Federal Health Architecture Program

Behavioral Health Information Model Report - Final

FHIM_Publication 'BehavioralHealth' Model

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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. Interim 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.

3. Final Draft - July 30th, 2010

This is the final draft following editorial edits and feedback from initial peer review comments.

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 the Federal Health Information Model (FHIM).

A.1. HL7 Version 3 RIM Considerations

An information model is a structured specification of the information within a specific domain of interest. It expresses the classes of information required and the properties of those classes, including attributes, relationships, constraints, and states. In HL7, the scope of a domain of interest ranges from the domain of the entire system of health services to the specific context of a set of information exchanges to meet a particular identified business purpose. The FHIM model relies on the following three HL7 Version 3 (V3) standards: the Reference Information Model (RIM), abstract data types and vocabulary specifications. The HL7 RIM is a critical component and is the root of all information models and structures developed as part of the V3 development process. The RIM consists of classes assigned to one or more subject area packages. Attributes, Relationships, and State Machines are associated with the classes. The following is a summary of these conventions based on the application of HL7 Version 3 design principles to the development of FHIM information domains. Note that HL7 RIM classes are color coded according their main class type or stereotype.

1. Class

Each class within the RIM represents information about a concept that is documented and communicated within the health care environment. A class is an abstraction of things or concepts that are subjects of interest in a given application domain. Classes are the people, places, roles, things, and events about which information is kept. Classes have a name, description, sets of attributes, relationships, and states. The instances of classes are called objects. While classes represent categories of concepts, people and things, objects represent the individual things themselves. Classes relate to other classes in various ways. Such relationships are of two types: Generalization and Association.

2. Generalization

A generalization relationship is a connection between classes (as opposed to objects). It is an association between two classes (a superclass and a subclass) in which the subclass is derived from the superclass (i.e., the superclass generalizes the subclass and the subclass is a specialization of the superclass). The subclass inherits all properties from the superclass, including attributes, relationships and states. Instances of a subclass are also instances of the superclass. In addition, the subclass has other properties that are unique to the subclass. Each subclass may in turn have subclasses of its own. Thus, a class can be both a subclass of its superclass and a superclass of its subclasses. A generalization usually has multiple specializations. However, not all of the conceptual specializations have to be represented in

the model. Only the concepts that warrant special properties (e.g., attributes, relationships, states) are modeled as specialized classes. If all specializations are fully enumerated as subclasses in the model, the superclass is considered to be an ' abstract' class. An abstract class is designed only as a parent class from which implementable child classes may be derived. Abstract classes are often used to represent abstract concepts or entities. The incomplete features of the abstract class are shared by a group of subclasses which add different variations of the missing pieces. An abstract class is never instantiated directly, but only through one of its specializations.

3. Association

An association defines a relationship between a class to another class or to itself, or a connection between two objects (instances of classes). Associations in the HL7 information models have at least two ends (source and target). The target end of an association must contain an end name (endName) and the multiplicity/cardinality of the relationship. Associations may be directed (one way) or bi-directional. If the association is directed, the association line has an arrow at the target end of the association. If the association is bi-directional, both association end names must be specified (on source and target), but no arrows are included on the association. Each end of the association instance connects with one and only one object. However, one object may be associated with more than one object of the same class by the same association. In this case, multiple association instances exist, each connecting exactly two objects. The number of instances of an association that can connect to one object is regulated by the multiplicity/cardinality of the association. An association multiplicity/cardinality specifies the minimum and maximum number of objects of each class participating in the association. Multiplicity/cardinality is usually expressed as a pair of numbers on the end of the association e.g., [minimum..maximum]. The lower bound minimum is usually zero or one. The upper bound maximum is greater or equal to minimum, but is usually one, or unlimited. To specify that an association (or attribute) can repeat any number of times, the asterisk (*) notation is used. The default is [1..1] if not otherwise specified. In the UML diagrams included within this publication, multiplicity is displayed without the [square brackets] on association endNames, but within the classes themselves, the square bracket notation is used to describe the multiplicity on attributes.

4. Attribute

Class attributes are the core components of an information model. The attributes are the source for all the information content of HL7. The majority of attributes are descriptive and depict aspects of classes that are important for communication between healthcare systems. Beside the descriptive attributes, there are four special kinds of attributes in the information model of note: identifier, classifier, structural and state attributes. a. Identifier Attributes: Identifier attributes can be used to identify an instance of a class. (Sometimes more than one attribute may be needed to identify an instance of a class.) Identifier attributes always have a value and the values of identifier attributes are unique among all instances of the class. Since identity is static, values of identifier attributes never change. Identifier attributes are assigned the “set of instance identifier data type and generally have the name 'id' which allow for multiple identifiers to be specified. Examples of identifier attributes from the RIM include Entity.id and Act.id, which uniquely identify a particular Entity or Act respectively. In each case, the identifier

attributes are a set of instance identifiers. This indicates that there may be multiple, unique identifiers for an Entity or Act. Entity identifiers might include device serial numbers, social security numbers, driver license numbers, and others. Act identifiers might include placer accession numbers, filler accession numbers, and others. b. Classifier Attributes: The classifier attributes are a critical aspect of classes forming the backbone of the RIM (Entity, Role, Act, Participation, ActRelationship and RoleLink classes). Classifier attributes are named 'classCode'. The classifier attributes provide a great flexibility and extensibility in the information model. The vocabulary for classifier attributes include an entry for each specialization of the backbone class. For example, the vocabulary domain specified for Entity.classCode includes living subject, organization, place and material. The vocabulary domain may also include entries that are not explicitly expressed as classes in the model. For example, group is a valid Entity classCode (or specialization of Entity) but does not appear in the RIM as a class. c. Structural Attributes: Structural attributes are attributes whose coded values are needed to fully interpret the classes they classify. They are four mandatory attributes and include the classifier attribute, ClassCode described in the previous paragraph. The other three are moodCode, typeCode and determinerCode. All four are not found in every class (neither Acts or Entities use determinerCode). There is a bounded vocabulary managed by HL7 for each use of a structural attribute. For instance, for Act, there is an actMood vocabulary. d. State Attributes: A state attribute is used in subject classes (subject classes are those that a Technical Committee designates as the central focus of a collection of messages). A state attribute contains a value that indicates the current state (named condition) of the class. A subject class must have only one state attribute. The state attribute must be assigned the data type ' set of code value' that allows multiple state flags to be specified. State attributes are named status_cd and are associated with vocabulary domains defined by HL7 that correspond to the state machine defined for the subject class. For example, Act.status_cd has the domain values which include active, suspended, cancelled, completed, and aborted.

5. 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. We will use the «guillemets» notation in this publication.

6. Terminology Binding

The HL7 vocabulary model allows a coded attribute to be associated with either a coded concept, a coding system or a coding system and a value set consisting of allowable coded concepts. An important aspect of both the FHIM and HL7 models is that they explicitly link ' coded concepts' to their corresponding vocabularies. This is necessary for two reasons: first because external terminologies (such as SNOMED) already exist and must be referenced by the model; and second, because to model those

terminologies in UML would be both redundant and overly complex. It is far more efficient to simply link to the existing terminology. The structural model, expressed in UML, and the terminology are two sides of the same coin; one cannot fully describe the relevant concepts without having both models. Both models must be designed to complement each other.

7. Constraints

Constraints narrow the set of possible values that an attribute can take on. Constraints include vocabulary domain constraints (e.g., this attribute must be a LOINC code), range constraints (e.g., this attribute must be a floating point number between 0 and 1), etc. While the term ' constraint' has the connotation of restricting and limiting, the objective in defining constraints is to provide guidance in the proper use of a class or attribute.

8. Act-Role-Entity Pattern

The ' back-bone' of the RIM is used to express the clinical and administrative content of health care, and is comprised of six classes: • Act – which represents the actions that are executed and must be documented as health care is provided. Act classes are depicted in pale Red on the UML diagrams; • Participation – which expresses the context for an act in terms such as who performed it, for whom it was done, where it was done, etc. Participation classes are depicted in Blue on UML diagrams; • Entity – which represents the physical things and beings that are of interest to, and take part in health care. Entity classes are depicted in Green on the UML diagrams; • Role – which establishes the roles that entities play as they participate in health care acts. Role classes are depicted in Yellow on the UML diagrams; • ActRelationship – which represents the binding of one act to another, such as the relationship between an order for an observation and the observation event as it occurs. ActRelationships may only appear as stereotyped associations between classes; and • RoleLink – which represents relationships between individual roles. RoleLink classes are depicted in pale Yellow/Green on UML diagrams. Three of these classes – Act, Entity and Role – are further represented by a set of specialized classes or sub-types.

A.2 Information Modeling Notation Overview

This section is intended to provide an overview of the Unified Modeling Language (UML) used throughout the FHIM to describe the information contained within the Behavioral Health model.

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. class, 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 associated conventions specified by the FHIM model. Note that the HL7 RIM classes are color coded according their main class type or stereotype. Entities play a Role (patient, provider, person, etc.) as they participate in Acts (planned or unplanned events or actions). A Participation is an association between an Act and a Role. The Entity playing the Role is the actor. Each Entity involved in an Act is linked to the Act by one Participation-instance. Entities are depicted in green, Roles in yellow, Acts in light red and Participation in blue. A description for additiional HL7 Version 3 stereotypes are included in the description of the illustrative classes and attributes included in the diagram below.

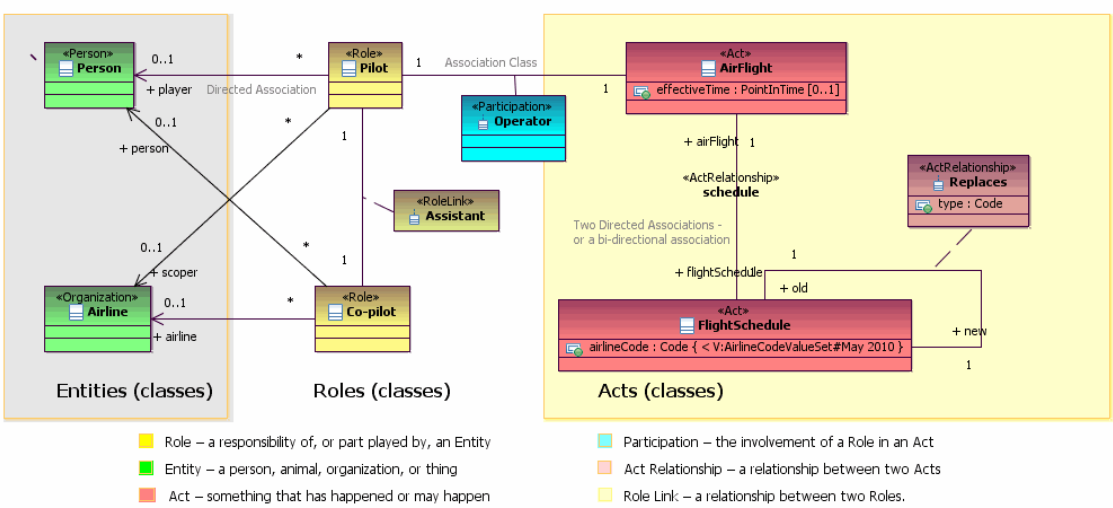

Figure A.2: Class Diagram Notation and HL7 Reference Information Model Example

«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 to 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 predefined 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 of an AirFlight to a FlightSchedule. The association will appear as a property of a class (AirFlight) and named for the far end of the association.

«Organization» Class: Airline

This class represents an entity which is defined as 'a physical thing, group of physical things or an organization capable of participating in Acts while playing a specific role'. The Organization stereotype is a specialization of an Entity class and represents a formalized group of persons or other organizations with a common purpose and the infrastructure to carry out that purpose.

«RoleLink»Assistant

The HL7 Version 3 definition for the RoleLink stereotype is a connection between two roles expressing a dependency between those roles and permitting the authorization or nullification of a dependent role based on status changes in its causal or directing role.' This association class describes a type of relationship between roles (not between people or other entities). People (or other Entities) are primarily related by the player/scoper relationships for player's Role and more generally through their interactions (i.e. their participations in acts). The associations of RoleLink are source (Co-pilot) and target (Pilot). An association class is rendered by a dashed line from the association to the class rectangle. Each link in the association is an object of the association class.

«Role» Class: Co-pilot

This class illustrates how a role (specified by the «Role» stereotype and color coded according to the HL7 RIM convention) is 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.

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

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

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. In this case, it represents the codes assigned to various airlines which can then be associated to a particular flight schedule. If the coding system is not specified here it may be specified 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:').

«Participation»Operator

The HL7 Version 3 definition for Participation class is an association between an Act and a Role. The Entity playing the Role is the actor. In this example, the Entity Pilot is participating in the Act of an AirFlight in the Role of operator of an AirFlight. A Participation represents performance of an Act.

«Person» Class: Person

This is an 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 the Open Health Tools MDHT project.

«Role» Class: Pilot

This class is used to specify the role of pilot in relation to an scheduled flight.

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

The association to the entity (Person) that plays the role specified by the 'Pilot' role class is identified by the association end. This notation indicates that the entity Person is played by the Role Pilot.

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

The association to the entity (Airline) that defines the role specified by the 'Pilot' role class is identified by the association end. This notation indicates that the entity Airline scopes the role of the entity Person played by the Role Pilot.

«ActRelationship»Replaces

This association class represents an example ActRelationship that used to associate two FlightSchedule instances.

«ActRelationship»schedule

This ActRelationship describes the relationship between FlightSchedule and AirFlight. ActRelationship is a directed association between a source Act and a target Act (in this case it is a bi-directional association) as specified by the HL7 V3 RIM. The relationships associated with an Act are considered properties of the source act object. This means that the author of an Act-instance is also considered the author of all of the act relationships that have this Act as their source, (though not necessarily of the target Acts of those relationships). There are no exceptions to this rule. The meaning and purpose of an ActRelationship is specified in the ActRelationship.typeCode attribute. Every ActRelationship instance is like an arrow with a point (headed to the target) and a butt (coming from the source). The functions that source and target Acts play in that association are defined for each ActRelationship type differently. For instance, in a composition relationship, the source is the composite and the targets are the components. In a reason-relationship the source is any Act and the target is the reason or indication for the source-Act.

A.3 Use Case Notation Overview

The following is a brief summary of the UML used to graphically communicate 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.

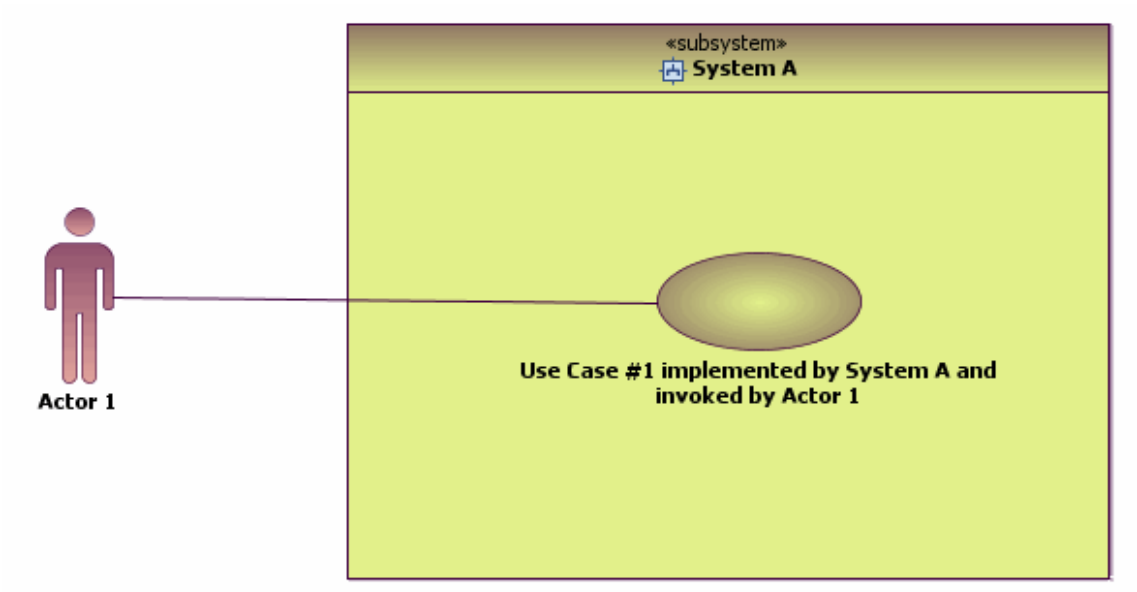

Figure A.3: Actors, Use Cases, and Relationships

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 of 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. The use case icon is drawn as a horizontal ellipse. A use case in software engineering and systems is a description of a system’s behavior as it responds to a request that originates from outside 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 the business domain’s perspective of 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 classes used in this domain that are declared in other FHIM domains. These FHIM Common classes are used in this model by reference from their original namespaces/domain for reuse in the context of substance abuse and mental health treatment. The FHIM Common Class name is found in parenthesis under the Behavioral Health class name.

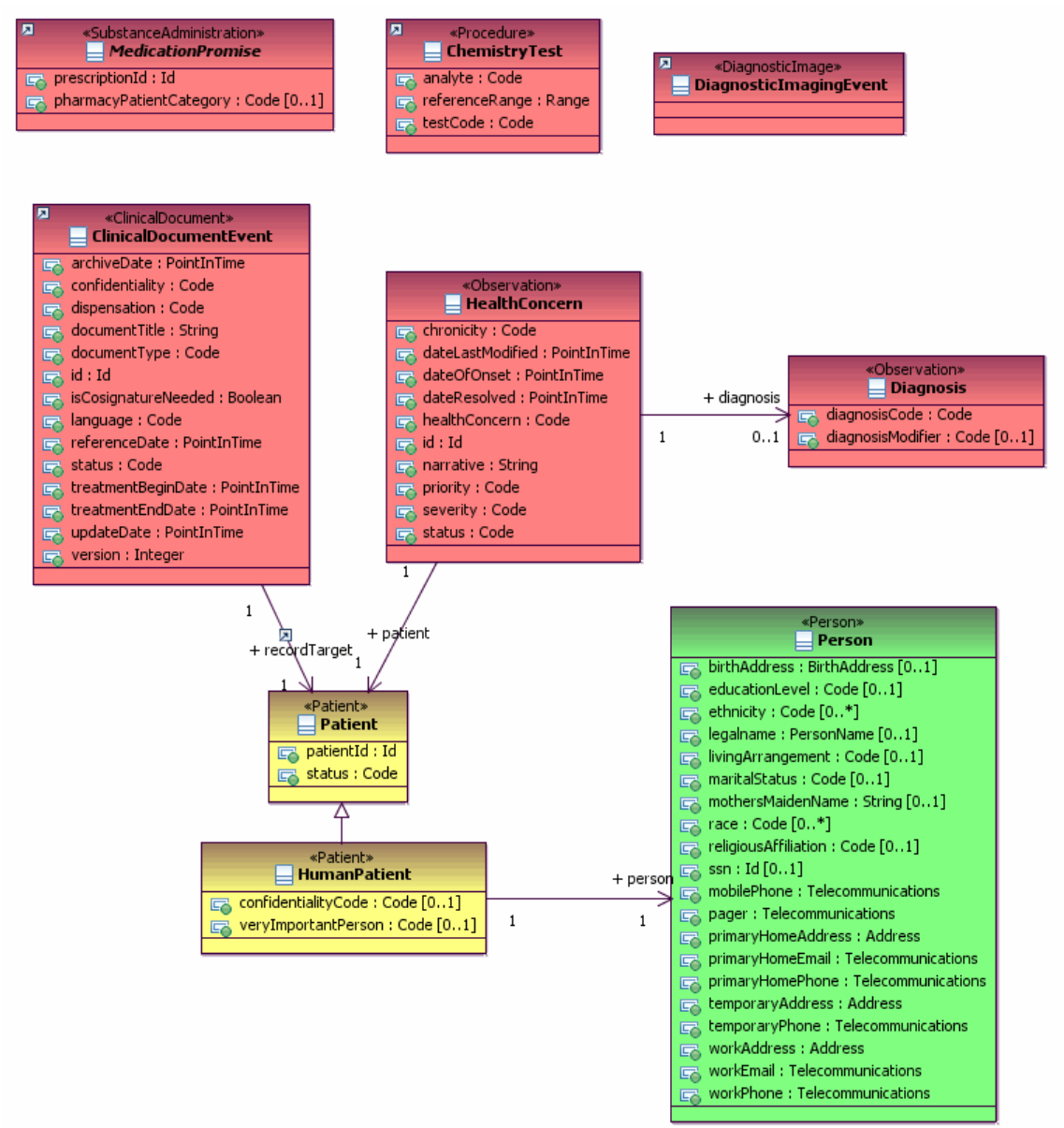

Figure 1: FHIM Common Classes

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

Figure 2.1 displays the classes that are reused to support the use cases identified in this domain. The specializations shown here are intended to extended the FHIM common classes with the traits or terminology specific to Behavioral Health information.

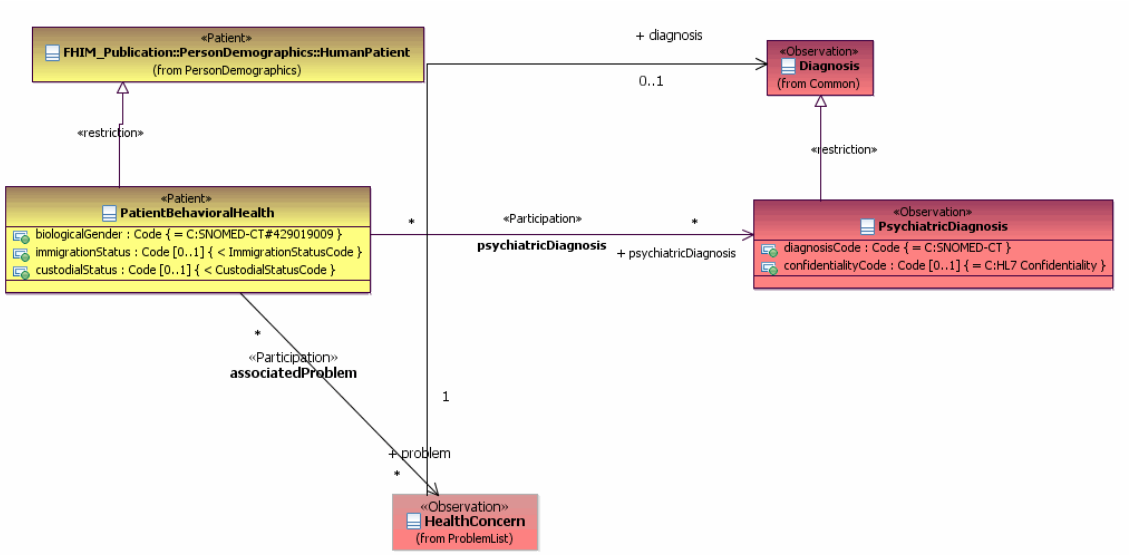

Figure 2.1: Behavioral Health Common Classes

«Participation»associatedProblem

This is a directed association between a behavioral patient/client and all of their behavioral health problems or concerns.

«Patient» Class: PatientBehavioralHealth

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

Demographics domain.

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

Vocabulary Binding:

Code System: SNOMED-CT , Code Value: 429019009

Concept Domain: Biological Gender

This attribute is currently in this domain but it will be moved to 'Person'. It specifies the biological gender of a client/patient. This attribute is optional (i.e. cardinality [0..1]). HL7 Version 3 does not currently have a Concept Domain corresponding to Biological Gender. There is a concept domain for AdministrativeGender which has the definition ' the gender of a person used for administrative purposes (as opposed to clinical gender)' .

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

Vocabulary Binding:

Concept Domain: CustodialStatus

The primary purpose for this attribute is for reporting purposes. Custodial status refers to the legal guardianship according to example enumerations that were provided to this analysis and which appear in the Terminology section of this publication. There are no values currently defined to indicate prison incarceration however. This attribute is optional (i.e. cardinality [0..1]).

Association 'PatientBehavioralHealth.historyOfAbuseOrNeglect' of type ' HistoryOfAbuseOrNeglectRecord' with cardinality of [0..1]

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

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

Vocabulary Binding:

Concept Domain: ImmigrationStatus

The primary purpose for this attribute is for reporting purposes, although in some instances, immigration status could be used to determine eligibility for Behavioral Health services. Example enumerations have been provided for this attribute in the Terminology section of this publication. This attribute is optional (i.e. cardinality [0..1]).

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

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

Association 'PatientBehavioralHealth.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 'PatientBehavioralHealth.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.

«Participation»psychiatricDiagnosis

This is a directed association between a behavioral patient/client and their psychiatric diagnoses.

«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

Concept Domain: Confidentiality

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 , Code System Id: SNOMED-CT ()

Concept Domain: Diagnosis

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.

«Participation»suicidalIdeation

This is a directed association between a patient/client and the details of a health concern related to suicidal ideation.

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. These assessments may be exchanged between providers to eliminate redundant assessments. Note that this diagram identifies the structure of an assessment, the type, outcome and the clinical information inferred from the assessment responses.

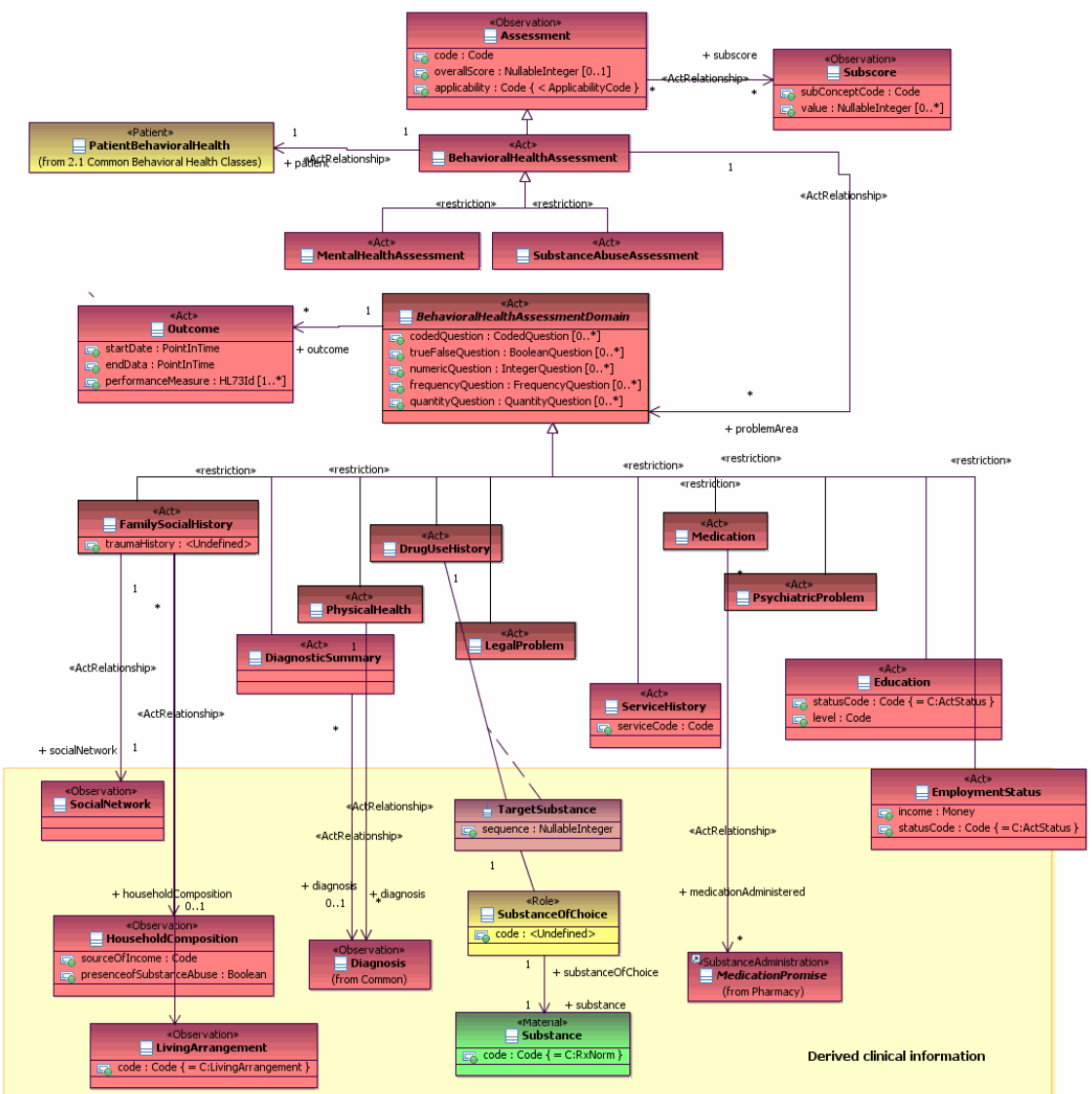

Figure 2.2.a: Behavioral Health Assessment Classes

2.2.b: Assessment Question and Answer Types

Figure 2.2.b details the questions and answers that may be used an in an assessment. A domain may contain any subset of coded, true/false, numeric, frequency, or quantity related answers to questions.

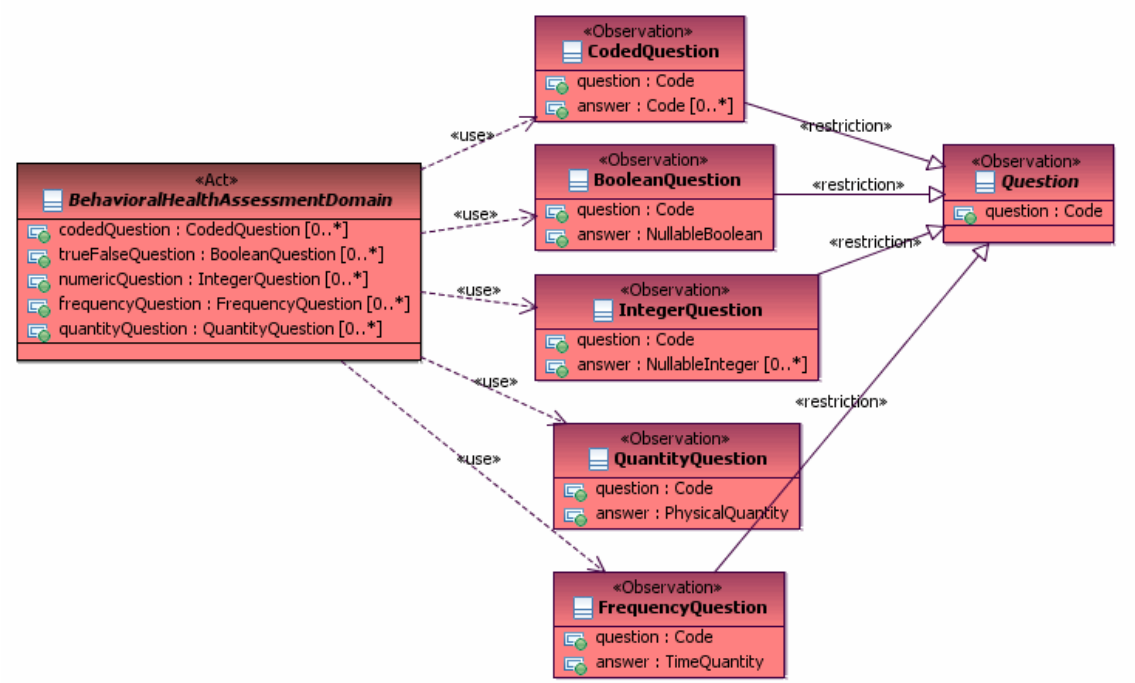

Figure 2.2.b: Assessment Question and Answer Types

«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 for 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 identifying the main concept associated with 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 answers to assessment questions. The value of the score is used to create a care/treatment plan to meet the needs of the client/patient.

Association 'Assessment.subscore' of type ' Subscore' with cardinality of [*]

This attribute represents the subscore score computed by the assessment tool based on the patient's answers to assessment questions. 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).

«Act» Class: BehavioralHealthAssessment

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

Association 'BehavioralHealthAssessment.patient' of type ' PatientBehavioralHealth' with cardinality of [1]

This directed association describes the relationship between a client/patient and their behavioral health assessments.

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

This association is used to identify the logical problem areas (e.g., FamilySocialHistoryArea, DrugUseHistoryArea, MedicationsArea, etc.) contained in the assessment.

«Act» Class: BehavioralHealthAssessmentDomain (Abstract)

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

Attribute 'BehavioralHealthAssessmentDomain.codedQuestion' of type ' CodedQuestion' with cardinality of [*]

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

Attribute 'BehavioralHealthAssessmentDomain.frequencyQuestion' of type ' FrequencyQuestion' with cardinality of [*]

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

Attribute 'BehavioralHealthAssessmentDomain.numericQuestion' of type ' IntegerQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a numeric (integer) response.

Association 'BehavioralHealthAssessmentDomain.outcome' of type ' Outcome' with cardinality of [*]

This is a directed association describing the relationship between an assessment and the outcome measurements related to that assessment.

Attribute 'BehavioralHealthAssessmentDomain.quantityQuestion' of type ' QuantityQuestion' with cardinality of [*]

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

Attribute 'BehavioralHealthAssessmentDomain.trueFalseQuestion' of type ' BooleanQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a true or false (boolean) response.

«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.answer' of type ' NullableBoolean' with cardinality of [1]

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

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

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a yes/no response.

«Observation» Class: CodedQuestion

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

Attribute 'CodedQuestion.answer' 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.

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

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a coded response.

«Act» Class: DiagnosticSummary

This area of the assessment is used to record answers related to the client/patient's diagnoses that may be pertinent to their behavioral health problems.

«Act» Class: DrugUseHistory

This 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 status 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]

Vocabulary Binding:

Code System: ActStatus , Code System Id: 2.16.840.1.113883.5.14 () May 2010

Concept Domain: ActStatus

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

«Act» Class: FamilySocialHistory

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

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

This coded attribute specifies whether the patient may have a history of physical or mental trauma even though it has not yet 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.answer' of type ' TimeQuantity' with cardinality of [1]

This coded attribute is used to specify the number of occurrences within a given period of time.

If a response is not provided, the null value may be qualified by an ASKU (asked but unknown) null flavor.

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

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a frequency response.

«Observation» Class: HouseholdComposition

This section identifies specific household traits 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 household traits (e.g. primary source of income) are derived from this assessment section.

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.answer' of type ' NullableInteger' with cardinality of [*]

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

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

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a numeric (integer) response.

«Act» Class: LegalProblem

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

«Observation» Class: LivingArrangement

This section identifies the living arrangements for a client/patient. This class may have overlaps with FamilySocialHistoryArea so this may go away.

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) used to specify whether the patient is homeless, transient, living in a community shelter, or institutionalized.

«Act» Class: Medication

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

Attribute 'Medication.medicationAdministered' of type ' MedicationPromise' with cardinality of [*]

This directed association describes the relationship between the Medications that the client/patient is taking as defined in the Medications Area of the assessment.

«Act» Class: MentalHealthAssessment

This type of assessment is intended to evaluate the mental health problems affecting 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 non-mental health problems or diagnoses of the patient.

«Act» Class: PsychiatricProblem

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.answer' of type ' PhysicalQuantity' with cardinality of [1]

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

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

The coded value of the question that requires 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.

Attribute 'ServiceHistory.serviceCode' of type ' Code' with cardinality of [1]

This is a coded attribute describing the type of service that has been rendered to the client/patient that appears in this area of the behavioral health assessment,

«Observation» Class: SocialNetwork

This class identifies whether a person is in environment where others are abusing alcohol or other substances. The National Outcomes Measures (NOMs) set performance targets for State and Federally funded initiatives and programs for substance abuse prevention and mental health promotion, early intervention, and treatment services. Social network risk factors are one component of these measures.

«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 abused by a patient.

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

Vocabulary Binding:

Code System: RxNorm

This coded attribute is used to specify the specific substance abused by patient (e.g. cocaine, oxycodone, etc.,) rather than a code for the type of substance (e.g. narcotics, alcohol, pharmaceutical drugs).

«Act» Class: SubstanceAbuseAssessment

This class represents any type of assessment used to identify the 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 coded attribute is used to specify the type of substance used by patient (e.g. alcohol, narcotics, pharmaceutical drugs) rather than a code for the specific substance.

TargetSubstance

This association class is used to describe the priority of the SubstanceOfChoice abused by the client/patient defined by the sequence attribute and is used to distinguish primary from secondary and tertiary substances.

Attribute 'TargetSubstance.sequence' of type ' NullableInteger' with cardinality of [1]

This attribute defines whether the abused Substance is the primary SubstanceOfChoice or secondary, tertiary, etc. This is captured to determine whether different treatments are effective depending on whether the substance is the primary one being abused or incidental to the primary substance.

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

Figure 2.3 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 patient's suicidal ideation and their history of abuse or neglect. The information is associated with a Patient (referenced using the Patient_BehavioralHealth class specialization introduced in this domain).

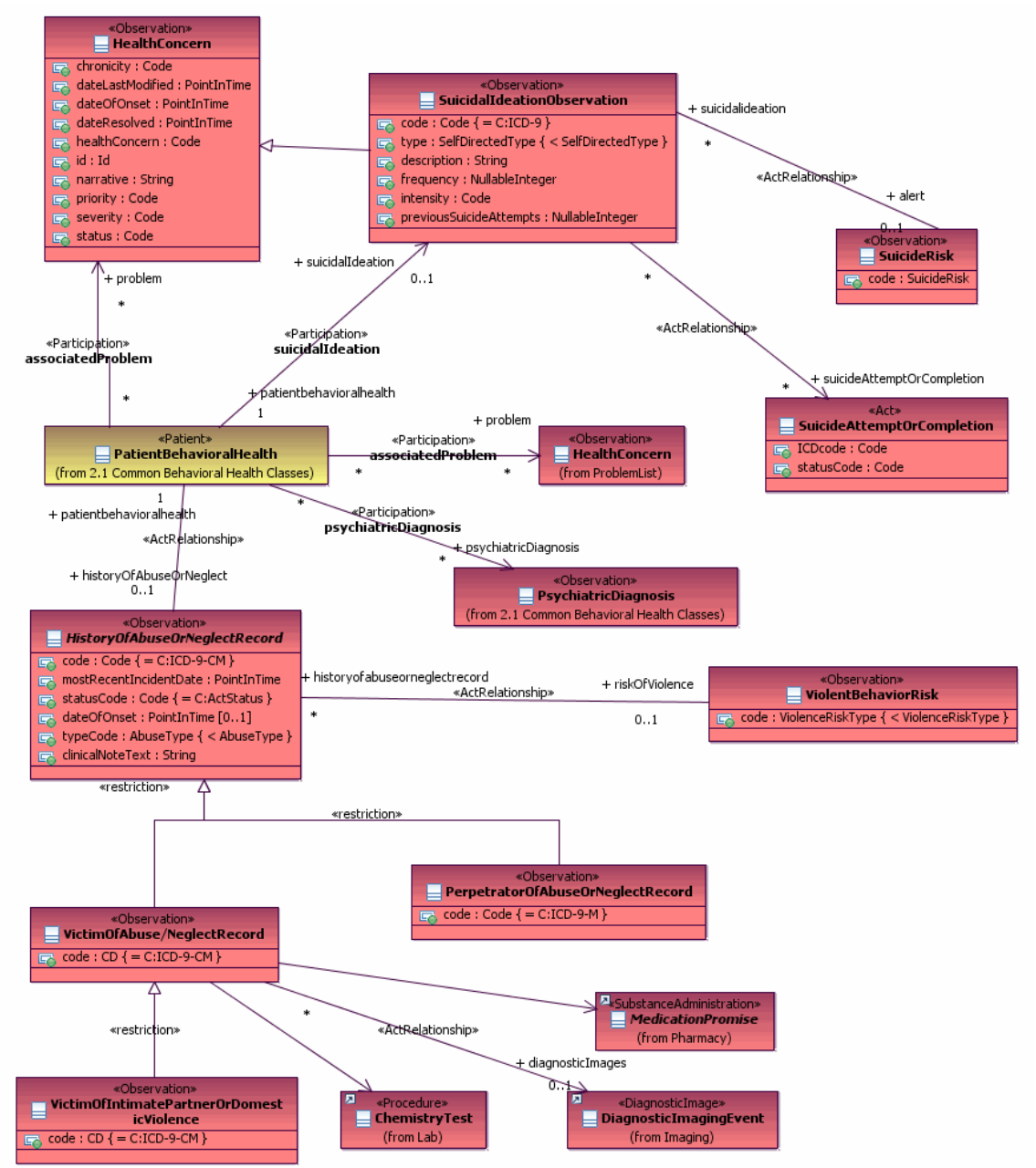

Figure 2.3: Suicide and Violence Details

«Observation» Class: HistoryOfAbuseOrNeglectRecord (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.

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

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: History of Abuse

This is the coded attribute describing the type of abuse or neglect. It is not currently associated with any particular value set, but this may be captured using ICD-9-CM diagnostic codes.

Attribute 'HistoryOfAbuseOrNeglectRecord.dateOfOnset' of type ' PointInTime' with cardinality of [0..1]

This attribute is the date when the neglect or abuse started (e.g. first incident). (An imprecise date would be appropriate).

Association 'HistoryOfAbuseOrNeglectRecord.historyOfAbuse/Neglect' of type ' HistoryOfAbuseOrNeglectRecord' with cardinality of [0..1]

This is an association between a client/patient and their History of Abuse and Neglect records.

Attribute 'HistoryOfAbuseOrNeglectRecord.mostRecentIncidentDate' of type ' PointInTime' with cardinality of [1]

This attribute is the date of the most recent incident of neglect or abuse that has been identified by the assessment.

Association 'HistoryOfAbuseOrNeglectRecord.patientbehavioralhealth' of type ' PatientBehavioralHealth' with cardinality of [1]

This is an association between a client/patient and their History of Abuse and Neglect records.

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

Vocabulary Binding:

Code System: ActStatus , Code System Id: 2.16.840.1.113883.5.14 ()

Concept Domain: ActStatus

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

Attribute 'HistoryOfAbuseOrNeglectRecord.typeCode' of type ' AbuseType' with cardinality of [1]

Vocabulary Binding:

Concept Domain: AbuseType

This attribute specifies whether the history of abuse refers to neglect, physical, or sexual abuse.

«Observation» Class: PerpetratorOfAbuseOrNeglectRecord

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 'PerpetratorOfAbuseOrNeglectRecord.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-M

Concept Domain: Perpetrator of Abuse or Neglect Type

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) and is a specialization of HealthConcern. The severity of suicidal ideation can be determined by assessing the frequency, intensity, and duration of these thoughts. The CDC is in the process of developing Suicide Surveillance: Uniform Definitions and Recommended Data Elements. 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.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9 , Code System Id: E950-E959 ()

Concept Domain: Suicide and Self-Inflicted Injury

The business stakeholders may specify what code is associated with SuicidalIdeationObservation. There is an ICDcode attribute in the class SuicideAttemptOrCompletion. Are there two different codes for these classes? If so, what is the definition for this code and as the name implies is an ICD-9 code always used to specify this information.

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

The intensity may be specified using a value set or a scale of integer values.

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 coded attribute is used to specify the means by which suicide was attempted. The attribute name implies that an ICD-9 code is used to specify this information. Is this the case?

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.

«Observation» 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 client/patient, as victim of abuse or neglect, may have additional forensic tests (e.g. imaging, lab) and medications. Therefore this specialization class has associations to medication, diagnostic imaging, and laboratory results.

Attribute 'VictimOfAbuse/NeglectRecord.code' of type ' CD' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: Victim of Abuse Type

This attribute specifies the type of victim or abuse or neglect using a standard coding system.

Attribute 'VictimOfAbuse/NeglectRecord.diagnosticImages' of type ' DiagnosticImagingEvent' with cardinality of [0..1]

If the record contains references to specific diagnostic images that document the abuse, this association will provide supporting information.

Attribute 'VictimOfAbuse/NeglectRecord.laboratoryResults' of type ' ChemistryTest' with cardinality of [0..1]

If the record contains references to specific laboratory that document the abuse, this association will provide the supporting information.

Attribute 'VictimOfAbuse/NeglectRecord.medication' of type ' MedicationPromise' with cardinality of [0..1]

If the record contains references to specific medication associated with the abuse, this association will provide the supporting information.

«Observation» Class: VictimOfIntimatePartnerOrDomesticViolence

This specialization class is used to specify the codes and details related to a history of violence

perpetrated by a domestic partner.

Attribute 'VictimOfIntimatePartnerOrDomesticViolence.code' of type ' CD' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: Victim of Intimate of Intimate of Domestic Violence

This attribute specifies the type of victim or abuse or neglect using a standard coding system.

«Observation» Class: ViolentBehaviorRisk

This class is used to alert providers of any risk of violent behavior posed by the patient. This class is used convey information about the violent tendencies of a client/patient 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

Figure 2.4 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 relevant for exchanges between providers, across departments and even among organizations.

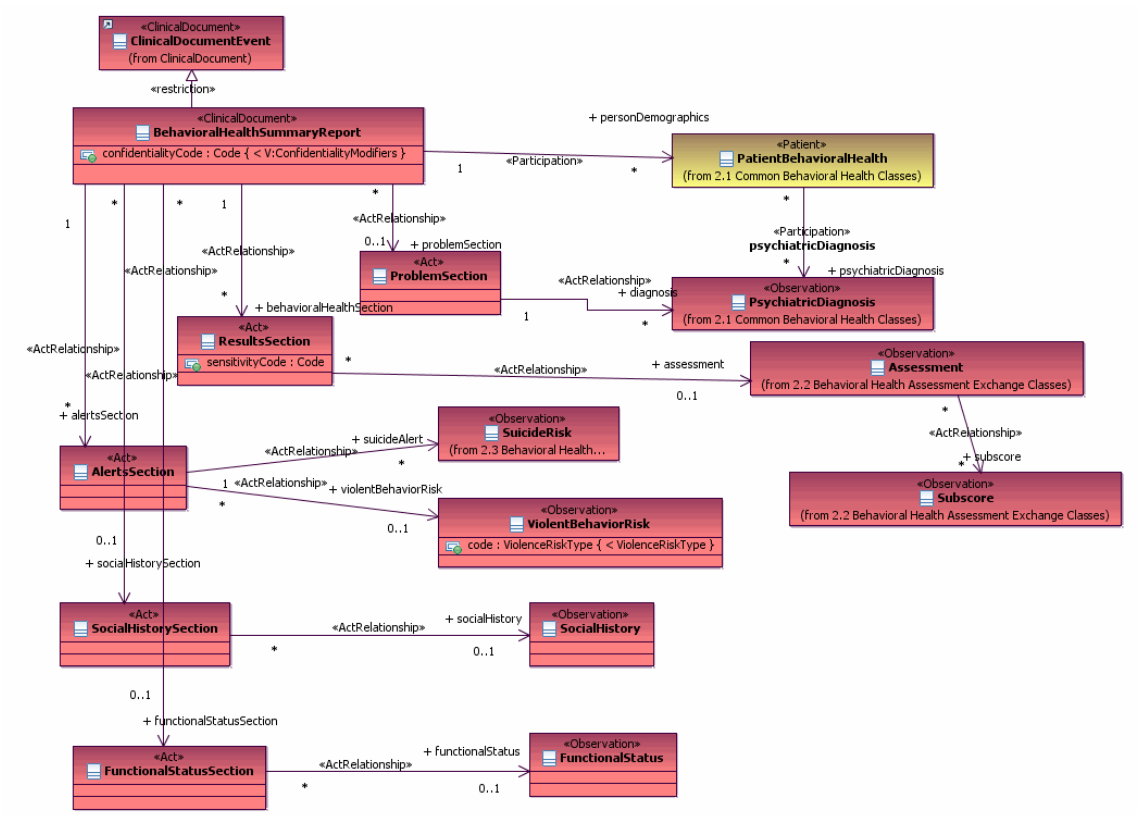

Figure 2.4: Behavioral Health Summary

«Act» Class: AlertsSection

This class corresponds to a document section intended to contain the alerts, allergies, and adverse reactions. This class provides context required for 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 content of this clinical document is sensitive because it contains Behavioral Health information. This attribute corresponds to the Act.confidentialityCode in the HL7 Version 3 RIM but is constrained to specify sensitivity and for the purpose of 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 content of this clinical document 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-9-CM 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.

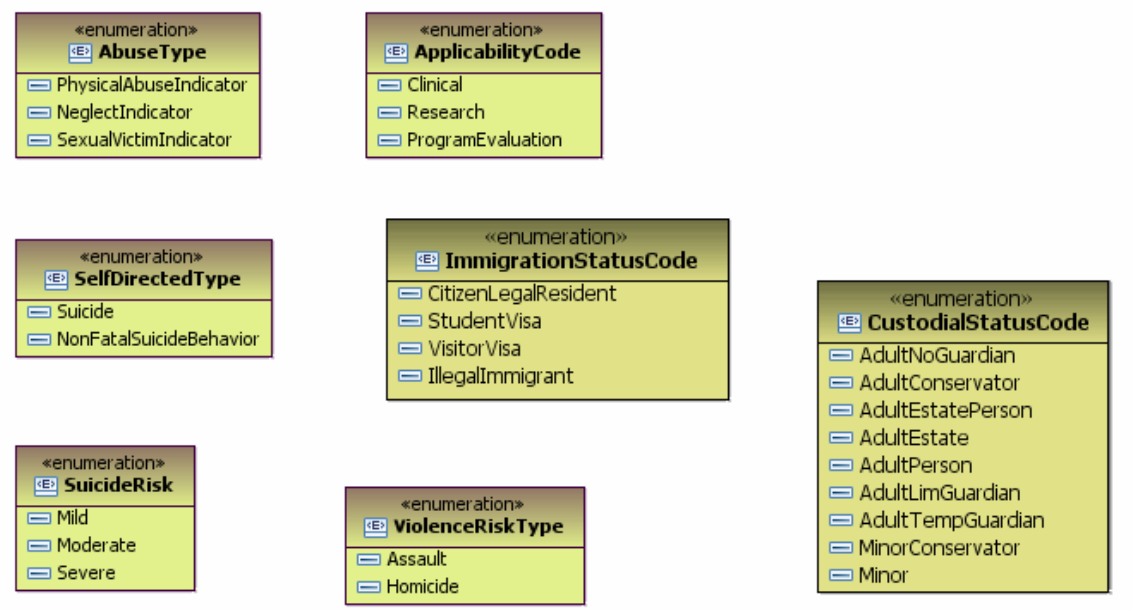

Figure 2.5: Terminology Analysis

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 (This is an example code used to indicate that the abuse is neglect.)
- PhysicalAbuseIndicator (This is an example code used to specify that the type of abuse is...)
- SexualVictimIndicator (This is an example code intended to specify sexual abuse.)

ApplicabilityCode

This value set specifies the how the content of assessment being exchanged is used.

ApplicabilityCode: values

- Clinical

  This code specifies that the assessment is applicable to clinical evaluation of the patient.

- ProgramEvaluation

  The value 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, etc.

- Research

  This code specifies that the assessment is applicable for research.

CustodialStatusCode

This enumeration illustrates the types of values that may be used to populate the custodialStatus code of the Patient_BehavioralHealth class.

CustodialStatusCode: values

- AdultConservator (Adult with Conservator)
- AdultEstate (Adult with Guardian of Estate)
- AdultEstatePerson (Adult with Guardian of Estate and Person)
- AdultLimGuardian (Adult with Limited Guardian)
- AdultNoGuardian (Adult, not under custodial supervision)
- AdultPerson (Adult with Guardian of Person)
- AdultTempGuardian (Adult with Temporary Guardian)
- Minor (Minor)
- MinorConservator (Minor with Conservator)

ImmigrationStatusCode

This enumeration illustrates the types of values that may be used to populate the immigrationStatus code of the Patient_BehavioralHealth class.

ImmigrationStatusCode: values

- CitizenLegalResident (Citizen/Permanent Resident/Legal Immigrant)
- IllegalImmigrant (Illegal Immigrant)
- StudentVisa (Student Visa)
- VisitorVisa (Visitor Visa)

SelfDirectedType

This enumeration illustrates the values that may be used to populate the type attribute of a SuicidialIdeationObservation class.

SelfDirectedType: values

- NonFatalSuicideBehavior
- Suicide

SuicideRisk

This enumeration illustrates the values that may be used to populate the attribute code of the SuicideRisk class. These values may be associated with a LOINC Answer ID associated with the LOINC code 42823-5 Suicide risk).

SuicideRisk: values

- Mild
  LOINC Answer ID LA6752-5

- Moderate
  LOINC Answer ID LA6751-7

- Severe
  LOINC Answer ID: LA6750-9

ViolenceRiskType

This enumeration illustrates the values that may be used to populate the attribute code of the ViolentBehaviorRisk class.

ViolenceRiskType: values

- Assault
- Homicide

3. Use Cases

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

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, to disambiguate stakeholder requirements and to identify the type of users and systems expected to participate in the information exchange.

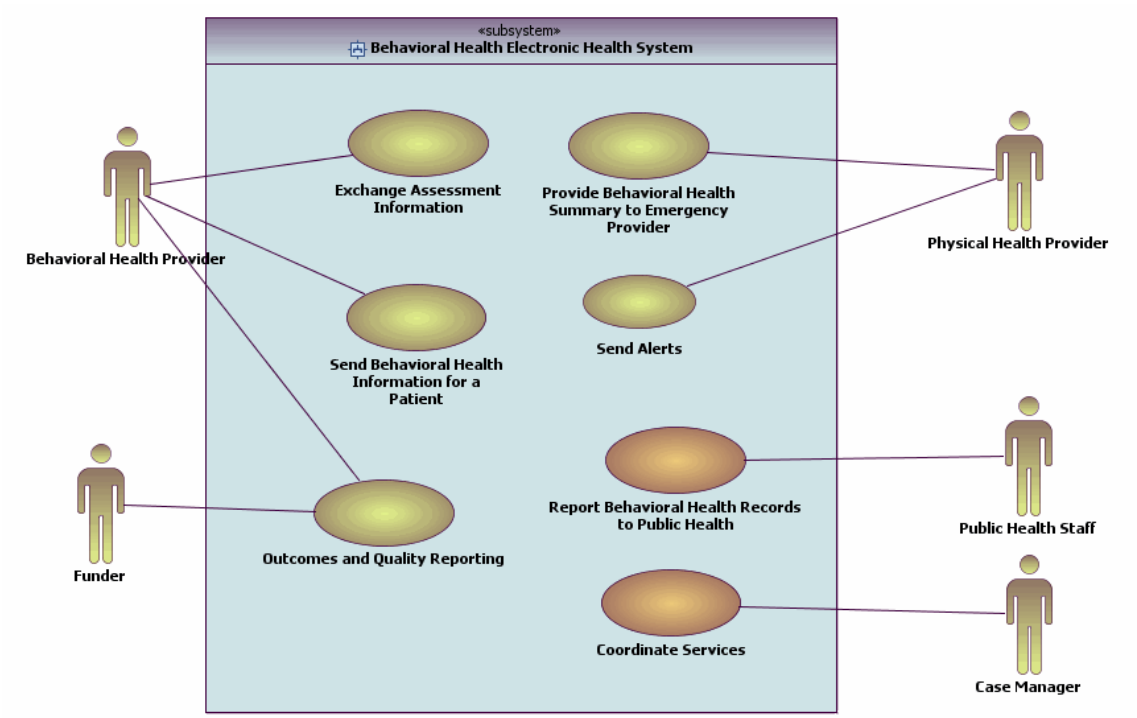

Figure 3: Behavioral Health Exchange Use Cases

«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 a high-level summary, 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 (e.g. before treatment, after treatment, 3-month follow-up, etc.).

Report Behavioral Health Records to Public Health : uml:UseCase

This use case supports Public health reporting which 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 case 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 manage the care for clients/patients.

Funder

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

Physical Health Provider

This actors refers to non-behavioral health clinical users (physical medicine) 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 which have been identified during the analysis for this domain.

Class: BehavioralHealthAssessment/PlacementTool

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

Class: ScreeningTool

Screening tools are used establish the presence, absence or the severity of a behavioral health 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.