# INTRODUCCIÓN AL MODELO DE DATOS OMOP-CDM

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open data - open source – open science

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# Descripción del curso

El curso tiene como objetivo proporcionar una comprensión profunda del modelo de datos **OMOP-CDM de la OHDSI**, sus vocabularios y cómo usar la **aplicación web Atlas** para crear cohortes y extraer datos para **estudios observacionales**. El curso cubrirá los conceptos y principios básicos del modelo de datos OMOP-CDM, incluida su estructura, tablas clave y vocabularios. Además, el curso cubrirá los aspectos prácticos de trabajar con **Atlas**, incluido cómo crear y ejecutar análisis de **cohortes**.

# Materiales del curso

alabarga / **omop-cdm-course** Public

Code | Issues | Pull requests | Actions | Projects | Security | Insights

main | 1 branch | 0 tags | Go to file | Code

**alabarga** Update README.md af00948 8 hours ago **18** commits

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|---|---|---|
| docs | Add course outline | 6 months ago |
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| slides | Update README.md | 8 hours ago |
| .gitignore | Initial commit | 6 months ago |
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| LICENSE | Initial commit | 6 months ago |
| README.md | Update README.md | 8 hours ago |
| docker-compose.yml | Add files via upload | 10 hours ago |

https://github.com/alabarga/omop-cdm-course

# (Clinical) Data is complicated

# (Clinical) Data is complicated

- El sector médico es uno de los sectores que genera un gran **volumen** de datos, de gran **heterogeneidad,** entre los que se incluyen las historias clínicas electrónicas (EMR), las imágenes médicas o los resultados de pruebas médicas, y muchos otros.
- El **análisis y la interpretación** de estos datos pueden brindar información importante para la mejora de la calidad de la atención médica, la **investigación clínica** y la toma de decisiones.

A
B

# (Clinical) Data is complicated

- La **falta de estandarización** en los modelos de datos ha creado una serie de problemas. En primer lugar, dificulta la **comparación** y el **intercambio** de datos entre diferentes sistemas y organizaciones, lo que hace que sea difícil para los investigadores, clínicos y los responsables políticos obtener una imagen clara y completa de las enfermedades, los tratamientos y su eficacia.

CLOSED

# Protección de Datos

- El **Reglamento General de Protección de Datos (RGPD)** es una ley de la Unión Europea que entró en vigor el 25 de mayo de 2018, y que establece las reglas para la protección de datos personales de los ciudadanos europeos.
- El objetivo principal del RGPD es proteger los **derechos de privacidad** de los ciudadanos europeos, y proporcionar un **marco legal claro y coherente** para el **tratamiento de datos personales**. Para ello, establece un **conjunto de normas y principios** para garantizar que las empresas y organizaciones que manejan datos personales, incluyendo empresas en línea, procesen la información de forma justa y transparente.

# Protección de Datos

- Entre los principales objetivos del RGPD se incluyen:
  - La necesidad de obtener el **consentimiento expreso** del titular de los datos antes de recopilar, utilizar o compartir sus datos personales.
  - La obligación de las empresas y organizaciones de **informar** clara y concisamente a los titulares de datos sobre cómo se utilizarán sus datos personales.
  - El derecho de los titulares de datos a **solicitar el acceso** a sus datos personales, su rectificación o supresión, y a obtener una copia de sus datos personales en un formato legible por máquina.
  - La obligación de las empresas y organizaciones de tomar **medidas de seguridad adecuadas** para proteger los datos personales, y notificar a los titulares de datos y a las autoridades competentes en caso de violación de seguridad de los datos.

OPEN

FAIR

# Datos FAIR

## FINDABLE

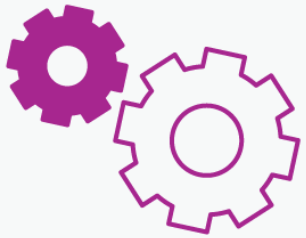
Identificadores únicos y metadatos que pueden usarse para encontrar los datos de manera sencilla

## ACCESSIBLE

Los datos son abiertos, libres y universalmente disponibles para la investigación

## INTER-OPERABLE

Los datos utilizan formatos libres y estándar utilizados por un amplio número de aplicaciones



## REUSABLE

Todos los datos están descritos con formatos estándard y tienen licencias de uso claramente descritas

# (Clinical) Data is complicated

- La **armonización de datos** se refiere al proceso de transformar y estandarizar los datos para que puedan ser comparables y analizados juntos. Al intentar combinar datos de diferentes fuentes, surge el siguiente problema: estos datos suelen tener distintas formas de recopilación, procesamiento e interpretación, lo que hace que los datos estén en diferentes formatos y no tengan las mismas estructuras y convenciones. Para abordar este problema y alcanzar la armonización de los datos de salud, deben crearse **estándares y protocolos** para la recopilación y el análisis de estos, así como el desarrollo de **herramientas** y técnicas que hagan posible la combinación de los datos

# (Clinical) Data is complicated

- Una solución podría ser la **centralización** de datos, que consiste en recolectar, almacenar y gestionar los datos en un único lugar. Sin embargo, este método no es posible para los datos clínicos, ya que la centralización de datos está pensada para datos de una misma organización.
- Otra solución son las **bases de datos federadas**, que permiten analizar los datos sin que sea necesario que estos se muevan del lugar donde se han recogido. No obstante, el tratamiento conjunto de los datos requiere que se tenga un **modelo común** para que las consultas puedan devolver datos sobre bases de datos armonizadas en este modelo de datos común.

# (Clinical) Data is complicated

- Los **estándares de datos** en medicina se refieren a un conjunto de **reglas y formato**s que se utilizan para definir la **estructura**, el **contenido** y el intercambio de datos médicos entre sistemas y aplicaciones de salud.
- Estos estándares son necesarios para garantizar la **calidad** y la **interoperabilidad** de los datos médicos, y para permitir que el personal de atención médica y los pacientes compartan información de manera eficiente y segura.

# (Clinical) Data is complicated

- **Estándares de formato**: los estándares de formato establecen cómo se debe estructurar y presentar la información médica en un formato estandarizado. Ejemplos de este tipo de estándares en medicina son el **Health Level 7 (HL7)**, que se utiliza para intercambiar información entre sistemas de información médica, y **Digital Imaging and Communications in Medicine (DICOM)**, que se utiliza para almacenar y compartir imágenes médicas.

# (Clinical) Data is complicated

- **Estándares de codificación**: la función de estos estándares es convertir información médica, como diagnósticos, procedimientos, medicamentos y resultados de laboratorio, en un formato particular para que pueda ser transmitida, almacenada o procesada de manera eficiente. Algunos de los estándares de codificación más comunes son el **Sistema Internacional de Clasificación Internacional de Enfermedades (CIE)** y el **Código Universal para la Identificación de Observaciones Clínicas y de Laboratorio (LOINC).**

# (Clinical) Data is complicated

- **Estándares de interoperabilidad**: los estándares de interoperabilidad son un conjunto de normas, directrices y especificaciones técnicas que establecen la forma en que diferentes sistemas de información y tecnologías deben comunicarse y transmitir datos entre sí. Este tipo de estándares es imprescindible para asegurar que los distintos sistemas u orígenes de datos pueden trabajar entre ellos. Ejemplos de este tipo de estándares son **Patient Summary**, así como el modelo de datos **OMOP-CDM**.

# OMOP-CDM

The Observational Medical Outcomes Partnership Common Data Model (OMOP-CDM) ha sido desarrollado por y para la comunidad científica, proporcionándo las herramientas para generar evidencia de alta calidad y reproducible a partir de datos de salud observacionales. Los datos pueden ser extraídos, transformados y cargados directamente desde los sistemas de información clínica.

FHIR (Fast Healthcare Interoperability Resources) es un estándar universal para el intercambio de registros de salud de pacientes en sistemas de historia clínica electrónica. Está compuesto por lo que se denominan recursos, agrupados en perfiles que especifican cómo debe representarse un elemento de información particular.

openEHR es un estándar abierto que describe la administración y almacenamiento de información sanitaria basada en arquetipos, definiciones estandarizadas para estructurar y almacenar información médica. Estos arquetipos permiten que los sistemas de salud capturen, compartan e interpreten datos de manera coherente y estandarizada

# Introducción al modelo de datos OMOP-CDM

# OHDSI

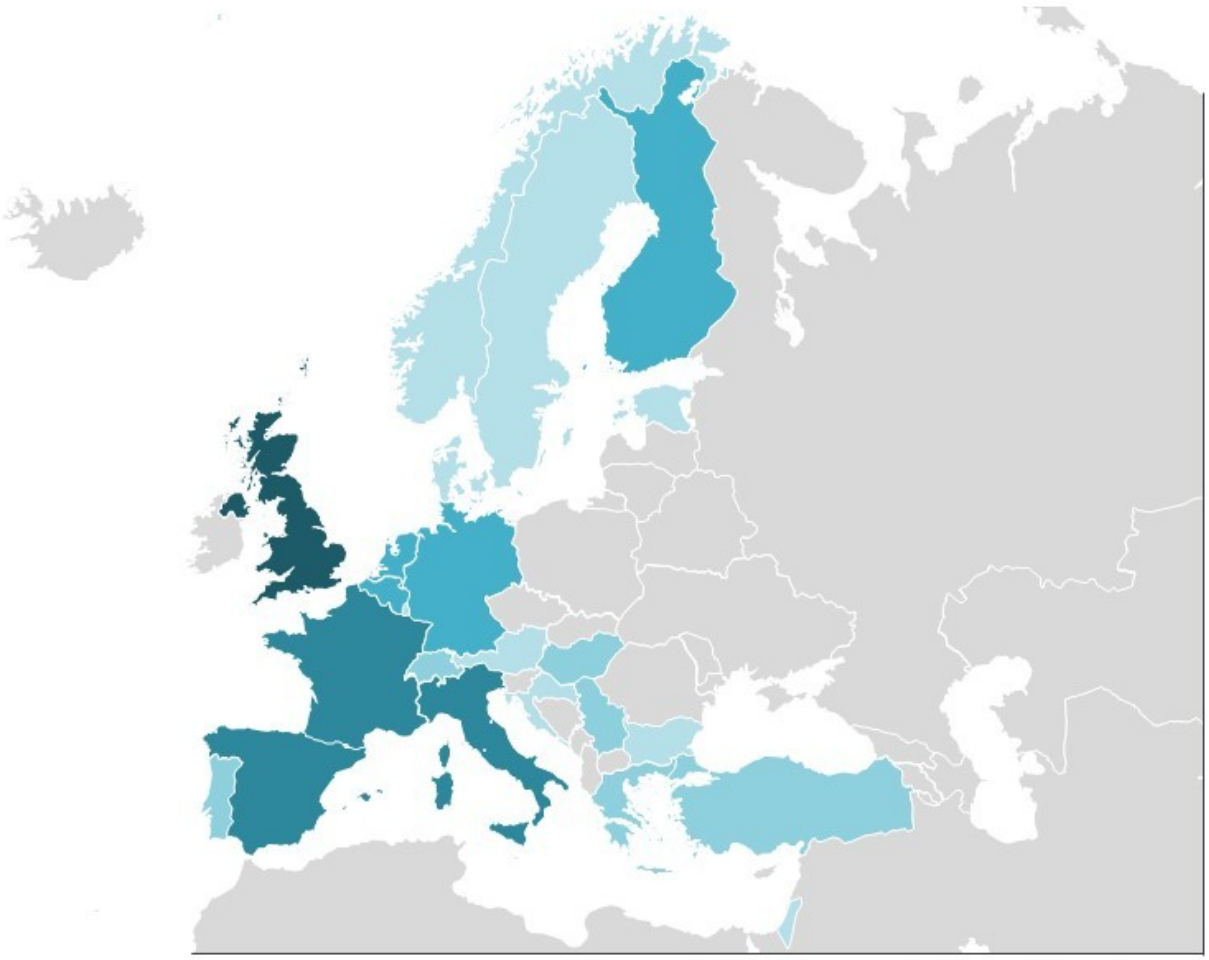
- La **Observational Health Data Sciences and Informatics (OHDSI)** es una red internacional de investigadores y bases de datos observacionales de salud, la cual tiene como objetivo crear y aplicar soluciones analíticas de datos de código abierto a una gran red de bases de datos clínicos para mejorar la salud y el bienestar humanos. Esta red de investigación surgió del **Observational Medical Outcomes Partnership (OMOP)**', que era una asociación público-privada establecida en los EE. UU. para informar el uso apropiado de las bases de datos observacionales de atención médica para estudiar los efectos de los productos médicos
- Para lograr la integración entre los datos de los múltiples participantes de la red, OHDSI utiliza el **Common Data Model (CDM)** desarrollado por OMOP
- https://www.ohdsi-europe.org/

OHDSI
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

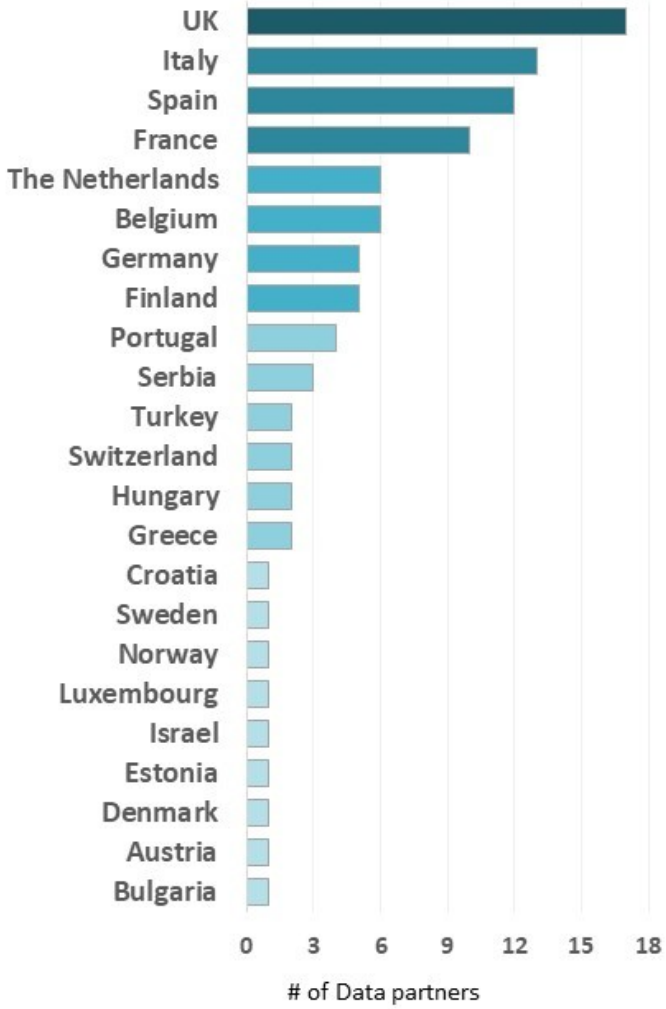
# EHDEN

- The **European Health Data and Evidence Network (EHDEN)** is developing a federated and equitable ecosystem of institutions generating clinical data, with researchers across academia and industry, supported by certified and qualified SMEs, **harmonising clinical data** and creating a network technology for real-world data research.
- Centres joining the EHDEN network could be university or non-academic hospitals, primary care networks, existing registries, etc.
- Study execution is performed in a **federated** manner, i.e. analytical code is sent to the data source, run locally in their own safe haven, and only the aggregated results are shared.
- https://www.ehden.eu/

EHDEN
EUROPEAN HEALTH DATA & EVIDENCE NETWORK

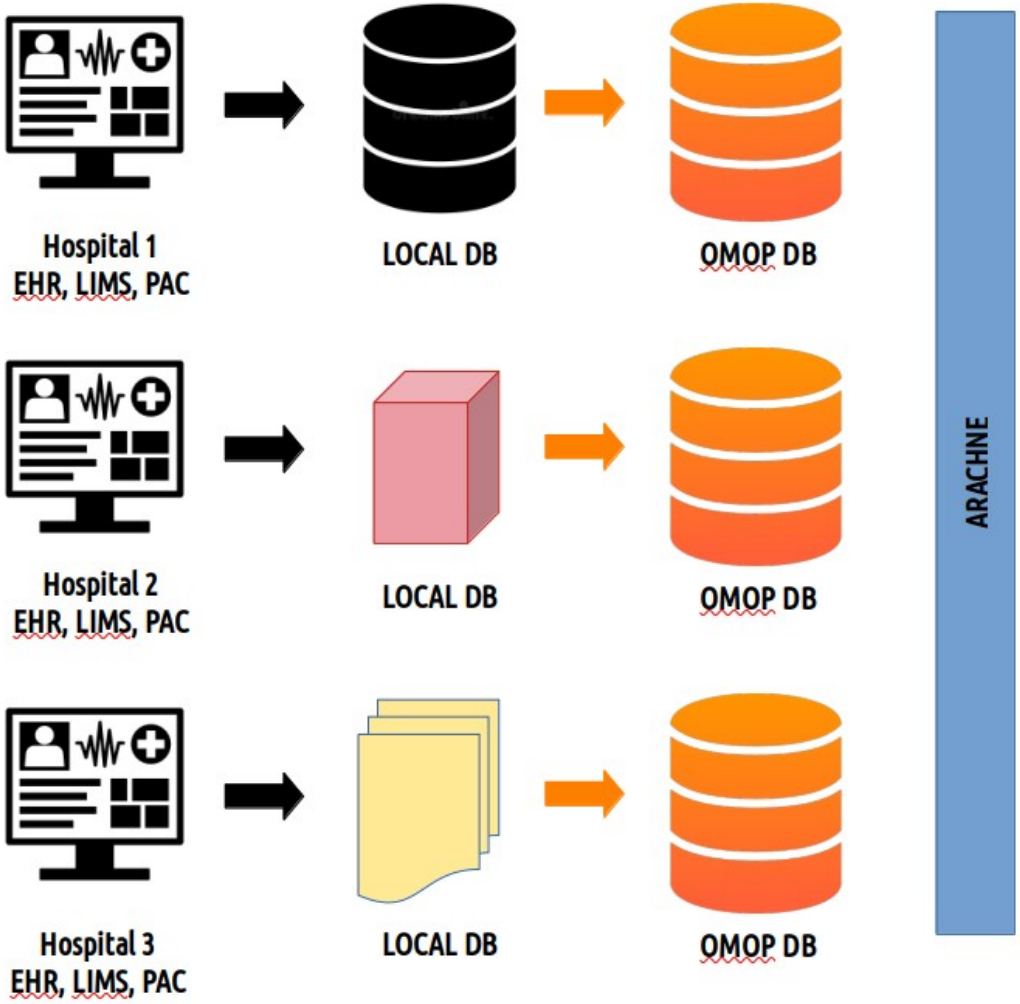


Geographic spread of data partners. The shade of blue indicates the # of data partners in that country (darker = more)




EHDEN
EUROPEAN HEALTH DATA & EVIDENCE NETWORK

# OMOP-CDM




Una comunidad internacional de desarrollo de herramientas, estándares y buenas prácticas en estandarizaciónde datos de salud

Herramientas libres para el análisis y explotación de los datos (generación de cohortes, caracterización, incidencia, predicción)

Red europea para la estandarización y federación de datos para la generación de evidencia clinica basada en datos del mundo real

# OMOP-CDM

Global Alliance for Genomics & Health
Collaborate. Innovate. Accelerate.

International Cancer Genome Consortium

ARGO Accelerating Research in Genomic Oncology
International Cancer Genome Consortium

European Commission | European Health Data Space
European Cancer Mission

eosc

1+MG

B1MG

elixir

iMPaCT | Data

IBSAL Instituto de Investigación Biomédica de Salamanca

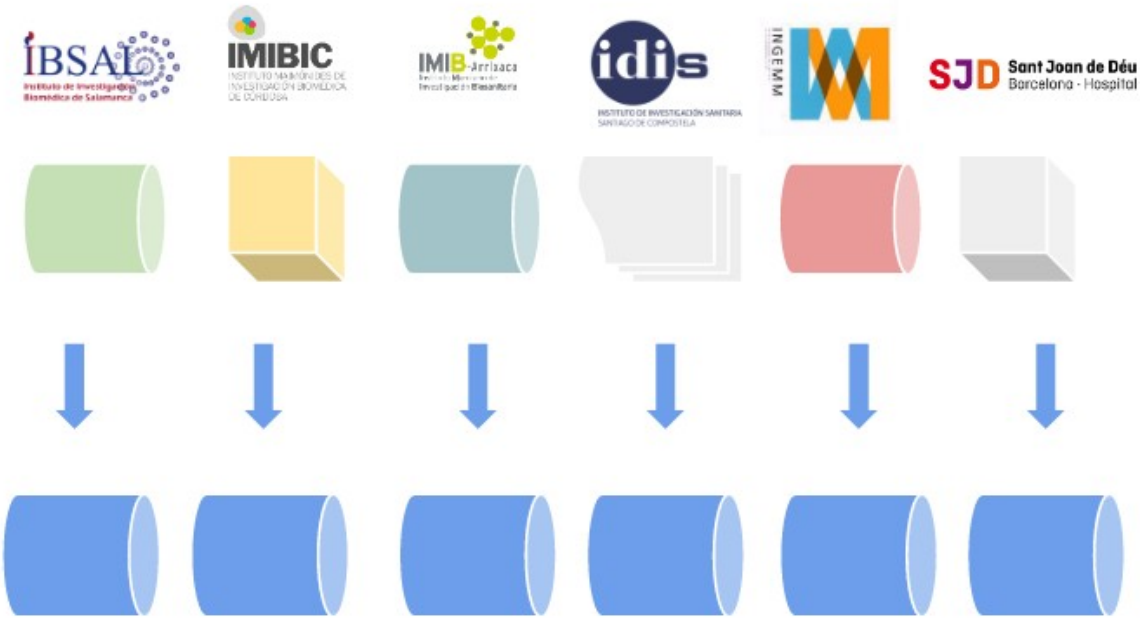
IMIBIC Instituto Maimónides de Investigación Biomédica de Córdoba

IMIB-Arrixaca Instituto Murciano de Investigación Biosanitaria

idis Instituto de Investigación Sanitaria Santiago de Compostela

INGEMM

SJD Sant Joan de Déu Barcelona - Hospital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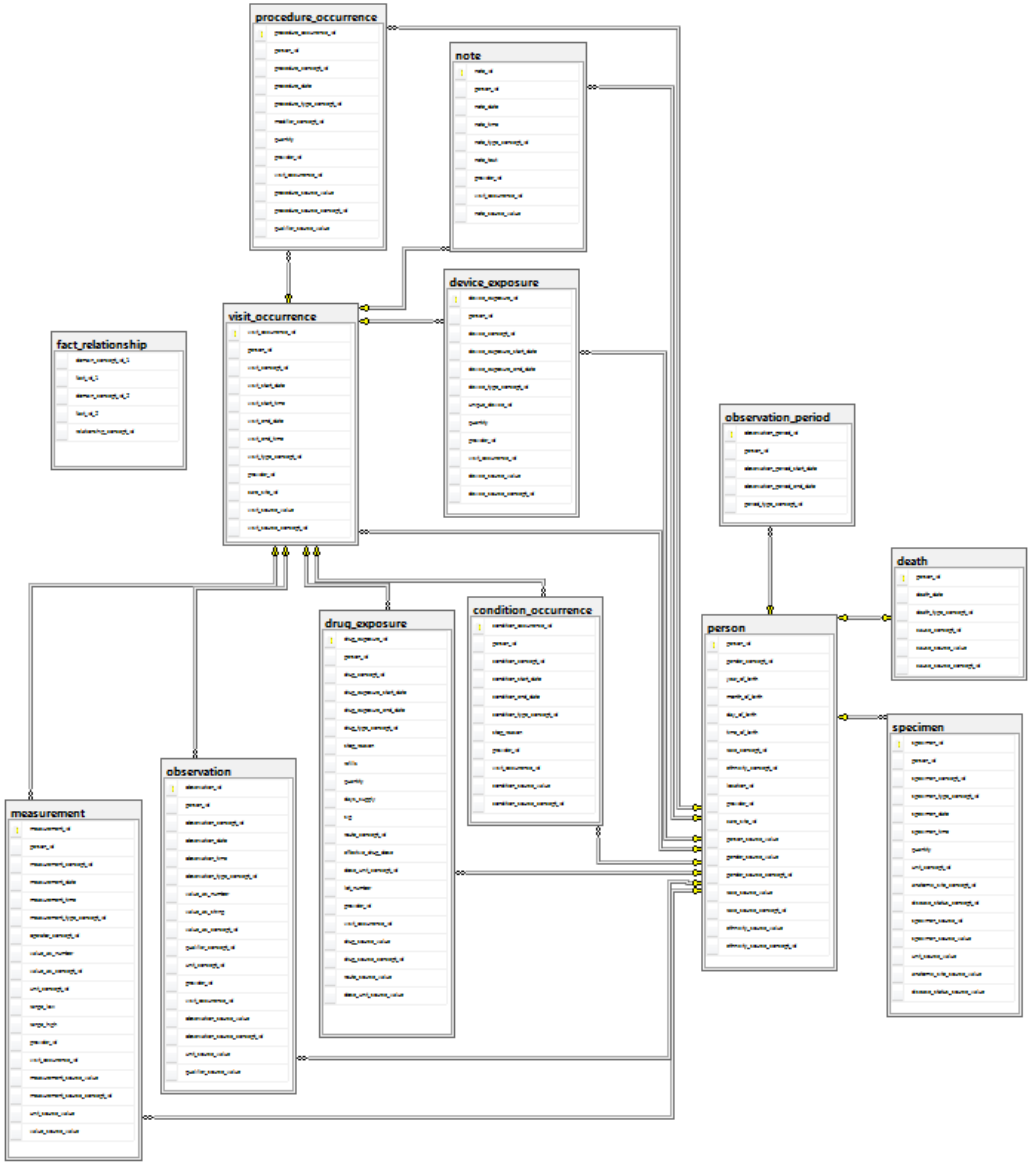
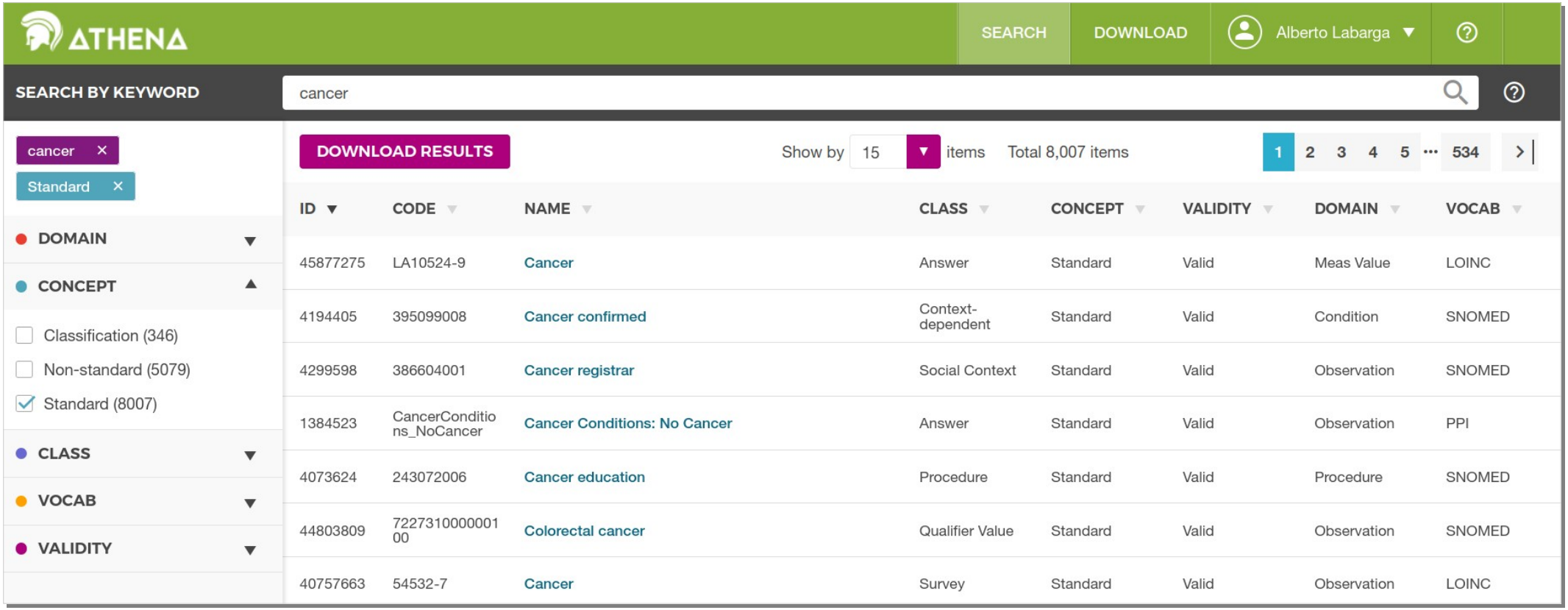
# Interoperabilidad sintáctica




https://ohdsi.github.io/CommonDataModel/

# Interoperabilidad semántica

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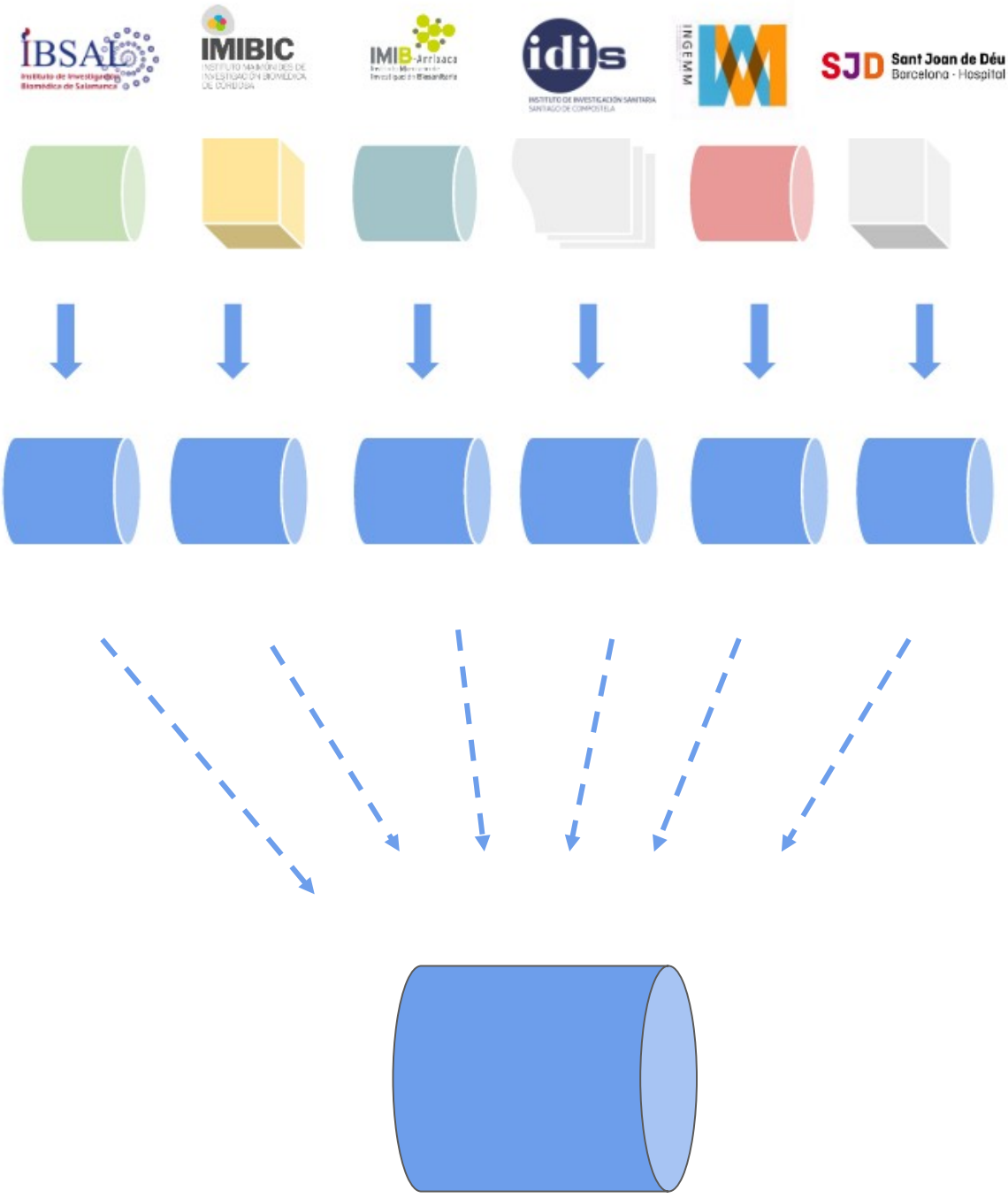
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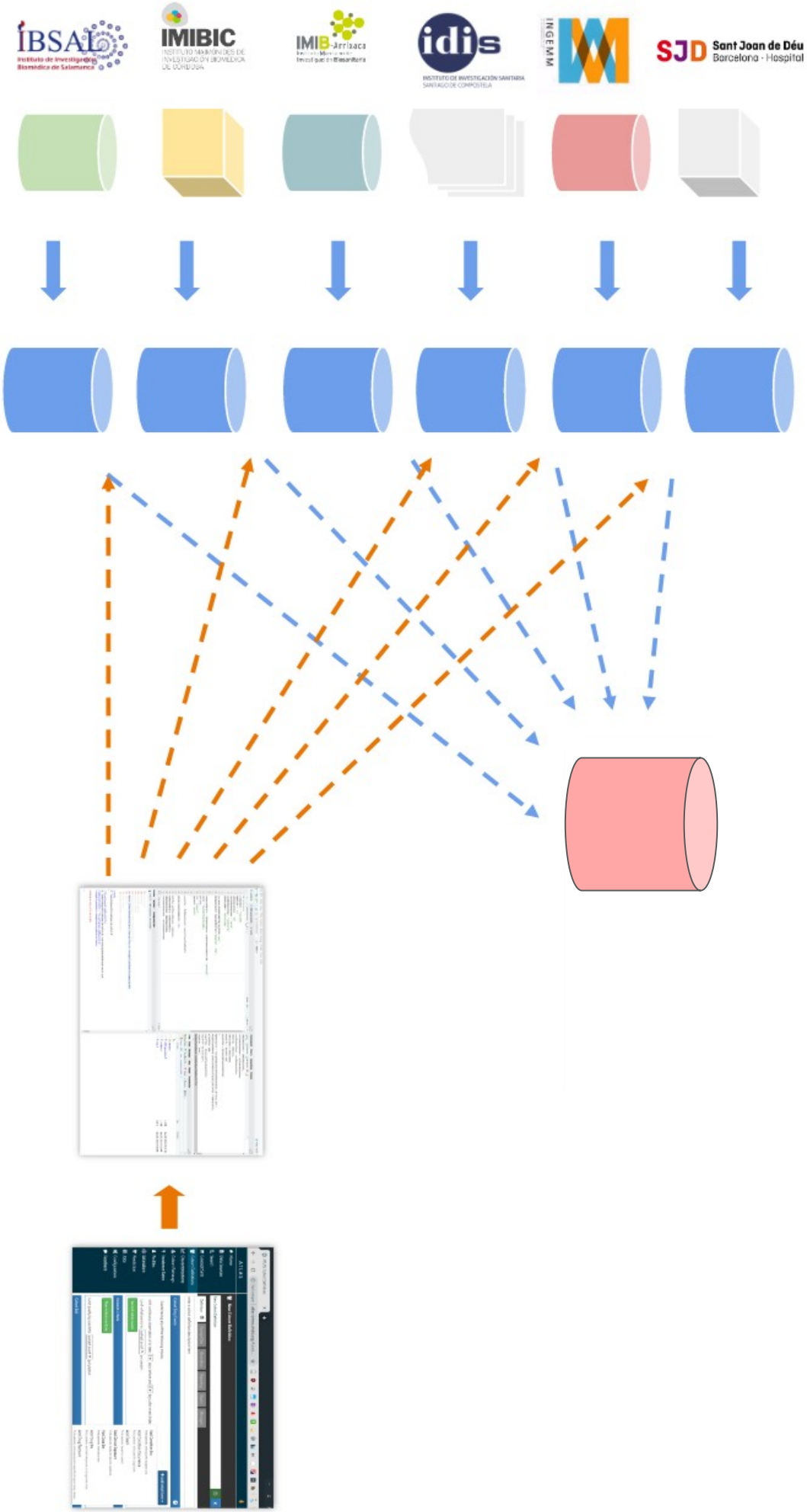

IBSAL
Instituto de Investigación Biomédica de Salamanca
IMIBIC
INSTITUTO MAIMÓNIDES DE INVESTIGACIÓN BIOMÉDICA DE CÓRDOBA
IMIB-Arrixaca
Instituto Murciano de Investigación Biosanitaria
idis
INSTITUTO DE INVESTIGACIÓN SANITARIA SANTIAGO DE COMPOSTELA
INGEMM
SJD Sant Joan de Déu
Barcelona · Hospital

# OMOP-CDM

- OMOP pretende servir como **modelo de datos común** para poder comprender los datos clínicos sin importar su origen. Este es un estándar de **licencia abierta** cuyo objetivo es estandarizar los datos y estructurarlos para permitir análisis y observaciones eficientes cuyos resultados sean fiables
- OMOP está optimizado para **identificar conjuntos de la población** con determinadas intervenciones clínicas y sus resultados; **caracterizar** estos conjuntos de población para distintas características como pueden ser información demográfica, historial de enfermedades, tratamientos, etc; **predecir** los resultados de la exposición a un medicamento o la aplicación de una determinada intervención médica para un paciente a nivel individual; **estimar** el efecto que puede tener una determinada intervención para un conjunto de la población.

# OMOP-CDM

- **Idoneidad para el propósito**: este CDM se centra en su capacidad para **ofrecer información** útil para el análisis, más que en satisfacer las necesidades operativas de los proveedores de atención médica o los pagadores.
- Se trata de un **modelo centrado en la persona**, lo cual se traduce en que todas las tablas de eventos se encuentran enlazadas a la tabla PERSON (persona), exceptuando las tablas de datos estandarizados del sistema de salud, que se encuentran enlazadas a los distintos dominios u orígenes.
- **Protección de datos**: los datos personales, como pueden ser el nombre, los apellidos, o el lugar exacto de domicilio, están limitados, exceptuando aquellas investigaciones que requieran de datos exactos.
- **Diseño de dominios**: los dominios se representan como tablas relacionales en las que se captura, como mínimo, la identidad de la persona y una fecha para cada registro. Es importante destacar que se trata de un **modelo de datos relacional** en el que los datos se representan en forma de tablas que están interconectadas mediante claves primarias (primary key, PK) y foráneas (foreign key, FK).
- **Justificación de los dominios**: los dominios se encuentran definidos aparte, en un modelo entidad-relación, en caso de que su uso sea analítico y el dominio tenga incorporados atributos específicos que no sean aplicables de ninguna otra forma. El resto de los datos pueden almacenarse en tablas con estructura entidad-atributo-valor. Hay un total de 30 dominios.

# OMOP-CDM

- **Vocabularios estandarizados**: se utilizan vocabularios estandarizados para estandarizar los registros, con el fin de que estos contengan todos los conceptos correspondientes.
- **Reutilización de vocabularios existentes**: siempre que sea posible, el origen de los conceptos serán estándares industriales o nacionales, así como definiciones provenientes de organizaciones médicas.
- **Conservación de códigos de origen**: todos los códigos están conectados a los vocabularios estandarizados, pero aún así OMOP almacena el código de origen con el fin de no perder información.
- Cada **concepto estándar** tiene una asignación única de dominio que define en qué tabla se registran. Aunque la asignación de dominio correcta puede ser objeto de debate, la **correspondencia estricta entre dominio-tabla-campo** asegura una ubicación inequívoca para cualquier código o concepto.

# OMOP-CDM

- **Neutralidad tecnológica**: OMOP no requiere una tecnología específica, sino que se puede utilizar en distintas bases de datos relaciones, como pueden ser Oracle o PostgreSQL, así como diferente software para el análisis de datos.
- **Escalabilidad**: este CDM está optimizado para el uso de orígenes de datos con distintos tamaños, ya que existen bases de datos que pueden llegar a contener millones o billones de registros clínicos.
- **Compatibilidad** con versiones anteriores
- Los derechos del usuario final sobre las tablas de vocabulario y las tablas de eventos son de **solo lectura**. Aquellas tablas que necesiten ser manipuladas por el usuario final son almacenadas en el esquema “Results”.
- Los **tipos de datos** normalmente están definidos por el estándar ANSI SQL, entre los cuales se encuentran VARCHAR, INTEGER, FLOAT, DATE, DATE-TIME y CLOB

Looking to send us a pull request for a bug fix? Please see the readme on the main github page.

**Clinical Data Tables**
- PERSON
- OBSERVATION_PERIOD
- VISIT_OCCURRENCE
- VISIT_DETAIL
- CONDITION_OCCURRENCE
- DRUG_EXPOSURE
- PROCEDURE_OCCURRENCE
- DEVICE_EXPOSURE
- MEASUREMENT
- OBSERVATION
- DEATH
- NOTE
- NOTE_NLP
- SPECIMEN
- FACT_RELATIONSHIP

**Health System Data Tables**

**Health Economics Data Tables**

# Clinical Data Tables

## PERSON

### Table Description

This table serves as the central identity management for all Persons in the database. It contains records that uniquely identify each person or patient, and some demographic information.

### User Guide

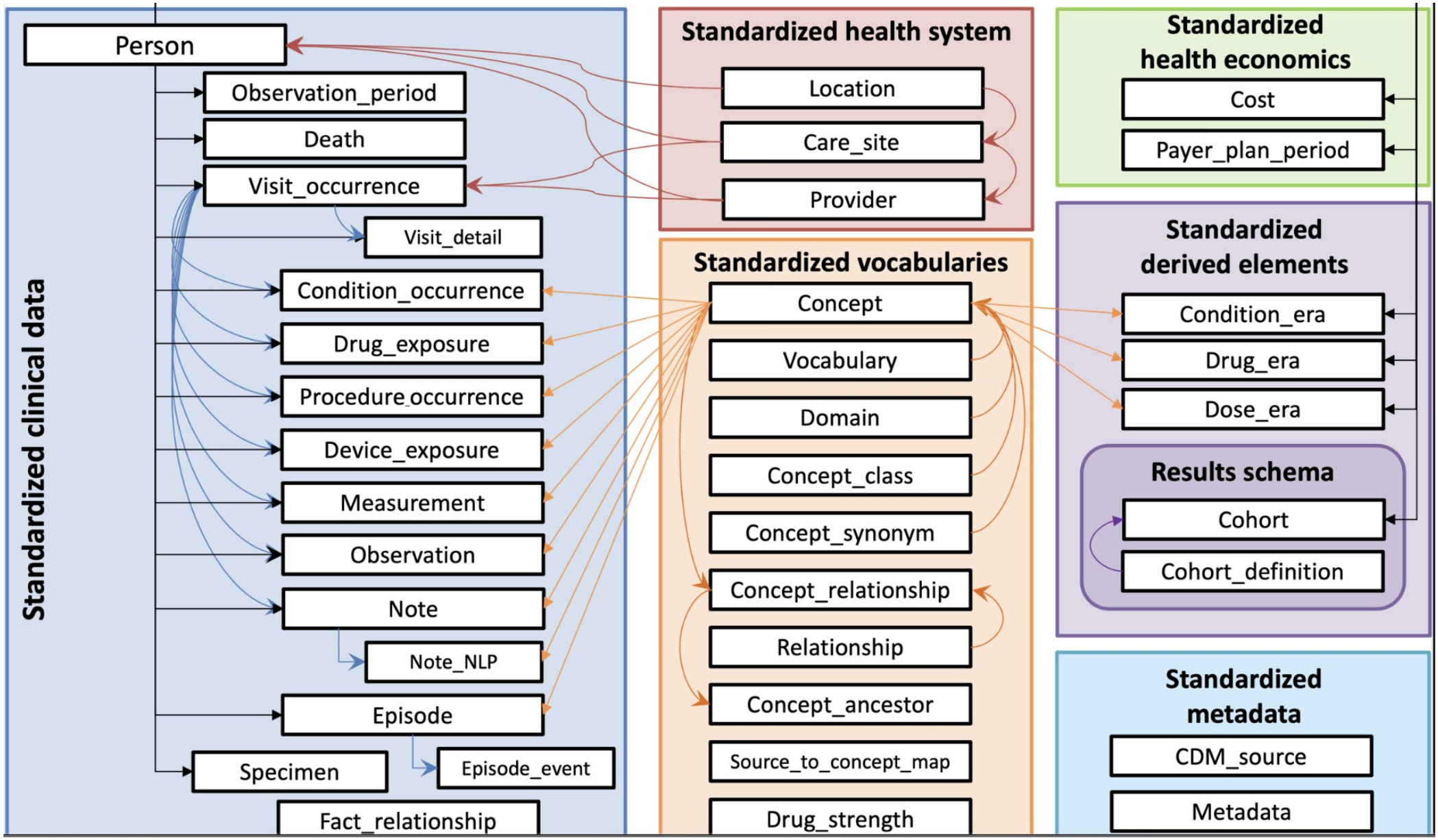
All records in this table are independent Persons.

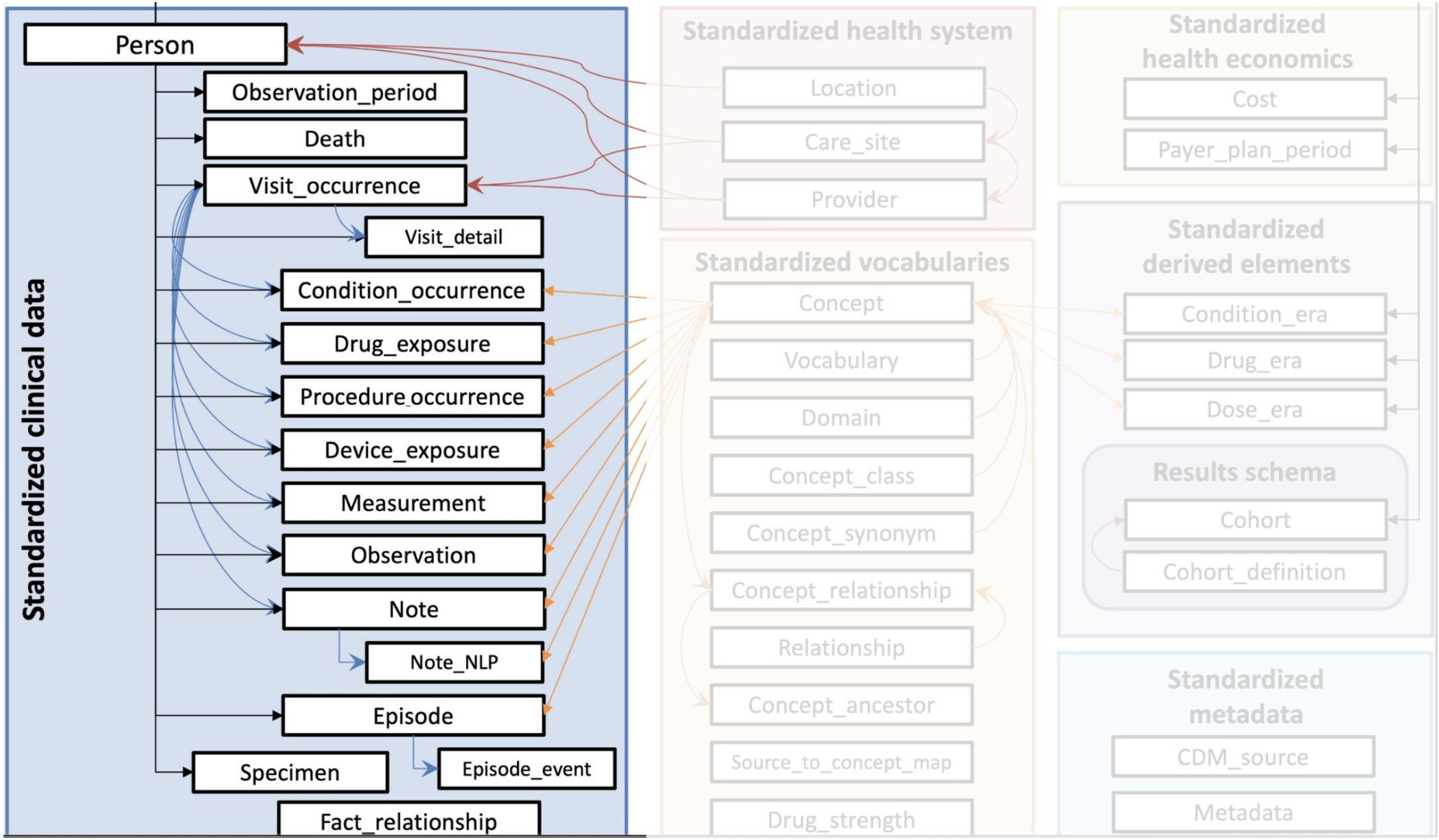
### ETL Conventions

All Persons in a database needs one record in this table, unless they fail data quality requirements specified in the ETL. Persons with no Events should have a record nonetheless. If more than one data source contributes Events to the database, Persons must be reconciled, if possible, across the sources to create one single record per Person. The content of the BIRTH_DATETIME must be equivalent to the content of BIRTH_DAY, BIRTH_MONTH and BIRTH_YEAR.

| CDM Field | User Guide | ETL Conventions | Datatype | Required | Primary Key | Foreign Key | FK Table | FK Domain |
|---|---|---|---|---|---|---|---|---|
| **person_id** | It is assumed that every person with a different unique identifier is in fact a different person and should be treated | Any person linkage that needs to occur to uniquely identify Persons ought to be done prior to writing this table. This identifier can be the original id from the source data provided if it is | integer | Yes | Yes | No | | |

https://ohdsi.github.io/CommonDataModel/cdm54.html


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata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Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

| person | |
|---|---|
| person_id | bigint NN |
| location_id | bigint |
| provider_id | bigint |
| care_site_id | bigint |
| birth_datetime | timestamp |
| year_of_birth | integer NN |
| gender_source_concept_id | integer NN |
| gender_concept_id | integer NN |
| ethnicity_concept_id | integer NN |
| ethnicity_source_concept_id | integer NN |
| race_concept_id | integer NN |
| race_source_concept_id | integer NN |
| month_of_birth | integer |
| day_of_birth | integer |
| person_source_value | text |
| gender_source_value | text |
| race_source_value | text |
| ethnicity_source_value | text |

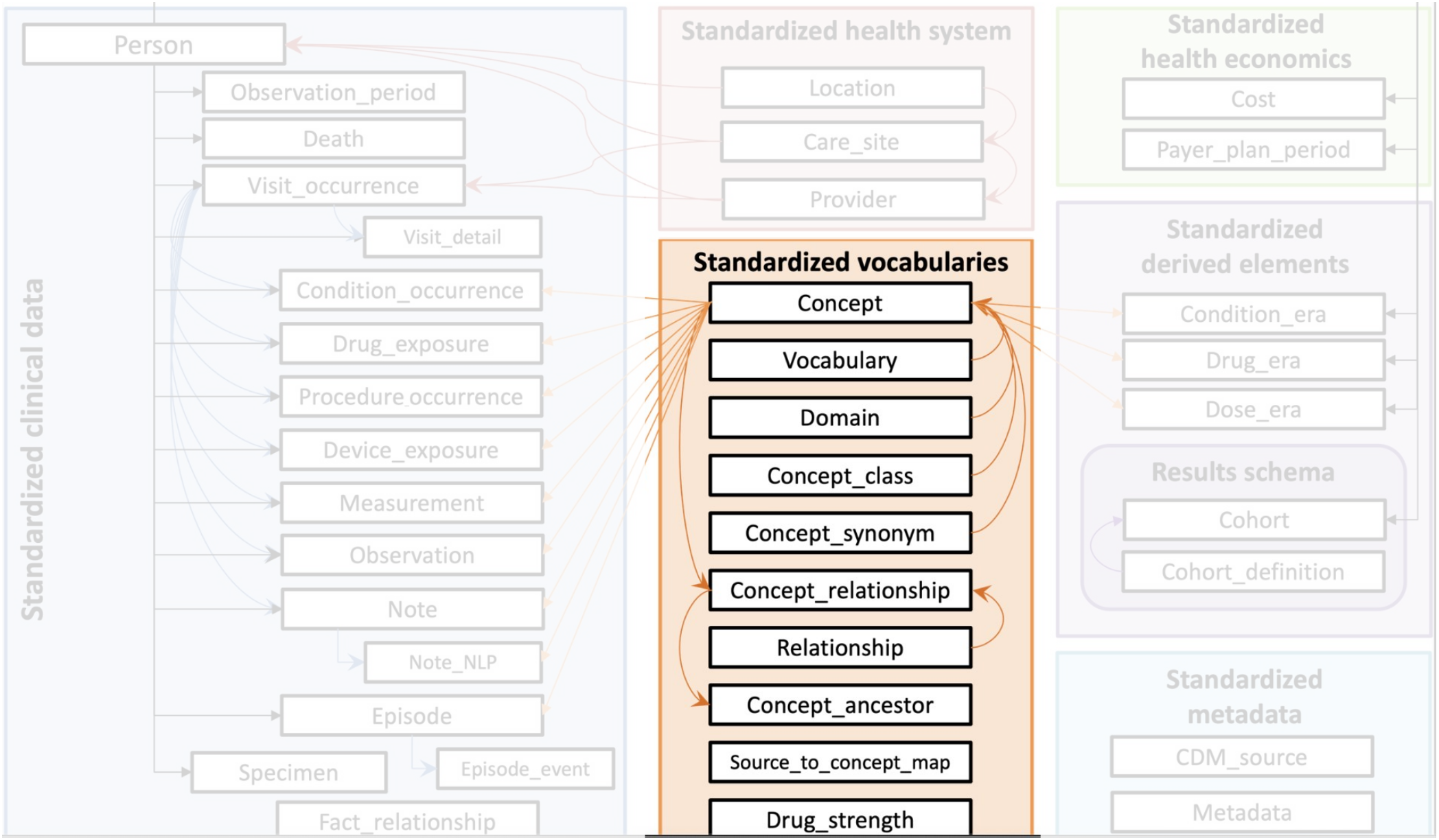
| death | |
|---|---|
| person_id | bigint NN |
| death_datetime | timestamp |
| death_date | date NN |
| death_type_concept_id | integer NN |
| cause_concept_id | integer |
| cause_source_concept_id | integer |
| cause_source_value | text |

# Principios generales

- [Event]_ID es una clave primaria de las tablas de eventos. Por ejemplo, el campo PERSON_ID identifica a una persona concreta en la tabla PERSON,
- [Event]_CONCEPT_ID es una clave foránea a un concepto estándar de la tabla CONCEPT, por ejemplo gender_concept_id 8532 corresponde a ‘Female’

# Conceptos estándar

- Los conceptos estándar son la representación principal del evento, ya que definen el significado de una entidad clínica de la misma forma independientemente de su valor en el origen.


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

# Conceptos

- En las tablas de datos del CDM, cada registro está representado por un conjunto de conceptos normalizados, que se almacenan en tablas de eventos con sus valores **CONCEPT_ID**, los cuales son claves foráneas a la **tabla CONCEPT**, que sirve como tabla de referencia general.
- Todas las instancias de CDM utilizan la misma tabla CONCEPT como **referencia** para los conceptos, lo que junto con el modelo de datos común es un mecanismo clave de interoperabilidad y la base de la red de investigación OHDSI.

# Conceptos

- La tabla CONCEPT contiene información detallada sobre cada concepto, como su nombre, dominio y clase, entre otros.
- En caso de que no exista un **concepto estándar** o no se puede identificar, el valor del CONCEPT_ID se establece en 0, lo que representa un **concepto inexistente, desconocido o no mapeable**.

| concept | | |
|---|---|---|
| concept_id | integer | NN |
| valid_start_date | date | NN |
| valid_end_date | date | NN |
| concept_name | text | NN |
| domain_id | text | NN |
| vocabulary_id | text | NN |
| concept_class_id | text | NN |
| concept_code | text | NN |
| standard_concept | text | |
| invalid_reason | text | |

| DETAILS | |
|---|---|
| **Domain ID** | Condition |
| **Concept Class ID** | Clinical Finding |
| **Vocabulary ID** | SNOMED |
| **Concept ID** | 320128 |
| **Concept code** | 59621000 |
| **Validity** | Valid |
| **Concept** | Standard |
| **Synonyms** | Essential hypertension (disorder)<br>Idiopathic hypertension<br>Primary hypertension<br>Systemic primary arterial hypertension |
| **Valid start** | 31-Jan-2002 |
| **Valid end** | 31-Dec-2099 |

| | |
|---|---|
| CONCEPT_ID | 313217 |
| CONCEPT_NAME | Atrial fibrillation |
| DOMAIN_ID | Condition |
| VOCABULARY_ID | SNOMED |
| CONCEPT_CLASS_ID | Clinical Finding |
| STANDARD_CONCEPT | S |
| CONCEPT_CODE | 49436004 |
| VALID_START_DATE | 01-Jan-1970 |
| VALID_END_DATE | 31-Dec-2099 |
| INVALID_REASON | |

For use in CDM

English description

Domain

Vocabulary

Class in SNOMED

Concept in data

Code in SNOMED

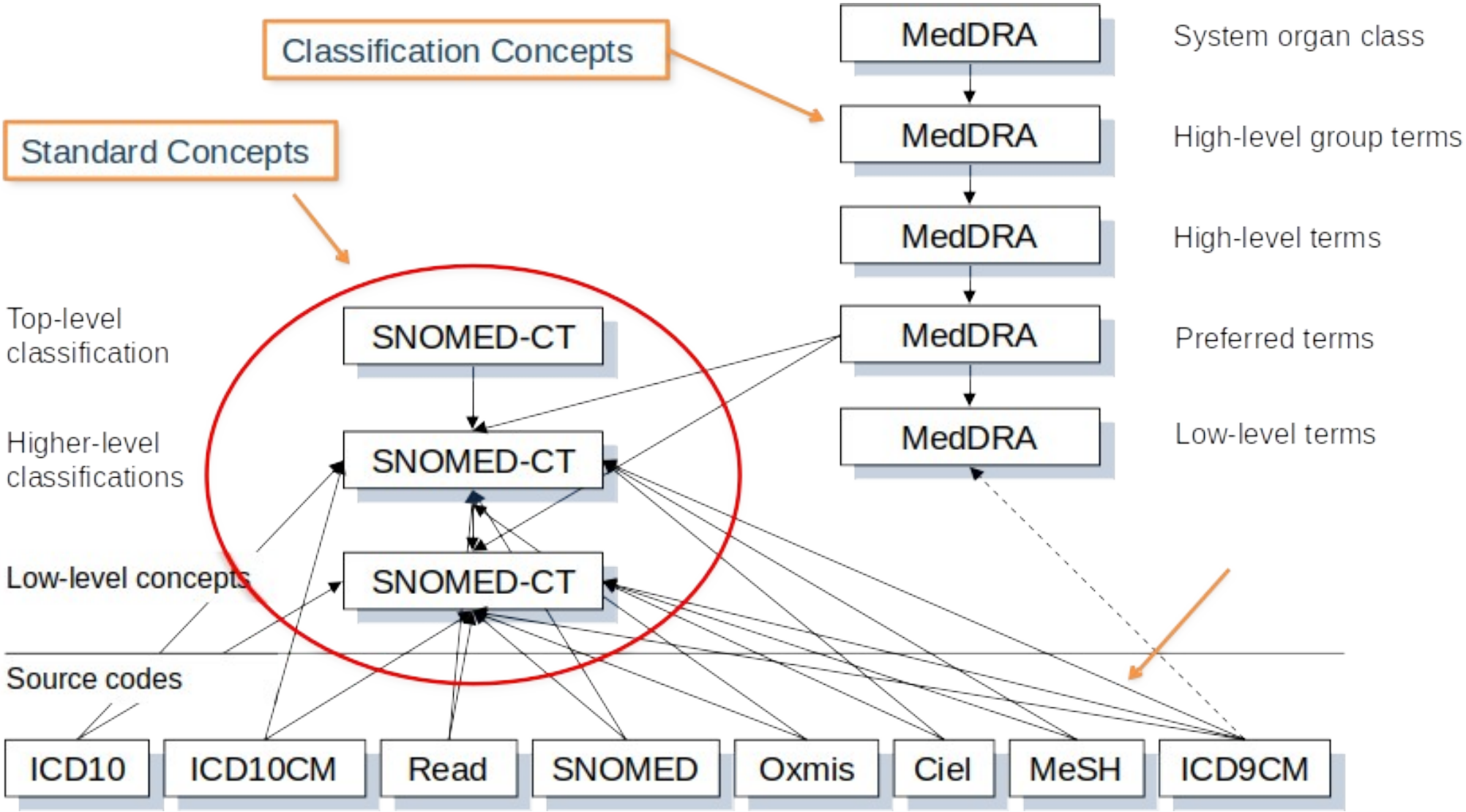
Valid during time interval

| concept | | |
|---|---|---|
| concept_id | integer | NN |
| valid_start_date | date | NN |
| valid_end_date | date | NN |
| concept_name | text | NN |
| domain_id | text | NN |
| vocabulary_id | text | NN |
| concept_class_id | text | NN |
| concept_code | text | NN |
| standard_concept | text | |
| invalid_reason | text | |

- Proporciona una visión estandarizada de los conceptos clínicos en distintos dominios
- Reutiliza vocabularios existentes
- Se actualiza constantemente
- NO es cerrado (podemos añadir conceptos usando concept_id > 200000000)

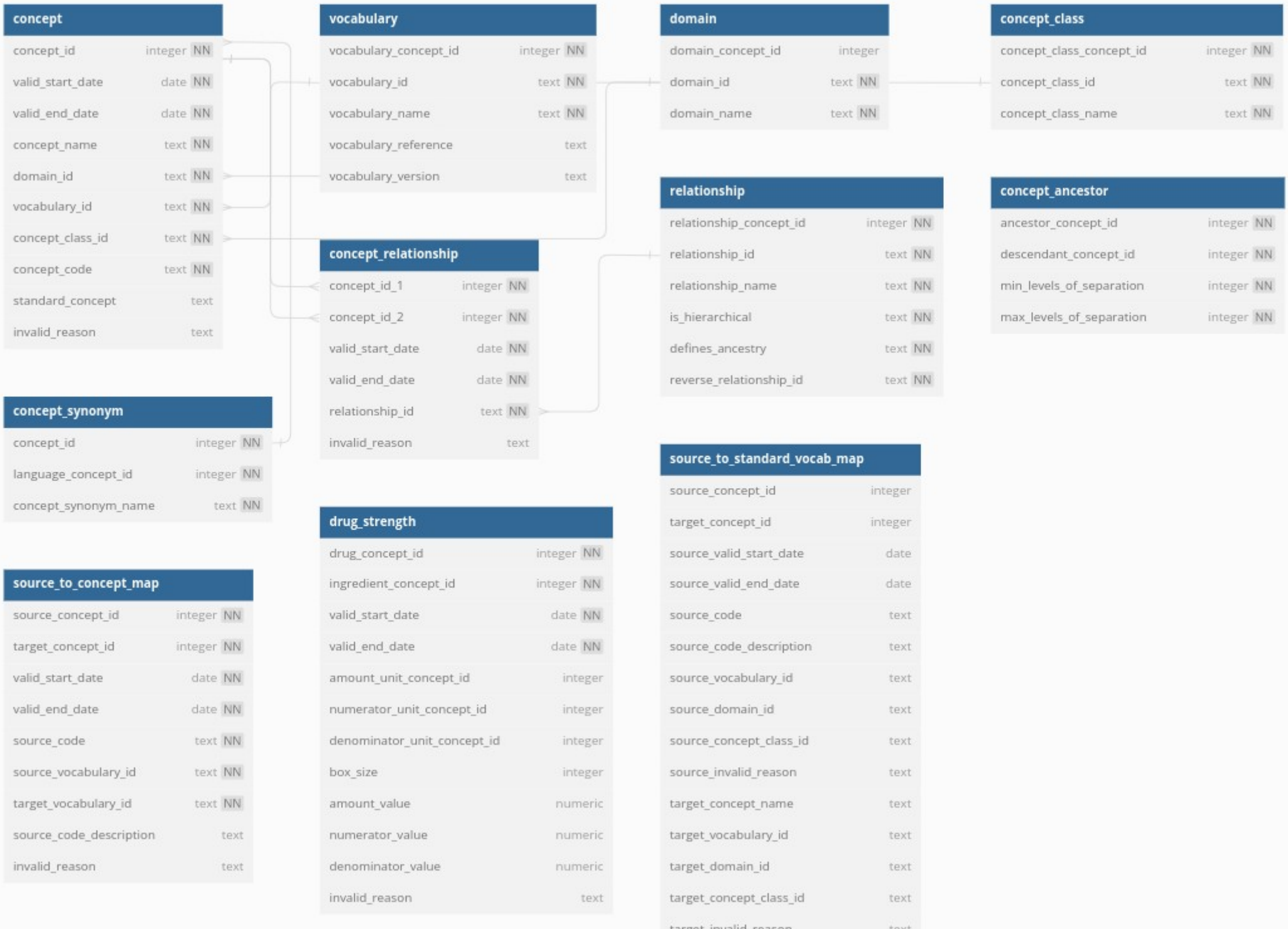
# Conceptos

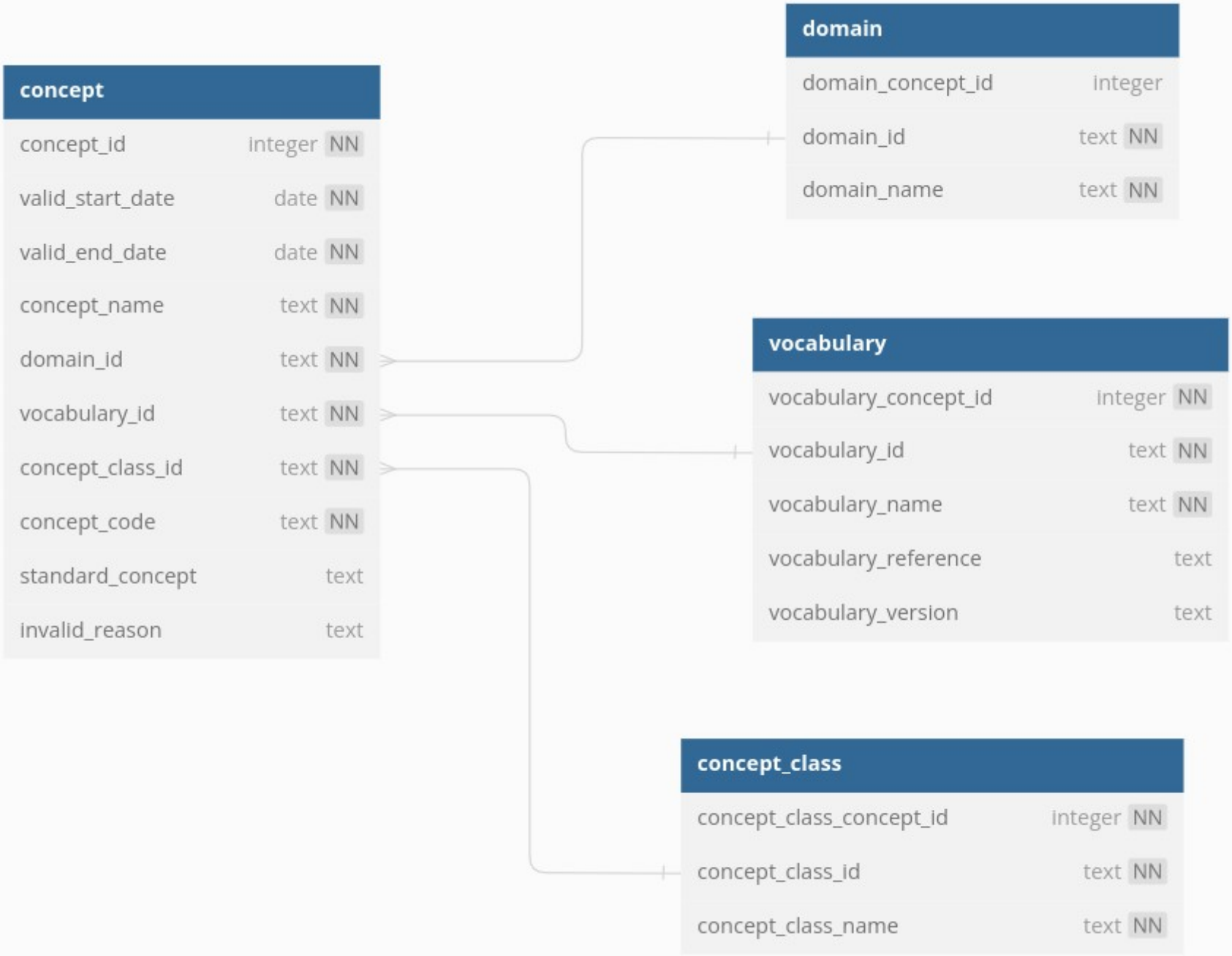
- Hay tres categorías de conceptos:
  - **Non-standard Concepts**: representaciones unívocas de un código existente
  - **Standard Concept**: Conceptos de un vocabulario considerado estándar para un determinado dominio para facilitar los análisis y estudios usando las herramientas de la OHDSI
  - **Classification Concepts**: No se utilizan directamente para codig¡ficar datos de origen sino que se utilizan para ejecutar consultas jerárquicas o definir un **concept set**


Classification Concepts
Standard Concepts
MedDRA
System organ class
MedDRA
High-level group terms
MedDRA
High-level terms
MedDRA
Preferred terms
MedDRA
Low-level terms
Top-level classification
SNOMED-CT
Higher-level classifications
SNOMED-CT
Low-level concepts
SNOMED-CT
Source codes
ICD10
ICD10CM
Read
SNOMED
Oxmis
Ciel
MeSH
ICD9CM

# Conceptos

- [Event]_SOURCE_CONCEPT_ID es otra clave foránea de la tabla CONCEPT, que contiene el valor de origen. Siguiendo el ejemplo anterior, en la Figura 3.5 este campo tendría el valor ‘70070008’, que es el valor del identificador de ‘Torticollis’ en el origen, y que se corresponde con el valor ‘440814’ en el estándar SNOMED.
- [Event]_SOURCE_VALUE contiene la representación del valor de origen. Es importante tener en cuenta que este dato no se encuentra armonizado dentro del modelo de datos. Para el ejemplo de la Figura 3.6 el valor original es ‘72166-2’
- [Event]_TYPE_CONCEPT_ID es una clave foránea de la tabla CONCEPT que representa el origen del dato de forma estandarizada. Este campo declara el mecanismo de captura que creó el registro. En el caso del ejemplo correspondiente la Figura 3.6, este valor es ‘38000280’


concept
concept_id integer NN
valid_start_date date NN
valid_end_date date NN
concept_name text NN
domain_id text NN
vocabulary_id text NN
concept_class_id text NN
concept_code text NN
standard_concept text
invalid_reason text
vocabulary
vocabulary_concept_id integer NN
vocabulary_id text NN
vocabulary_name text NN
vocabulary_reference text
vocabulary_version text
domain
domain_concept_id integer
domain_id text NN
domain_name text NN
concept_class
concept_class_concept_id integer NN
concept_class_id text NN
concept_class_name text NN
relationship
relationship_concept_id integer NN
relationship_id text NN
relationship_name text NN
is_hierarchical text NN
defines_ancestry text NN
reverse_relationship_id text NN
concept_ancestor
ancestor_concept_id integer NN
descendant_concept_id integer NN
min_levels_of_separation integer NN
max_levels_of_separation integer NN
concept_relationship
concept_id_1 integer NN
concept_id_2 integer NN
valid_start_date date NN
valid_end_date date NN
relationship_id text NN
invalid_reason text
concept_synonym
concept_id integer NN
language_concept_id integer NN
concept_synonym_name text NN
source_to_standard_vocab_map
source_concept_id integer
target_concept_id integer
source_valid_start_date date
source_valid_end_date date
source_code text
source_code_description text
source_vocabulary_id text
source_domain_id text
source_concept_class_id text
source_invalid_reason text
target_concept_name text
target_vocabulary_id text
target_domain_id text
target_concept_class_id text
drug_strength
drug_concept_id integer NN
ingredient_concept_id integer NN
valid_start_date date NN
valid_end_date date NN
amount_unit_concept_id integer
numerator_unit_concept_id integer
denominator_unit_concept_id integer
box_size integer
amount_value numeric
numerator_value numeric
denominator_value numeric
invalid_reason text
source_to_concept_map
source_concept_id integer NN
target_concept_id integer NN
valid_start_date date NN
valid_end_date date NN
source_code text NN
source_vocabulary_id text NN
target_vocabulary_id text NN
source_code_description text
invalid_reason text


concept
concept_id integer NN
valid_start_date date NN
valid_end_date date NN
concept_name text NN
domain_id text NN
vocabulary_id text NN
concept_class_id text NN
concept_code text NN
standard_concept text
invalid_reason text
domain
domain_concept_id integer
domain_id text NN
domain_name text NN
vocabulary
vocabulary_concept_id integer NN
vocabulary_id text NN
vocabulary_name text NN
vocabulary_reference text
vocabulary_version text
concept_class
concept_class_concept_id integer NN
concept_class_id text NN
concept_class_name text NN

| Concept Count | Domain ID | Concept Count | Domain ID |
|---|---|---|---|
| 1731378 | Drug | 183 | Route |
| 477597 | Device | 180 | Currency |
| 257000 | Procedure | 158 | Payer |
| 163807 | Condition | 123 | Visit |
| 145898 | Observation | 51 | Cost |
| 89645 | Measurement | 50 | Race |
| 33759 | Spec Anatomic Site | 13 | Plan Stop Reason |
| 17302 | Meas Value | 11 | Plan |
| 1799 | Specimen | 6 | Episode |
| 1215 | Provider Specialty | 6 | Sponsor |
| 1046 | Unit | 5 | Meas Value Operator |
| 944 | Metadata | 3 | Spec Disease Status |
| 538 | Revenue Code | 2 | Gender |
| 336 | Type Concept | 2 | Ethnicity |
| 194 | Relationship | 1 | Observation Type |

```
select domain_id, count(*)
from concept
group by domain_id
```

ATHENA

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SEARCH BY KEYWORD: neoplasm

neoplasm ×
Clinical Finding ×
Condition ×
Standard ×

DOMAIN
CONCEPT
CLASS
VOCAB

filter

- [ ] Nebraska Lexicon (6)
- [x] SNOMED (4275)
- [ ] SNOMED Veterinary (7)
- [ ] ABMS (0)

DOWNLOAD RESULTS

Show by 15 items Total 4,275 items

1 2 3 4 5 ... 285

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4290837 | 399956005 | Melanocytic neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4294432 | 402877008 | Rhabdomyomatous neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4344389 | 240204004 | Synovial-like neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4129890 | 126871001 | Neoplasm of omentum | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4113639 | 286904004 | Benign genital neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 42537690 | 737223000 | Dendritic cell neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 443736 | 414653009 | Mast cell neoplasm | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4054416 | 126567006 | Neoplasm of acromion | Clinical Finding | Standard | Valid | Condition | SNOMED |
| 4129245 | 126639006 | Neoplasm of axilla | Clinical Finding | Standard | Valid | Condition | SNOMED |

https://athena.ohdsi.org/

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Show all | SHOW HISTORY | DOWNLOAD VOCABULARIES

| | ID (CDM V4.5) | CODE (CDM V5) | NAME | REQUIRED | LATEST UPDATE |
|---|---|---|---|---|---|
| ☑ | 1 | SNOMED | Systematic Nomenclature of Medicine - Clinical Terms (IHTSDO) | | 28-Jan-2022 |
| ☑ | 2 | ICD9CM | International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 1 and 2 (NCHS) | | 01-Oct-2014 |
| ☑ | 3 | ICD9Proc | International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 3 (NCHS) | | 01-Oct-2014 |
| ☑ | 4 | CPT4 | Current Procedural Terminology version 4 (AMA) | EULA required | 01-May-2023 |
| ☑ | 5 | HCPCS | Healthcare Common Procedure Coding System (CMS) | | 01-Jul-2023 |
| ☑ | 6 | LOINC | Logical Observation Identifiers Names and Codes (Regenstrief Institute) | | 15-Aug-2023 |
| ☐ | 7 | NDFRT | National Drug File - Reference Terminology (VA) | | 06-Aug-2018 |
| ☑ | 8 | RxNorm | RxNorm (NLM) | | 03-Jul-2023 |
| ☑ | 9 | NDC | National Drug Code (FDA and manufacturers) | | 27-Aug-2023 |
| | 10 | GPI | Medi-Span Generic Product Identifier (Wolters Kluwer Health) | License required | 14-Dec-2017 |
| ☑ | 12 | Gender | OMOP Gender | | |

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# DOWNLOAD HISTORY

REFRESH | NOTIFICATIONS

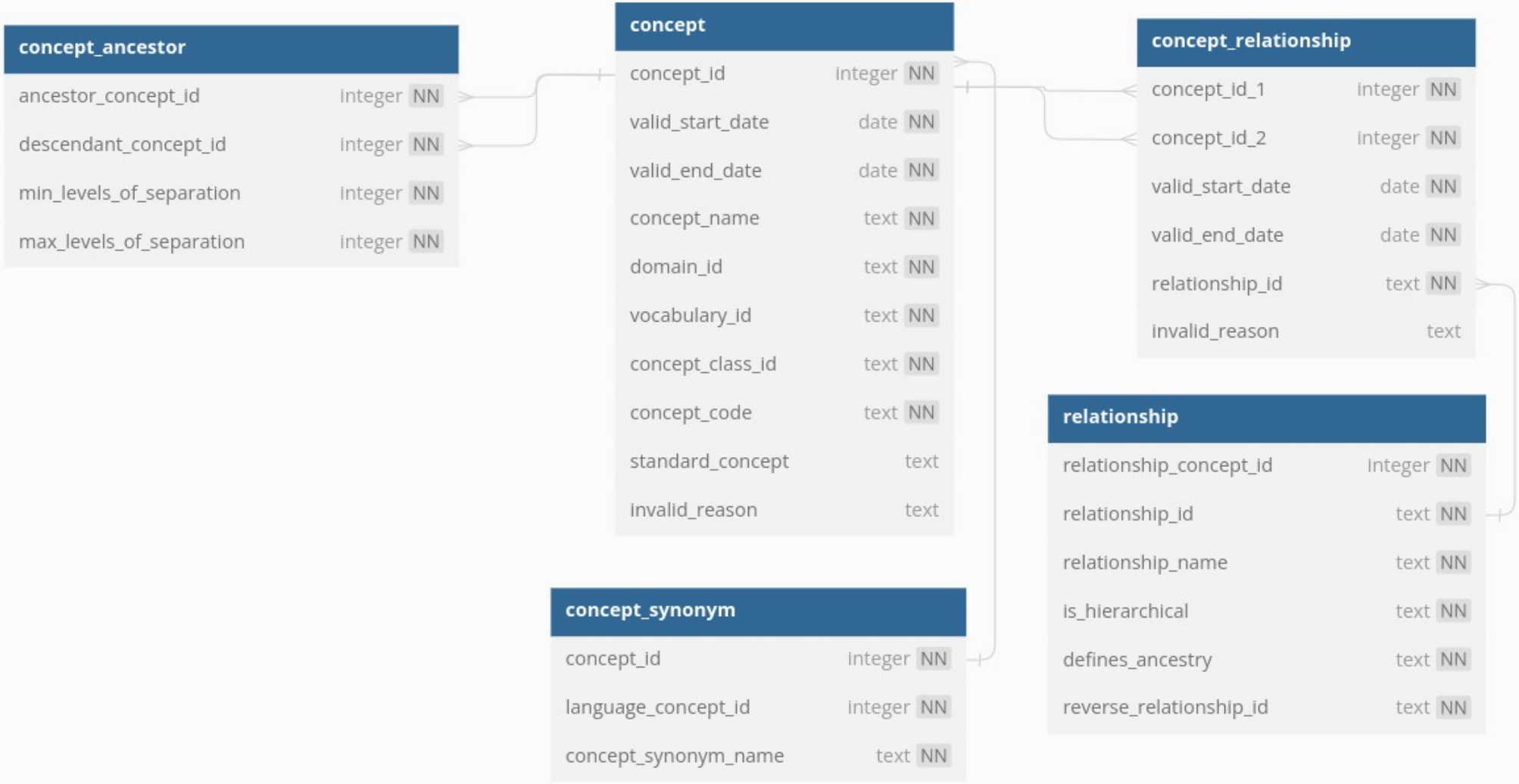
## BSC_OMOP_VOCABULARIES

09:56 AM | 13-FEB-2023

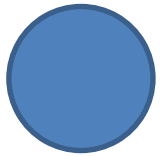
V5.0 23-JAN-23

ARCHIVED | RESTORE

# Jerarquía de conceptos

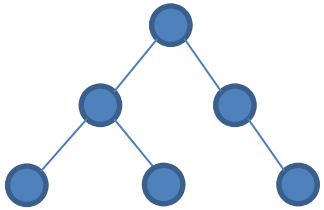


# Jerarquía de conceptos



conceptos médicos en **concept**

Relaciones directas entre conceptos **concept_relationship**



Relaciones jerárquicas **concept_ancestor**

# concept_ancestor

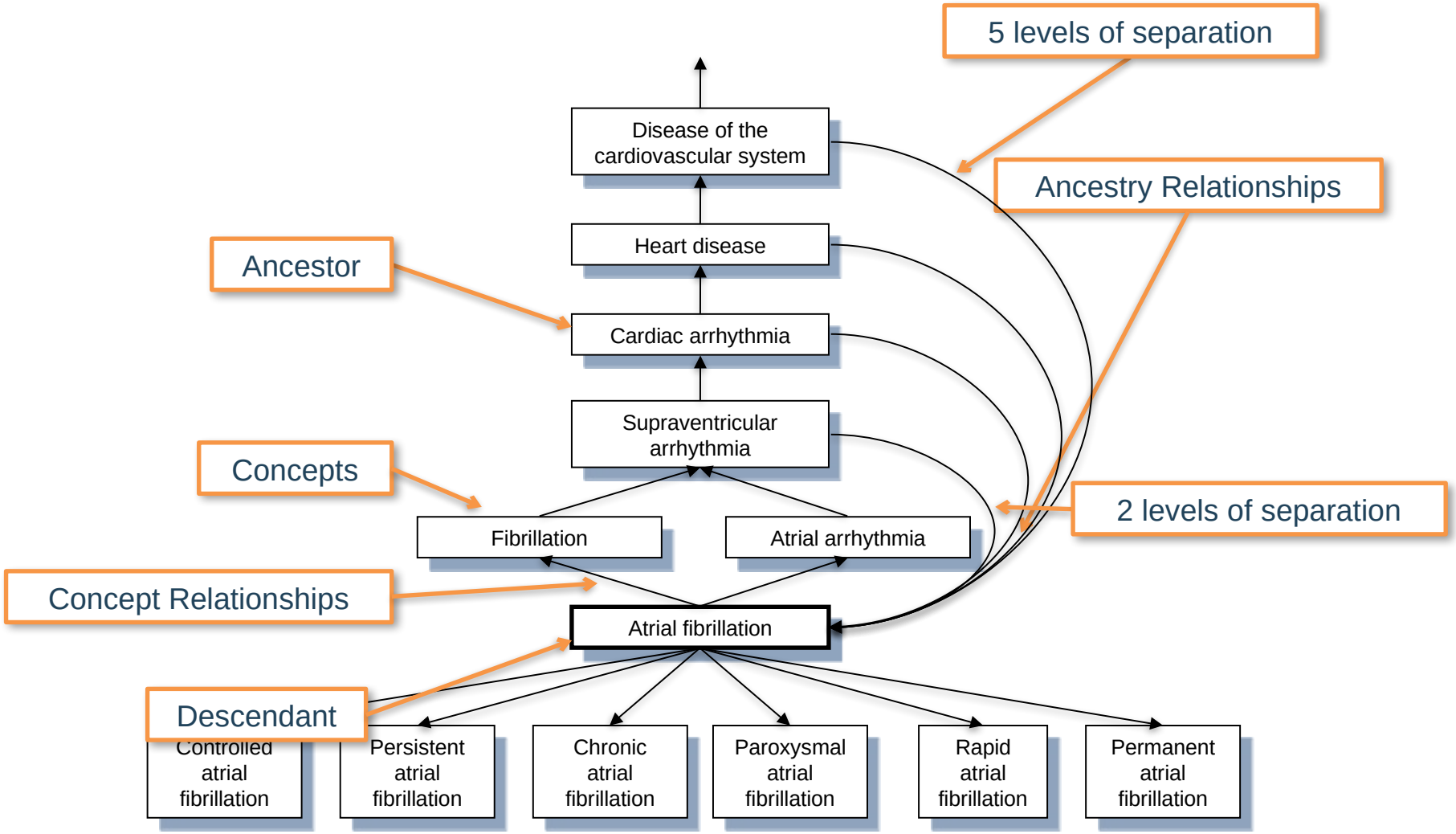
| concept_ancestor | | |
|---|---|---|
| ancestor_concept_id | integer | NN |
| descendant_concept_id | integer | NN |
| min_levels_of_separation | integer | NN |
| max_levels_of_separation | integer | NN |

```
WITH RECURSIVE related_concepts AS (
    -- Base case
    SELECT concept_id_1, concept_id_2
    FROM concept_relationship
    WHERE concept_relatinoship_id = 'is_a'

    UNION ALL

    -- Recursive step
    SELECT rc.concept_id_1, cr.concept_id_2
    FROM concept_relationship cr
    JOIN related_concepts rc
    ON cr.concept_id_1 = rc.concept_id_2
    WHERE cr.concept_relatinoship_id = 'is_a'
)

SELECT DISTINCT concept_id_1, concept_id_2
FROM related_concepts
ORDER BY concept_id_1, concept_id_2;
```


5 levels of separation
Ancestry Relationships
Ancestor
Concepts
2 levels of separation
Concept Relationships
Descendant
Disease of the cardiovascular system
Heart disease
Cardiac arrhythmia
Supraventricular arrhythmia
Fibrillation
Atrial arrhythmia
Atrial fibrillation
Controlled atrial fibrillation
Persistent atrial fibrillation
Chronic atrial fibrillation
Paroxysmal atrial fibrillation
Rapid atrial fibrillation
Permanent atrial fibrillation

# Mapeo de vocabularios

- Si los códigos utilizados en el EHR corresponden a un vocabulario existente en OMOP se pueden traducir a códigos standard
- Por ejemplo:
  - ICD10 a SNOMED
  - ATC a RxNORM
  - Código nacional a SNOMED a RxNorm

concept
concept_id integer NN
valid_start_date date NN
valid_end_date date NN
concept_name text NN
domain_id text NN
vocabulary_id text NN
concept_class_id text NN
concept_code text NN
standard_concept text
invalid_reason text
vocabulary
vocabulary_concept_id integer NN
vocabulary_id text NN
vocabulary_name text NN
vocabulary_reference text
vocabulary_version text
source_to_standard_vocab_map
source_concept_id integer
target_concept_id integer
source_valid_start_date date
source_valid_end_date date
source_code text
source_code_description text
source_vocabulary_id text
source_domain_id text
source_concept_class_id text
source_invalid_reason text
target_concept_name text
target_vocabulary_id text
target_domain_id text
target_concept_class_id text
target_invalid_reason text
target_standard_concept text
source_to_concept_map
source_concept_id integer NN
target_concept_id integer NN
valid_start_date date NN
valid_end_date date NN
source_code text NN
source_vocabulary_id text NN
target_vocabulary_id text NN
source_code_description text
invalid_reason text

# Source to Source

```
SELECT c.concept_code AS SOURCE_CODE, c.concept_id AS
SOURCE_CONCEPT_ID, c.CONCEPT_NAME AS SOURCE_CODE_DESCRIPTION,
c.vocabulary_id AS SOURCE_VOCABULARY_ID, c.domain_id AS
SOURCE_DOMAIN_ID, c.concept_class_id AS SOURCE_CONCEPT_CLASS_ID,
c.VALID_START_DATE AS SOURCE_VALID_START_DATE, c.VALID_END_DATE AS
SOURCE_VALID_END_DATE, c.invalid_reason AS SOURCE_INVALID_REASON,
c.concept_ID as TARGET_CONCEPT_ID, c.concept_name AS
TARGET_CONCEPT_NAME, c.vocabulary_id AS TARGET_VOCABULARY_ID,
c.domain_id AS TARGET_DOMAIN_ID, c.concept_class_id AS
TARGET_CONCEPT_CLASS_ID, c.INVALID_REASON AS TARGET_INVALID_REASON,
c.STANDARD_CONCEPT AS TARGET_STANDARD_CONCEPT
       FROM CONCEPT c
       UNION
       SELECT source_code, SOURCE_CONCEPT_ID, SOURCE_CODE_DESCRIPTION,
source_vocabulary_id, c1.domain_id AS SOURCE_DOMAIN_ID,
c2.CONCEPT_CLASS_ID AS SOURCE_CONCEPT_CLASS_ID, c1.VALID_START_DATE AS
SOURCE_VALID_START_DATE, c1.VALID_END_DATE AS
SOURCE_VALID_END_DATE,stcm.INVALID_REASON AS SOURCE_INVALID_REASON,
target_concept_id, c2.CONCEPT_NAME AS TARGET_CONCEPT_NAME,
target_vocabulary_id, c2.domain_id AS TARGET_DOMAIN_ID,
c2.concept_class_id AS TARGET_CONCEPT_CLASS_ID, c2.INVALID_REASON AS
TARGET_INVALID_REASON, c2.standard_concept AS TARGET_STANDARD_CONCEPT
       FROM source_to_concept_map stcm
              LEFT OUTER JOIN CONCEPT c1
                     ON c1.concept_id = stcm.source_concept_id
              LEFT OUTER JOIN CONCEPT c2
                     ON c2.CONCEPT_ID = stcm.target_concept_id
       WHERE stcm.INVALID_REASON IS NULL
```

Esta consulta genera una tabla con todos los códigos origen y sus correspondientes concept_id y se utiliza para rellenar los campos *_SOURCE_CONCEPT_ID

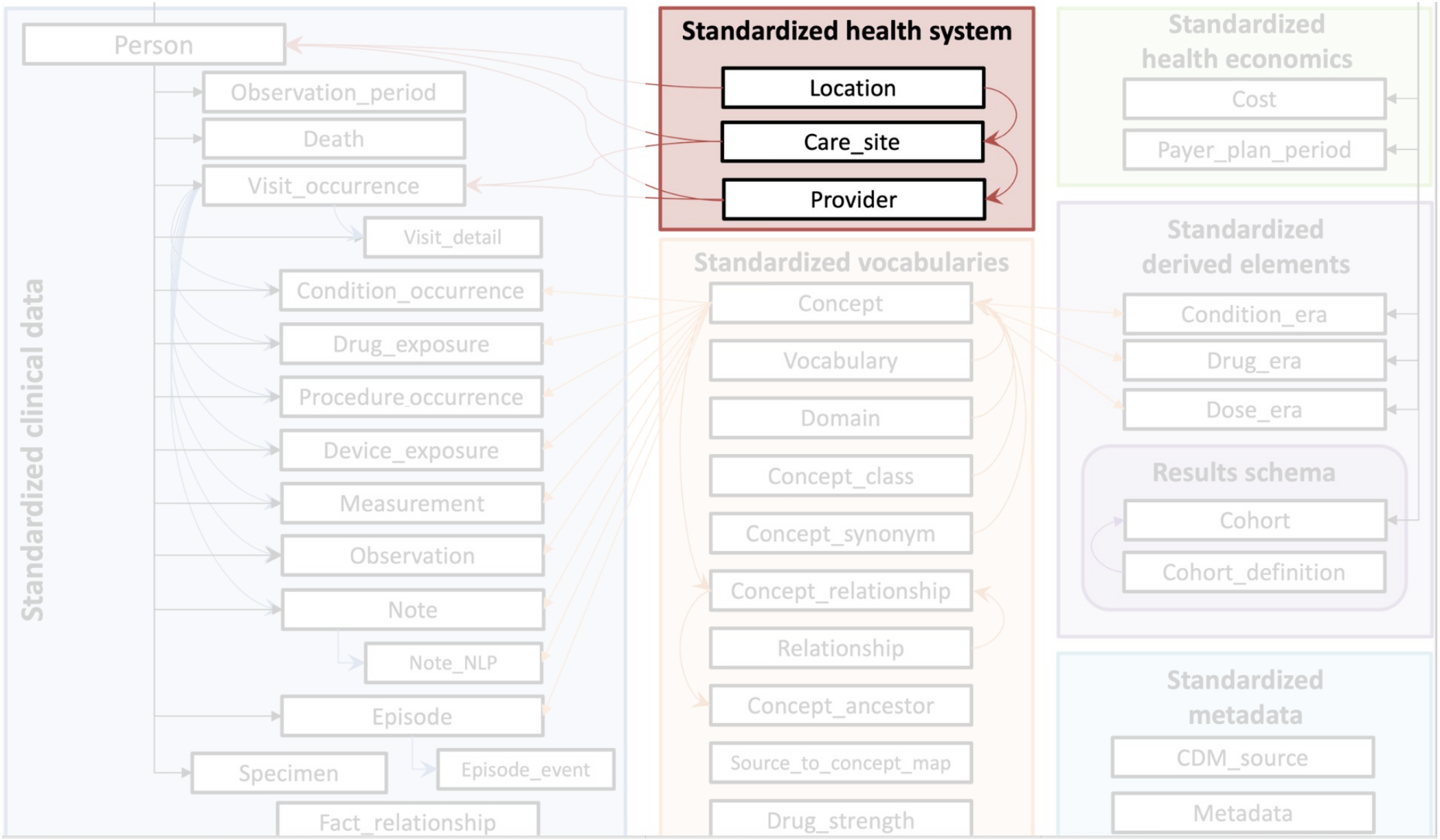
# Source to Standard

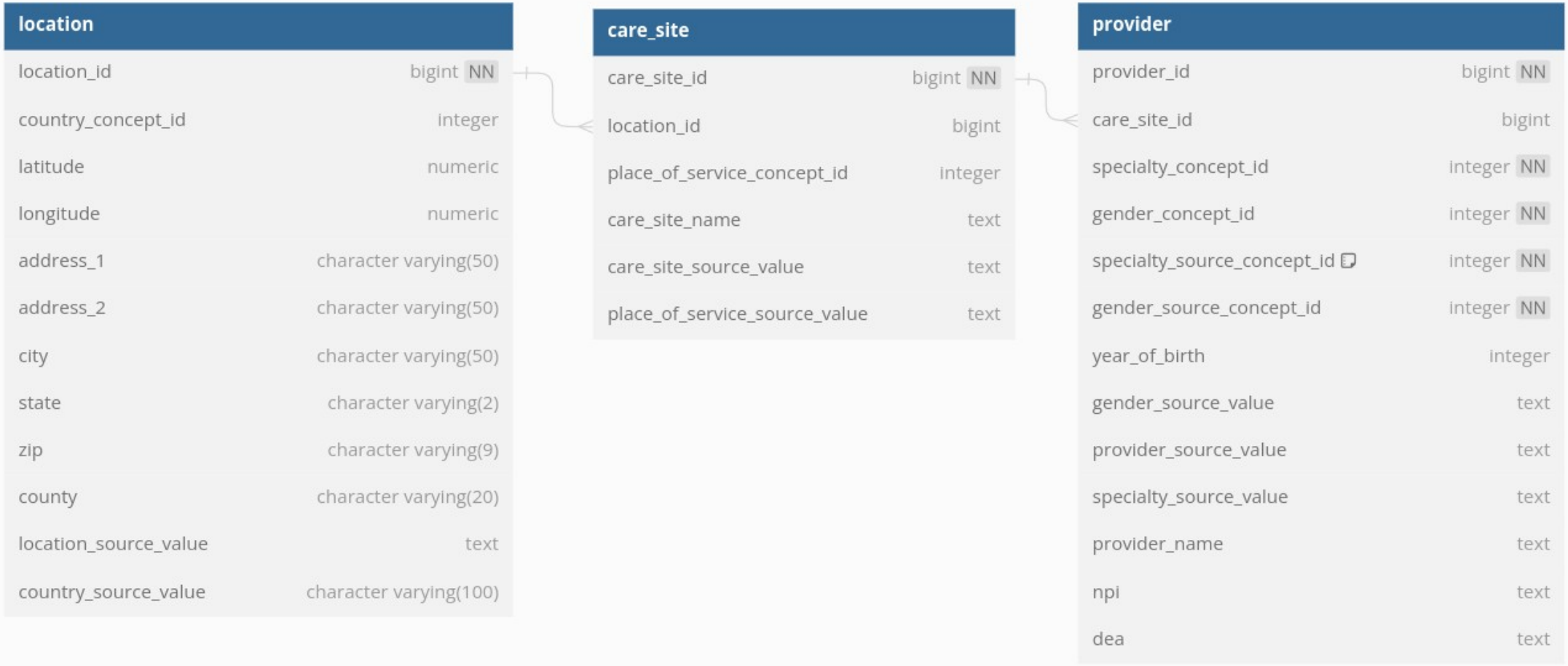
```
SELECT c.concept_code AS SOURCE_CODE, c.concept_id AS SOURCE_CONCEPT_ID, c.concept_name
AS SOURCE_CODE_DESCRIPTION, c.vocabulary_id AS SOURCE_VOCABULARY_ID, c.domain_id AS
SOURCE_DOMAIN_ID, c.CONCEPT_CLASS_ID AS SOURCE_CONCEPT_CLASS_ID, c.VALID_START_DATE
AS SOURCE_VALID_START_DATE, c.VALID_END_DATE AS SOURCE_VALID_END_DATE,
c.INVALID_REASON AS SOURCE_INVALID_REASON, c1.concept_id AS TARGET_CONCEPT_ID,
c1.concept_name AS TARGET_CONCEPT_NAME, c1.VOCABULARY_ID AS TARGET_VOCABUALRY_ID,
c1.domain_id AS TARGET_DOMAIN_ID, c1.concept_class_id AS TARGET_CONCEPT_CLASS_ID,
c1.INVALID_REASON AS TARGET_INVALID_REASON, c1.standard_concept AS
TARGET_STANDARD_CONCEPT
    FROM CONCEPT C
        JOIN CONCEPT_RELATIONSHIP CR
            ON C.CONCEPT_ID = CR.CONCEPT_ID_1
            AND CR.invalid_reason IS NULL
            AND lower(cr.relationship_id) = 'maps to'
        JOIN CONCEPT C1
            ON CR.CONCEPT_ID_2 = C1.CONCEPT_ID
            AND C1.INVALID_REASON IS NULL
    UNION
    SELECT source_code, SOURCE_CONCEPT_ID, SOURCE_CODE_DESCRIPTION,
source_vocabulary_id, c1.domain_id AS SOURCE_DOMAIN_ID, c2.CONCEPT_CLASS_ID AS
SOURCE_CONCEPT_CLASS_ID, c1.VALID_START_DATE AS SOURCE_VALID_START_DATE,
c1.VALID_END_DATE AS SOURCE_VALID_END_DATE, stcm.INVALID_REASON AS
SOURCE_INVALID_REASON,target_concept_id, c2.CONCEPT_NAME AS TARGET_CONCEPT_NAME,
target_vocabulary_id, c2.domain_id AS TARGET_DOMAIN_ID, c2.concept_class_id AS
TARGET_CONCEPT_CLASS_ID, c2.INVALID_REASON AS TARGET_INVALID_REASON,
c2.standard_concept AS TARGET_STANDARD_CONCEPT
    FROM source_to_concept_map stcm
        LEFT OUTER JOIN CONCEPT c1
            ON c1.concept_id = stcm.source_concept_id
        LEFT OUTER JOIN CONCEPT c2
            ON c2.CONCEPT_ID = stcm.target_concept_id
    WHERE stcm.INVALID_REASON IS NULL
```

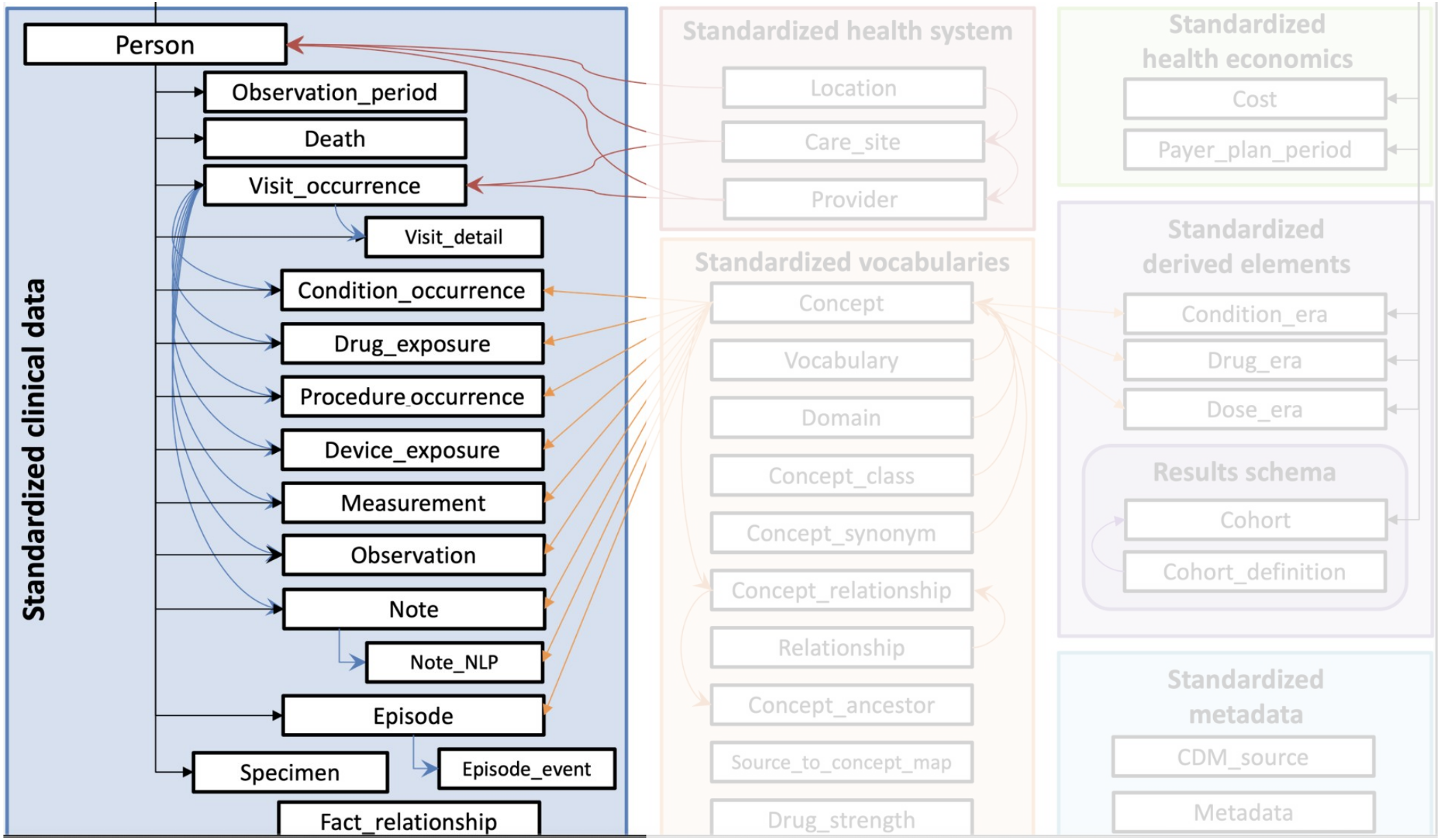
Esta consulta genera una tabla con todos los códigos origen y sus correspondientes concept_id estándar y se utiliza para rellenar los campos *_CONCEPT_ID

| person | |
|---|---|
| person_id | bigint NN |
| location_id | bigint |
| provider_id | bigint |
| care_site_id | bigint |
| birth_datetime | timestamp |
| year_of_birth | integer NN |
| gender_source_concept_id | integer NN |
| gender_concept_id | integer NN |
| ethnicity_concept_id | integer NN |
| ethnicity_source_concept_id | integer NN |
| race_concept_id | integer NN |
| race_source_concept_id | integer NN |
| month_of_birth | integer |
| day_of_birth | integer |
| person_source_value | text |
| gender_source_value | text |
| race_source_value | text |
| ethnicity_source_value | text |

| death | |
|---|---|
| person_id | bigint NN |
| death_datetime | timestamp |
| death_date | date NN |
| death_type_concept_id | integer NN |
| cause_concept_id | integer |
| cause_source_concept_id | integer |
| cause_source_value | text |


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata


location
location_id bigint NN
country_concept_id integer
latitude numeric
longitude numeric
address_1 character varying(50)
address_2 character varying(50)
city character varying(50)
state character varying(2)
zip character varying(9)
county character varying(20)
location_source_value text
country_source_value character varying(100)
care_site
care_site_id bigint NN
location_id bigint
place_of_service_concept_id integer
care_site_name text
care_site_source_value text
place_of_service_source_value text
provider
provider_id bigint NN
care_site_id bigint
specialty_concept_id integer NN
gender_concept_id integer NN
specialty_source_concept_id integer NN
gender_source_concept_id integer NN
year_of_birth integer
gender_source_value text
provider_source_value text
specialty_source_value text
provider_name text
npi text
dea text


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

| visit_occurrence | | |
|---|---|---|
| visit_occurrence_id | bigint | NN |
| person_id | bigint | NN |
| visit_start_datetime | timestamp | NN |
| visit_end_datetime | timestamp | NN |
| provider_id | bigint | |
| care_site_id | bigint | |
| preceding_visit_occurrence_id | bigint | |
| visit_concept_id | integer | NN |
| visit_type_concept_id | integer | NN |
| visit_source_concept_id | integer | NN |
| admitted_from_concept_id | integer | NN |
| discharged_to_concept_id | integer | NN |
| visit_start_date | date | |
| visit_end_date | date | |
| visit_source_value | text | |
| admitted_from_source_value | text | |
| discharged_to_source_value | text | |

La tabla VISIT_OCCURRENCE se utiliza para representar las visitas de un paciente a un establecimiento de atención médica u otro tipo de encuentros con un proveedor de salud

Incluye el identificador del paciente y una clave primaria para relacionarla con otras tablas.

Contiene información sobre la fecha de inicio y fin de la visita.

Almacena el tipo de visita, que puede ser una visita ambulatoria, una hospitalización, una visita de emergencia, entre otros.

# Visit Type

- Inpatient Visit: Person visiting hospital, at a Care Site, in bed, for duration of more than one day, with physicians and other Providers permanently available to deliver service around the clock
- Emergency Room Visit: Person visiting dedicated healthcare institution for treating emergencies, at a Care Site, within one day, with physicians and Providers permanently available to deliver service around the clock
- Emergency Room and Inpatient Visit: Person visiting ER followed by a subsequent Inpatient Visit, where Emergency department is part of hospital, and transition from the ER to other hospital departments is undefined
- Outpatient Visit: Person visiting dedicated ambulatory healthcare institution, at a Care Site, within one day, without bed, with physicians or medical Providers delivering service during Visit
- Home Visit: Provider visiting Person, without a Care Site, within one day, delivering service
- Telehealth Visit: Patient engages with Provider through communication media
- Pharmacy Visit: Person visiting pharmacy for dispensing of Drug, at a Care Site, within one day
- Laboratory Visit: Patient visiting dedicated institution, at a Care Site, within one day, for the purpose of a Measurement.
- Ambulance Visit: Person using transportation service for the purpose of initiating one of the other Visits, without a Care Site, within one day, potentially with Providers accompanying the Visit and delivering service

# _TYPE_CONCEP_ID

- EHR: An Electronic Health (or Medical) Record. These are usually systems supporting hospitals or ambulatory healthcare providers
- EHR administration record: A record in the EHR indicating the administration of a service, drug or treatment.
- EHR discharge summary: A record in the EHR usually created by the discharging Provider upon discharge of a Person from the Provider's care (when a Person is discharged from inpatient hospitalization, discharged from a physical therapy series, discharged from counseling, etc.)
- EHR note: Unspecified note recorded in the EHR
- EHR Pathology report: Pathology Laboratory Report based on findings derived from examination of a specimen
- EHR radiology report: Radiology Department Report based on findings derived from the analysis of imaging modalities
- NLP: Information derived by Natural Language Processing
- Survey: A survey in general

ATHENA

SEARCH BY KEYWORD

aspirin

Type Concept ×

Standard ×

DOMAIN

CONCEPT

CLASS

VOCAB

VALIDITY

DOWNLOAD RESULTS

| ID | CODE | NAME | CLASS |
|---|---|---|---|
| 32809 | OMOP4976882 | Case Report Form | Type Concept |
| 32810 | OMOP4976883 | Claim | Type Concept |
| 32811 | OMOP4976884 | Claim authorization | Type Concept |
| 32812 | OMOP4976885 | Claim discharge record | Type Concept |
| 32813 | OMOP4976886 | Claim enrolment record | Type Concept |
| 32814 | OMOP4976887 | Cost record | Type Concept |
| 32815 | OMOP4976888 | Death Certificate | Type Concept |
| 32816 | OMOP4976889 | Dental claim | Type Concept |

https://athena.ohdsi.org/search-terms/terms?domain=Type+Concept&standardConcept=Standard

| visit_detail | |
|---|---|
| visit_detail_id | bigint NN |
| visit_detail_start_datetime | timestamp |
| visit_detail_end_datetime | timestamp |
| person_id | bigint NN |
| visit_occurrence_id | bigint NN |
| provider_id | bigint |
| care_site_id | bigint |
| preceding_visit_detail_id | bigint |
| parent_visit_detail_id | bigint |
| visit_detail_concept_id | integer NN |
| visit_detail_type_concept_id | integer NN |
| discharged_to_concept_id | integer |
| admitted_from_concept_id | integer |
| visit_detail_source_concept_id | integer |
| visit_detail_start_date | date |
| visit_detail_end_date | date |
| admitted_from_source_value | text |
| visit_detail_source_value | text |
| discharged_to_source_value | text |

La tabla **VISIT_DETAIL** se utiliza para proporcionar **detalles adicionales** sobre las visitas del paciente que no están cubiertos en la tabla VISIT_OCCURRENCE, en genral, cuando la visita tiene **múltiples entradas** para PROVIDER o CARE_SITE

| observation_period | | |
|---|---|---|
| observation_period_id | INTEGER | NN |
| person_id | INTEGER | NN |
| observation_period_start_date | DATE | NN |
| observation_period_end_date | DATE | NN |
| period_type_concept_id | INTEGER | |

La tabla **OBSERVATION_PERIOD** se utiliza para registrar los períodos de tiempo durante los cuales un paciente es observado o seguido en el sistema de atención médica.

Contiene información sobre la **fecha de inicio (primer registro) y fin del período de observación** para cada paciente (último registro + 60 días, fecha de muerte + 60 días, fecha de extracción).

Puede haber **múltiples períodos** de observación para un paciente a lo largo del tiempo (gap de 18 meses).

Ayuda a determinar el tiempo durante el cual se recopilaron datos clínicos para un paciente en particular.

| condition_occurrence | |
|---|---|
| condition_occurrence_id | bigint NN |
| person_id | bigint |
| provider_id | bigint |
| visit_occurrence_id | bigint |
| visit_detail_id | bigint |
| condition_start_datetime | timestamp |
| condition_end_datetime | timestamp |
| condition_concept_id | integer |
| condition_type_concept_id | integer |
| condition_status_concept_id | integer |
| condition_source_concept_id | integer |
| condition_start_date | date |
| condition_end_date | date |
| stop_reason | text |
| condition_source_value | text |
| condition_status_source_value | text |

La tabla **CONDITION_OCCURRENCE** tiene como objetivo principal registrar las ocurrencias individuales de condiciones médicas,y diagnósticos, que han sido observadas o documentadas en pacientes en un contexto de atención médica.

El diagnóstico se recoge en el campo **condition_concept_id** usando **SNOMED.**

El campo **condition_status_concept_id** se utiliza para registrar el contexto o la circunstancia en la que se dio el diagnóstico de una condición médica en una visita médica específica. Esta información detalla las condiciones bajo las cuales se hizo el diagnóstico, como si se tratara de un diagnóstico de ingreso, un diagnóstico final, si se basó en hallazgos de laboratorio

| procedure_occurrence | |
|---|---|
| procedure_occurrence_id | bigint NN |
| person_id | bigint NN |
| procedure_datetime | timestamp NN |
| provider_id | bigint |
| visit_occurrence_id | bigint |
| visit_detail_id | bigint |
| procedure_end_datetime | timestamp |
| procedure_concept_id | integer NN |
| procedure_source_concept_id | integer NN |
| procedure_type_concept_id | integer NN |
| modifier_concept_id | integer NN |
| quantity | integer |
| procedure_date | date |
| procedure_end_date | date |
| procedure_source_value | text |
| modifier_source_value | text |

La tabla PROCEDURE_OCCURRENCE en el modelo OMOP-CDM (Observational Medical Outcomes Partnership - Common Data Model) de OHDSI se utiliza para registrar eventos individuales de procedimientos médicos realizados en pacientes durante su atención médica.

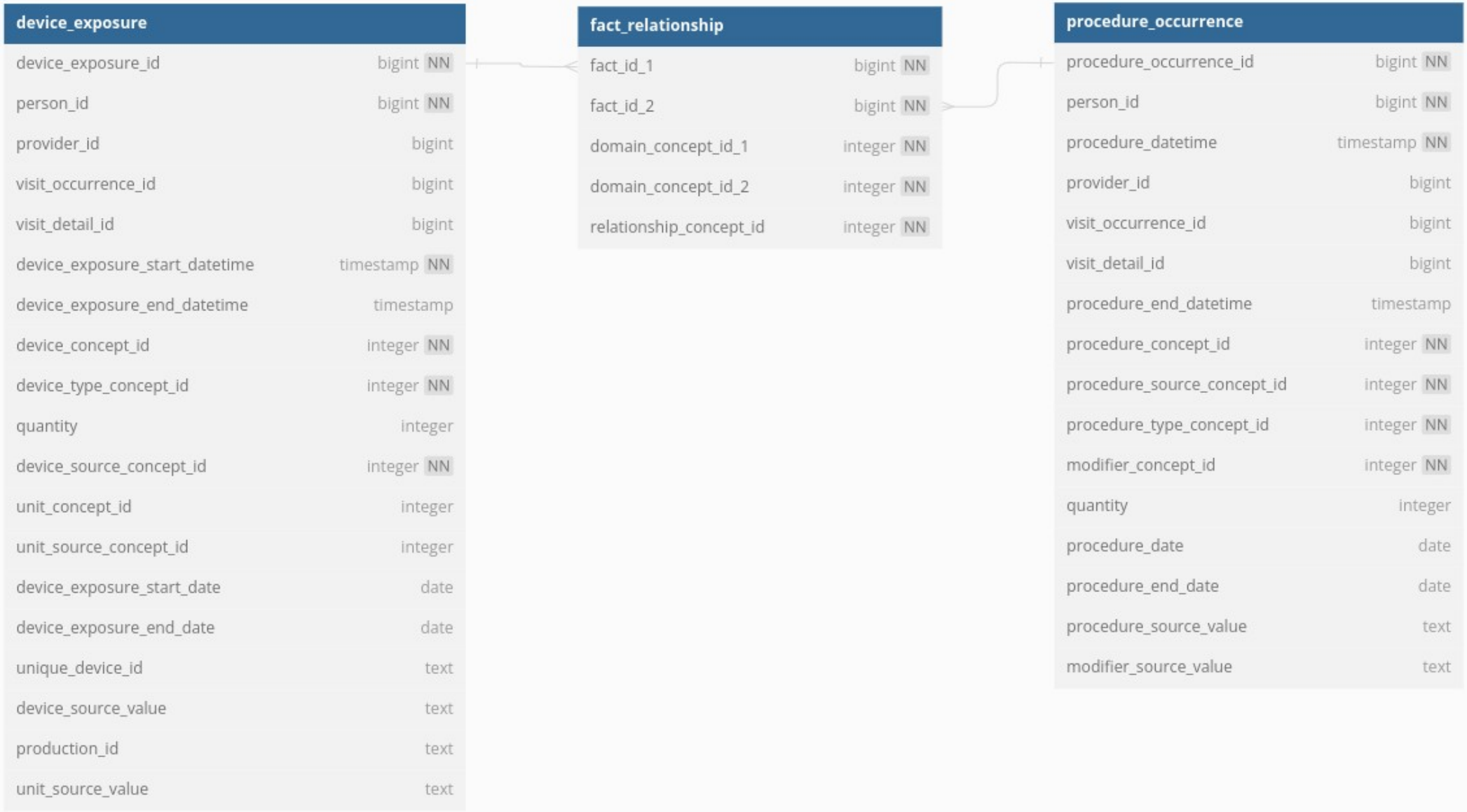
procedure_concept_id: Representa el concepto del procedimiento médico utilizando un identificador de concepto estándar, que está vinculado a un vocabulario médico controlado, como SNOMED-CT u otro.

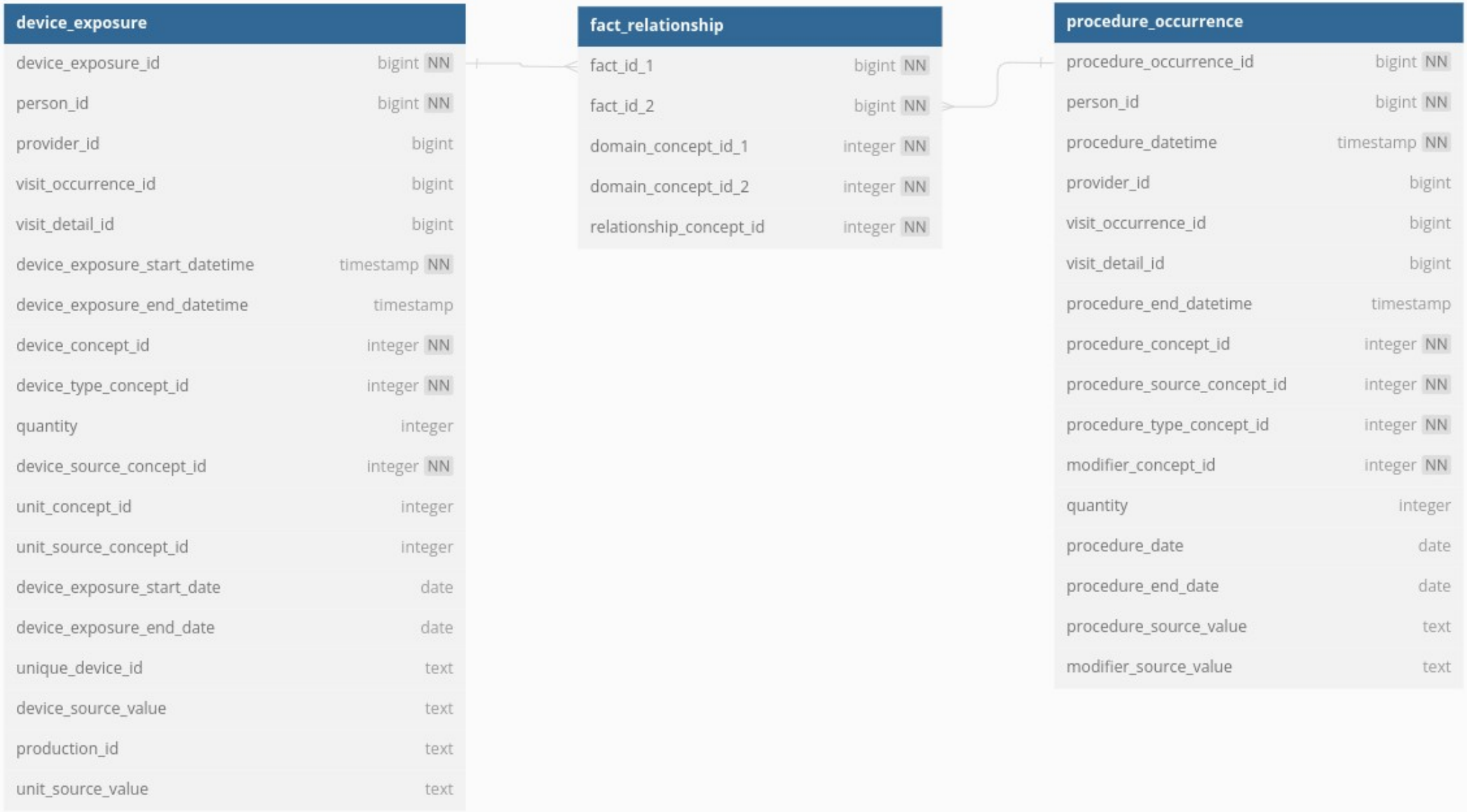
modifier_concept_id: Opcionalmente, se puede registrar un modificador que proporciona información adicional sobre el procedimiento, como el enfoque o la técnica utilizada.

| device_exposure | |
|---|---|
| device_exposure_id | bigint NN |
| person_id | bigint NN |
| provider_id | bigint |
| visit_occurrence_id | bigint |
| visit_detail_id | bigint |
| device_exposure_start_datetime | timestamp NN |
| device_exposure_end_datetime | timestamp |
| device_concept_id | integer NN |
| device_type_concept_id | integer NN |
| quantity | integer |
| device_source_concept_id | integer NN |
| unit_concept_id | integer |
| unit_source_concept_id | integer |
| device_exposure_start_date | date |
| device_exposure_end_date | date |
| unique_device_id | text |
| device_source_value | text |
| production_id | text |
| unit_source_value | text |

La tabla DEVICE_EXPOSURE tiene como objetivo principal registrar eventos de exposición a dispositivos médicos que incluyen objetos implantables (por ejemplo, marcapasos, stents, articulaciones artificiales), equipos y suministros médicos (por ejemplo, vendajes, muletas, jeringas), otros instrumentos utilizados en procedimientos médicos (por ejemplo, suturas, desfibriladores) y material utilizado en la atención clínica (por ejemplo, adhesivos, material corporal, material dental, material quirúrgico).

El campo device_concept_id representa el concepto del dispositivo médico utilizando un identificador de concepto estándar, que está vinculado a un vocabulario médico controlado, como SNOMED-CT u otro.


device_exposure
device_exposure_id bigint NN
person_id bigint NN
provider_id bigint
visit_occurrence_id bigint
visit_detail_id bigint
device_exposure_start_datetime timestamp NN
device_exposure_end_datetime timestamp
device_concept_id integer NN
device_type_concept_id integer NN
quantity integer
device_source_concept_id integer NN
unit_concept_id integer
unit_source_concept_id integer
device_exposure_start_date date
device_exposure_end_date date
unique_device_id text
device_source_value text
production_id text
unit_source_value text
fact_relationship
fact_id_1 bigint NN
fact_id_2 bigint NN
domain_concept_id_1 integer NN
domain_concept_id_2 integer NN
relationship_concept_id integer NN
procedure_occurrence
procedure_occurrence_id bigint NN
person_id bigint NN
procedure_datetime timestamp NN
provider_id bigint
visit_occurrence_id bigint
visit_detail_id bigint
procedure_end_datetime timestamp
procedure_concept_id integer NN
procedure_source_concept_id integer NN
procedure_type_concept_id integer NN
modifier_concept_id integer NN
quantity integer
procedure_date date
procedure_end_date date
procedure_source_value text
modifier_source_value text




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 44818892 | OMOP generated | Device used by (SNOMED) | Relationship | Non-standard | Valid | Metadata | Relationship |

| drug_exposure | |
|---|---|
| drug_exposure_id | bigint NN |
| person_id | bigint NN |
| provider_id | bigint |
| visit_occurrence_id | bigint |
| visit_detail_id | bigint |
| drug_exposure_start_datetime | timestamp |
| drug_exposure_end_datetime | timestamp |
| drug_concept_id | integer NN |
| drug_type_concept_id | integer NN |
| drug_source_concept_id | integer NN |
| route_concept_id | integer NN |
| refills | integer |
| days_supply | integer |
| drug_exposure_start_date | date |
| drug_exposure_end_date | date |
| verbatim_end_date | date |
| quantity | numeric |
| sig | text |
| lot_number | text |
| drug_source_value | text |
| route_source_value | text |
| dose_unit_source_value | text |
| stop_reason | text |

La tabla DRUG_EXPOSURE tiene como objetivo principal registrar eventos individuales de exposición a medicamentos o sustancias farmacológicas por parte de los pacientes durante su atención médica.

drug_concept_id representa el concepto del medicamento o la sustancia utilizando un identificador de concepto estándar vinculado generalmente al vocabulario RxNorm

Los registros en esta tabla representan recetas médicas escritas, medicamentos dispensados y medicamentos administrados por un proveedor, entre otros. El DRUG_TYPE_CONCEPT_ID se puede utilizar para buscar y filtrar estos tipos

El propósito de los registros en esta tabla es indicar una exposición a un cierto medicamento de la mejor manera posible. En este contexto, un medicamento se define como un principio activo. El dominio DRUG, forma una jerarquía complejapor lo que un DRUG_SOURCE_CONCEPT_ID puede mapear a múltiples identificadores de conceptos estándar si se trata de un producto combinado.

El contenido de información más detallado es preferido durante el proceso de mapeo, indicado por el CONCEPT_CLASS_ID del Concepto y se registran en el siguiente orden de precedencia: ‘Branded Pack’, ‘Clinical Pack’, ‘Branded Drug’, ‘Clinical Drug’, ‘Branded Drug Component’, ‘Clinical Drug Component’, ‘Branded Drug Form’, ‘Clinical Drug Form’ and ‘Ingredient’.

| measurement | | |
|---|---|---|
| measurement_id | bigint | NN |
| person_id | bigint | NN |
| provider_id | bigint | |
| visit_occurrence_id | bigint | |
| visit_detail_id | bigint | |
| measurement_event_id | bigint | |
| measurement_datetime | timestamp | NN |
| measurement_concept_id | integer | NN |
| measurement_type_concept_id | integer | NN |
| measurement_source_concept_id | integer | NN |
| measurement_date | date | |
| operator_concept_id | integer | |
| value_as_concept_id | integer | |
| unit_concept_id | integer | |
| unit_source_concept_id | integer | |
| meas_event_field_concept_id | integer | |
| value_as_number | numeric | |
| range_low | numeric | |
| range_high | numeric | |
| measurement_time | text | |
| measurement_source_value | text | |
| unit_source_value | text | |
| value_source_value | text | |

La tabla **MEASUREMENT** contiene registros de Mediciones, es decir, valores estructurados (numéricos o categóricos) obtenidos a través de un examen o prueba sistemática y estandarizada de una Persona o de una muestra de la Persona.

La tabla MEASUREMENT contiene tanto las solicitudes de pruebas como los resultados, como pruebas de laboratorio, signos vitales, hallazgos cuantitativos de informes de patología, etc.

Las Mediciones se almacenan como pares atributo-valor, donde el atributo es el concepto medido y el valor representa el resultado.

**measurement_concept_id** se codifica generalmente usando el vocabulario **LOINC**

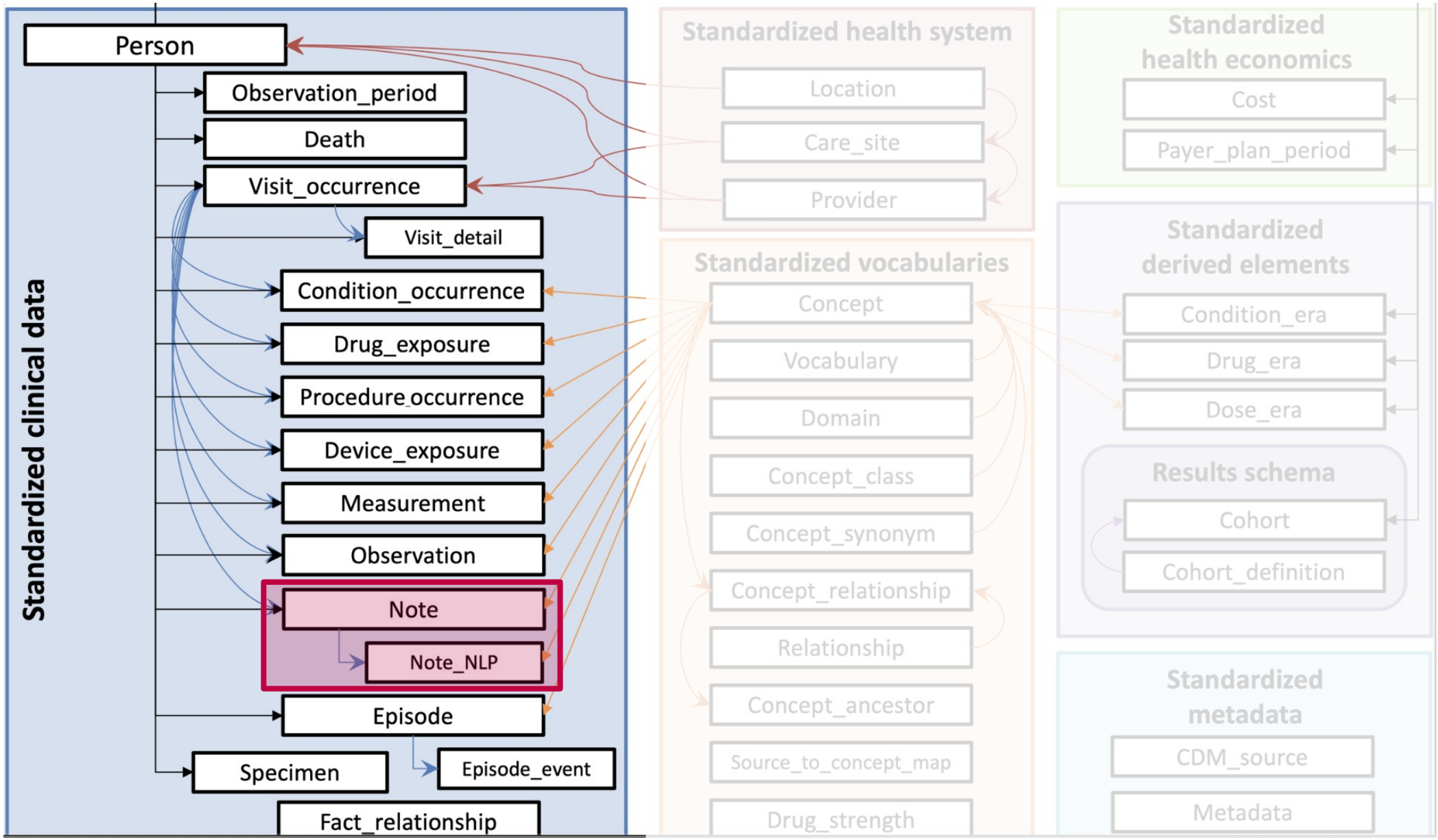
| observation | | |
|---|---|---|
| observation_id | bigint | NN |
| person_id | bigint | NN |
| observation_datetime | timestamp | NN |
| provider_id | bigint | |
| visit_occurrence_id | bigint | |
| visit_detail_id | bigint | |
| observation_event_id | bigint | |
| observation_date | date | |
| observation_concept_id | integer | NN |
| observation_type_concept_id | integer | NN |
| qualifier_concept_id | integer | NN |
| observation_source_concept_id | integer | NN |
| obs_event_field_concept_id | integer | |
| value_as_concept_id | integer | |
| unit_concept_id | integer | |
| value_as_number | numeric | |
| value_as_string | text | |
| observation_source_value | text | |
| unit_source_value | text | |
| qualifier_source_value | text | |
| value_source_value | text | |

La tabla **OBSERVATION** captura información clínica sobre una Persona obtenida en el contexto de un examen, una entrevista o un procedimiento. Cualquier dato que no pueda ser representado por otros dominios, como datos sociales y de estilo de vida, historial médico, historial familiar, etc., se registra aquí.

Las observaciones difieren de las mediciones en el sentido de que no requieren una prueba estandarizada u otra actividad para generar información clínica. Las observaciones típicas incluyen historial médico, historial familiar, la necesidad declarada de cierto tratamiento, circunstancias sociales, elecciones de estilo de vida, patrones de utilización de atención médica, etc. Si la generación de información clínica requiere una prueba estandarizada, como análisis de laboratorio o imágenes, y da como resultado un resultado estandarizado, el dato se registra en la tabla MEASUREMENT.

| specimen | | |
|---|---|---|
| specimen_id | bigint | NN |
| person_id | bigint | NN |
| specimen_datetime | timestamp | NN |
| specimen_concept_id | integer | NN |
| specimen_type_concept_id | integer | NN |
| anatomic_site_concept_id | integer | NN |
| disease_status_concept_id | integer | NN |
| unit_concept_id | integer | |
| specimen_date | date | |
| quantity | numeric | |
| specimen_source_id | text | |
| specimen_source_value | text | |
| unit_source_value | text | |
| anatomic_site_source_value | text | |
| disease_status_source_value | text | |

La tabla **SPECIMEN** almacena información sobre muestras biológicas


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

| note | | |
|---|---|---|
| note_id | bigint | NN |
| person_id | bigint | NN |
| note_event_id | bigint | |
| provider_id | bigint | |
| visit_occurrence_id | bigint | |
| visit_detail_id | bigint | |
| note_datetime | timestamp | NN |
| note_event_field_concept_id | integer | NN |
| note_type_concept_id | integer | NN |
| note_class_concept_id | integer | NN |
| encoding_concept_id | integer | NN |
| language_concept_id | integer | NN |
| note_date | date | |
| note_title | text | |
| note_text | text | |
| note_source_value | text | |

La tabla **NOTE** en el modelo OMOP-CDM (Observational Medical Outcomes Partnership - Common Data Model) de OHDSI se utiliza para almacenar **notas o comentarios** relacionados con eventos clínicos y de atención médica en los datos del paciente.

El campo **note_class_concept_id** se completa con HL7/LOINC CDO, que es un estándar para nombrar documentos de manera coherente con el fin de respaldar una variedad de casos de uso: recuperación, organización, visualización e intercambio. CDO anota cada documento con 5 dimensiones:

**Tipo de Documento**: Caracteriza la estructura general del documento a nivel macro (por ejemplo, Consentimiento de Anestesia).

**Tipo de Servicio**: Caracteriza el tipo de servicio o actividad (por ejemplo, evaluaciones, consultas y resúmenes). La noción de secuencia temporal, por ejemplo, al comienzo (admisión) o al final (alta), está subsumida en este eje. Ejemplo: Enseñanza al Alta.

**Configuración**: La configuración es una extensión de las definiciones de CMS (por ejemplo, Hospitalización, Ambulatorio).

**Dominio del Tema**: Caracteriza el dominio del tema de una nota (por ejemplo, Anestesiología).

**Rol**: Caracteriza el nivel de formación o profesionalismo del autor del documento, pero no se desglosa en especialidad o subespecialidad (por ejemplo, Médico). Cada combinación de estas 5 dimensiones se traduce en un código LOINC único.

# LOINC Document Ontology (DO)

- Type of Service (ToS): the kind of healthcare services provided to patients. e.g., Consultation, Evaluation and Management, Procedure
- Kind of Document (KoD): the type of clinical documents based on its structure. e.g., Note, Report, Checklist
- Setting: the location or channel where clinical care is provided. e.g., Ambulance, Birthing Center, Intensive Care Unit
- Role: people and their occupations involved in the service or authors who created the clinical note. e.g., Physicians, Nurse, Pharmacist
- Subject Matter Domain (SMD): clinical specialty relevant to the document or the main purpose of creating the document. e.g., Anesthesiology, Urology, Cardiovascular Disease

| Content | Description |
|---|---|
| 193240 | Corresponds to LOINC 34127-1, Dentistry Hygienist Outpatient Progress note |
| 55443322132 | Corresponds to LOINC LP173418-7, Kind of Document = Note |
| 55443322175 | Corresponds to LOINC LP173213-2, Type of Service = Progress |
| 55443322166 | Corresponds to LOINC LP173051-6, Setting = Outpatient |
| 55443322107 | Corresponds to LOINC LP172934-4, Subject Matter Domain = Dentistry |
| 55443322146 | Corresponds to LOINC LP173071-4, Role = Hygienist |

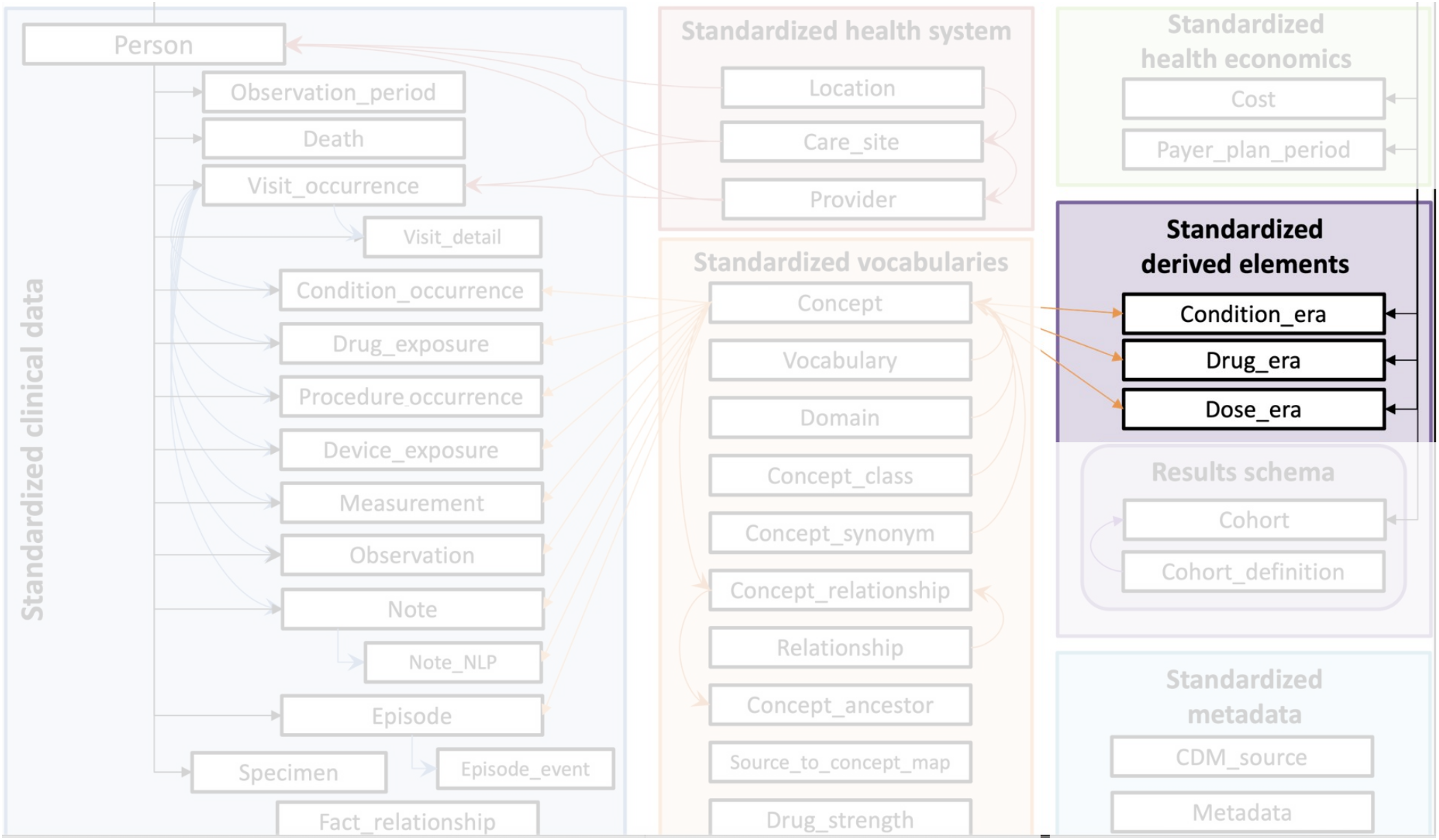
| note_nlp | | |
|---|---|---|
| note_nlp_id | bigint | NN |
| note_id | bigint | NN |
| section_concept_id | integer | NN |
| snippet | text | |
| offset | text | |
| lexical_variant | text | NN |
| note_nlp_concept_id | integer | NN |
| nlp_system | text | |
| nlp_date | date | NN |
| nlp_datetime | timestamp | |
| term_exists | text | |
| term_temporal | text | |
| term_modifiers | text | |
| note_nlp_source_concept_id | integer | NN |

La tabla **NOTE_NLP** tiene como objetivo principal almacenar los resultados del procesamiento de lenguaje natural de notas clínicas y comentarios, lo que incluye la extracción de información estructurada a partir de texto no estructurado, como diagnósticos, medicamentos, síntomas, y otra información relevante contenida en las notas.

**note_nlp_concept_id**: Representa el concepto detectado o extraído del texto utilizando NLP. Puede ser un diagnóstico, un medicamento, un síntoma u otra entidad relevante.

El campo **term_modifiers** se utiliza para registrar información adicional o modificadores relacionados con el término extraído o detectado a través del procesamiento de lenguaje natural (NLP).

Negation = false
Subject = patient
Conditional = false
Rule_out = false
Uncertain = true or high or moderate or even low
History = true
Concept_date = 2018-01-23


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
Device_exposure
Measurement
Observation
Note
Note_NLP
Episode
Specimen
Episode_event
Fact_relationship
Standardized health system
Location
Care_site
Provider
Standardized vocabularies
Concept
Vocabulary
Domain
Concept_class
Concept_synonym
Concept_relationship
Relationship
Concept_ancestor
Source_to_concept_map
Drug_strength
Standardized health economics
Cost
Payer_plan_period
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

| condition_era | |
|---|---|
| condition_era_id | INTEGER |
| person_id | INTEGER |
| condition_concept_id | INTEGER |
| condition_era_start_date | DATE |
| condition_era_end_date | DATE |
| condition_occurrence_count | INTEGER |

La tabla CONDITION_OCCURRENCE almacena eventos individuales de condiciones médicas que se han registrado para un paciente.

En la tabla **CONDITION_ERA**, se agrupan las condiciones médicas que ocurren en secuencia continua sin interrupciones para un paciente específico, es decir, aquellas que se superponen o se encuentran en secuencia temporal sin un período de tiempo significativo entre ellas (normalmente 30 días).

| drug_era | |
|---|---|
| drug_era_id | bigint NN |
| person_id | bigint NN |
| drug_concept_id | integer NN |
| drug_exposure_count | integer |
| gap_days | integer |
| drug_era_start_date | date |
| drug_era_end_date | date |

| dose_era | |
|---|---|
| dose_era_id | bigint NN |
| person_id | bigint NN |
| dose_era_start_datetime | timestamp NN |
| dose_era_end_datetime | timestamp NN |
| drug_concept_id | integer NN |
| unit_concept_id | integer NN |
| dose_value | numeric NN |

Para crear **DRUG_ERA**, se agrupan las exposiciones a medicamentos que ocurren en secuencia continua sin interrupciones significativas para un paciente específico.

Las exposiciones a medicamentos que cumplen con este criterio se agrupan juntas y se registran en DRUG_ERA como una única "era" de uso de medicamento.

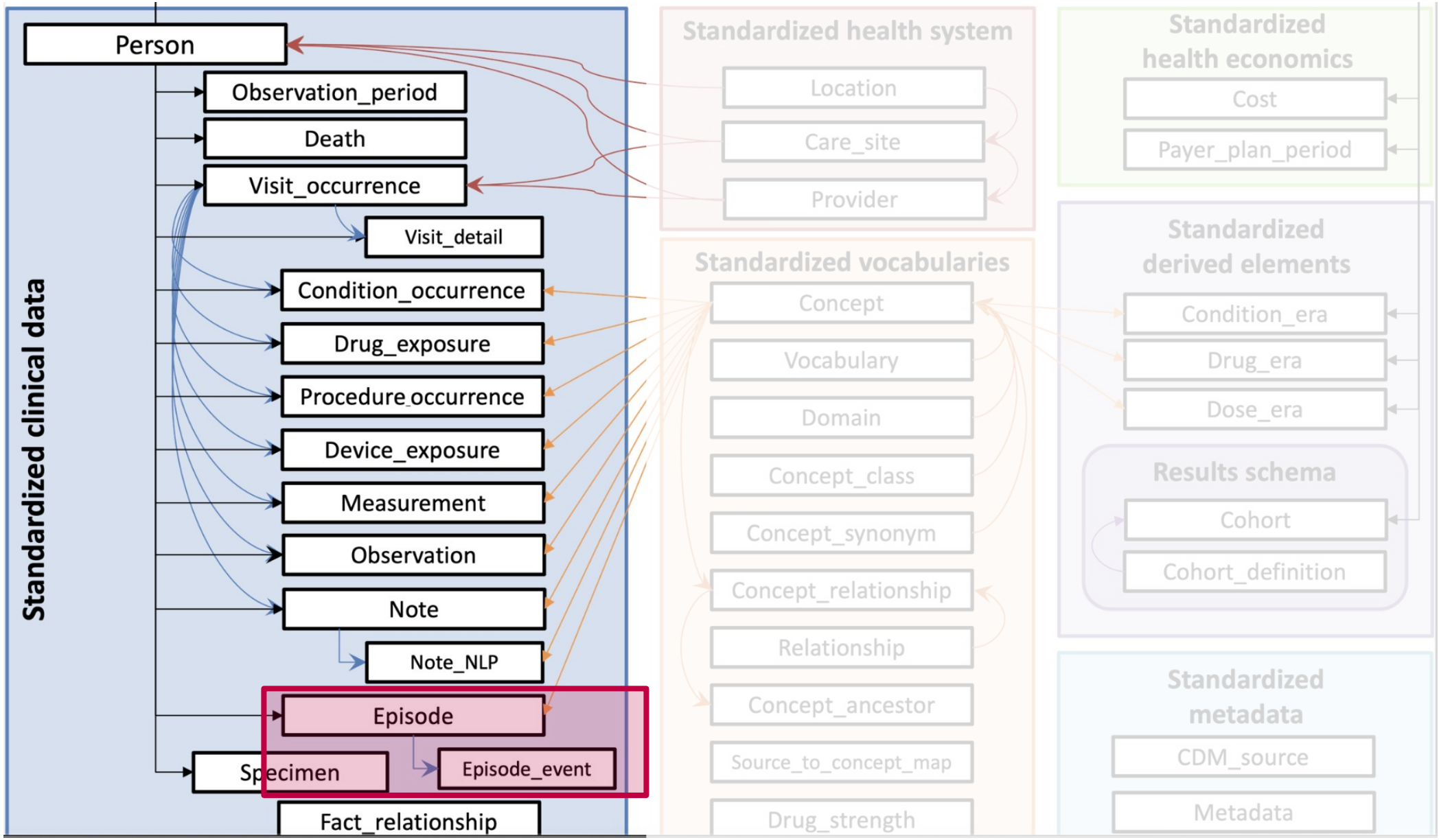
La columna drug_era_start_date de la era de uso de medicamento se establece en la fecha de inicio de la primera exposición a medicamento en el grupo, y la columna drug_era_end_date se establece en la fecha de finalización de la última exposición a medicamento en el grupo.

Se contabiliza la cantidad de exposiciones a medicamentos en esa era y se registra en la columna drug_exposure_count.

Del mismo modo **DOSE_ERA** se genera agrupando las exposiciones a dosis de medicamentos que ocurren en secuencia continua sin interrupciones significativas para un paciente específico.

Las exposiciones a dosis que cumplen con este criterio se agrupan y se registran en DOSE_ERA como una única "era" de exposición a dosis de medicamento.

La columna dose_era_start_date de la era de exposición a dosis se establece en la fecha de inicio de la primera exposición a dosis en el grupo, y la columna dose_era_end_date se establece en la fecha de finalización de la última exposición a dosis en el grupo.


Standardized clinical data
Person
Observation_period
Death
Visit_occurrence
Visit_detail
Condition_occurrence
Drug_exposure
Procedure_occurrence
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Drug_era
Dose_era
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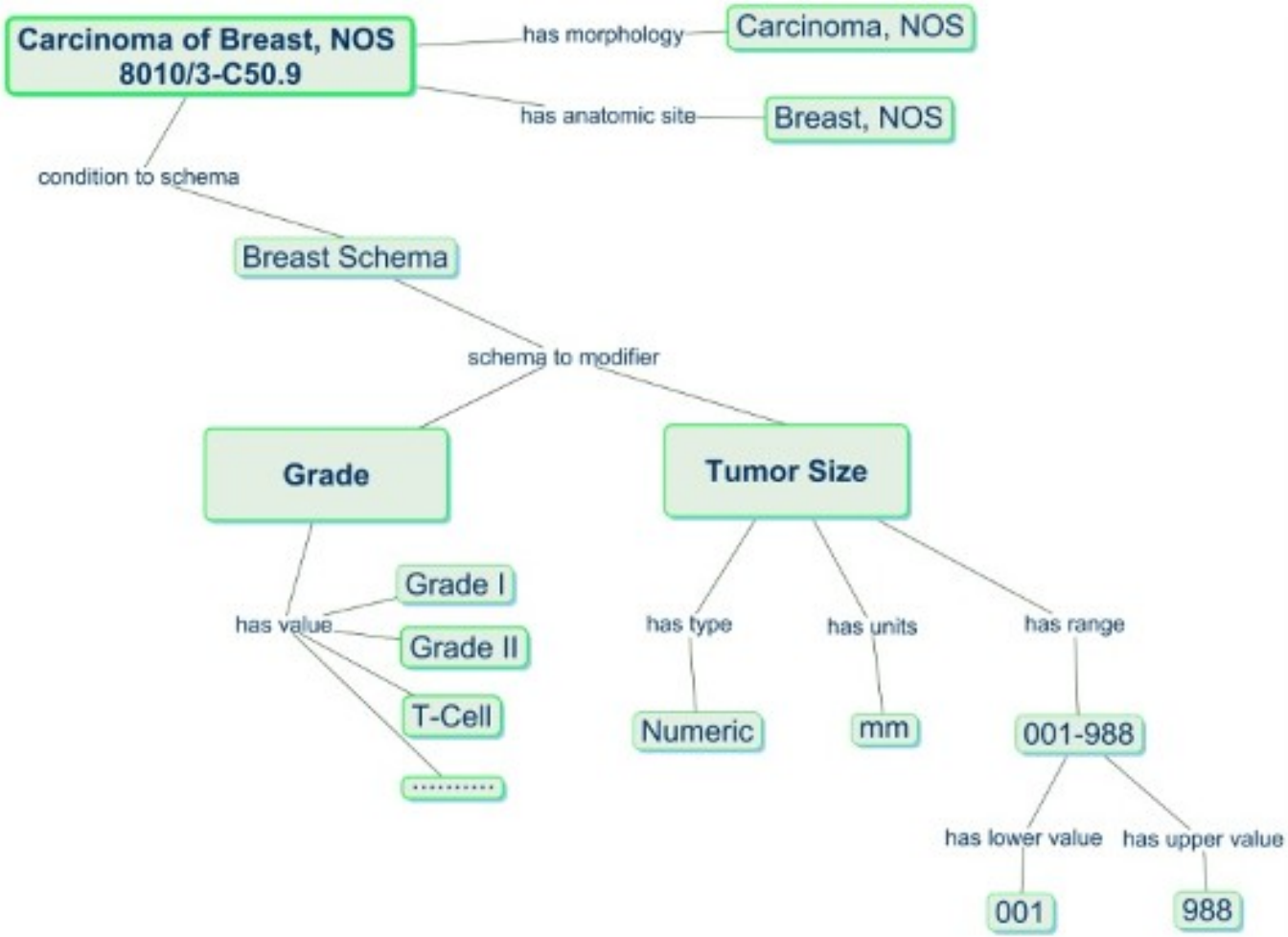
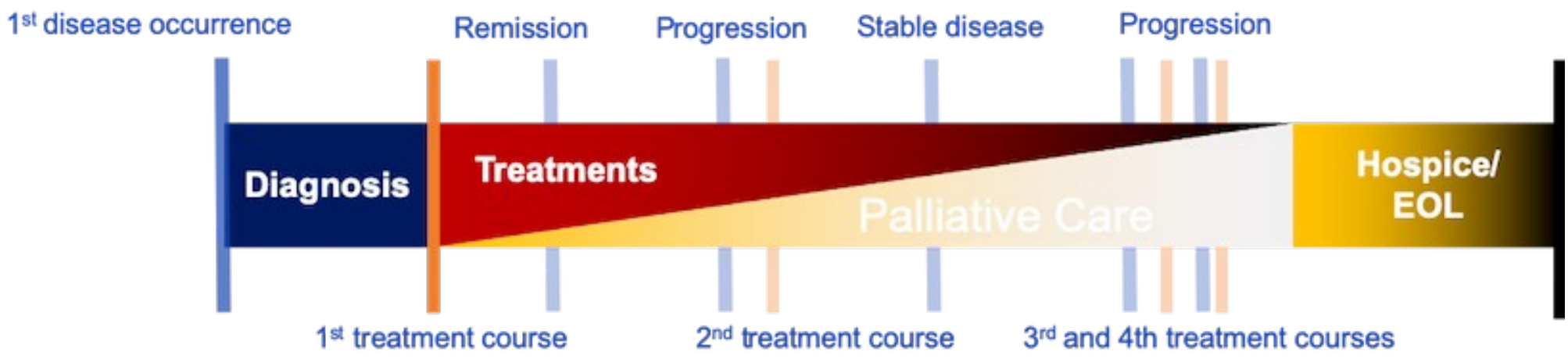
CDM_source
Metadata

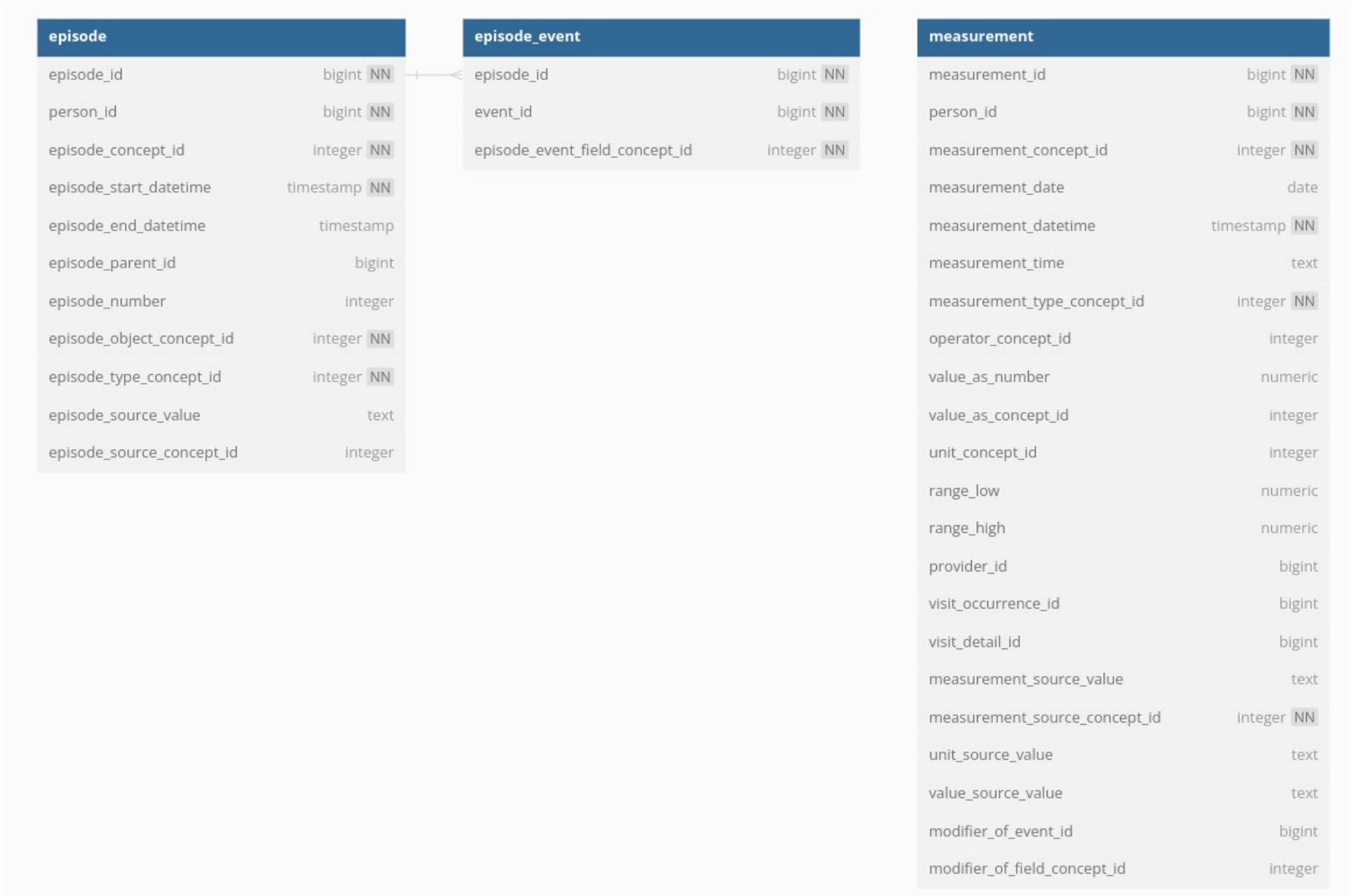
# Oncology Extension



# Oncology Extension



# Oncology Extension



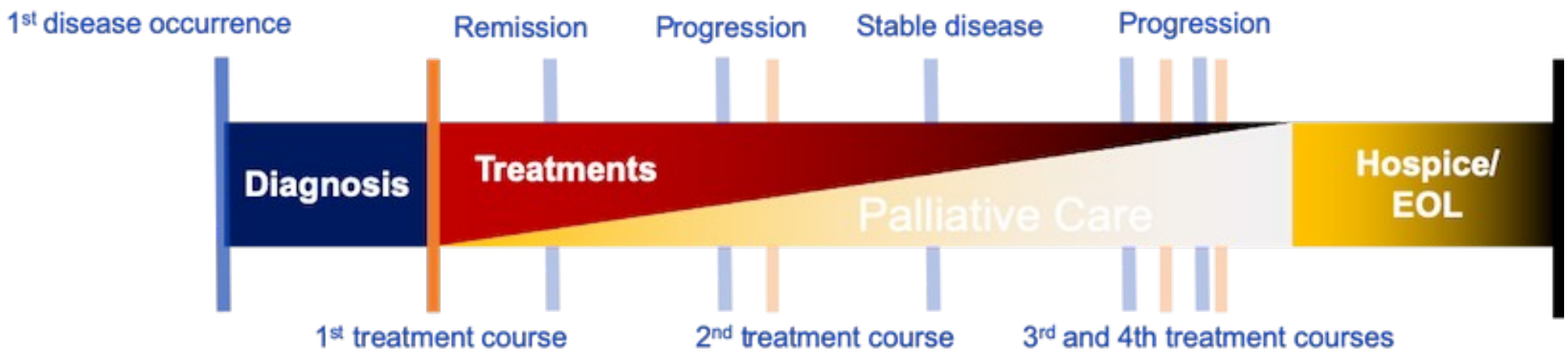

https://ohdsi.github.io/CommonDataModel/oncology.html

# Oncology Extension

The **EPISODE** table aggregates lower-level clinical events (VISIT_OCCURRENCE, DRUG_EXPOSURE, PROCEDURE_OCCURRENCE, DEVICE_EXPOSURE) into a higher-level abstraction representing clinically and analytically **relevant disease phases/outcomes and treatments**. The **EPISODE_EVENT** table **connects qualifying clinical event**s (VISIT_OCCURRENCE, DRUG_EXPOSURE, PROCEDURE_OCCURRENCE, DEVICE_EXPOSURE) to the appropriate EPISODE entry.

EPISODE
PK episode_id
FK person_id
FK episode_concept_id
episode_start_datetime
episode_end_datetime
FK episode_parent_id
episode_number
FK episode_object_concept_id
FK episode_type_concept_id
episode_source_value
FK episode_source_concept_id
EPISODE_EVENT
FK episode_id
FK event_id
FK episode_event_field_concept_id
CONDITION_OCCURRENCE
PK condition_occurrence_id
PROCEDURE_OCCURRENCE
PK procedure_occurrence_id
DRUG_EXPOSURE
PK procedure_occurrence_id

# Oncology Extension




## Example of disease and treatment episodes in the Episode table

***'First occurrence'-of-'Carcinoma of breast'***

| | |
|---|---|
| episode_id | 12345 |
| person_id | 1 |
| episode_concept_id | 32528 |
| episode_start_datetime | June 9, 2019 |
| episode_object_concept_id | 4116071 |
| episode_type_concept_id | 32535 |

episode_concept_id: OMOP concept 'First disease occurrence'

episode_object_concept_id: SNOMED concept 'Carcinoma of breast'

episode_type_concept_id: OMOP concept 'Tumor registry'

***'Treatment regimen'-of-' Paclitaxel and Bevacizumab'***

| | |
|---|---|
| episode_id | 12346 |
| person_id | 1 |
| episode_concept_id | 32531 |
| episode_start_datetime | July 9, 2019 |
| episode_parent_id | 12345 |
| episode_object_concept_id | 35804255 |
| episode_type_concept_id | 32545 |

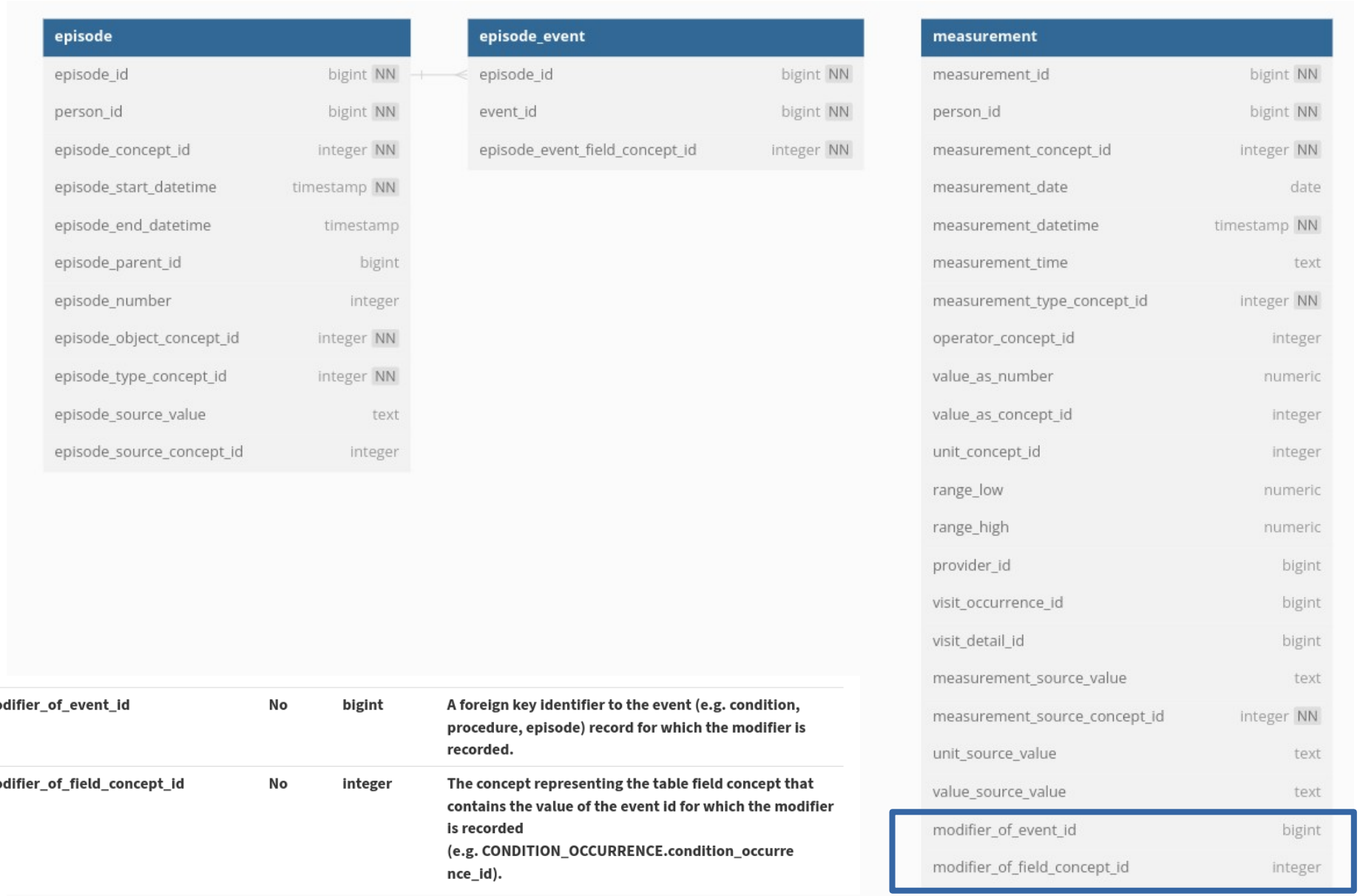
episode_concept_id: OMOP concept 'Treatment Regimen'

episode_parent_id: Foreign key to the disease Episode record

episode_object_concept_id: HemOnc concept Paclitaxel and Bevacizumab'

episode_type_concept_id: OMOP concept 'Episode algorithmically derived from EHR'

# Oncology Extension




| | | | |
|---|---|---|---|
| **modifier_of_event_id** | **No** | **bigint** | **A foreign key identifier to the event (e.g. condition, procedure, episode) record for which the modifier is recorded.** |
| **modifier_of_field_concept_id** | **No** | **integer** | **The concept representing the table field concept that contains the value of the event id for which the modifier is recorded (e.g. CONDITION_OCCURRENCE.condition_occurrence_id).** |

# Oncology Extension

## Example of cancer diagnosis in the OMOP CDM

### *Histology+Site* diagnosis in **Condition_Occurrence**

| | | |
|---|---|---|
| condition_occurrence_id | 123456789 | |
| person_id | 1 | |
| condition_concept_id | **4116071** | ← SNOMED concept 'Carcinoma of breast' |
| condition_start_datetime | June 9, 2019 | |
| condition_type_concept_id | 32535 | |
| condition_source_value | **8010/3-C50.9** | ← Precoordinated concept of ICD-O Histology & Site |
| condition_source_concept_id | 44505310 | |

| | | |
|---|---|---|
| measurement_id | 567890 | |
| person_id | 1 | |
| measurement_datetime | June 9, 2019 | |
| measurement_concept_id | **35918640** | ← NAACCR concept 'Grade Pathological' |
| measurement_date | June 9, 2019 | |
| value_as_concept_id | **35922509** | ← NAACCR concept 'G3: High combined histologic grade (unfavorable); SBR score of 8-9 points' |
| measurement_type_concept_id | 32534 | ← OMOP concept 'Tumor registry' |
| measurement_source_value | 3844 | ← NAACCR code for 'Grade Pathological' |
| measurement_source_concept_id | 35918640 | ← NAACCR concept 'Grade Pathological' |
| value_source_value | breast@3844@3 | ← NAACCR code for 'G3: High combined histologic grade (unfavorable); SBR score of 8-9 points' |
| modifier_of_event_id | **123456789** | ← Value of the respective condition record condition_occurrence_id |
| modifier_field_concept_id | **1147127** | ← Concept for 'condition_occurrence.condition_occurrence_id' |

# Vocabularios

Cancer Modifier ×
Staging/Grading ×

DOMAIN
CONCEPT
CLASS

filter

- [ ] Dimension (29)
- [ ] Extension/Invasion (545)
- [ ] Histopattern (444)
- [ ] Margin (433)
- [ ] Metastasis (579)
- [ ] Morph Abnormality (15)
- [ ] Nodes (192)
- [ ] Qualifier Value (7)
- [x] Staging/Grading (3281)
- [ ] Topography (518)

DOWNLOAD RESULTS

Show by 15 items Total 3,281 items

1 2 3 4 5 ··· 219

| ID | CODE | NAME | CLASS | CONCEPT | VALIDITY | DOMAIN | VOCAB |
|---|---|---|---|---|---|---|---|
| 1634568 | advanced | Advanced Stage | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1635479 | AJCC-TRG-0 | AJCC Tumor Regression Grading Grade 0 | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1635394 | AJCC-TRG-1 | AJCC Tumor Regression Grading Grade 1 | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634517 | AJCC-TRG-2 | AJCC Tumor Regression Grading Grade 2 | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634617 | AJCC-TRG-3 | AJCC Tumor Regression Grading Grade 3 | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634194 | c-6th_AJCC/UICC-M0 | AJCC/UICC 6th clinical M0 Category | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634042 | c-6th_AJCC/UICC-M0(i+) | AJCC/UICC 6th clinical M0(i+) Category | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634829 | c-6th_AJCC/UICC-M1 | AJCC/UICC 6th clinical M1 Category | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1633709 | c-6th_AJCC/UICC-M1a | AJCC/UICC 6th clinical M1a Category | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |
| 1634442 | c-6th_AJCC/UICC-M1b | AJCC/UICC 6th clinical M1b Category | Staging/Grading | Standard | Valid | Measurement | Cancer Modifier |

NAACCR ×
NAACCR Variable ×

DOMAIN
CONCEPT
CLASS

filter

- [ ] NAACCR Proc Schema (30)
- [ ] NAACCR Procedure (707)
- [ ] NAACCR Schema (195)
- [ ] NAACCR Value (31179)
- [x] NAACCR Variable (1881)
- [ ] Permissible Range (481)

DOWNLOAD RESULTS

Show by 15 items Total 1,881 items

1 2 3 4 5 ··· 126

| ID | CODE | NAME | CLASS | CONCEPT | VALIDITY | DOMAIN | VOCAB |
|---|---|---|---|---|---|---|---|
| 35917581 | rectum@2864 | 18q Loss of Heterozygosity (LOH) | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35917706 | appendix@2864 | 18q Loss of Heterozygosity (LOH) | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35917755 | colon@2864 | 18q Loss of Heterozygosity (LOH) | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35918610 | 3803 | Adenoid Cystic Basaloid Pattern | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35917191 | lacrimal_gland@2930 | Adenoid Cystic Carcinoma - Presence of Basaloid Pattern | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35918528 | 3804 | Adenopathy | NAACCR Variable | Standard | Valid | Measurement | NAACCR |
| 35918321 | 3805 | AFP Post-Orchiectomy Lab Value | NAACCR Variable | Standard | Valid | Measurement | NAACCR |

# concept_numeric

Cómo puedo encontrar pacientes con tumores de menos de 2cm en mi modelo?

| concept_id | concept_name | domain_id | vocabulary_id | concept_class_id | standard_concept | concept_code |
|---|---|---|---|---|---|---|
| 45883535 | Mild | Meas Value | LOINC | Answer | S | LA6752-5 |
| 35920053 | Described as "less than 1 centimeter (cm)" | Meas Value | NAACCR | Cancer Identification | S | melanoma_skin@2800@991 |
| 35919956 | Described as "less than 2 cm," or "greater than 1 cm," or "between 1 cm and 2 cm" | Meas Value | NAACCR | Cancer Identification | S | melanoma_mouth_other@2800@992 |

# concept_numeric

Cómo puedo encontrar pacientes con tumores de menos de 2cm en mi modelo?

```
SELECT *
FROM measurement
WHERE measurement_concept_id = 4139794  -- Tumor size
AND ( (value_as_number <= 2 and unit_concept_id = 8582) -- Centimeter
OR (value_as_number <= 20 and unit_concept_id = 8588)) --Millimeter
AND COALESCE(operator_concept_id, 4171754) = 4171754 -- Less than or equal
```

# concept_numeric

| concept_numeric | |
|---|---|
| concept_id | integer |
| value_as_number | float |
| unit_concept_id | integer |
| operator_concept_id | float |

Cómo puedo encontrar pacientes con tumores de menos de 2cm en mi modelo?

```
SELECT *
FROM measurement
WHERE measurement_concept_id = 4139794  -- Tumor size
AND ( (value_as_number <= 2 and unit_concept_id = 8582) -- Centimeter
OR (value_as_number <= 20 and unit_concept_id = 8588)) --Millimeter
AND COALESCE(operator_concept_id, 4171754) = 4171754 -- Less than or equal
```

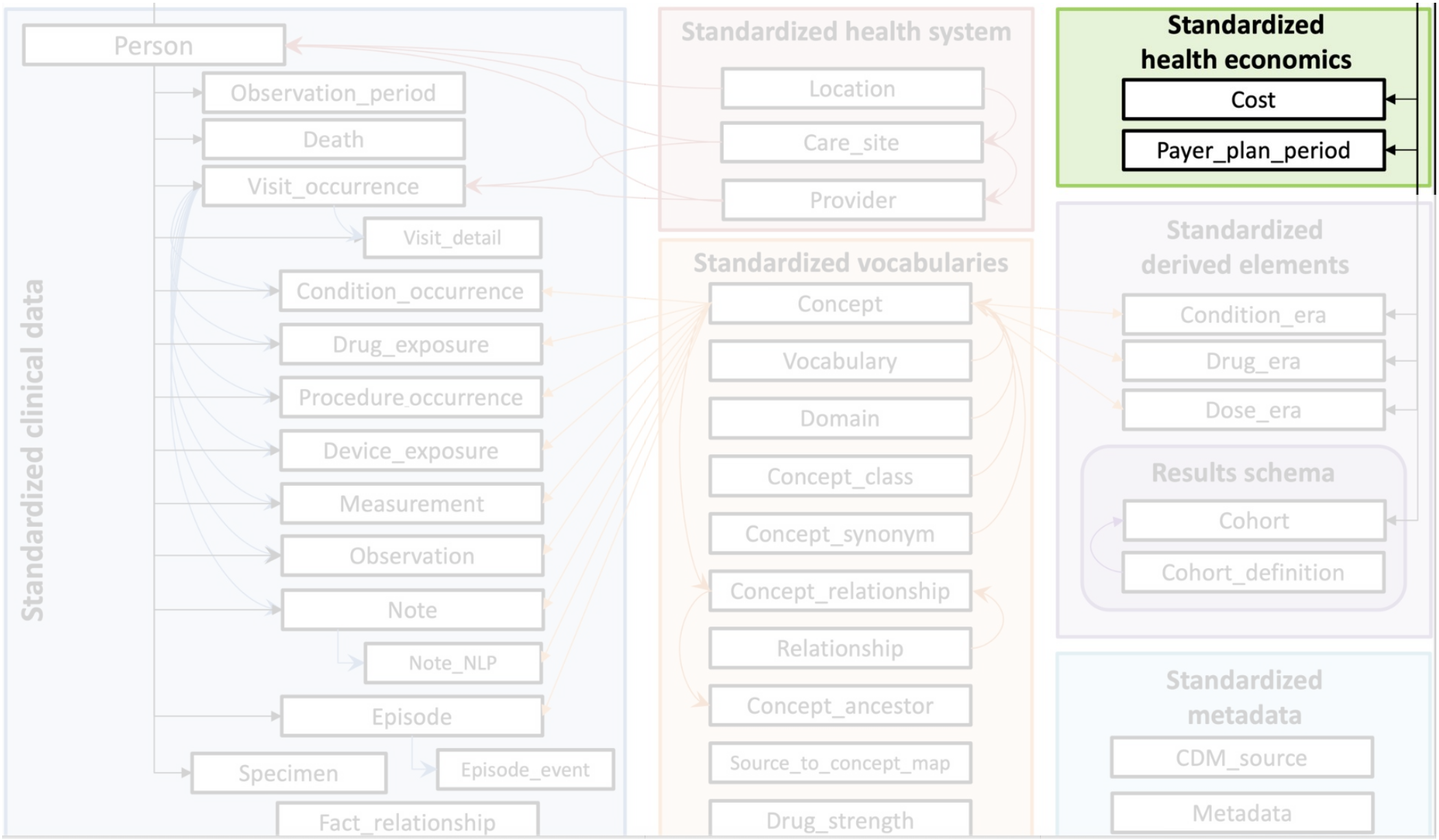
# concept_numeric

| concept_numeric | |
|---|---|
| concept_id | integer |
| value_as_number | float |
| unit_concept_id | integer |
| operator_concept_id | float |

| concept_id | concept_name | domain_id | vocabulary_id | concept_class_id | standard_concept | concept_code |
|---|---|---|---|---|---|---|
| 45883535 | Mild | Meas Value | LOINC | Answer | S | LA6752-5 |
| 35920053 | Described as “less than 1 centimeter (cm)” | Meas Value | NAACCR | Cancer Identification | S | melanoma_skin@2800@991 |
| 35919956 | Described as “less than 2 cm,” or “greater than 1 cm,” or “between 1 cm and 2 cm” | Meas Value | NAACCR | Cancer Identification | S | melanoma_mouth_other@2800@992 |

**CONCEPT_NUMERIC**

| concept_id | value_as_number | unit_concept_id | operator_concept_id | Description |
|---|---|---|---|---|
| 45883535 | 1 | | | 1 is numeric value of ‘Mild’ |
| 35920053 | 1 | 8582 | 4171756 | ‘Less than 1 cm’ |
| 35919956 | 1 | 8582 | 4171755 | Lower limit of ‘between 1 cm and 2 cm’ |
| 35919956 | 2 | 8582 | 4171754 | Upper limit of ‘between 1 cm and 2 cm’ |


Standardized clinical data
Person
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CDM_source
Metadata

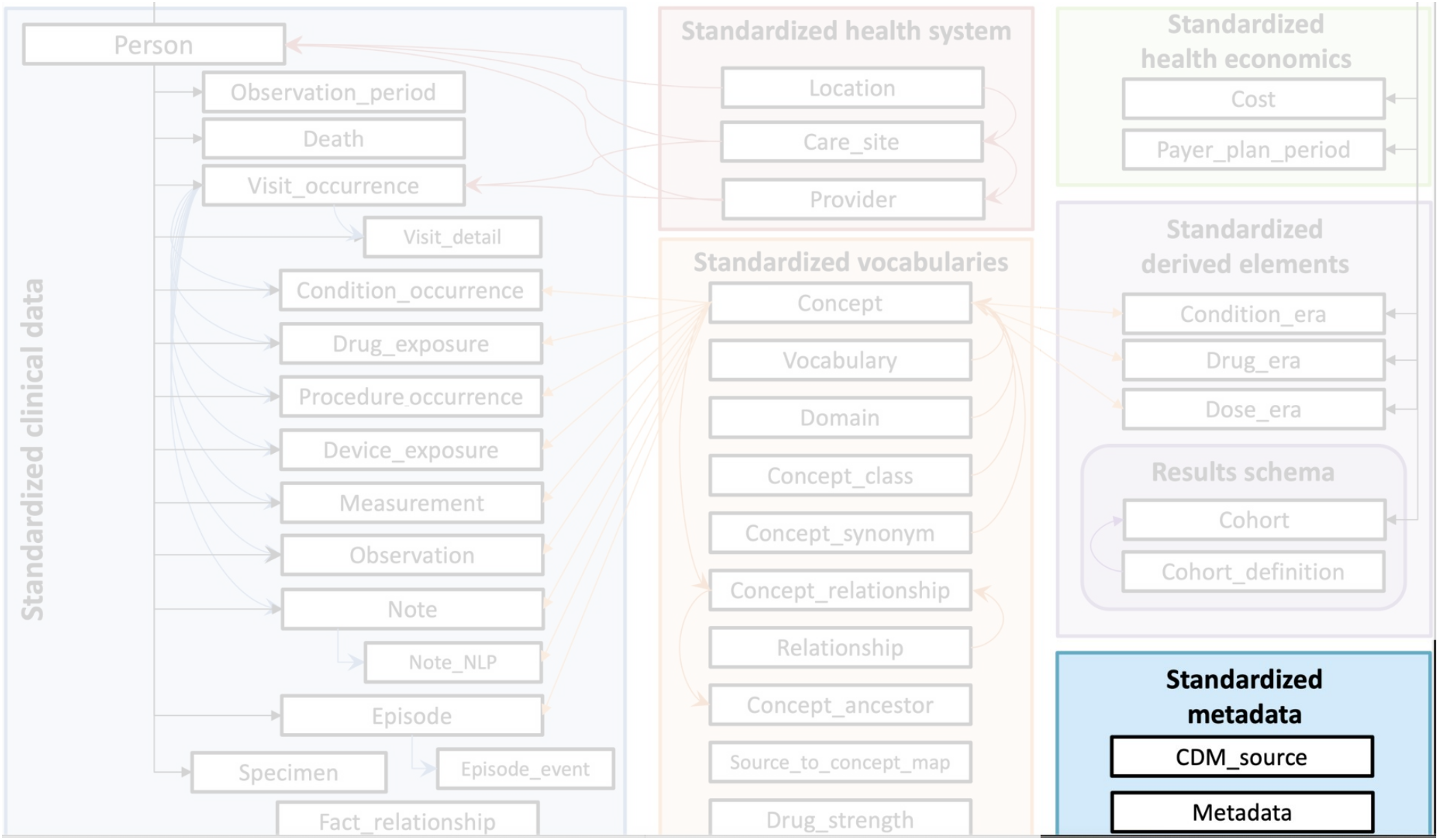
| cost | | |
|---|---|---|
| cost_id | bigint | NN |
| cost_event_id | bigint | NN |
| cost_domain_id | text | NN |
| payer_plan_period_id | bigint | |
| cost_type_concept_id | integer | NN |
| currency_concept_id | integer | |
| revenue_code_concept_id | integer | |
| drg_concept_id | integer | |
| total_charge | double | |
| total_cost | double | |
| total_paid | double | |
| paid_by_payer | double | |
| paid_by_patient | double | |
| paid_patient_copay | double | |
| paid_patient_coinsurance | double | |
| paid_patient_deductible | double | |
| paid_by_primary | double | |
| paid_ingredient_cost | double | |
| paid_dispensing_fee | double | |
| amount_allowed | double | |
| revenue_code_source_value | text | |
| drg_source_value | text | |

La tabla **COST** se utiliza para registrar información relacionada con los **costes asociados** a eventos clínicos y de atención médica en los datos de los pacientes.

Esta tabla es fundamental para el análisis económico y de costes en el contexto de la atención médica y la Evaluación de tecnologñias sanitarias (HTA)

| payer_plan_period | | |
|---|---|---|
| payer_plan_period_id | bigint | NN |
| person_id | bigint | NN |
| contract_person_id | bigint | |
| payer_plan_period_start_date | date | NN |
| payer_plan_period_end_date | date | NN |
| payer_concept_id | integer | NN |
| plan_concept_id | integer | NN |
| contract_concept_id | integer | |
| sponsor_concept_id | integer | |
| stop_reason_concept_id | integer | NN |
| payer_source_concept_id | integer | NN |
| plan_source_concept_id | integer | NN |
| contract_source_concept_id | integer | |
| sponsor_source_concept_id | integer | NN |
| stop_reason_source_concept_id | integer | NN |
| payer_source_value | text | |
| plan_source_value | text | |
| contract_source_value | text | |
| sponsor_source_value | text | |
| family_source_value | text | |
| stop_reason_source_value | text | |

La tabla **PAYER_PLAN_PERIOD** se utiliza para registrar información relacionada con los tipos y períodos de **cobertura** de planes de pago o **seguros médicos** para los pacientes y se referencia desde la tabla **COST**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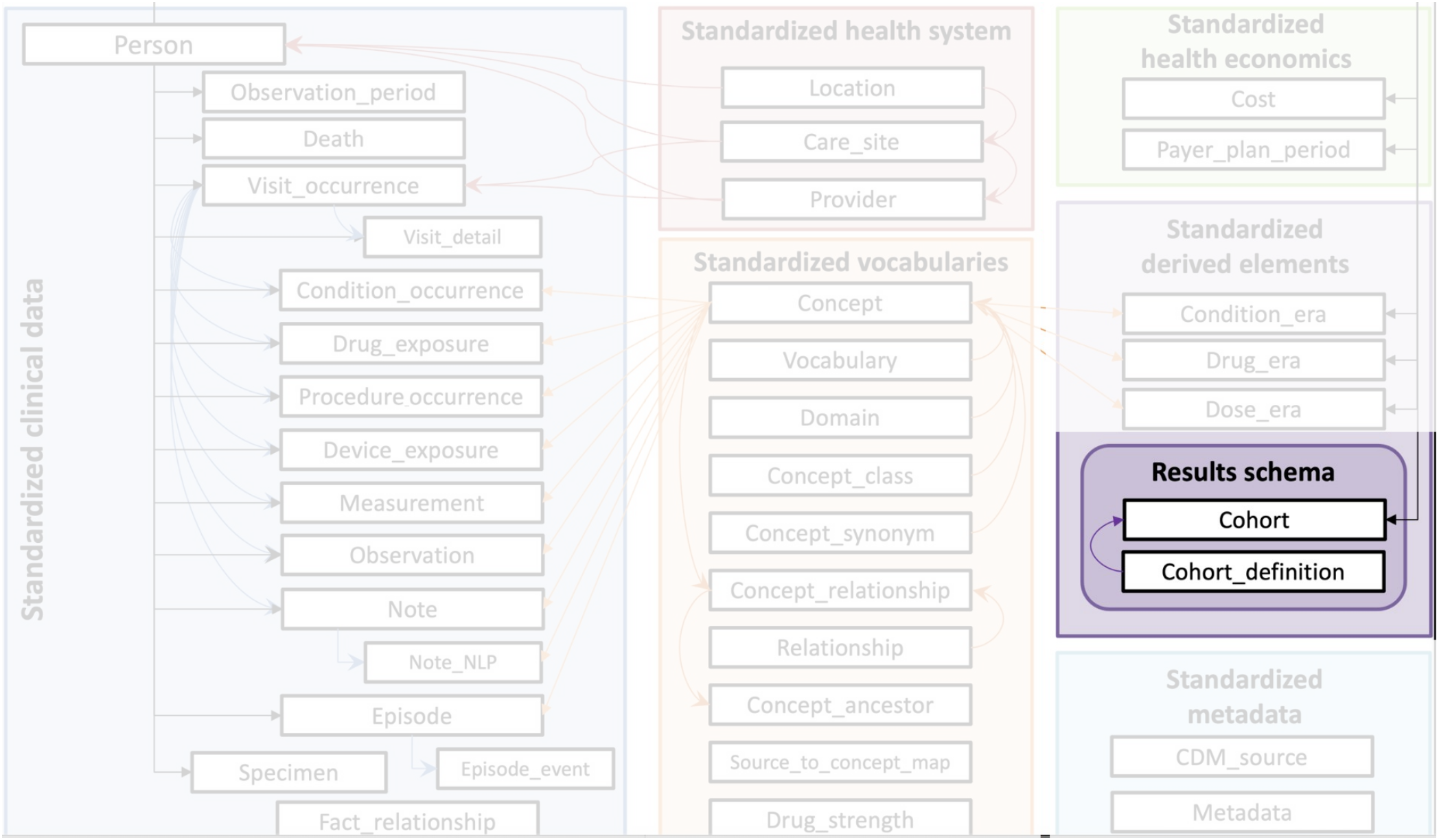
Standardized derived elements
Condition_era
Drug_era
Dose_era
Results schema
Cohort
Cohort_definition
Standardized metadata
CDM_source
Metadata

# Información sobre esta instalación de OMOP-CDM

| cdm_source | |
|---|---|
| cdm_version_concept_id | integer |
| source_release_date | date NN |
| cdm_release_date | date |
| cdm_source_name | text NN |
| cdm_source_abbreviation | text NN |
| cdm_holder | text NN |
| source_description | text |
| source_documentation_reference | text |
| cdm_etl_reference | text |
| cdm_version | text |
| vocabulary_version | text |

| metadata | |
|---|---|
| metadata_datetime | timestamp |
| metadata_concept_id | integer NN |
| metadata_type_concept_id | integer NN |
| value_as_concept_id | integer |
| metadata_date | date |
| name | text NN |
| value_as_string | text |

Data Source
Data Extraction Date
ETL Version
Last ETL Refresh Date
Total Patients Loaded
Domains covered
Mapping Conventions
Data Quality Checks
Data License Information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# Cohortes

- Otro de los aspectos importantes del modelo común de datos OMOP es el concepto de cohorte. Una cohorte es un **conjunto de personas que satisfacen uno o más criterios** de inclusión al conjunto durante un período determinado de tiempo. Estos conjuntos se utilizan en todas las herramientas analíticas y estudios de OHDSI como los elementos fundamentales para llevar a cabo una investigación. Las cohortes se definen de forma independiente a los demás conjuntos en una investigación

# Publicación de nuestra base de datos

# Data publication - Quality

OVERVIEW

METADATA

RESULTS

ABOUT

## DATA QUALITY ASSESSMENT

### SYNTHEA SYNTHETIC HEALTH DATABASE

Results generated at 2019-08-22 14:15:06 in 29 mins

| | Verification | | | | Validation | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pass | Fail | Total | % Pass | Pass | Fail | Total | % Pass | Pass | Fail | Total | % Pass |
| Plausibility | 159 | 21 | 180 | 88% | 283 | 0 | 283 | 100% | 442 | 21 | 463 | 95% |
| Conformance | 637 | 34 | 671 | 95% | 104 | 0 | 104 | 100% | 741 | 34 | 775 | 96% |
| Completeness | 369 | 17 | 386 | 96% | 5 | 10 | 15 | 33% | 374 | 27 | 401 | 93% |
| Total | 1165 | 72 | 1237 | 94% | 392 | 10 | 402 | 98% | 1557 | 82 | 1639 | **95%** |

https://github.com/OHDSI/DataQualityDashboard

Files

main

Go to file t

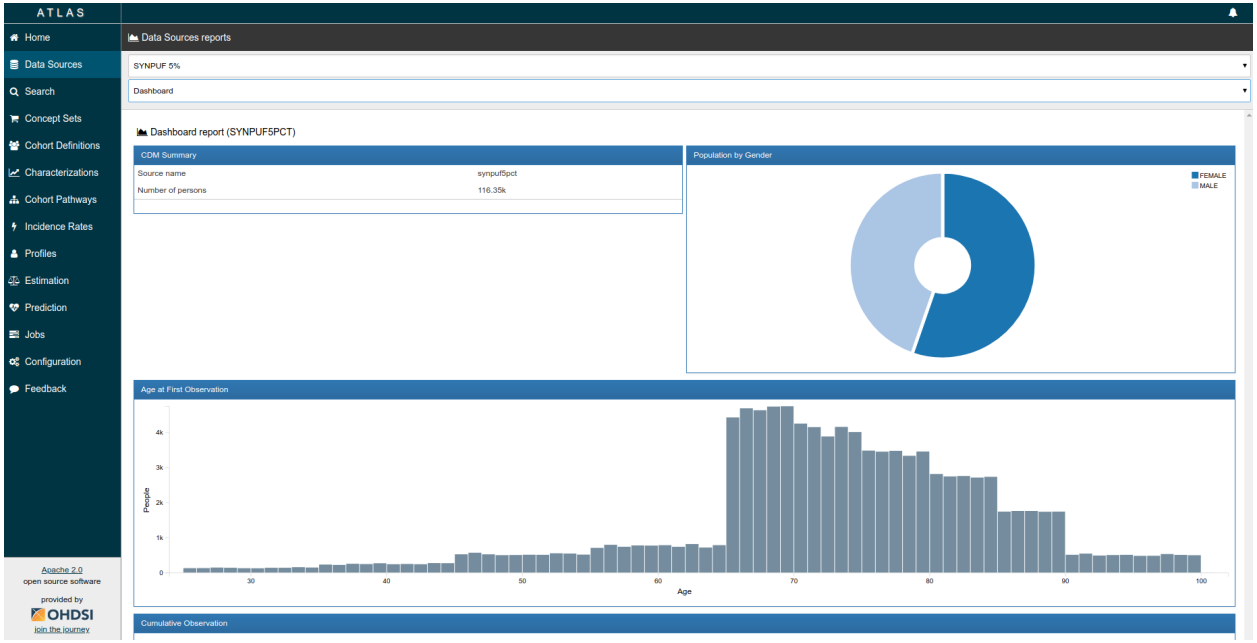
- .github
- R
- docs
- extras
- inst
  - csv
  - doc
  - shinyApps
  - sql/sql_server
    - sqlOnly
    - concept_plausible_gender.sql
    - concept_plausible_unit_concept…
    - concept_plausible_value_high.sql
    - concept_plausible_value_low.sql
    - field_cdm_datatype.sql
    - field_cdm_field.sql

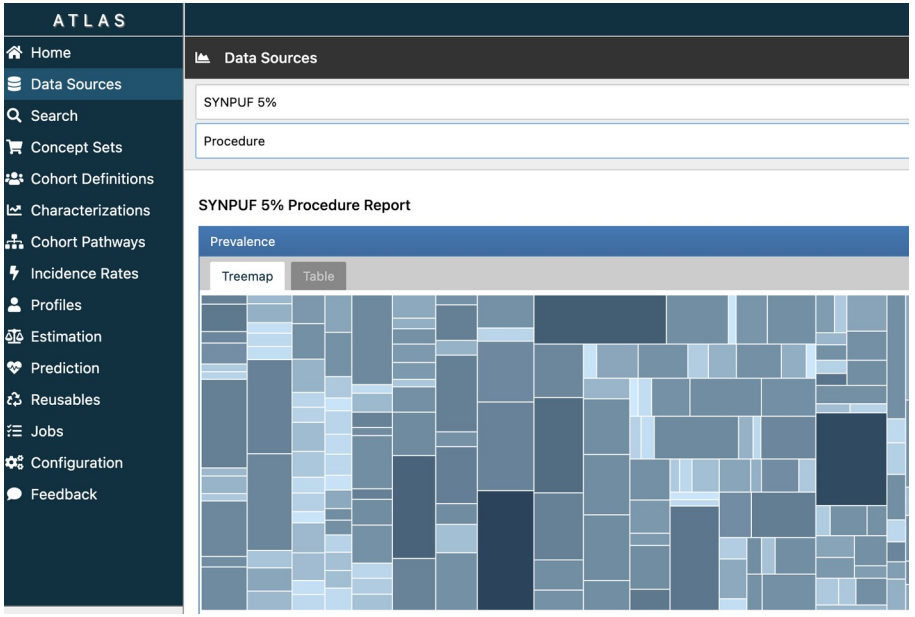
DataQualityDashboard / inst / sql / sql_server / **concept_plausible_gender.sql**

Code Blame Executable File · 59 lines (55 loc) · 1.56 KB

```sql
SELECT
  num_violated_rows,
        CASE
                WHEN denominator.num_rows = 0 THEN 0
                ELSE 1.0*num_violated_rows/denominator.num_rows
        END AS pct_violated_rows,
        denominator.num_rows AS num_denominator_rows
FROM
(
        SELECT
          COUNT_BIG(*) AS num_violated_rows
        FROM
        (
                /*violatedRowsBegin*/
                SELECT cdmTable.*
                FROM @cdmDatabaseSchema.@cdmTableName cdmTable
                        INNER JOIN @cdmDatabaseSchema.person p
                        ON cdmTable.person_id = p.person_id
                        {@cohort}?{
        JOIN @cohortDatabaseSchema.@cohortTableName c
          ON cdmTable.person_id = c.subject_id
          AND c.cohort_definition_id = @cohortDefinitionId
        }
                WHERE cdmTable.@cdmFieldName = @conceptId
                  AND p.gender_concept_id <> {@plausibleGender == 'Male'} ? {8507} : {8532}
                /*violatedRowsEnd*/
        ) violated_rows
) violated_row_count,
```

# Data publication - Visualization




https://atlas-demo.ohdsi.org/

OHDSI / **Achilles**

Type / to search

Code | Issues 30 | Pull requests 4 | Discussions | Actions | Projects | Wiki | Security | Insights

**Files**

main

Go to file t

- export
- summary
  - dbSourceVocabs.sql
  - dbVisitDist.sql
  - generateDbSummary.sql
- temporal
- man
- tests
- vignettes
- .Rbuildignore
- .gitattributes
- .gitignore

**Achilles** / inst / sql / sql_server / summary / **generateDbSummary.sql**

**clairblacketer** Added new folder for database summary sql. Updated generateDbSummary....

Code | Blame | 149 lines (116 loc) · 4.77 KB

```sql
-- Generates a one-line database summary table

select c.cdm_source_name,
       c.cdm_source_abbreviation,
       '@country' as country,
       '@provenance' as provenance,
             t3.attribute_name,
             round(t3.attribute_value, 2) as attribute_value,
             rank_order

from @cdm_database_schema.cdm_source c,

(
  select 'Earliest date available' as attribute_name,
         min(cast(stratum_1 as numeric))*1 as attribute_value,
         1 as rank_order
  from @results_database_schema.achilles_results
  where analysis_id = 110
```

# Run Achilles

- DatabaseConnector::createConnectionDetails()
- DatabaseConnector::connect()
- SQLRender::render()
- Achilles::achilles()
- Achilles::exportToAres()
- AresIndexer::buildDataQualityIndex()
- DataQualityDashboard::executeDqChecks()
- DataQualityDashboard::convertJsonResultsFileCase()

EHDEN PORTAL

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Alberto Labarga

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- DASHBOARD
- ACADEMY
- EHDEN
- PUBLICATIONS
- STATUS

PORTAL

- ABOUT
- GET STARTED
- FEEDBACK
- PROFILE
- SIGN OUT

New Entry | Compare | Export

15 Results | Filtered by: Country: Spain | Sorted by: Database Acronym | Clear All

| | | | |
|---|---|---|---|
| INCLIVA \| VLC Instituto de Investigación Sanitaria | ABUCASIS | ABUCASIS<br>Instituto de Investigación Sanitaria INCLIVA | 3.88M<br>Spain |
| Base de Análisis Resultados DE NAvarra | BARDENA | Base de Analisis Resultados de Navarra<br>Navarre Health Service - SNS-O | 600K<br>Spain |
| BiGAN | BIGAN | BIGAN - Big Data in Healthcare, Aragon (Spain)<br>Aragon Institute for Health Sciences - Instituto Aragonés de Ciencias de la Salud | 2.24M<br>Spain |
| marinaSalud | DptoSalud-DENIA | DENIA<br>Hospital de Denia - MarinaSalud | 300K<br>Spain |

https://portal.ehden.eu

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# Databases / BARDENA

Fingerprint | Literature | Database Dashboard

**Hits:** 51 **Unique Views:** 27 **Filled:** 98 %

## DATABASE DESCRIPTION

For enquiries about this database, please contact enquiries@ehden.eu.

Database Acronym

BARDENA

Database Name

Base de Analisis Resultados de Navarra

Institution name

Navarre Health Service - SNS-O

Department name

Health results evaluation and analysis service.

Street Address

st/ Tudela 20

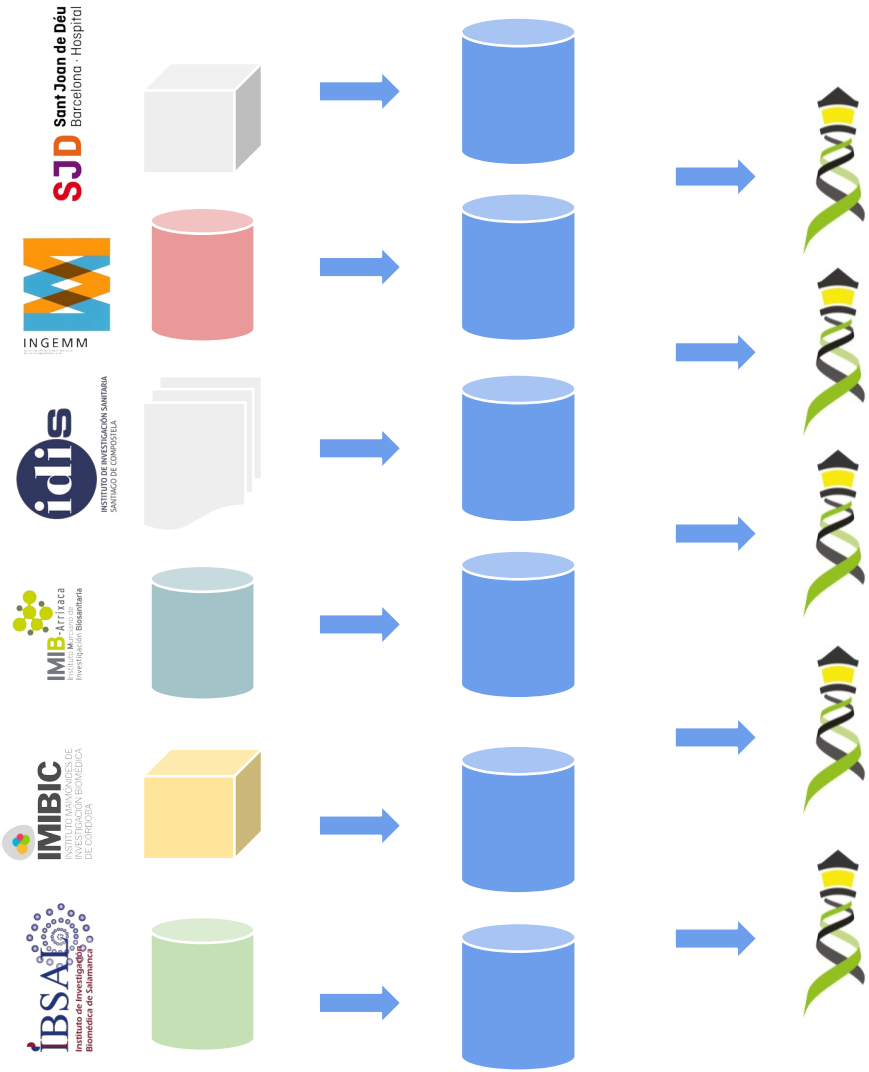
City

Pamplona

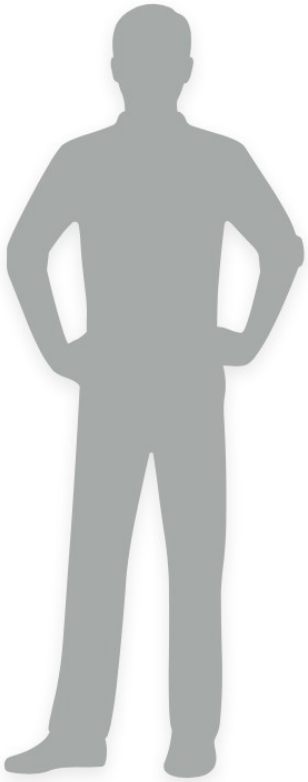
https://portal.ehden.eu

SJD Sant Joan de Déu
Barcelona · Hospital
INGEMM
idis
IMIB Arrilaca
IMIBIC
IBSAL

# GA4GH Beacon



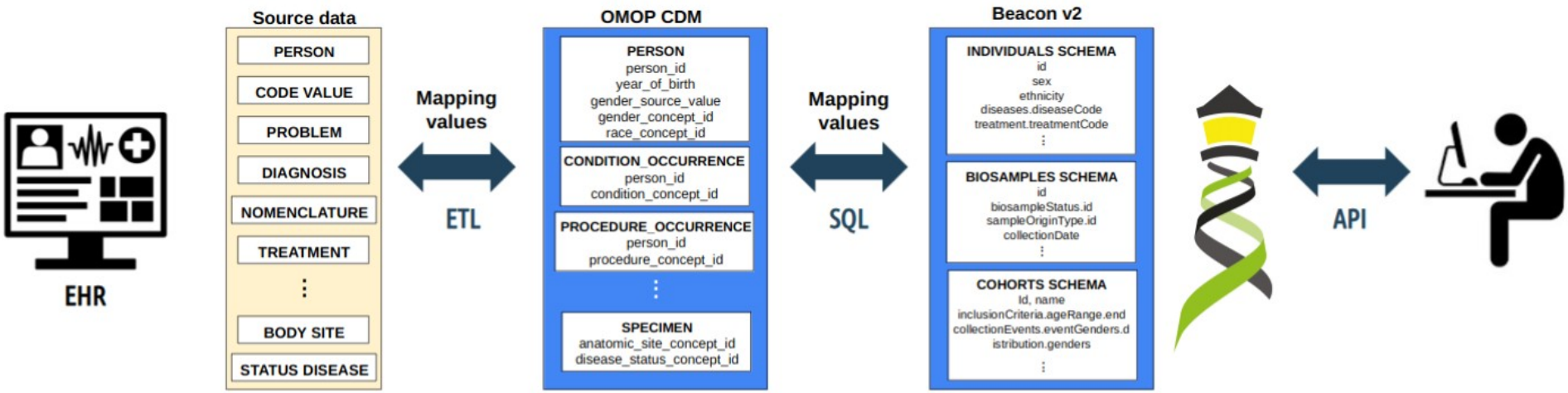
# GA4GH Beacon



"Do you have a 'C' at chromosome 13 at position 32,936,732?"

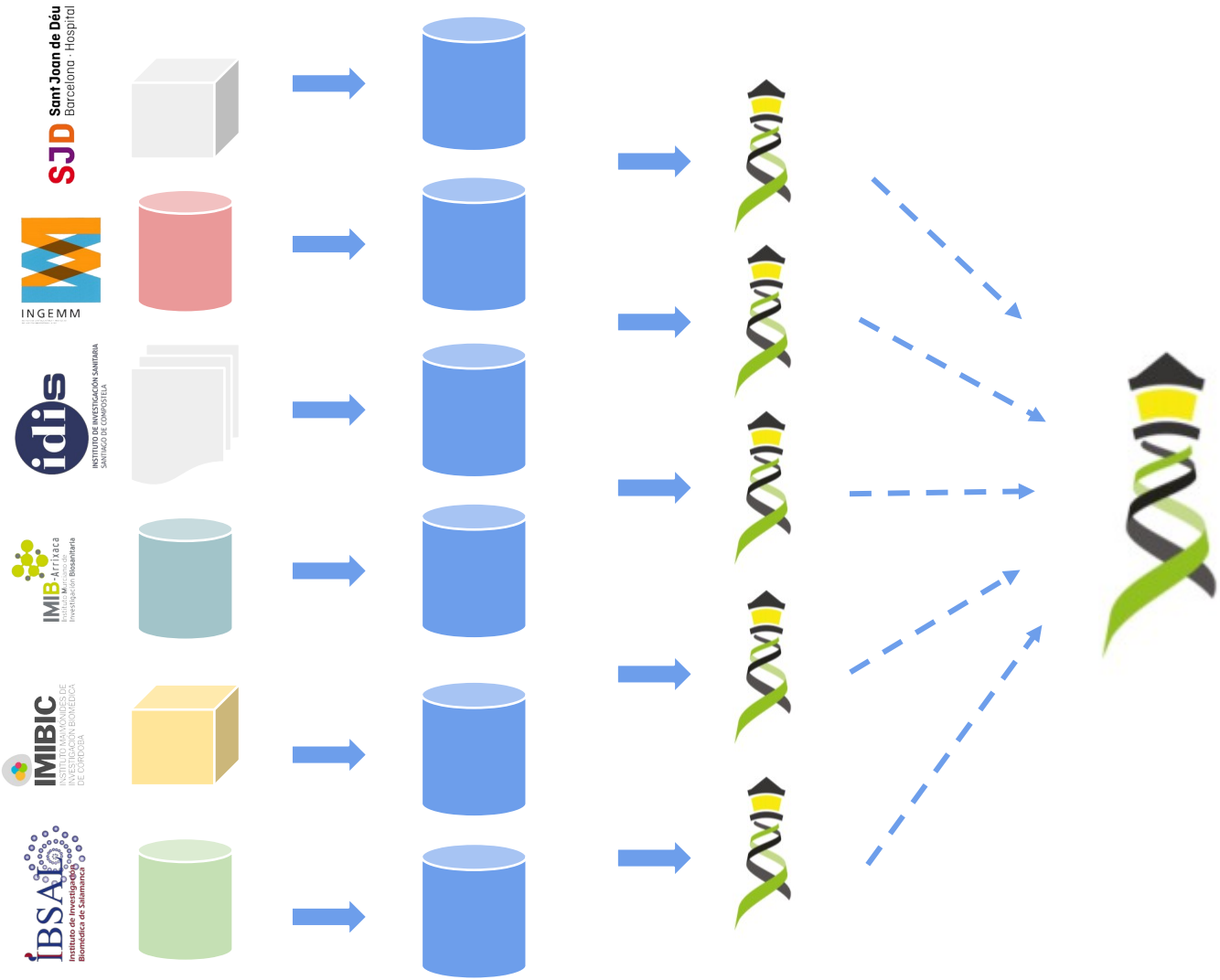
"Yes" (or "no")

# GA4GH beacon




https://gitlab.bsc.es/impact-data/impd-beacon_omopcdm

# GA4GH Beacon



# Beacon network

Beacon Network

Search Beacons Login

Search all beacons for allele

GRCh37 | 13 : 32936732 G > C | Cancel

Log in with Science ID to search controlled access beacons

**Response** All None

- [x] Found 3
- [ ] Not Found 17
- [ ] Not Applicable 20

**Access** All None

- [x] Controlled 0
- [x] Public 40

BRCA Exchange
Hosted by BRCA Exchange
Show Metadata Found

HGMD Public
Hosted by University of California, Santa Cruz
Found

MOLGENIS EMX2
Hosted by University Medical Center Groningen
Show Metadata Found

FAIRsharing.org
standards, databases, policies

search through all content

SEARCH

ACTIONS

GENERAL INFORMATION

**Minimum Information About a Bioinformatics investigation (MIABi)**

10.25504/FAIRsharing.28yec8

MIABi) initiative specifies, through a
that should be provided for a
response to the growing need for
e bioinformatics and computational

DSW

Product Solutions Learn About Get Started

# Data Stewardship Wizard

Create, plan, collaborate, and bring your data management plans to life with a tool trusted by thousands of people worldwide — from data management pioneers, to international research institutes.

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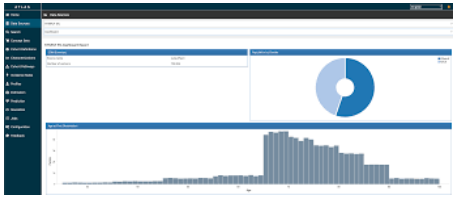


# HADES

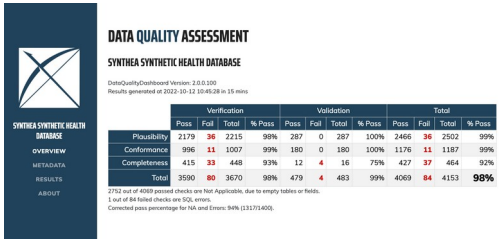
HADES

HEALTH ANALYTICS DATA-TO-EVIDENCE SUITE

Web API

Apache Tomcat

PostgreSQL



SYNTHEA SYNTHETIC HEALTH DATABASE

OVERVIEW

METADATA

RESULTS

ABOUT

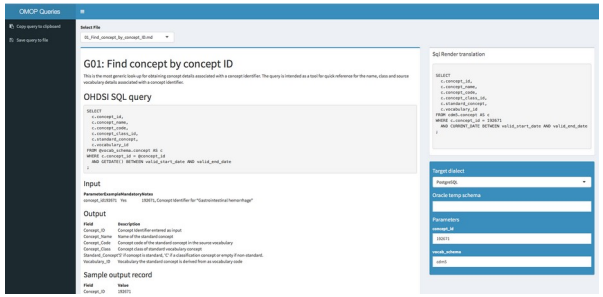
## DATA QUALITY ASSESSMENT

### SYNTHEA SYNTHETIC HEALTH DATABASE

DataQualityDashboard Version: 2.0.0.100
Results generated at 2022-10-12 10:45:28 in 15 mins

| | Verification | | | | Validation | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pass | Fail | Total | % Pass | Pass | Fail | Total | % Pass | Pass | Fail | Total | % Pass |
| Plausibility | 2179 | 36 | 2215 | 98% | 287 | 0 | 287 | 100% | 2466 | 36 | 2502 | 99% |
| Conformance | 996 | 11 | 1007 | 99% | 180 | 0 | 180 | 100% | 1176 | 11 | 1187 | 99% |
| Completeness | 415 | 33 | 448 | 93% | 12 | 4 | 16 | 75% | 427 | 37 | 464 | 92% |
| Total | 3590 | 80 | 3670 | 98% | 479 | 4 | 483 | 99% | 4069 | 84 | 4153 | **98%** |

2752 out of 4069 passed checks are Not Applicable, due to empty tables or fields.
1 out of 84 failed checks are SQL errors.
Corrected pass percentage for NA and Errors: 94% (3317/3400).



OMOP Queries

G01: Find concept by concept ID

OHDSI SQL query

Input

Output

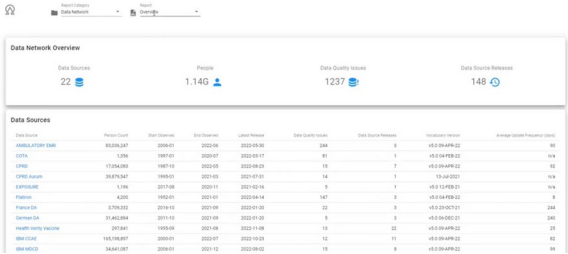
Sample output record

Sql Render translation

Target dialect

Oracle temp schema

Parameters



Data Network Overview

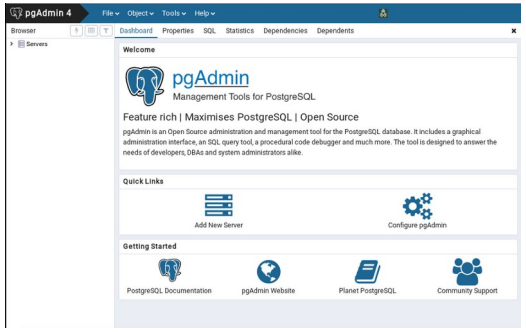
Data Sources 22

People 1.14G

Data Quality Issues 1237

Data Source Releases 148

Data Sources



pgAdmin 4

File Object Tools Help

Browser

Servers

Dashboard Properties SQL Statistics Dependencies Dependents

Welcome

pgAdmin

Management Tools for PostgreSQL

Feature rich | Maximises PostgreSQL | Open Source

pgAdmin is an Open Source administration and management tool for the PostgreSQL database. It includes a graphical administration interface, an SQL query tool, a procedural code debugger and much more. The tool is designed to answer the needs of developers, DBAs and system administrators alike.

Quick Links

Add New Server

Configure pgAdmin

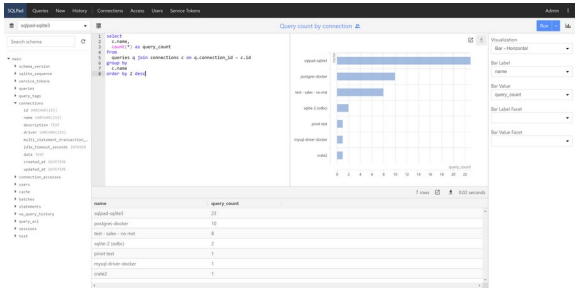
Getting Started

PostgreSQL Documentation

pgAdmin Website

Planet PostgreSQL

Community Support



SQLPad

Query count by connection

Visualization

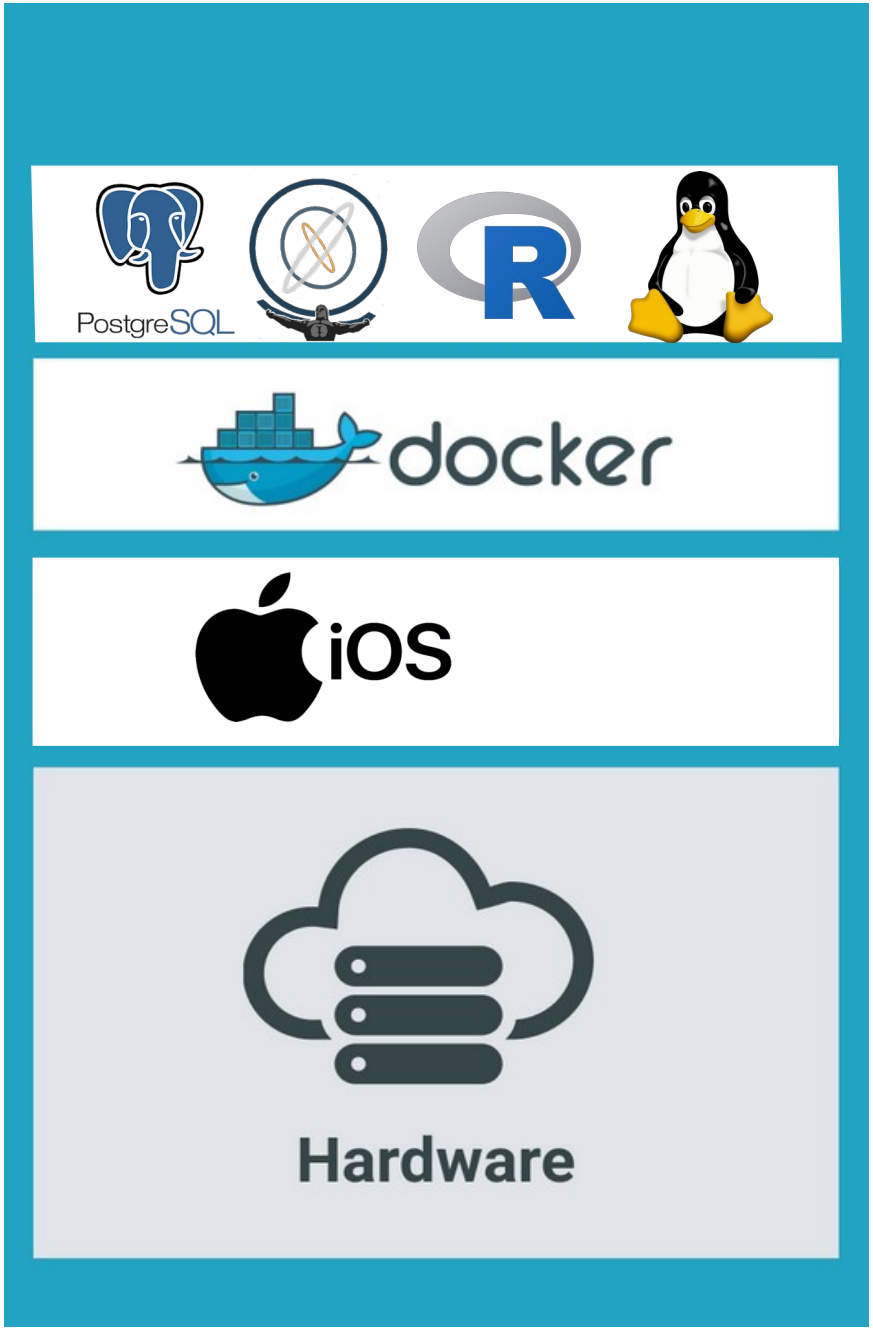
Bar - Horizontal

Bar Label

Bar Value

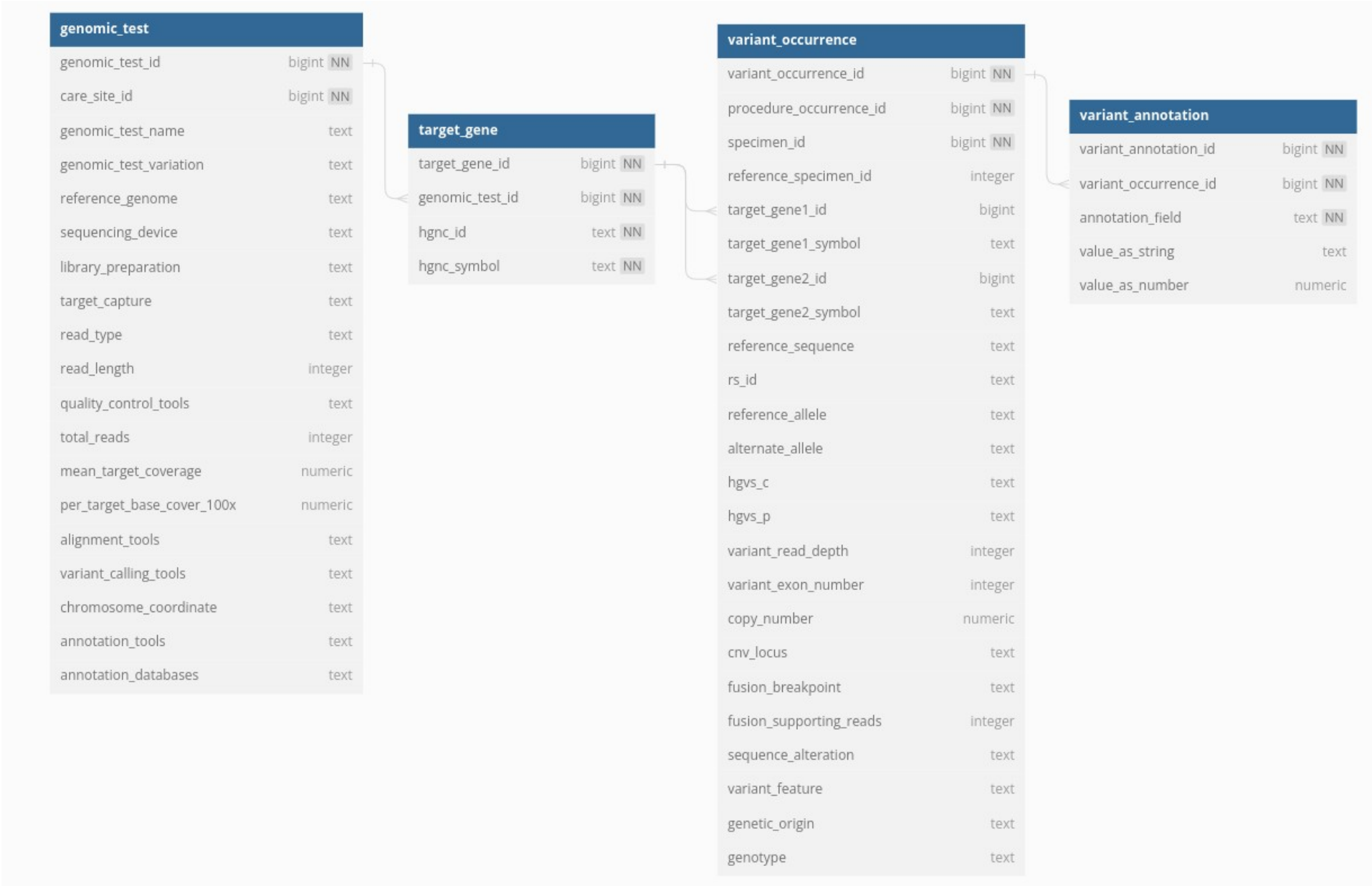
Bar Label Facet

Bar Value Facet


PostgreSQL
R
docker
iOS
Hardware

# OMOP-CDM extensions

# Genomics Extension



# Genomic data

[gene name + sequential variant + specimen + inspection method + exon number + variant type]

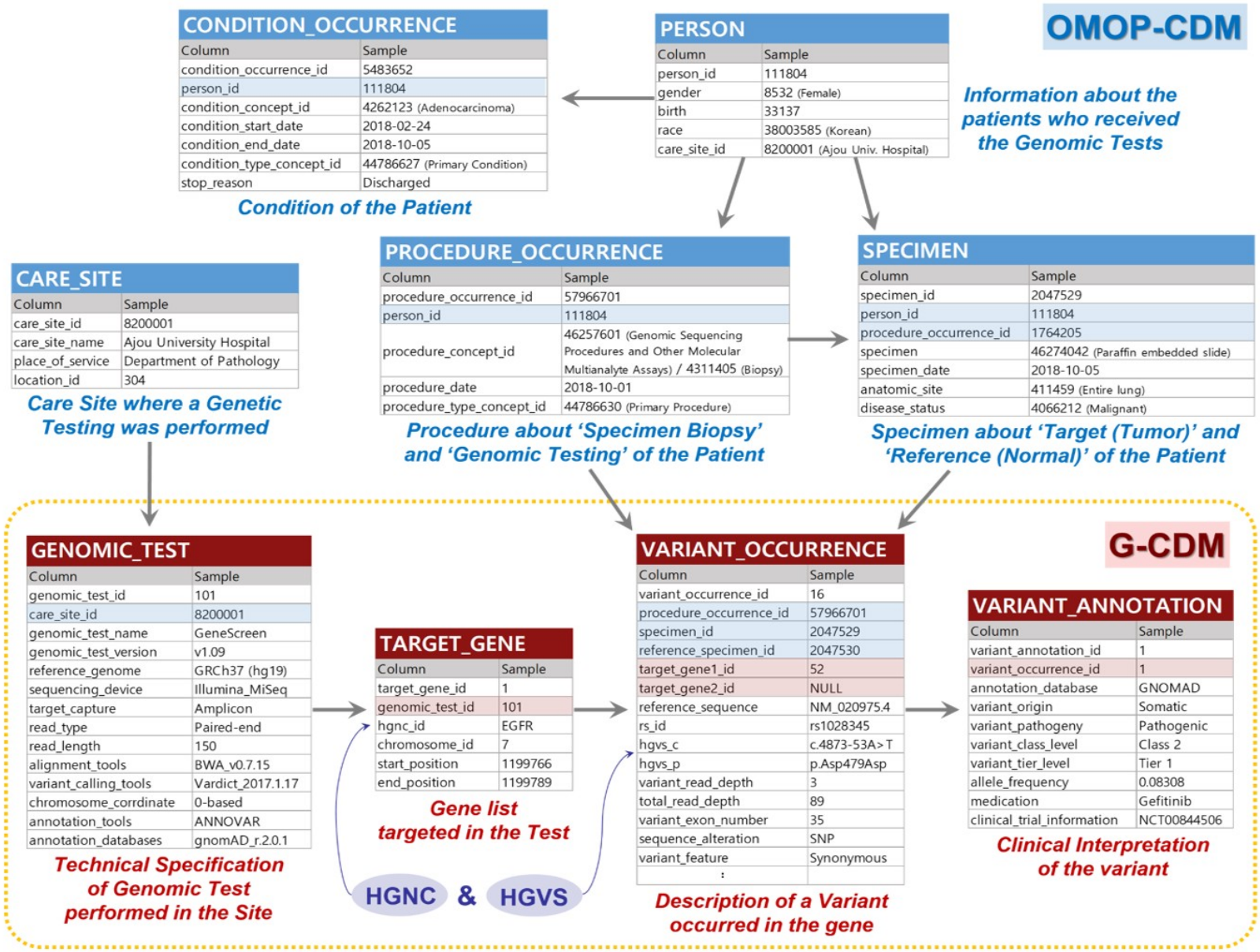
## Measurement table

| ID | CODE | NAME | CLASS | CONCEPT | VALIDITY | DOMAIN | VOCAB |
|---|---|---|---|---|---|---|---|
| 40776139 | LP19695-3 | EGFR gene | LOINC Hierarchy | Classification | Valid | Measurement | LOINC |
| 40758886 | 55766-2 | EGFR gene c.2156G>C+2155G>A+2155G>T [Presence] in Blood or Tissue by Molecular genetics method | Lab Test | Standard | Valid | Measurement | LOINC |
| 40758889 | 55768-6 | EGFR gene c.2303G>T [Presence] in Blood or Tissue by Molecular genetics method | Lab Test | Standard | Valid | Measurement | LOINC |
| 40758890 | 55769-4 | EGFR gene c.2369C>T [Presence] in Blood or Tissue by Molecular genetics method | Lab Test | Standard | Valid | Measurement | LOINC |
| 36203240 | 85383-8 | EGFR gene c.2369C>T actual/normal in Plasma cell-free DNA by Molecular genetics method | Lab Test | Standard | Valid | Measurement | LOINC |

## Observation table

| ID | CODE | NAME | CLASS | CONCEPT | VALIDITY | DOMAIN | VOCAB |
|---|---|---|---|---|---|---|---|
| 40775288 | LP96041-7 | EGFR gene c.2573T>G | LOINC Hierarchy | Classification | Valid | Observation | LOINC |
| 40785298 | LP96040-9 | EGFR gene c.2156G>C+2155G>A+2155G>T | LOINC Hierarchy | Classification | Valid | Observation | LOINC |
| 40785299 | LP96045-8 | EGFR gene exon 20 insertion | LOINC Hierarchy | Classification | Valid | Observation | LOINC |
| 40788607 | LP96063-1 | EGFR gene exon 19 | LOINC Hierarchy | Classification | Valid | Observation | LOINC |
| 40791895 | LP96042-5 | EGFR gene c.2582T>A | LOINC Hierarchy | Classification | Valid | Observation | LOINC |

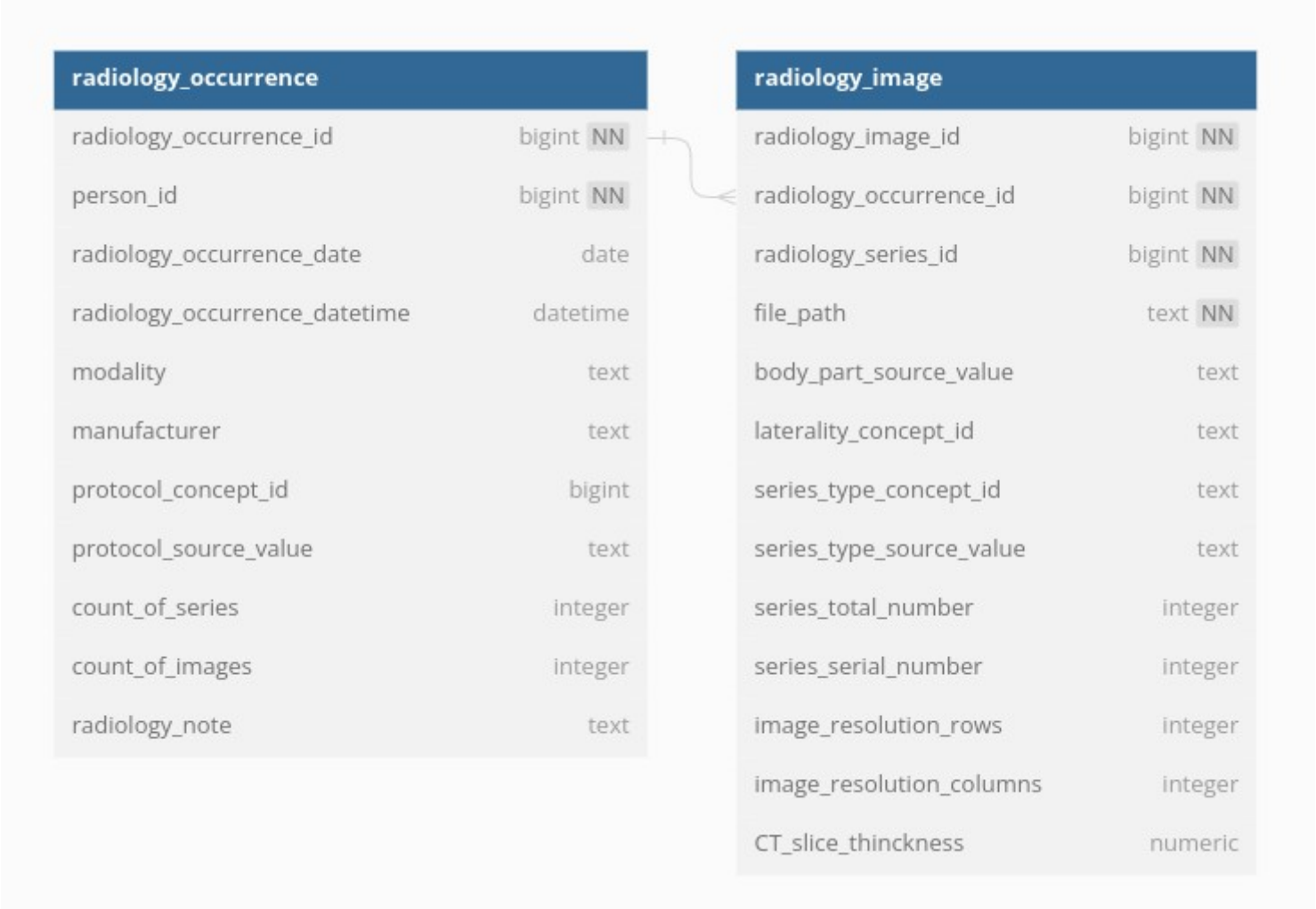
# Genomic extension



# Genomic Extension

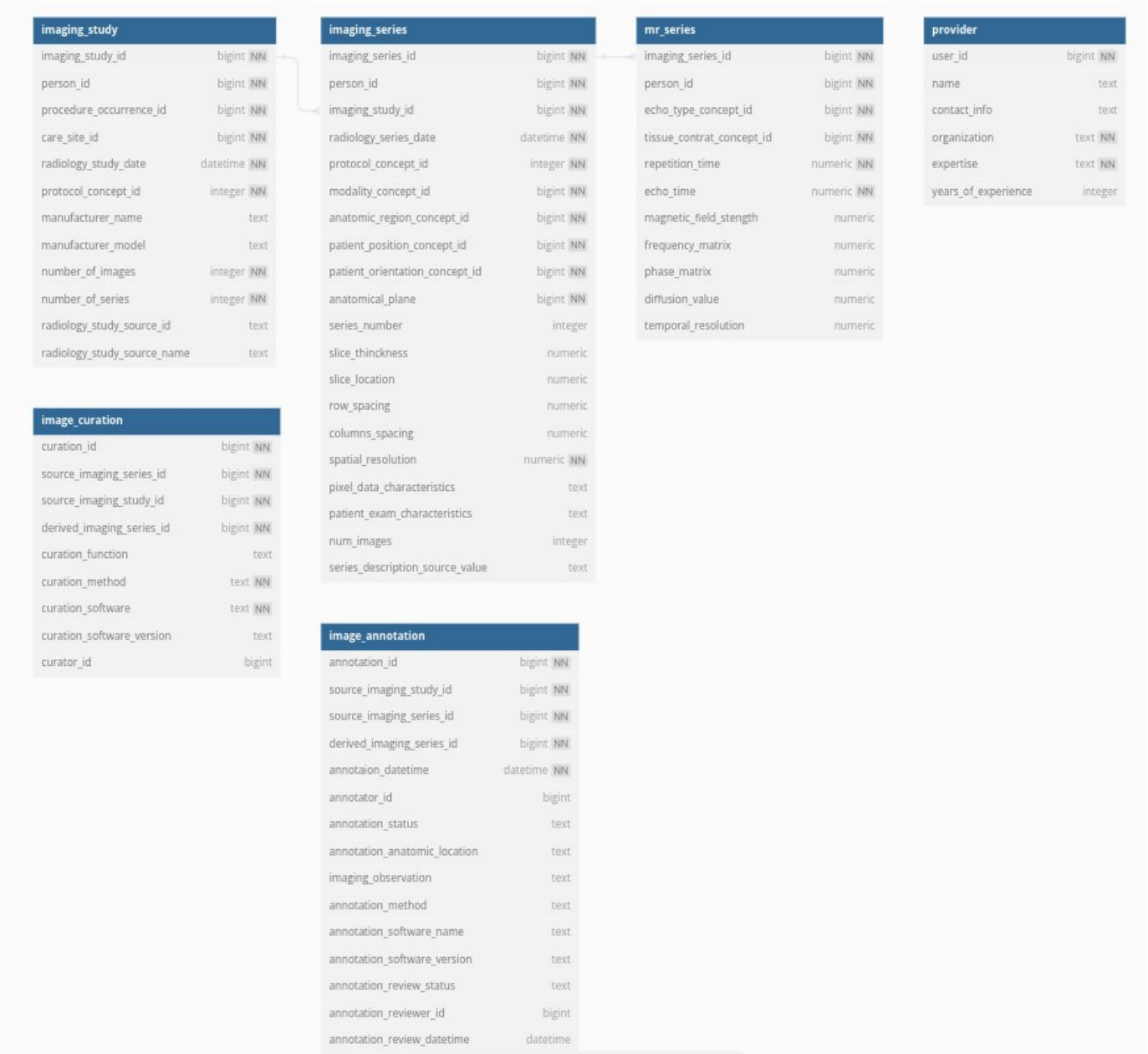
- Genomic Vocabularies
  - HGNC (HUGO Gene Nomenclature Committee)
  - ClinVar
  - CiVIC (Clinical Interpretation of Variants in Cancer)
  - NCIt (National Cancer Institute Thesaurus)
  - CGI (Cancer Genome Interpreter)
  - CAP (College of American Pathologists Cancer Checklists)
  - JAX CKB (The Clinical Knowledgebase by The Jackson Laboratory)

# Radiology CDM



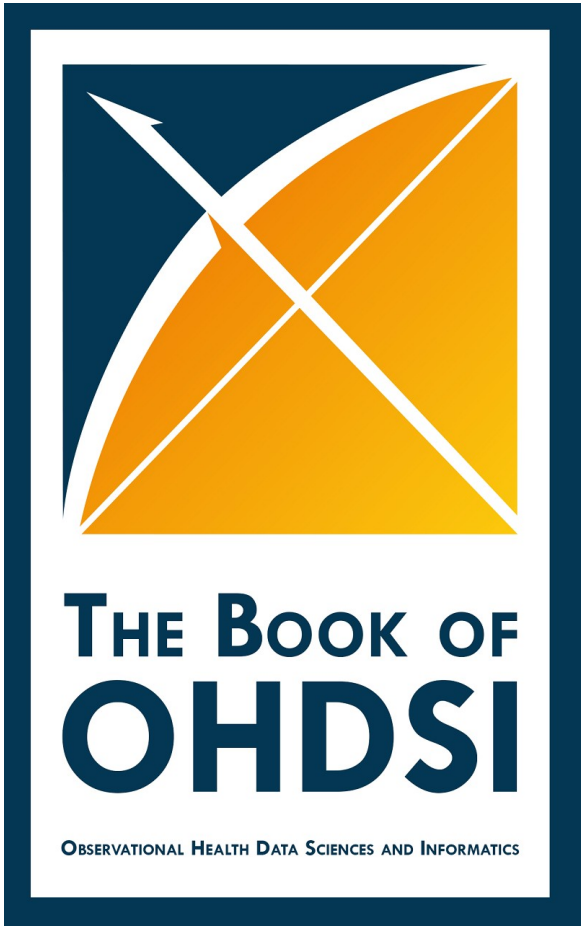

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8790584/

# Medical Imaging CDM



# Recursos

- Diapositivas
- El Libro de OHDSI
- EHDEN academy
- OHDSI workshops
- Atlas tutorials



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# Introducción al modelo de datos OMOP-CDM

- Descripción general del modelo de datos OMOP-CDM
- Conceptos y principios clave del modelo de datos OMOP-CDM
- Comprensión de la estructura y tablas clave del modelo de datos OMOP-CDM
- Introducción a los vocabularios OMOP-CDM
- Resultados del aprendizaje: los participantes comprenderán los **conceptos básicos del modelo de datos OMOP-CDM**, su estructura y los vocabularios utilizados.