

This boolean attribute specifies the presence of substance abuse in the household shared by the patient.

Attribute 'HouseholdComposition.sourceOfIncome' of type ' Code' with cardinality of [1]

This coded attribute specifies the type of income (e.g. supplemental social security insurance -SSI, food stamps, employment).

«Observation» Class: IntegerQuestion

This class represents a question that requires a numeric answer.

Attribute 'IntegerQuestion.value' of type ' NullableInteger' with cardinality of [*]

This attribute represents response as a numeric to a specific assessment question. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

«Act» Class: LegalProblemArea

This class is used to record answers related to any criminal justice issues (e.g. criminal record, parole status).

Attribute 'LivingArrangement.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: LivingArrangement , Code System Id: 2.16.840.1.113883.5.63 ()

The value sets for this attribute are based on the HL7 Living Arrangements coding system (2.16.840.1.113883.5.63) to specify if the patient is homeless, transient, in a community shelter, or institutionalized.

«Act» Class: MedicationsArea

This problem are/section of the assessment is used to identify the medications administered to the patient.

«Act» Class: MentalHealthAssessment

This type of assessment is intended to evaluate the mental problems that affect the patient. This class is a specialization/restriction of the BehavioralHealthAssessment class.

«Act» Class: Outcome

This class is used specify the outcome of Behavioral Health treatment as described by changes to the patient's state reflected in the that patient's responses to assessment questions.

«Act» Class: PhysicalHealth

This class is used to specify the medical (physical) health problems or diagnoses of the patient.

«Act» Class: PsychiatricProblemArea

This section of the assessment is used to identify the psychiatric problems of a patient.

«Observation» Class: QuantityQuestion

This class is used to specify the response to questions that are expressed by a quantity (e.g., years of use).

Attribute 'QuantityQuestion.quantity' of type ' PhysicalQuantity' with cardinality of [1]

If a response require a quantity (e.g. years) this attributer specifies its coded value. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

Attribute 'QuantityQuestion.question' of type ' Code' with cardinality of [1]

The coded value of the question that require s the quantity amount specification.

«Observation» Class: Question (Abstract)

This class represents the abstract base class for all the questions contained in the assessment questionnaire.

Attribute 'Question.question' of type ' Code' with cardinality of [1]

The question in a questionnaire (e.g. Assessment instrument) may be based on a common value set. Therefore, the question may be a coded attribute.

«Act» Class: ServiceHistory

The type of services to determine if frequent inpatient detox vs. on-going treatment is more prevalent. This section is used to determine the effectiveness of the various services.

«Observation» Class: SocialNetwork

Identifies whether a person is in environment where others abused alcohol or other substances. NOMS measures social network risk factors.

«Observation» Class: Subscore

This class is used to describe the context of an assessment subscore. A subscore may be associated with a specific domain or concept that is evaluated through the assessment (e.g. depression may receive a subscore in an overall mental health assessment).

Attribute 'Subscore.value' of type ' NullableInteger' with cardinality of [*]

This attribute holds the numeric value of the subscore. The type of this attribute is 'NullableInteger' because the value may be null.

«Material» Class: Substance

This class is used to specify the type of substance (e.g. alcohol, controlled substances) that is used by a patient.

«Act» Class: SubstanceAbuseAssessment

This class represents any type the assessment used to identify substance abuse problems of a patient. This class is a specialization/restriction of the BehavioralHealthAssessment class.

«Role» Class: SubstanceOfChoice

This role class is used to identify the properties of a substance that is identified as a substance of choice based on the answers provided by the patient to the questions in Drug Use History section of a Behavioral Health or Substance Abuse assessment.

Attribute 'SubstanceOfChoice.code' of type ' ' with cardinality of [1]

This attribute is used to specify the type of substance used by patient (e.g. alcohol, narcotics, pharmaceuticals) rather than the code for the specific substance. This allows a lower level or precision but it may

2.3 Behavioral Health Record Exchange Classes

This section describes the structure and information objects needed to exchange Behavioral Health records between various stakeholders. The information detailed in this section is intended to address the information requirements of the 'Report Behavioral Health Records to Public Health' use case - see Section 3.

2.3: Suicide and Violence Details

The following diagram focuses on the information that may be required for public health as well as a part of the behavioral health record. This diagram identifies the types of the information needed to convey a patients' suicidal ideation and their history of abuse or neglect. The information is associated with a Patient (referenced using the class specialization introduced in this domain 'Patient_BehavioralHealth class).

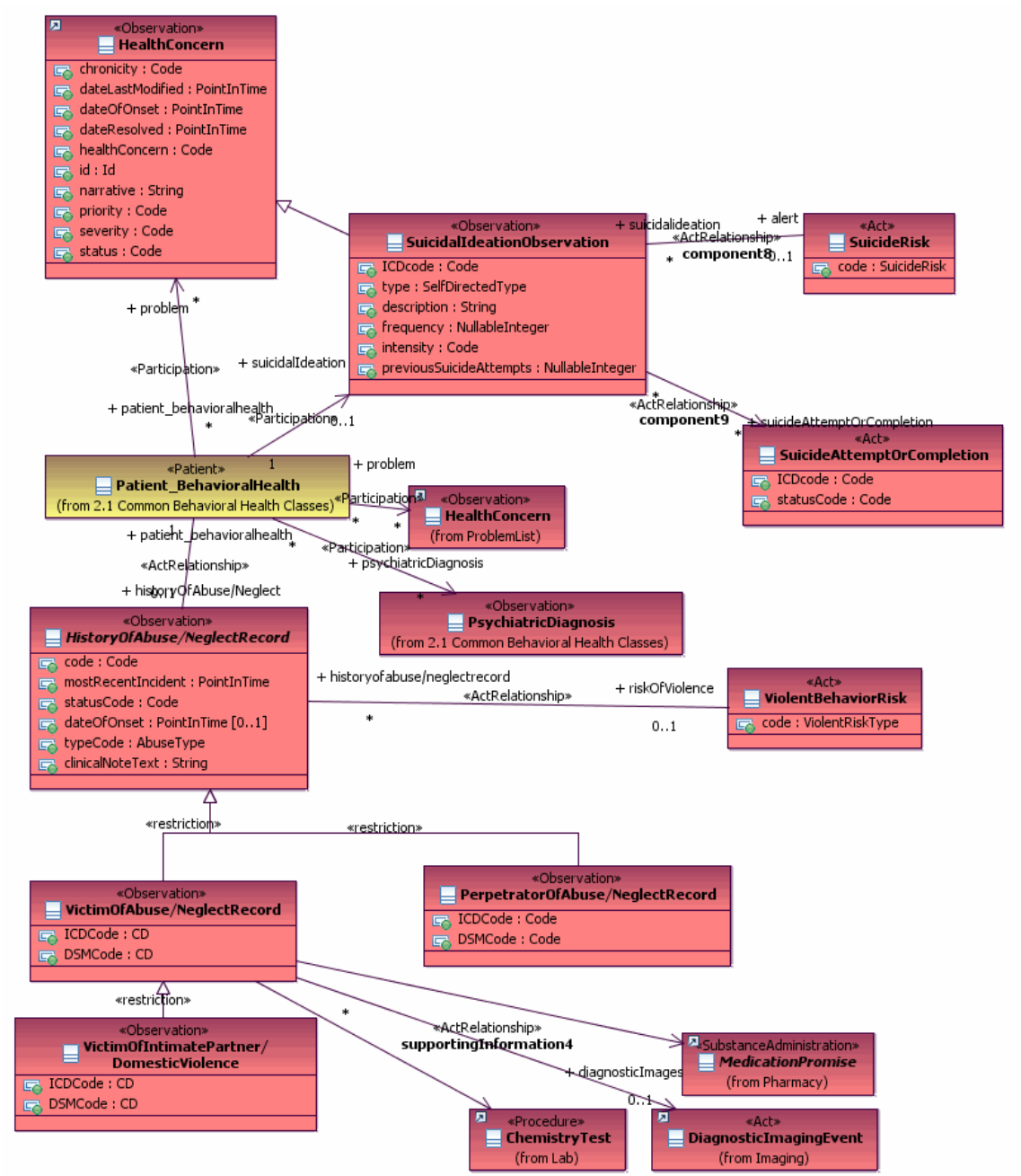

Figure 2.3: Suicide and Violence Details

«Observation» Class: HistoryOfAbuse/NeglectRecord (Abstract)

This class is intended to capture details related to any past abuse/violence and/or neglect Violence is a significant problem in the United States (U.S.). From infants to the elderly, it affects people in all stages of life. In 2006, 18,573 people died as a result of homicide and 33,300 took their own life. The number of violent deaths tells only part of the story. Many more survive violence and are left with

permanent physical and emotional scars. Violence also erodes communities by reducing productivity, decreasing property values, and disrupting social services. In 1979, violent behavior was identified by the U.S. Surgeon General as a key public health priority. Shortly thereafter, in 1980, CDC began studying patterns of violence. These early activities grew into a national program to reduce the death and disability associated with injuries outside the workplace. In 1992, CDC established the National Center for Injury Prevention and Control (NCIPC) as the lead federal organization for violence prevention. The Division of Violence Prevention (DVP) is one of three divisions within NCIPC. (Reference http://www.cdc.gov/ViolencePrevention/overview/)

Attribute 'HistoryOfAbuse/NeglectRecord.code' of type ' Code' with cardinality of [1]

ICD code.

Attribute 'HistoryOfAbuse/NeglectRecord.dateOfOnset' of type ' PointInTime' with cardinality of [0..1]

Date (imprecise date would be appropriate) when the neglect or abuse started (e.g. first incident).

Attribute 'HistoryOfAbuse/NeglectRecord.mostRecentIncident' of type ' PointInTime' with cardinality of [1]

The most recent incident as identified

Attribute 'HistoryOfAbuse/NeglectRecord.statusCode' of type ' Code' with cardinality of [1]

This attributes whether the abuse or neglect is still in progress ('active') or was in the past ('completed').

«Observation» Class: PerpetratorOfAbuse/NeglectRecord

This class is intended to record any additional attributes required to describe a history of abuse from the perspective of the perpetrator. This is not typical but it is an optional content of a behavioral health record.

Attribute 'PerpetratorOfAbuse/NeglectRecord.ICDCode' of type ' Code' with cardinality of [1]

This coded attribute may be used to indicate that the patient is a registered sex offender, convicted of arson, etc.

«Observation» Class: SuicidalIdeationObservation

This class is used to record 'thoughts of harming or killing oneself' (IOM 2002). The severity of suicidal ideation can be determined by assessing the frequency, intensity, and duration of these thoughts (IOM 2002).Thoughts of harming or killing oneself' (IOM 2002). The severity of suicidal ideation can be determined by assessing the frequency, intensity, and duration of these thoughts (IOM 2002). CDC is in the process of developing Suicide Surveillance: Uniform Definitions and Recommended Data Elements. This publication is expected to be available starting in 2009. Reference: Goldsmith SK, Pellmar TC,

Kleinman AM, Bunney WE, eds. Reducing suicide: a national imperative. .

Attribute 'SuicidalIdeationObservation.intensity' of type ' Code' with cardinality of [1]

Score or code?

Attribute 'SuicidalIdeationObservation.previousSuicideAttempts' of type ' NullableInteger' with cardinality of [1]

'A non-fatal, self-inflicted destructive act with explicit or inferred intent to die' (IOM 2002).

«Act» Class: SuicideAttemptOrCompletion

This class is used to specify past incidents of suicide attempt.

Attribute 'SuicideAttemptOrCompletion.ICDcode' of type ' Code' with cardinality of [1]

This code is used to specify the means by which suicide was attempted.

Attribute 'SuicideAttemptOrCompletion.statusCode' of type ' Code' with cardinality of [1]

This coded attribute is used to specify if the suicide attempt was successful/completed, aborted, or otherwise unsuccessful.

«Act» Class: SuicideRisk

This class is used to convey a risk of suicide. This class contains an association to the full details of a patient's suicidal ideation and past history of suicide attempts.

«Observation» Class: VictimOfAbuse/NeglectRecord

This class is used to record the details of a history of abuse perpetrated by others. The patient, as victim of abuse or neglect, may have additional forensic tests (e.g. imaging, lab) and medication therefore this specialization class has associations to medication, diagnostic imaging, and laboratory results.

«Observation» Class: VictimOfIntimatePartner/DomesticViolence

This specialization class is used to specify the codes and details related to a history of violence perpetrated by a domestic partner.

«Act» Class: ViolentBehaviorRisk

This class is used to alert providers of any risk violent behavior raised by the patient. This class is used convey information about the violent tendencies of a client in the context of protecting healthcare providers.

2.4 Summary Information Exchange Classes

This section describes the structure and information objects required to communicate Behavioral Health records to other specialties and care environments (e.g. acute care). The information detailed in this section is intended to address the information requirements of the 'Provide Behavioral Health Summary to Emergency Provide' use case - see Section 3.

Requirement 1:

The information exchange must be completed using a secure information exchange.

Requirement 2:

The Behavioral Health information may only be disclosed in accordance to prevailing privacy policies and patient consent, if needed.

2.4: Behavioral Health Summary

This diagram describes the information exchanged when behavioral health information is communicated across specialties (e.g to emergency providers). Some of the classes of objects described here are based on problem areas defined through assessments. This summary information is relenvant for exchanges across departments, facilities, and even organizations.

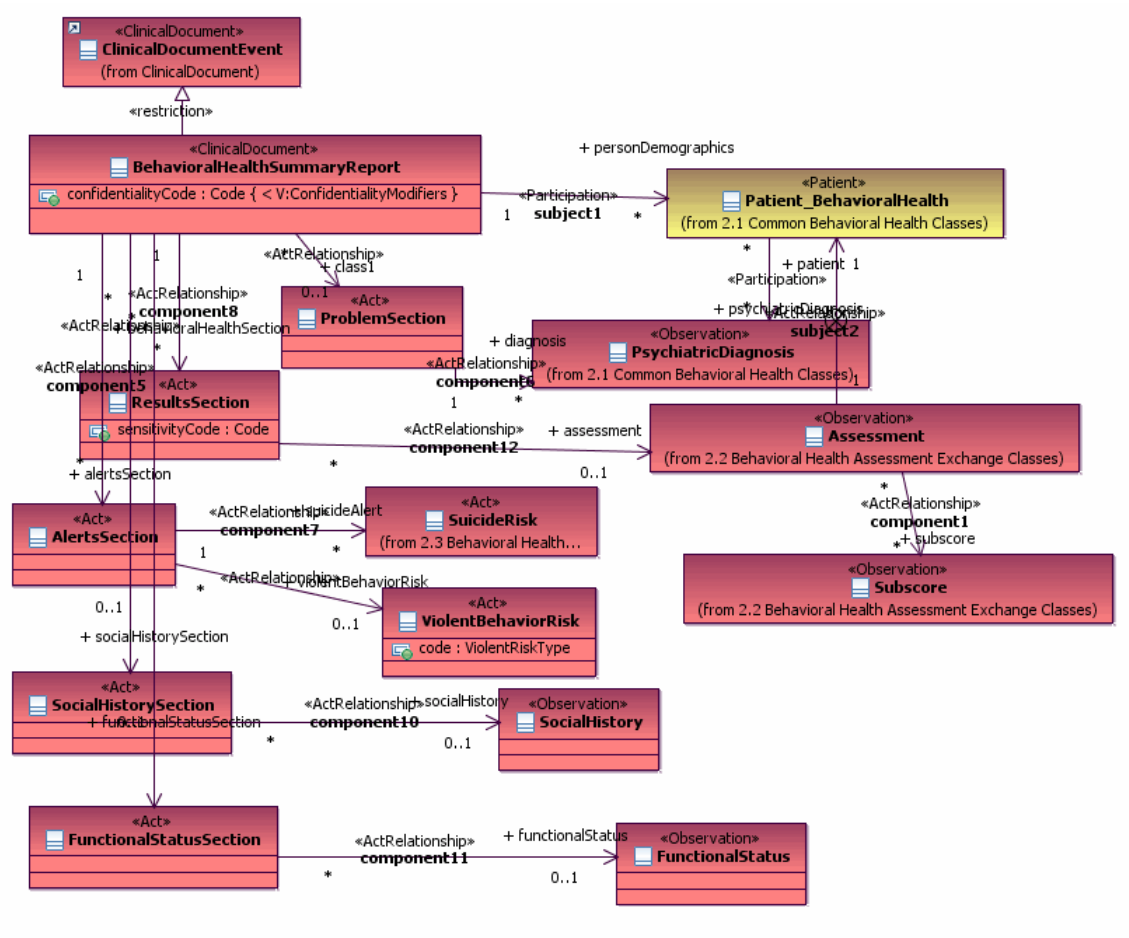

Figure 2.4: Behavioral Health Summary

«Act» Class: AlertsSection

This class corresponds to a document section intended to contain the alerts, allergies, and adverse reactions. This class provides the context required by behavioral health interoperability.

«ClinicalDocument» Class: BehavioralHealthSummaryReport

This class specifies the summary report intended to exchange selected information relevant across specialties. It may not include the details of an assessment but it will contain many data elements that are based on the information collected through the assessment and generated from its processing.

Attribute 'BehavioralHealthSummaryReport.confidentialityCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: Confidentiality , Code System Id: 2.16.840.1.113883.5.25 (HL7 Confidentiality)

Value Set: ConfidentialityModifiers , Value Set Id: 2.16.840.1.113883.1.11.10236

This attribute is used to specify that the contents of this clinical document is sensitive. This

attribute corresponds to the Act.confidentialityCode in the HL7 Version 3 RIM but it constrained specifically to specify sensitivity and data segmentation.

«Act» Class: ResultsSection

This is a results document section intended to hold the values of behavioral health assessment scores and subscores. This is part of a summary report that may be exchanged across specialties to support continuity of care. Other related results may be included in this section.

Attribute 'ResultsSection.sensitivityCode' of type ' Code' with cardinality of [1]

This attribute is used to specify that the contents of this section is sensitive because it contains Behavioral Health information.

2.5 Terminology Analysis

The following section specifies the terminology analysis for this document. This section will be further elaborated to include ICD codes for Self-Directed Violence concepts.

2.5: Terminology Analysis

The following diagram shows the value sets and coded concepts specific to behavioral health as enumerations. This is a high-level inventory of the types of value sets identified so far.

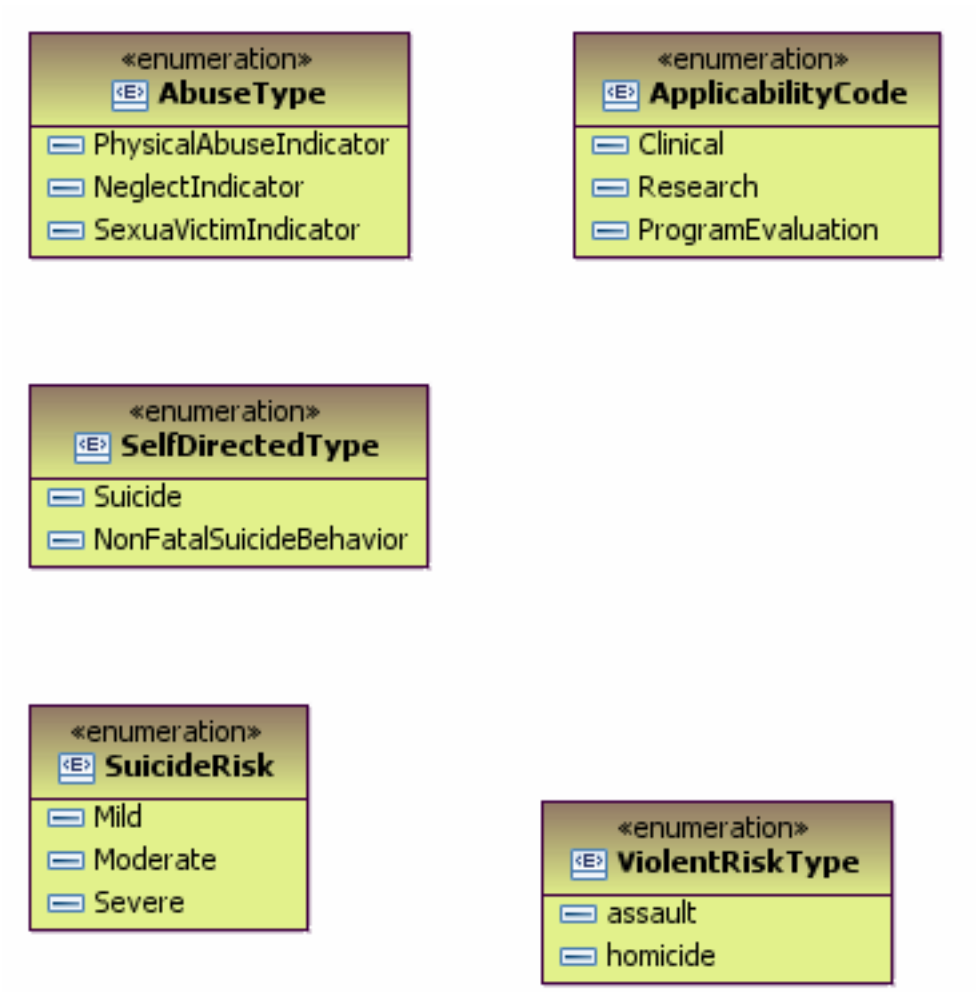

Figure 2.5: Terminology Analysis

AbuseType

This enumeration illustrates the types of values that may be used to populate the 'typeCode'

attribute of a 'HistoryOfAbuse/Neglect' class.

AbuseType: values

- NeglectIndicator
- PhysicalAbuseIndicator (This sample code is used to specify the type of physical abuse type.)
- SexuaVictimIndicator (This is a example code intended to specify that the abuse was a sexual.)

ApplicabilityCode

This value set demonstrates how the assessment applicability is specified.

ApplicabilityCode: values

- Clinical
- ProgramEvaluation

Identifies types of patients and problems presenting for treatment, Quantifies level of problems, Measures patients' response to treatment, Identifies agencies'/workers' strengths and areas for improvement with particular populations and problems, Enables management by outcome, Reports to funding sources

- Research

SelfDirectedType: values

- NonFatalSuicideBehavior
- Suicide

SuicideRisk

LOINC 42823-5 Suicide risk

SuicideRisk: values

- Mild
- Moderate
- Severe

ViolentRiskType: values

- assault
- homicide

3. Use Cases

This section documents the use cases in scope for this specification. The use cases are included to clarify the scope of the analysis and to enable stakeholders with differing view-points to communicate effectively their Behavioral Health information exchange needs. These use cases are not intended to be exhaustive but representative for the information exchanges required for continuity of care, quality measurements, and public health needs.

3: Behavioral Health Exchange Use Cases

The following summarizes the use cases that specify the scope of the information analysis. These use cases were identified primarily as means for communication and to disambiguate statekholder requirements and to identify the type of users and systems expected to participate in the information exchange.

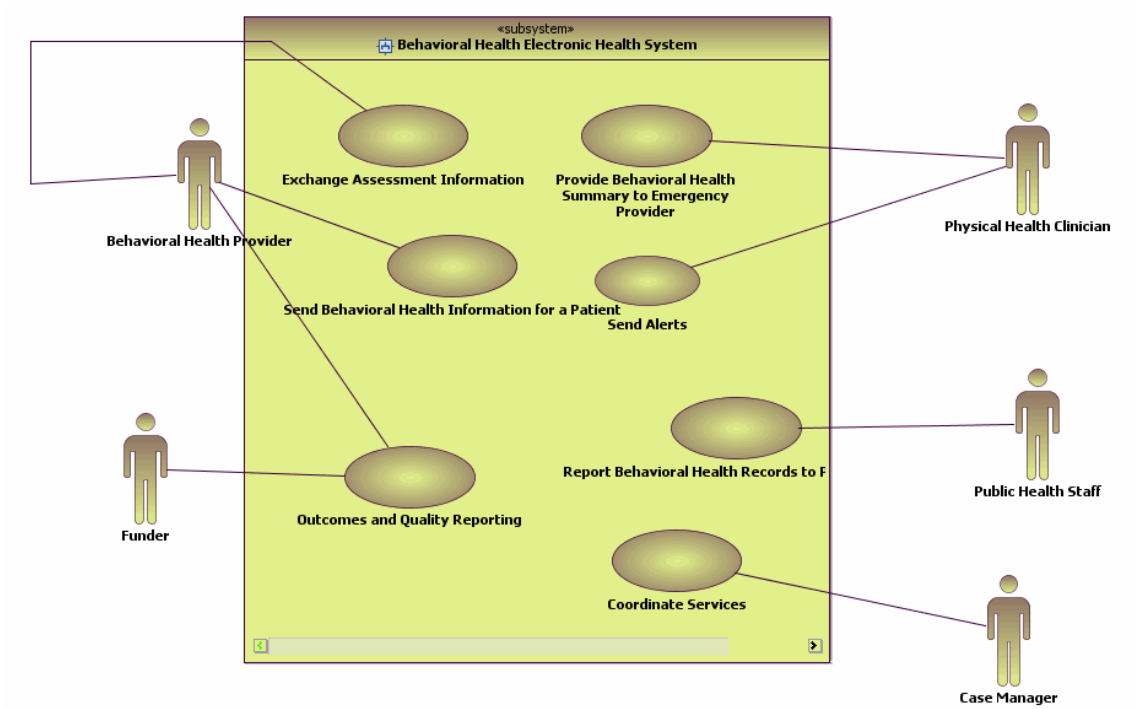

Figure 3: Behavioral Health Exchange Use Cases

«subsystem»Behavioral Health Electronic Health System

This system is conceptually equivalent to any information system (open-source or commercial-off-the-shelf - COTS) used by behavioral health providers. This system is expected to conform to the HL7 Behavioral Health Functional Profile.

Exchange Assessment Information

This use case requires that the details of an assessment be shared between healthcare providers. Not only score but the details provided by the patient through the assessment questions are relevant. The receiving provider has the expertise to use that information in addition to the scores to determine a course of treatment for the patient.

Provide Behavioral Health Summary to Emergency Provider

This use case requires that a subset of behavioral health information be made available to providers in case of emergency. This information may be summary, high-level, only relevant to address the immediate needs of a patient.

Behavioral Health Electronic Health System: implemented use cases

Coordinate Services : uml:UseCase

This use specifies the actions required to coordinate Behavioral Health services for a client with a complex medical, substance abuse, and psychiatric history.

Outcomes and Quality Reporting : uml:UseCase

This use case refers to the activities required to evaluate the efficacy of a treatment program. For example Government Performance and Results Act (GPRA) may be used to evaluate the outcome of a Behavioral Health encounter (i.e. before treatment, after treatment, 3-month follow-up).

Report Behavioral Health Records to Public Health : uml:UseCase

Public health reporting requires information about suicide, a history a violence, abuse, neglect, etc. These are high-priorities for evaluating a population's overall morbidity.

Send Alerts : uml:UseCase

This use addresses the need to provide alerts regarding the risk of self-directed or violence on others.

Send Behavioral Health Information for a Patient : uml:UseCase

This use case deals with those situations where behavioral health records are exchanged when a patient is referred to another provider. This use case assumes that the Behavioral Health information is sufficient for a receiving system to create its own records based on the information provided by the referring Behavioral Health provider.

Behavioral Health Provider

This actor corresponds to a behavioral health provider using an information system.

Case Manager

This actor represents a system user who requires a diverse set of information - including Behavioral Health - in order to assist clients.

Funder

This actor represents a funding agency users who is evaluating the efficacy of a treatment facility as reflected its outcomes.

Physical Health Clinician

This actors refers to a physical health clinical users who require summary Behavioral Health information to determine a care plan for a client with a complex medical history including behavioral health information..

Public Health Staff

This actor refers to the public health staff that require Behavioral Health information in order to conduct studies across a large Behavioral Health population.

4. Future Use

The following section identifies classes that are out-of-scope for now but have been identified during the analysis for this domain.

Class: BehavioralHealthAssessment/PlacementTool

Assessment/Placement Tools are used initiate treatment planning and guide the continuum of care (e.g. ASI, ASAM, PPCII, and GAIN). This type of tool is used to create Behavioral Health Assessments. This class identifies the tool rather than the assessment data resulting for applying the tool.

Class: ScreeningTool

Screening tools are used establish the presence or absence or the severity of a problem and indicates the need for more comprehensive evaluation (e.g.CAGE /T-ACE, MAST / DAST, and AUDIT). The output of these tools is not in scope for this analysis model but may relevant for future modeling activities.