

Oncology Extension

OMOP Common Data Model Oncology Extension Documentation

This documentation details the ratified proposal of adding an oncology extension to the OMOP CDM. These tables and fields will become part of the next release (v6.1) of the Common Data Model. Below are their descriptions; showing *additions* to the model only. For example, two fields were added to the MEASUREMENT table as part of this extension so only those two fields are listed below for MEASUREMENT instead of the entire table. For more information, please see the OMOP Oncology wiki site (<https://github.com/OHDSI/OncologyWG/wiki>).

The DDLs for these tables are located on the Oncology github, as detailed in the installation instructions (<https://github.com/OHDSI/OncologyWG/wiki/Oncology-CDM-Extension-Installation>).

EPISODE

Table Description

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 events (VISIT_OCCURRENCE, DRUG_EXPOSURE, PROCEDURE_OCCURRENCE, DEVICE_EXPOSURE) to the appropriate EPISODE entry.

ETL Conventions

Valid Episode Concepts belong to the 'Episode' domain.

Standard Episode Concepts are categorized by concept class:

Disease Episode

32528 "Disease First Occurrence"

32529 "Disease Recurrence"

32530 "Disease Remission"

32677 "Disease Progression"

Treatment Episode 32531 "Treatment Regimen"

32532 "Treatment Cycle"

Episode of Care 32533 "Episode of Care"

The relationship between a disease episode and treatment episodes can be represented by the self-referencing foreign key column EPISODE.episode_parent_id.

A treatment EPISODE can be delivered at regular intervals, cycles or fractions. The parent-child relationship between a treatment episode and its constituent treatment cycles can be represented by the self-referencing foreign key column EPISODE.episode_parent_id. 5 Some episodes may not have links to any underlying clinical events. For such episodes, the EPISODE_EVENT table is not populated.

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
episode_id	A unique identifier for each Episode event.		bigint	Yes	Yes	No			
person_id	A foreign key identifier to the Person who is experiencing the episode. The demographic details of that Person are stored in the PERSON table.		bigint	Yes	No	Yes	PERSON		
episode_concept_id	A foreign key that refers to a Standard Concept identifier in the Standardized Vocabularies belonging to the 'Episode' domain.		integer	Yes	No	Yes		Episode	

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
episode_start_datetime	The date and time when the Episode begins.		datetime	Yes	No	No			
episode_end_datetime	The date when the instance of the Episode is considered to have ended.		datetime	No	No	No			
episode_parent_id	A foreign key that refers to a parent Episode entry representing an entire episode if the episode spans multiple cycles.		bigint	No	No	No			
episode_number	An ordinal count for an Episode that spans multiple times.		integer	No	No	No			
episode_object_concept_id	A foreign key that refers to a concept identifier in the Standardized Vocabularies describing the disease, treatment, or other abstraction that the episode describes. Episode entries from the 'Disease Episode' concept class should have an episode_object_concept_id that comes from the Condition domain. Episode entries from the 'Treatment Episode' concept class should have an episode_object_concept_id that come from the 'Procedure' or 'Regimen' domain.		integer	Yes	No	Yes	CONCEPT	Procedure, Regimen	
episode_type_concept_id	A foreign key to the predefined Concept identifier in the Standardized Vocabularies reflecting the source data from which the Episode was recorded, the level of standardization, and the type of occurrence. These belong to the 'Episode Type' vocabulary		integer	Yes	No	Yes	CONCEPT	Type Concept	
episode_source_value	The source code for the Episode as it appears in the source data. This code is mapped to a Standard Condition Concept in the Standardized Vocabularies and the original code is stored here for reference.		varchar(50)	No	No	No			
episode_source_concept_id	A foreign key to a Episode Concept that refers to the code used in the source.		integer	No	No	Yes	CONCEPT		

EPISODE_EVENT

Table Description

The EPISODE_EVENT table connects qualifying clinical events (VISIT_OCCURRENCE, DRUG_EXPOSURE, PROCEDURE_OCCURRENCE, DEVICE_EXPOSURE) to the appropriate EPISODE entry. The EPISODE_EVENT table supports the linkage of an EPISODE abstraction to the low-level clinical events that implement the EPISODE abstraction.

ETL Conventions

Some episodes may not have links to any underlying clinical events. For such episodes, the EPISODE_EVENT table is not populated.

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
episode_id	A foreign key identifier to the Episode that the Episode Event belongs to.		bigint	Yes	No	Yes	EPISODE	Episode	
event_id	A foreign key identifier to the underlying event (condition, procedure, measurement, etc.) record in a respective table for which an episode is recorded.		bigint	Yes	No	No			
episode_event_field_concept_id	A foreign key identifier to the standardized concept corresponding to the table primary key column (condition_occurrence.condition_occurrence_id, procedure_occurrence.procedure_occurrence_id, measurement.measurement_id etc.) where the underlying event is stored.		integer	Yes	No	Yes	CONCEPT	Metadata	

MEASUREMENT

Table Description

The MEASUREMENT table contains records of Measurement, i.e. structured values (numerical or categorical) obtained through systematic and standardized examination or testing of a Person or Person's sample. The MEASUREMENT table contains both orders and results of such Measurements as laboratory tests, vital signs, quantitative findings from pathology reports, etc. Measurements are stored as attribute value pairs, with the attribute as the Measurement Concept and the value representing the result. The value can be a Concept (stored in VALUE_AS_CONCEPT), or a numerical value (VALUE_AS_NUMBER) with a Unit (UNIT_CONCEPT_ID).

User Guide

Measurements differ from Observations in that they require a standardized test or some other activity to generate a quantitative or qualitative result.

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
modifier_of_event_id	A foreign key identifier to the event (e.g. condition, procedure, episode) record for which the modifier is recorded.		bigint	No	No	No			
modifier_of_field_concept_id	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).		integer	No	No	Yes	CONCEPT	Metadata	

CONCEPT_NUMERIC

Table Description

In this table, numeric values, units and math operators indicating range limits (less than) corresponding to "numeric" concepts will be stored. It is an extension of the OMOP CDM and vocabulary that supports formal representation of concepts containing numeric values or ranges. This proposal has not yet been ratified by a larger CDM Workgroup. However, it plays a critical role in supporting ETL from tumor registries. NAACCR vocabulary includes concepts representing numeric values or numeric ranges. Often, these concepts also contain measurement units. For example, "Described as less than 1 centimeter (cm)". In OMOP CDM, these concepts are normally used in Measurement and Observation tables to store value_as_concept_id. Analysis of these data is currently possible only if the user knows exactly which concepts are used to represent range or value, including their respective units. It is not possible to perform analysis on numeric values of these data, nor is it possible to differentiate numeric values by units.

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
concept_id	A foreign key that refers to a respective concept in the Standardized Vocabularies.		integer	Yes	No	Yes	CONCEPT		
value_as_number	A value of the concept expressed as a numeric value.		float	Yes	No	No			

CDM Field	User Guide	ETL Conventions	Datatype	Required	Primary Key	Foreign Key	FK Table	FK Domain	FK Class
unit_concept_id	A foreign key to a Standard Concept ID of the concept units in the Standardized Vocabularies that belong to the 'Unit' domain.		integer	No	No	Yes	CONCEPT		
operator_concept_id	A foreign key identifier to the predefined Concept in the Standardized Vocabularies reflecting the mathematical operator that is applied to the value_as_number. Operators are <, <=, =, >=, > and these concepts belong to the 'Meas Value Operator' domain.		float	yes	No	Yes	CONCEPT		