Canadian Core Data for Interoperability Logical Data Model

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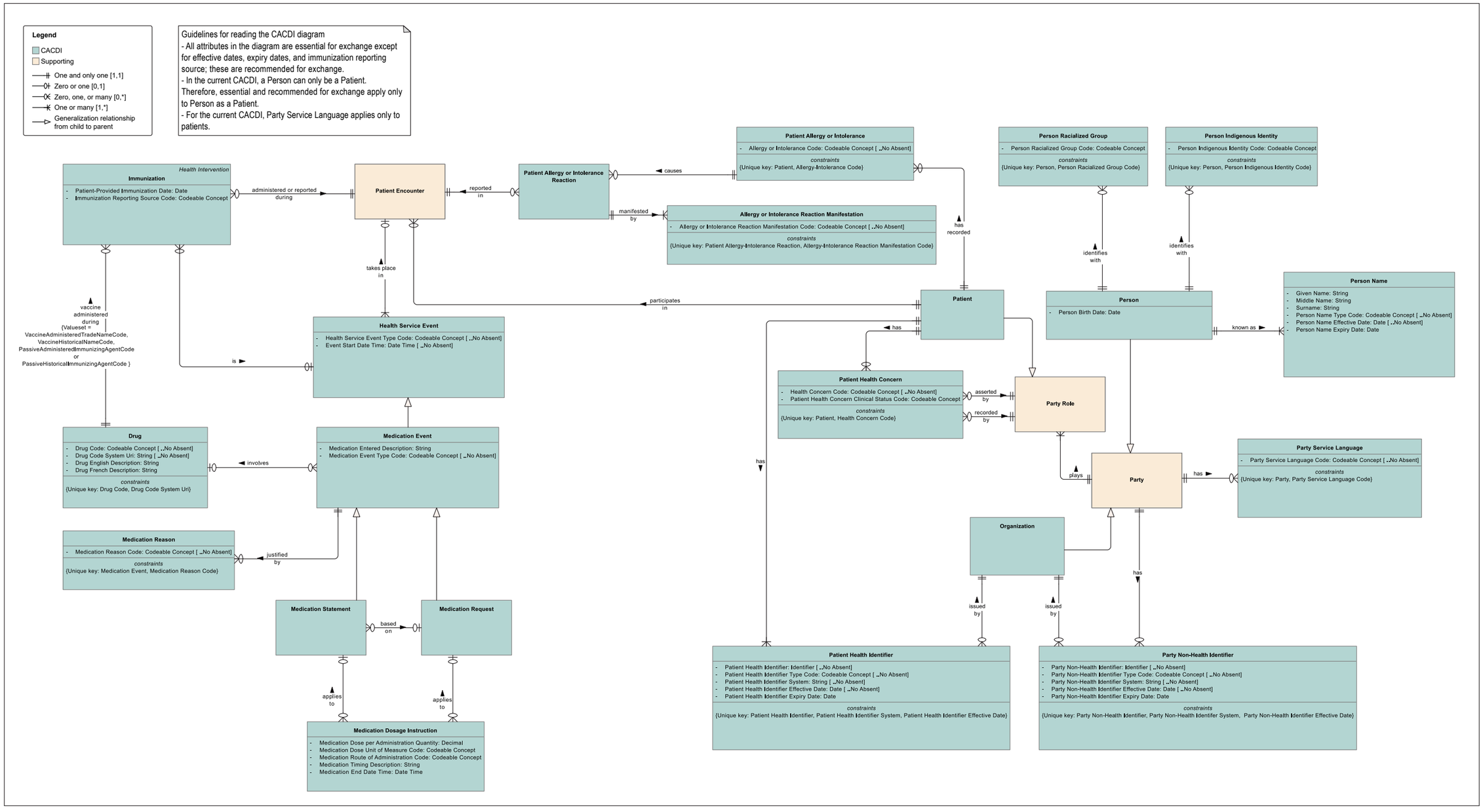
Canadian Institute for Health Information

Institut canadien d'information sur la santé



Legend

Association

Plain lines in the Logical Data Model represent association relationships between entities. Information engineering is used to depict cardinalities in these relationships. This includes 0 to 1, 1 to 1, 0 to many, and 1 to many relationships.

 1 and only 1 [1,1]

 0 or 1 [0,1]

 0, 1 or many [0,*]

 1 or many [1,*]

Any such cardinality applies to the entity that is the nearest to its symbol in a diagram. Every relationship thus has 2 cardinality symbols, one at either end.

The direction of a relationship is depicted by an arrow near its name.

For example, the Person entity has a “known as” relationship to the Person Name entity. Its cardinalities, as their symbols indicate, are

- 1 and only 1 near the Person entity; and
- 1 or many near the Person Name entity.

Therefore, each Person has 1 or more instances of Person Name (e.g., official name, nickname). Conversely, each instance of Person Name applies to 1 and only 1 Person.

Stated simply, a Person may have recorded Names(s). Conversely, Person Name is always recorded for a single Person.

Generalization

Generalization relationships have an arrow that points from the child to the parent.

 Generalization relationship from child to parent

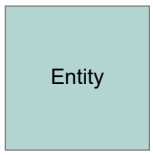
This means that the child entity is a special case (subtype) of the parent entity.

For example, Medication Statement is a Medication Event. Consequently, all properties of the parent entity Medication Event — all its attributes and all the relationships from or to it — also apply to the child entity Medication Statement.

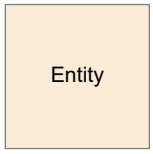
Entity

An entity is an encapsulation of data recognized by a domain expert as a representation of a discrete concept. Examples include Person, Immunization and Patient Encounter.

1. Green entities: Entities in the Canadian Core Data for Interoperability (CACDI)



2. Brown entities: Entities to support the CACDI



No Absent

When populating an entity, all its attributes marked “No Absent” should have a meaningful value; null and absent values are not considered meaningful. Attributes are categorized as No Absent if they are required for patient safety, required to meet a regulatory requirement or directly impact the meaning and understanding of the entity.

Value sets

These are defined as sets of permitted values, along with their codes and definitions, that are assigned to a data element. Fields in the tables about value sets includeThese are defined as sets of permitted values, along with their codes and definitions, that are assigned to a data element. Fields in the tables about value sets include

- **Terminology foundation:** The code system and/or base value set from which curated subsets can be developed for a specific use case; and
- **Value set:** Recommended pan-Canadian value sets are available on the Terminology Server by searching for the value set name.

Guidelines for reading the CACDI diagram

- All attributes in the diagram are essential for exchange **except for** effective dates, expiry dates and immunization reporting source; these are recommended for exchange.
- In the current CACDI, a Person can only be a Patient. Therefore, essential and recommended for exchange apply only to Person as a Patient.
- For the current CACDI, Party Service Language applies only to patients.

Allergy or Intolerance Reaction Manifestation

A symptom or sign associated with an allergy or intolerance reaction.

Constraint: Unique key: Patient Allergy or Intolerance Reaction, Allergy or Intolerance Reaction Manifestation Code

Relationships:

- Patient Allergy or Intolerance Reaction [1] is manifested by [1,*] Allergy or Intolerance Reaction Manifestation.

Allergy or Intolerance Reaction Manifestation Code: Codeable Concept

A code that specifies an allergy or intolerance reaction manifestation (e.g., allergic bronchitis).

Value set: ClinicalFindingCode

Multiplicity: No Absent

Drug

A substance or mixture of substances that can impart biological, physiological or psychological effects by exerting pharmacological, immunological or metabolic action.

Constraint: Unique key: Drug Code, Drug Code System URI (uniform resource indicator)

Relationships:

- Drug [1] vaccine is administered during [0,*] Immunization; value set = VaccineAdministeredTradeNameCode, VaccineHistoricalNameCode, PassiveAdministeredImmunizingAgentCode or PassiveHistoricalImmunizingAgentCode.
- Medication Event [0,*] includes [0,1] Drug.

Drug Code: Codeable Concept

The code that uniquely identifies the drug in the specified code system.

Medication terminology foundation: Canadian Clinical Drug Data Set (CCDD)

Medication value set: Canadian Clinical Drug Data Set

Medication terminology foundation: Health Canada Licensed Natural Health Products Database

Medication value set: HealthCanadaNatural ProductNumber

Medication terminology foundation: Alternate

SNOMED CT CA including subtypes of 373873005 | Pharmaceutical / biologic product (product), 105590001 | Substance (substance)

Medication value set: Alternate Pharmaceutical I Biologic ProductAndSubstance Code

Immunization terminology foundation: SNOMED CT CA where concepts are represented in VaccineAdministered TradeNameCode

Immunization value set: VaccineAdministered TradeNameCode

Immunization terminology foundation: VaccineHistorical NameCode

Immunization value set: VaccineHistorical NameCode

Immunization terminology foundation: PassiveAdministered ImmunizingAgentCode

Immunization value set: PassiveAdministered ImmunizingAgentCode

Immunization terminology foundation: PassiveHistorical ImmunizingAgentCode

Immunization value set: PassiveHistorical ImmunizingAgentCode

Multiplicity: No Absent

Drug Code System URI: String

The URI of the system that created and maintains drug value set codes, and in which a specific drug code is defined.

Multiplicity: No Absent

Drug English Description: String

The English description of a drug.

Drug French Description: String

The French description of a drug.

Health Service Event

An act that is being performed, has been performed or will be performed by a regulated provider with the intention of directly or indirectly improving the health of the person or populations for whom it is provided.

Relationships:

- Health Service Event [1,*] takes place in [1] Patient Encounter.
- Immunization [0,*] is [0,1] Health Service Event.
- Health Service Event is a generalization of Medication Event.

Health Service Event Type Code: Codeable Concept

A code that specifies the type/purpose of the Health Service Event (e.g., immunization).

Value set

Value set member code	Code system identifier	Value set member English name
0001	0002	Immunization
0002	0002	Medication Event

Multiplicity: No Absent

Event Start Date Time: Date/Time

The date and time at which the health service event begins.

Multiplicity: No Absent

Immunization

The process by which a person develops resistance against a disease through exposure to the immunizing agent.

Relationships:

- Immunization [0,*] is administered or reported during [1] Patient Encounter.
- Immunization [0,*] is [0,1] Health Service Event.
- Drug [1] vaccine is administered during [0,*] Immunization.

Patient-Provided Immunization Date: Date

The approximate date of the immunization when historical information is provided by the patient.

Immunization Reporting Source Code: Codeable Concept

A code that specifies the source of information reporting the immunization (e.g., person, health care professional).

Immunization Reporting Source Code is recommended for exchange; the value set is not in scope for CACDI.

Medication Dosage Instruction

An instruction on how a medication dosage is/was taken or should be taken.

Relationships:

- Medication Dosage Instruction [0,*] applies to [0,1] Medication Statement.
- Medication Dosage Instruction [0,*] applies to [0,1] Medication Request.

Medication Dose per Administration Quantity: Decimal

The prescribed quantity of medication to be taken for each administration (e.g., 50).

Medication Dose Unit of Measure Code: Codeable Concept

A code that specifies the unit of measure for the medication dose prescribed, administered or taken (e.g., mg, IU, capsule).

Terminology foundation: SNOMED CT CA including subtypes of 408103002 | Unit of drug administration (qualifier value)

The Unified Code for Units of Measure (UCUM)

Value set: PrescriptionDose QuantityUnit

Medication Route of Administration Code: Codeable Concept

A code that specifies the path by which the pharmaceutical product is taken into or contacts the body (e.g., oral, intramuscular).

Terminology foundation: SNOMED CT CA including subtypes of 284009009 | Route of administration value (qualifier value)

Value set: RouteOfAdministration

Medication Timing Description: String

The frequency and timing of the medication as prescribed, administered or taken (e.g., BID, TID, QD).

Medication End Date Time: Date/Time

The date and, if available, the time when the medication is to be stopped as prescribed, or when its administration or consumption was actually stopped.

Medication Event

The grouping of attributes and relationships common to events involving medication in relation to patients, such as Medication Request and Medication Statement.

Relationships:

- Medication Event [0,*] involves [0,1] Drug.
- Medication Event [1] is justified by [0,*] Medication Reason.
- Medication Event is a generalization of Medication Request.
- Medication Event is a generalization of Medication Statement.
- Health Service Event is a generalization of Medication Event.

Medication Entered Description: String

The description, as its author sees it, of a medication prescribed, administered or taken. Unlike drug description, entered description is not necessarily associated with a recommended pan-Canadian drug code. This description can be used for custom compound drugs.

Medication Event Type Code: Codeable Concept

A code that specifies the type of Medication Event, such as Medication Administration, Medication Request and Medication Statement, and eventually other event types, such as Medication Dispensation.

Value set

Value set member code	Code system identifier	Value set member English name
0001	0001	Medication Statement
0002	0001	Medication Request

Multiplicity: No Absent

Medication Reason

The sign, symptom or health condition that the medication was prescribed to improve or treat, or for which it is/was administered or taken.

Constraint: Unique key: Medication Event, Medication Reason Code

Relationships:

- Medication Event [1] is justified by [0,*] Medication Reason.

Medication Reason Code: Codeable Concept

A code that specifies the sign, symptom or health condition that the medication is prescribed to improve or treat, or for which it is/was administered or taken.

Terminology foundation: SNOMED CT CA including subtypes of 272379006 | Event (event), 243796009 | Situation with explicit context (situation), 404684003 | Clinical Finding (finding), 71388002 | Procedure (procedure)

Value set: MedicationReasonCode

Multiplicity: No Absent

Medication Request

An order for medication by a clinician. An order typically includes the medication name, dose, route of administration, frequency, duration and number of refills.

Relationships:

- Medication Statement [0,*] is based on [0,1] Medication Request.
- Medication Dosage Instruction [0,*] applies to [0,1] Medication Request.
- Medication Event is a generalization of Medication Request.

Medication Statement

A summary record of all the medication(s) a patient has taken, is taking or could be taking.

Relationships:

- Medication Statement [0,*] is based on [0,1] Medication Request.
- Medication Dosage Instruction [0,*] applies to [0,1] Medication Statement.
- Medication Event is a generalization of Medication Statement.

Organization

A formal collection of individuals in an operational structure formed to achieve a common purpose.

Relationships:

- Patient Health Identifier [0,*] is issued by [1] Organization.
- Party Non-Health Identifier [0,*] is issued by [1] Organization.

  Note: The above 2 relationships map to the Person Identifier Assigner data element in the Person Information table of the CACDI. In the CACDI, Party Non-Health identifier applies only to persons.
- Party is a generalization of Organization.

Party (supporting)

An individual or group of individuals with defined roles and common properties.

Relationships:

- Party [1] plays [1,*] Party Role.
- Party [1] has [0,*] Party Service Language.
- Party [1] has [0,*] Party Non-Health Identifier.
- Party is a generalization of Person.
- Party is a generalization of Organization.

Party Non-Health Identifier

A non-health identifier of an individual, a group of individuals or an organization (e.g., driver's licence, business number).

Constraint: Unique key: Party Non-Health Identifier, Party Non-Health Identifier System, Party Non-Health Identifier Effective Date

Relationships:

- Party [1] has [0,*] Party Non-Health Identifier.
- Party Non-Health Identifier [0,*] is issued by [1] Organization.

Party Non-Health Identifier: Identifier

The alphanumeric value and/or number of a non-health identifier, such as a driver's licence or a passport number (e.g., A789010, 123456).

Multiplicity: No Absent

Party Non-Health Identifier Type: Codeable Concept

A code that specifies the type of non-health identifier (e.g., driver's licence, passport).

Terminology foundation: Health Level 7® (HL7) Code System IdentifierType

Value set: IdentifierType

Multiplicity: No Absent

Party Non-Health Identifier System: String

The namespace for the identifier value — a unique URI.

Multiplicity: No Absent

Party Non-Health Identifier Effective Date: Date

The first date when the information specified is valid.

Multiplicity: No Absent

Party Non-Health Identifier Expiry Date: Date

The first date when the information specified is no longer valid.

Party Role (supporting)

A Party fulfilling a specific function related to Canada's health care systems.

Constraint: Unique key: Party, Party Role Type, Party Role Effective Date

Relationships:

- Patient Health Concern [0,*] is asserted by [1] Party Role.
- Patient Health Concern [0,*] is recorded by [1] Party Role.
- Party [1] plays [1,*] Party Role.
- Party Role is a generalization of Patient.

Party Service Language

The preferred language of service for an individual, group of individuals or organization.

Constraint: Unique key: Party, Party Service Language Code

Relationships:

- Party [1] has [0,*] Party Service Language.

Party Service Language Code: Codeable Concept

A code that specifies a party's language of service.

Terminology foundation: ISO 639-3 — Language Code

Value set: CIHI Language Codes

Multiplicity: No Absent

Patient

A person who has received, currently receives or is waiting to receive health care goods and services from a provider or organization.

Relationships:

- Patient [1] has [0,*] Patient Health Concern.
- Patient [1] has recorded [0,*] Patient Allergy or Intolerance.
- Patient [1] has [1,*] Patient Health Identifier.
- Patient [1] participates in [0,*] Patient Encounter.
- Party Role is a generalization of Patient.

Patient Allergy or Intolerance

A patient's immunological hypersensitivity (allergy) or non-immunological adverse reaction(s) (intolerance) to a product or a substance.

Constraint: Unique key: Patient, Allergy or Intolerance Code

Relationships:

- Patient Allergy or Intolerance [1] causes [0,*] Patient Allergy or Intolerance Reaction.
- Patient [1] has recorded [0,*] Patient Allergy or Intolerance.

Allergy or Intolerance Code: Codeable Concept

A code that specifies the pharmaceutical or biological product or substance (e.g., peanut) to which the person has an allergy or intolerance.

Terminology foundation: SNOMED CT CA including subtypes of 373873005 | Pharmaceutical / biologic product (product), 105590001 | Substance (substance)

Value set: ProductAndSubstanceCode

Multiplicity: No Absent

Patient Allergy or Intolerance Reaction

A patient's adverse reaction associated with an allergy or intolerance.

Relationships:

- Patient Allergy or Intolerance [1] causes [0,*] Patient Allergy or Intolerance Reaction.
- Patient Allergy or Intolerance Reaction [1] is manifested by [1,*] Allergy or Intolerance Reaction Manifestation.
- Patient Allergy or Intolerance Reaction [0,*] is reported in [1] Patient Encounter.

Patient Encounter (supporting)

An encounter for 1 patient, either alone or in a group, to receive health service(s) from 1 or more health care providers.

Constraint: Unique key: Patient, Encounter

Relationships:

- Patient Allergy or Intolerance Reaction [0,*] is reported in [1] Patient Encounter.
- Immunization [0,*] is administered or reported during [1] Patient Encounter.
- Health Service Event [1,*] takes place in [1] Patient Encounter.
- Patient [1] participates in [0,*] Patient Encounter.

Patient Health Concern

A patient's health concern (reported or diagnosed).

Constraint: Unique key: Patient, Health Concern Code

Relationships:

- Patient Health Concern [0,*] is asserted by [1] Party Role.
- Patient Health Concern [0,*] is recorded by [1] Party Role.
- Patient [1] has [0,*] Patient Health Concern.

Health Concern Code: Codeable Concept

A code that specifies an active or historical health-related condition or an issue requiring attention.

Terminology foundation: SNOMED CT CA including subtypes of 272379006 | Event (event), 243796009 | Situation with explicit context (situation), 404684003 | Clinical Finding (finding)

Value set: HealthConditionCode

For primary health care implementation: Pan-Canadian Health Concern Value Set (PHCVS)

Terminology foundation: International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada (ICD-10-CA)

Value set: Alternate

ICD-10-CA

Terminology foundation: International Statistical Classification of Diseases, Injuries, and Causes of Death, Ninth Revision (ICD-9)

Value set: Alternate (for exchange of data from existing billing systems only)

ICD-9

Multiplicity: No Absent

Patient Health Concern Clinical Status Code: Codeable Concept

A code that specifies the current status of the health concern (e.g., active, resolved).

Terminology foundation: Health Level 7® (HL7) Code System ConditionClinical StatusCodes

Value set: ConditionClinical StatusCodes

Patient Health Identifier

A health identifier of a specific patient (e.g., provincial health card number).

Constraint: Unique key: Patient Health Identifier, Patient Health Identifier System, Patient Health Identifier Effective Date

Relationships:

- Patient [1] has [1,*] Patient Health Identifier.
- Patient Health Identifier [0,*] is issued by [1] Organization.

Patient Health Identifier: Identifier

The alphanumeric value and/or number of a health identifier, such as a jurisdictional health card number or a hospital medical record number (e.g., A789010, 123456).

Multiplicity: No Absent

Patient Health Identifier Type Code: Codeable Concept

A code that specifies the type of health identifier (e.g., jurisdictional health number, medical record number).

Terminology foundation: Health Level 7® (HL7) Code System IdentifierType

Value set: IdentifierType

Multiplicity: No Absent

Patient Health Identifier System: String

The namespace for the identifier value — a unique URI.

Multiplicity: No Absent

Patient Health Identifier Effective Date: Date

The first date when the information specified is valid.

Multiplicity: No Absent

Patient Health Identifier Expiry Date: Date

The first date when the information specified is no longer valid.

Multiplicity: No Absent

Person

An individual human. Demographic, administrative and/or health information about a person may be collected and maintained. A person may be in the role of a patient, caregiver, provider or relative of a patient.

Relationships:

- Party is a generalization of Person.
- Person [1] identifies with [0,*] Person Indigenous Identity.
- Person [1] identifies with [0,*] Person Racialized Group.
- Person [1] is known as [1,*] Person Name.

Person Birth Date: Date

The year, month and day when a person was born.

Person Indigenous Identity

A person’s self-identification as First Nations, Inuk/Inuit and/or Métis.

Constraint: Unique key: Person, Person Indigenous Identity Code

Relationships:

- Person [1] identifies with [0,*] Person Indigenous Identity.

Person Indigenous Identity Code: Codeable Concept

A code that specifies a person's self-identification as First Nations, Inuk/Inuit and/or Métis.

Terminology foundation: SNOMED CT CA including subtypes of 29311000087102 | Indigenous identity group (social concept)

Value set: IndigenousIdentityCode

Person Name

A name by which a person is known.

Relationships:

- Person [1] is known as [1,*] Person Name.

Given Name: String

The person's first name. If official, must be as indicated on the person's government-issued identification (e.g., health card, driver's licence, passport). Otherwise, can be the person's usual name or the first name thereof, or a temporary name, a nickname, etc.

Middle Name: String

The person's middle name. If official, must be as indicated, if present, on the person's government-issued identification (e.g., health card, driver's licence, passport).

Surname: String

The person's last name. If official, must be as indicated on the person's government-issued identification (e.g., health card, driver's licence, passport).

Person Name Type Code: Codeable Concept

A code that specifies the use of a person's name (e.g., usual, official, temporary).

Terminology foundation: Health Level 7® (HL7) Code System NameUse

Value set: NameUse

Multiplicity: No Absent

Person Name Effective Date: Date

The first date when the information specified is valid.

Multiplicity: No Absent

Person Name Expiry Date: Date

The first date when the information specified is no longer valid.

Person Racialized Group

A person's self-identification with a social construct used to judge and categorize people based on perceived differences in physical appearance in ways that create and maintain power differentials within social hierarchies. There is no scientifically supported biological basis for discrete racial groups.

Constraint: Unique key: Person, Person Racialized Group Code

Relationships:

- Person [1] identifies with [0,*] Person Racialized Group.

Person Racialized Group Code: Codeable Concept

A code that specifies the social construct used to judge and categorize people based on perceived differences in physical appearance in ways that create and maintain power differentials within social hierarchies. There is no scientifically supported biological basis for discrete racial groups. Due to the inherent complexity of race identity, a person's association with a racialized group is through self-identification.

Terminology foundation: SNOMED CT CA including 413464008 | African race (racial group), subtypes of 413582008 | Asian race (racial group), 413773004 | Caucasian (racial group), 26631000087109 | Indigenous (racial group), 26641000087103 | Latino (racial group), 26651000087100 | Middle Eastern (racial group)

Value set: RacializedGroupCode