



**Revision history**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Author** | **Date** | **Description** |
| V1.0 | Irina Yabbarova | 18 October 2016 | Version 1 |
| V1.1 | Irina Yabbarova | 25 October 2016 | 1. Mapping rules and field mapping were corrected for cdm.person, cdm.provider, cdm.location, cdm.care\_site tables |
| V1.2 | Irina Yabbarova | 31 October 2016 | 1. Mapping rules and field mapping were corrected for cdm.death table 2. Mapping rules and field mapping were added for lookup tables biometric\_concept\_lk, icd10\_concept\_lk and voc\_icd10\_to\_standard\_lk 3. Business rule n.9 was added |
| V1.3 | Irina Yabbarova | 7 November 2016 | 1. Mapping rules and field mapping were added for measurement and condition\_occurrence tables 2. Business rules n.3 and 5. were corrected, n.9-10 were added |
| V1.4 | Irina Yabbarova | 15 November 2016 | 1. Mapping rules and field mapping were added for observation, procedure\_occurrence, drug\_exposure, device\_exposure, visit\_occurrence and observation\_period tables 2. Date for records from condition\_occurrence and measurement (populated from src.patient table) was changed (date of first contact of patient instead of date of dataset) 3. Applied rule for death date was corrected 4. business rule n.1 was corrected |
| V1.5 | Irina Yabbarova | 17 November 2016 | 1. Links to appendix B (stcm) were added 2. Date of current dataset was added |
| V1.6 | Irina Yabbarova | 18 November 2016 | 1. Rules about calculating date of first contact of patient and most recent date of contact of patient were added in business rules summary, links to this rule were added 2. Mapping rules and field mapping were added for payer\_plan\_period and cost 3. Applied rule for observation\_source\_value for records from src.action\_events.text was changed (comment about ‘Referral’ was added) |
| V1.7 | Irina Yabbarova | 22 November 2016 | 1. Summary was added for procedure\_occurrence, observation, device\_exposure, cost and death tables 2. Mapping rules and field mapping were corrected for drug\_exposure and cost tables, mapping rules and field mapping were added for lookup table drug\_exposure\_cost 3. Device mapping was added in appendix 4. Note about device with domain\_id = ‘Observation’ was added in mapping rules of device\_exposure table 5. Records from src.action\_events where text = ‘DMP..’ were moved from procedure\_occurence to observation |
| V1.8 | Irina Yabbarova | 30 November 2016 | 1. Rule for observation\_period\_end\_date was changed (*IF calculated observation\_period\_end\_date > death\_date of patient, populate with cdm.death.death\_date*) 2. Note about visits (with invalid visit date) after death\_date was added in mapping rules of cdm.death table. 3. Appendix A: source table mapping to CDM was added |
| V1.9 | Irina Yabbarova | 5 December 2016 | 1. Mapping rules for cdm.death table were updated (with examples) 2. Mapping rules for lk.drug\_exposure\_cost table were updated (with logic for new drug\_mapping) |
| V1.10 | Irina Yabbarova | 7 December 2016 | 1. Records associated with 'KEIN ADIPOSITAS' were moved from condition\_occurrence to measurement |
| V1.11 | Irina Yabbarova | 13 December 2016 | 1. Drug\_exposure\_cost was updated with route\_mapping (from stcm) 2. value\_as\_concept\_id field was added in VOC\_ICD10\_TO\_STANDARD\_LK 3. value\_as\_concept\_id field was updated in measurement (rules 1, 2, 3) and observation (rules 1.1, 2.1, 3) |
| V1.12 | Irina Yabbarova | 27 December 2016 | 1. Drug\_exposure\_cost and device\_exposure were updated with logic for drug/device vocabulary from mapping team |
| V1.13 | Irina Yabbarova | 10 January 2017 | 1. src.prescription\_events.pzn was replaced with src.therapy.pzn in mapping rules for lk.drug\_exposure\_cost table |

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**1.0 Introduction**

The purpose of this document is to describe the entity transformation and loading (ETL) of German Disease Analyzer (DA) EMR data into OMOP Common Data Model version 5 (CMDv5). The German DA source data contains 47 tables, but 8 main files, ‘Practice’, ‘Patient’, ‘Problem\_events’, ‘Medical\_Event\_List’, ‘Prescription\_events’, ‘Therapy’, ‘Action\_events’, and ‘Test\_prevention\_events’

|  |  |  |
| --- | --- | --- |
| **Source Data Tables** | **No of Variables** | **Description** |
| Practice | 12 | Practice level information including specialties |
| Patient | 19 | All documented patients and their demographic data. Also including smoking status and adipositas status |
| Medical Event List | 16 | ICD10 codes included in data. |
| Therapy | 51 | WHO ATC5 level |
| Problem Events | 9 | Primary key Identifiers for Practice, patient and diagnosis. |
| Prescription Events | 21 | All documented prescription level data |
| Tests Prevention Events | 13 | All documented test level with units and value data |
| Action Events | 12 | All documented “notes” from physician –(i.e referrals, sick leave, hospitalization, etc.) |

\*Note: Diagnosis Event Text is not included in conversion to avoid duplication of data gathered from other tables.

The dates of events in the data range from 01 Jan 1992 through 31 Dec 2015, inclusive. Date of current dataset =12/31/2015 (mm/dd/yyyy format).

It is based on the OMOP ETL Specifications. General information that is covered by the OMOP ETL Specification will not be covered in this document, but a detailed discussion of the German DA-specific aspects of mapping and converting data to the standard CDM is provided.

# Source Data Mapping Approach

In the OMOP ETL Specifications, this section covers the high-level assumptions and approach to extraction, transformation and loading (ETL) of raw source data into the Common Data Model (CDM). This high-level approach should be equivalent between the data sources obtained by OMOP. However, if a significant divergence becomes necessary and meaningful, it should be discussed here.

## 2.1 Business Rules Summary

To ensure common understanding of the rules related to how the source’s drugs, diagnoses, procedures, and revenue codes get allocated to CDM’s tables, below is the general set of rules to accomplish this. Also note that these rules are not intended to account for how every detailed field gets mapped (please read the Applied Rules in each section for this information). It is, however, intended to show in which CDM table each main field gets mapped and the logic around it.

1. From src.prescription events using src.therapy table we populate records in cdm.drug\_exposure and cdm.device\_exposure. In cdm.device\_exposure we populate records where src.therapy.substance has value from the following list of devices:

|  |
| --- |
| **substance** |
| BANDAGES |
| CONTRACEPTIVE DEVICES |
| DISPOSABLE BABY NAPKINS |
| DISPOSABLE MEDICAL DEVICES |
| DRESSING STRIPS |
| INHALER DEVICE |
| MEDICATED DRESSINGS |
| NON-DISPOSABLE MEDICAL DEVICE |
| STERILE DRESSING |

1. Patients with null dates of birth or with values assigned for system testing, along with all associated records, are excluded from the CDM.
2. For records where the ICD10 diagnosis code maps to an OMOP concept id, it is possible that the concept id will have a mapping type of Procedure, Observation, Measurement, or Аnatomical Site in the OMOP vocabulary.

**Rule for domain\_id = ‘Procedure’, ‘Condition’, ‘Observation’ and ‘Measurement:**

From source tables src.problem\_events, src.prescription\_events and src.action\_events we populate records according to domain\_id of corresponding concept (‘Procedure’, ‘Condition’, ‘Observation’, ‘Measurement’). There are 3 different cases:

* 1. If source icd10 code maps to OMOP icd10 code, and then to standard snomed concept\_id, we use domain\_id of snomed concept\_id;
  2. If source icd10 code maps to OMOP icd10 code, but then icd10 code doesn’t map to standard snomed concept\_id, we use domain\_id of icd10 concept\_id;
  3. If source icd10 code doesn’t map to OMOP icd10 code, we populate records associated with this source icd10 code in cdm.condition\_occurrence with condition\_source\_concept\_id и condition\_concept\_id equal to 0.

**Rule for domain\_id = ‘Spec Аnatomic Site’:**

From source tables src.problem\_events, src.prescription\_events and src.action\_events we populate records with domain\_id of corresponding concept = ‘Spec Аnatomic Site’ in cdm.observation table.

1. If \_concept\_id field can’t be populated with OMOP concept\_id, it should be populated with 0. This rule should be applied for all cdm tables.
2. German DA data has a diagnosis certainty attribute associated with each diagnosis. Where diagnosis certainty = ‘Exclusion of’ the associated diagnosis will populate the observation table regardless of domain. In these cases the observation source value field will contain the ICD10 code; \_source\_concept\_id and \_concept\_id will be set to 0. For all other diagnosis certainty values, rules 4 and 5 will be applied.
3. In 4 event tables diagnosis\_certainty field will be added (from src.medical\_event\_list.diagnosis\_certainty):
   1. condition\_occurrence (rules 1-3)
   2. procedure\_occurrence (rules 1, 2.1, 3)
   3. observation (rules 1.1 , 2.1, 3)
   4. measurement (rules 1-3)
4. In the payer plan period table, each patient has only one set of payer plan values from the source data, reflecting the most recent enrollment of the patient. The payer plan start date is set to equal the payer plan period end date, which is the most recent event date for a patient in the German DA EMR. Most recent event date for a patient is calculated on base of \_date filed from cdm event tables:
   1. drug\_exposure
   2. condition\_occurrence
   3. procedure\_occurrence
   4. observation
   5. measurement
   6. device\_exposure
5. In the German DA data, providers are identified by their practice id. Most practices have only one physician, but multi-physician practices are treated as a single practicing entity. To identify a practice specialty, both the specialty and practice fields are used.
6. We use the following ‘Death list’ of ICD10 codes related to death for populating records from source tables in cdm.death table:

|  |  |
| --- | --- |
| **ICD 10 codes** | **Diagnosis Text** |
| O95 | Obstetric death of unspecified cause |
| O96 | Death from any obstetric cause occurring more than 42 days but less than one year after delivery |
| O97 | Death from sequelae of obstetric causes |
| I461 | Sudden cardiac death, so described |
| I469 | Cardiac arrest, unspecified |
| R95 | Sudden infant death syndrome |
| R96 | Other sudden death, cause unknown |
| R98 | Unattended death |
| R99 | Other ill-defined and unspecified causes of mortality |

We don’t populate in cdm.condition\_occurrence and cdm.observation records from source tables associated with ICD10 code from ‘Death list’ (ICD10 codes from ‘Death list’ map only to domains ‘Condition’ and ‘Observation’). We populate in cdm.drug\_exposure records from srs.prescription\_events even if they are associated with icd10 code from ‘Death list’.

1. CDM tables should not have duplicates. We consider as duplicates in cdm tables records that have identical info except the \_id (identity field)
2. Date of first contact of patient that is used for populating fields cdm.condition\_occurrence.condition\_start\_date (rules n.5.1 and n.5.2 for records from src.patient) and cdm.measurement.measurement\_date (rule n.5 for records from src.patient) is calculated on base of date\_of\_event field from source tables (we take minimum date from the following tables as date of first contact):
   1. prescription\_events
   2. action\_events
   3. problem\_events
   4. tests\_and\_prevention\_events

## Data Mapping

Data is provided from data owners in csv files which are then loaded into one location. SQL is used for the development and conversion of data. For more information on the data and contents, refer to the separate “Data load Template” provided.

### Lookup Table Name: ICD10\_CONCEPT\_LK

**Summary**

ICD10 codes from source table src.medical\_event\_list need to be manipulated in order to find matching concept\_code from cdm.concept table.

**Mapping rules**

We use the following rules for mapping icd10 codes from source tables to concept\_code from cdm.concept table (we are using only one rule according to its priority. If rule n.1 is not applicable, then we use n.2. If no rule is applicable, the source code won’t be mapped to concept\_code from ICD10 vocabulary):

|  |  |  |
| --- | --- | --- |
|  | Rule n.1 | Rule n.2 |
| 1. Remove a dot in cdm.concept.concept\_code (ICD10 codes have a dot after the 2nd or 3rd character, but in source data they are often stored without the dot) | + | + |
| 1. Use src.medical\_event\_list.icd10\_4\_code | + |  |
| 1. Use src.medical\_event\_list.icd10\_3\_code |  | + |
| 1. src.concept.invalid\_reason is null | + | + |
| 1. src.concept.vocabulary\_id = “ICD10” | + | + |
| 1. src.concept.concept\_class\_id = “ICD10 code” | + | + |

**Field Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| medical\_event\_list\_id | src.medical\_event\_list.medical\_event\_list\_id |  |  |  |
| icd10\_code | src.medical\_event\_list.icd10\_4\_code  OR  src.medical\_event\_list.icd10\_3\_code | See mapping rules above  AND  IF rule 1 can be applied for mapping, populate with  src.medical\_event\_list.icd10\_4\_code,  If rule 2 can be applied for mapping, populate with  src.medical\_event\_list.icd10\_3\_code  If no rule can be applied, populate with  src.medical\_event\_list.icd10\_4\_code | Yes |  |
| concept\_code | cdm.concept.concept\_code | See mapping rules above |  |  |
| concept\_id | cdm.concept.concept\_id | See mapping rules above |  |  |
| domain\_id | cdm.concept.domain\_id | See mapping rules above |  |  |
| rule\_id |  | See mapping rules above  AND  Populate with number of rule that was applied for mapping (1 or 2). If neither src.medical\_event\_list.icd10\_4\_code nor src.medical\_event\_list.icd10\_3\_code doesn’t map to cdm.concept.concept\_code, populate with -1 | Yes |  |

### Lookup Table Name: VOC\_ICD10\_TO\_STANDARD\_LK

**Summary**

We create this table in order to map src.medical\_event\_list\_id.(icd10\_4\_code/icd10\_3\_code) to standard OMOP concepts.

**Mapping rules**

This table is populated from:

* lk.icd10\_concept\_lk

We use lk.icd10\_concept\_lk to find for each src.medical\_event\_list\_id.icd10\_4\_code or src.medical\_event\_list\_id.icd10\_3\_code corresponding icd10 code from cdm.concept table. We find corresponding target concept\_id for each source icd10 code using cdm.concept\_relationship and relationship\_id = ‘Maps to’ (we will use name C1 below in applied rule). We use cdm.concept\_relationship also with relationship\_id = ‘Maps to value’ for finding corresponding value\_as\_concept\_id (we will use name C2 below in applied rule).

**Field Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| medical\_event\_list\_id | lk.icd10\_concept\_lk.medical\_event\_list\_id |  | Yes |  |
| icd10\_code | lk.icd10\_concept\_lk.icd10\_code |  | Yes |  |
| concept\_id\_1 | lk.icd10\_concept\_lk.concept\_id | IF lk.icd10\_concept\_lk.concept\_id IS NOT NULL  THEN lk.icd10\_concept\_lk.concept\_id  ELSE 0 | Yes |  |
| concept\_id\_2 | C1.concept\_id | (C1.concept\_id\_1=lk.icd10\_concept\_lk.concept\_id  AND C1.relationship\_id = ‘Maps to’  AND C1.invalid\_reason IS NULL  AND C1.concept\_id\_2=C1.concept\_id  AND C1.invalid\_reason IS NULL)  AND  IF C1.concept\_id IS NOT NULL  THEN C1.concept\_id  ELSE 0 | Yes | **Note:**  C1 = cdm.concept |
| value\_as\_concept\_id | C2.concept\_id | (C2.concept\_id\_1=lk.icd10\_concept\_lk.concept\_id  AND C2.relationship\_id = ‘Maps to value’  AND C2.invalid\_reason IS NULL  AND C2.concept\_id\_2=C2.concept\_id  AND C2.invalid\_reason IS NULL  )  AND  IF C2.concept\_id IS NOT NULL  THEN C2.concept\_id  ELSE 0 |  | **Note:**  C2 = cdm.concept |
| domain\_id\_1 | lk.icd10\_concept\_lk.domain\_id |  |  |  |
| domain\_id\_2 | C1.domain\_id | C1.concept\_id\_1=lk.icd10\_concept\_lk.concept\_id  AND C1.relationship\_id = ‘Maps to’  AND C1.invalid\_reason IS NULL  AND C1.concept\_id\_2=C1.concept\_id  AND C1.invalid\_reason IS NULL |  | **Note:**  C1 = cdm.concept |

### Lookup Table Name: BIOMETRIC\_CONCEPT\_LK

**Mapping rules**

We create this table in order to create source\_value for 3 fields from src.patient.

All records from src.patient are divided into several measurements with different concepts according to the field. For each field name source\_value will be created.

**Field mapping**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **concept\_id** | **concept\_name** | **source\_value** | **rule** | **source field for value\_as\_number** | **unit\_concept\_id** | **unit\_concept\_name** |
| 3038553 | Body mass index | BODY MASS INDEX | src.patient.bmi > 0 | src.patient.bmi | 9531 | kilogram per square meter |
| 3036277 | Body height | HEIGHT | src.patient.height > 0 | src.patient.height | 8582 | centimeter |
| 3025315 | Body weight | WEIGHT | src.patient.weight > 0 | src.patient.weight | 9529 | kilogram |

### 

### Lookup Table Name: DRUG\_EXPOSURE\_COST

**Summary**

We create this temp table in order to populate cdm.drug\_exposure and cdm.cost tables.

**Mapping rules**

This table is populated from:

* src.prescription\_events
* src.therapy
  + src.prescription\_events.therapy\_id = src.therapy.therapy\_id
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value

We use the following rules for mapping pzn codes from src.therapy to concept\_code from cdm.concept (**Note:** cdm.concept = C1) table (we are using only one rule according to its priority. If rule n.1 is not applicable, then we use n.2. If no rule is applicable, the source code won’t be populated in cdm.drug\_exposure):

|  |  |  |
| --- | --- | --- |
|  | Rule n.1 | Rule n.2 |
| 1. take 8 symbols of src.therapy.pzn from the right + ‘-’ + src.therapy.out\_of\_trade\_date (format fmMM/fmDD/YYYY\*) | + |  |
| 1. take 8 symbols of src.therapy.pzn from the right |  | + |
| 1. C1.invalid\_reason IS NULL | + | + |
| 1. C1.vocabulary\_id = ‘GRR’ | + | + |
| 1. C1.domain\_id = ‘Drug’ | + | + |

\*format without leading zeroes (for example, 1/1/2001).

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Field Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| drug\_exposure\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rules above | Yes |  |
| drug\_concept\_id | src.therapy.pzn | See mapping rules above  AND  C1.concept\_id = cdm.concept\_relationship.concept\_id\_1  AND  cdm.concept\_relationship.relationship\_id = ‘Maps to’  AND  cdm.concept\_relationship.invalid\_reason IS NULL  AND  сdm.concept\_relationship.concept\_id\_2 = C2.concept\_id  AND  C2.invalid\_reason IS NULL  AND  (C2.vocabulary\_id =’RxNorm’ OR C2.vocabulary\_id =’RxNorm Extension’)  AND  IF C2.concept\_id IS NOT NULL  THEN C2.concept\_id  ELSE 0 | Yes | Find target concept\_id C2.concept\_id using src.therapy.pzn;  **Note:**  C2 = cdm.concept |
| drug\_exposure\_start\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| drug\_exposure\_end\_date |  | NULL |  |  |
| drug\_type\_concept\_id |  | IFsrc.prescription\_events.prescription\_type\_id\_text=’Vaccine’  THEN Populate with 38000179  ELSE Populate with 38000177 | Yes | 38000179 = ‘Physician administered drug (identified as procedure)’  38000177 = ’Prescription written’ |
| stop\_reason |  | NULL |  |  |
| refills |  | NULL |  |  |
| quantity | src.prescription\_events.nbr\_of\_packs,  src.therapy.packsize | USE FORMULA:  src.prescription\_events.nbr\_of\_packs \*  src.therapy.packsize |  |  |
| days\_supply | src.prescription\_events.therapy\_duration\_in\_days | IF src.prescription\_events.therapy\_duration\_in\_days IS NOT INTEGER  THEN ROUND IT TO THE LARGER NUMBER  ELSE  src.prescription\_events.therapy\_duration\_in\_days |  | This is calculated field, not directly from physician |
| sig | src.prescription\_events.text |  |  |  |
| route\_concept\_id | cdm.source\_to\_concept\_map.target\_concept\_id | cdm.source\_to\_concept\_map.source\_code=src.therapy.nfc AND  cdm.source\_to\_concept\_map.source\_vocabulary\_id = ‘NFC’  AND  IF cdm.source\_to\_concept\_map.target\_concept\_id  IS NOT NULL  THEN  cdm.source\_to\_concept\_map.target\_concept\_id  ELSE 0 |  |  |
| effective\_drug\_dose |  | NULL |  |  |
| dose\_unit\_concept\_id |  | 0 |  |  |
| lot\_number |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id |  | NULL |  |  |
| drug\_source\_value | src.therapy.pzn | See mapping rules above |  |  |
| drug\_source\_concept\_id | src.therapy.pzn | See mapping rules above |  | Find source concept\_id C1.concept\_id using src.therapy.pzn;  **Note:**  C1 = cdm.concept |
| route\_source\_value | src.therapy.nfc |  |  |  |
| dose\_unit\_source\_value |  | NULL |  |  |
| cost\_domain\_id |  | ‘Drug’ | Yes |  |
| cost\_type\_concept\_id |  | 5032 | Yes | 5032 = ‘Amount charged to the patient or the payer by the provider, list price’ |
| currency\_concept\_id |  | 44818568 |  | 44818568 = ‘Euro’ |
| total\_charge |  | NULL |  |  |
| total\_cost | src.prescription\_events.sales\_price |  |  | roughly equivalent to AWP - average wholesale price (at time of prescription);  already calculated in source (src.prescription\_events.sales\_price= <sales\_price per pack> \* nbr\_of\_packs) |
| total\_paid | src.prescription\_events.price |  |  | official pharmacy price at time of prescription; total all parties would pay, before negotiations, rebates; price may include default and dummy values;  already calculated in source (src.prescription\_events.price= <price per pack> \*nbr\_of\_packs) |
| paid\_by\_payer |  | NULL |  |  |
| paid\_by\_patient |  | NULL |  |  |
| paid\_patient\_copay |  | NULL |  |  |
| paid\_patient\_coinsurance |  | NULL |  |  |
| paid\_patient\_deductible |  | NULL |  |  |
| paid\_by\_primary |  | NULL |  |  |
| paid\_ingredient\_cost |  | NULL |  |  |
| paid\_dispensing\_fee |  | NULL |  |  |
| payer\_plan\_period\_id |  | NULL |  |  |
| amount\_allowed |  | NULL |  |  |
| revenue\_code\_concept\_id |  | 0 |  |  |
| revenue\_code\_source\_value |  | NULL |  |  |

### Table Name: PERSON

**Summary**

Person demographics data is recorded in source table “Patient”. Values for the individual source attributes are mapped to standard OMOP concept identifiers where applicable. Business rules were applied during conversion of data, and are listed below.

**Mapping rules**

Table is populated from:

* src.patient
* src.action\_events
  + src.patient.patient\_id=src.action\_events.person\_id.patient\_id
* src.prescription\_events
  + src.patient.patient\_id=src.prescription\_events.patient\_id
* src.problem\_events
  + src.patient.patient\_id=src.problem\_events.patient\_id
* src.test\_and\_prevention\_events
  + src.patient.patient\_id=src.test\_and\_prevention\_events.patient\_id

Person ID is based on a unique combination of patient\_id and practice\_id from the German DA Local Database source data.

Patients with no year of birth are excluded.

Patients where *active\_ind field = ‘Fictitious’* are excluded.

Records for any other table are excluded where *person id* is not populated in the person table.

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| person\_id | src.patient.patient\_id,    AND  src.action\_events.practice\_id/  src.prescription\_events.practice\_id/  src.problem\_events.practice\_id/  src.test\_and\_prevention\_events.practice\_id | Generate unique person id for each src.patient.patient\_id and practice\_id (from source event tables) combination | Yes | System generated Id |
| gender\_concept\_id | src.patient.sex\_desc | IF src.patient.sex\_desc = ‘Female’  THEN 8532  IF src.patient.sex\_desc = ‘Male’  THEN 8507  ELSE 0 | Yes | Standard CDM gender concepts.  8507 - ‘Male’  8532 - ‘Female’ |
| year\_of\_birth | src.patient.date\_of\_birth | year(src.patient.date\_of\_birth) | Yes | Exclude patients with null year of birth |
| month\_of\_birth |  | NULL |  |  |
| day\_of\_birth |  | NULL |  |  |
| time\_of\_birth |  | NULL |  |  |
| race\_concept\_id |  | 0 | Yes |  |
| ethnicity\_concept\_id |  | 0 | Yes |  |
| location\_id | cdm.care\_site.location\_id | cdm.care\_site.care\_site\_source\_value=practice\_id from source event tables |  |  |
| provider\_id | cdm.provider.provider\_id | cdm.provider.provider\_source\_value=practice\_id from source event tables |  |  |
| care\_site\_id | cdm.care\_site.care\_ssite\_id | cdm.care\_site.care\_site\_source\_value=practice\_id from source event tables |  |  |
| person\_source\_value | src.patient.patient\_id    AND  src.action\_events.practice\_id/  src.prescription\_events.practice\_id/  src.problem\_events.practice\_id/  src.test\_and\_prevention\_events.practice\_id | Add ‘<space>–<space>‘ between values as delimiter; |  |  |
| gender\_source\_value | src.patient.sex\_desc |  |  |  |
| gender\_source\_concept\_id |  | 0 |  |  |
| race\_source\_value |  | NULL |  |  |
| race\_source\_concept\_id |  | 0 |  |  |
| ethnicity\_source\_value |  | NULL |  |  |
| ethnicity\_source\_concept\_id |  | 0 |  |  |

### Table Name: DRUG\_EXPOSURE

**Summary**

The drug exposure domain captures records about the inferred utilization of a biochemical substance with a physiological effect when ingested or otherwise introduced into the body. Drugs include prescription and vaccines. Drug exposure is inferred from clinical events associated with prescriptions written.

**Mapping rules**

This table is populated from src.prescription\_events and src.therapy using corresponding fields from lk.drug\_exposure\_cost (See mapping rules and field mapping for lookup table [lk.drug\_exposure\_cost](#_mnibutrdfia9)).

**Field Mapping (additional to mapping from lk.drug\_exposure\_cost)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of  person\_id, provider\_id and drug\_exposure\_start\_date |  |  |

### Table Name: CONDITION\_OCCURRENCE

**Summary**

Conditions are records of a Person suggesting the presence of a disease or medical condition stated as a diagnosis, a sign or a symptom, which is observed by a Provider.

**Mapping rules**

##### Rule n.1: records from src.prescription\_events

This table is populated from:

* src.prescription\_events
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.prescription\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9,10):

3. populating records from source tables according to corresponding domain\_id + all unmapped records

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n. 1) - records from src.prescription\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.1 above | Yes |  |
| condition\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| condition\_start\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | 38000245 | Yes | 38000245 = ‘EMR problem list entry’ |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  |  |
| condition\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.1 above |  | \*added field |

##### Rule n.2: records from src.action\_events

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.action\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.action\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9,10):

3. populating records from source tables according to corresponding domain\_id + all unmapped records

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n. 2) - records from src.action\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2 above | Yes |  |
| condition\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| condition\_start\_date | src.action\_events.date\_of\_event |  | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | 38000245 | Yes | 38000245 = ‘EMR problem list entry’ |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above |  |  |
| condition\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.2 above |  | \*added field |

##### Rule n.3: records from src.problem\_events

This table is populated from:

* src.problem\_events
* cdm.person
  + (src.problem\_events.patient\_id +‘<space>–<space>‘ + src.problem\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.problem\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.problem\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9,10):

3. populating records from source tables according to corresponding domain\_id + all unmapped records

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n. 3) - records from src.problem\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.3 above | Yes |  |
| condition\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| condition\_start\_date | src.problem\_events.date\_of\_event |  | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | 38000245 | Yes | 38000245 = ‘EMR problem list entry’ |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.problem\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  |  |
| condition\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.3 above |  | \*added field |

##### Rule n.4: records from src.tests\_and\_prevention\_events

This table is populated from:

* src.tests\_and\_prevention\_events
* cdm.person
  + (src.tests\_and\_prevention\_events.patient\_id +‘<space>–<space>‘ + src.tests\_and\_prevention\_events.practice\_id) =cdm.person.person\_source\_value

From src.tests\_and\_prevention\_events we populate only records that are associated with patients from cdm.person table. We populate from src.tests\_and\_prevention\_events records associated with test\_category equal to ‘SMOKER’ or ‘ADIPOSITY’.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Field Mapping (n. 4) - records from src.test\_and\_prevention\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.4 above | Yes |  |
| condition\_concept\_id | src.tests\_and\_prevention\_events.test\_category | FOR src.tests\_and\_prevention\_events.test\_category = ‘SMOKER’  USE 4298794;  FOR src.tests\_and\_prevention\_events.test\_category = ‘ADIPOSITY’)  USE 433736 | Yes | 4298794 = ‘Smoker’;  433736 = ‘Obesity’ |
| condition\_start\_date | src.tests\_and\_prevention\_events.date\_of\_event |  | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | FOR src.tests\_and\_prevention\_events.test\_category = ‘SMOKER’  USE 45905770;  FOR src.tests\_and\_prevention\_events.test\_category = ‘ADIPOSITY’)  USE 38000245 | Yes | 45905770 = 'Patient Self-Reported Condition';  38000245 = ‘EMR problem list entry’ |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.person.provider\_id |  |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | src.tests\_and\_prevention\_events.test\_category |  |  |  |
| condition\_source\_concept\_id |  | 0 |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### Rule n.5.1: records from src.patient (using src.patient.smoking\_status)

This table is populated from:

* src.patient
* cdm.person
  + src.patient.patient\_id = patient\_id in (cdm.person.person\_source\_value)
* cdm.source\_to\_concept\_map
  + cdm.source\_to\_concept\_map.souce\_code=src.patient.smoking\_status

From field src.patient.smoking\_status we populate only values that are not NULL.

See also [Business Rules Summary](#_j9zarehtx8gy) (rules n.10 and 11):

10. rule regarding duplicates

11. rule about calculating date of first contact of patient

**Field Mapping (n.5.1) - records from src.patient (using src.patient.smoking\_status)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.5.1 above | Yes |  |
| condition\_concept\_id | src.patient.smoking\_status | See mapping rule n.5.1 above | Yes | Find target concept  cdm.source\_to\_concept\_map.target\_concept\_id  using  src.patient.smoking\_status |
| condition\_start\_date |  | Populate with date of first contact of patient | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | 45905770 | Yes | 45905770 = 'Patient Self-Reported Condition' |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.person.provider\_id | See mapping rule n.5.1 above |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | src.patient.smoking\_status | See mapping rule n.5.1 above |  |  |
| condition\_source\_concept\_id |  | 0 |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

### 

##### Rule n.5.2: records from src.patient (using src.patient.adipositas)

This table is populated from:

* src.patient
* cdm.person
  + src.patient.patient\_id = patient\_id in (cdm.person.person\_source\_value)

From src.patient we populate only records where src.patient.adipositas =1 (‘ADIPOSITAS’). Records where src.patient.adipositas = 2 (‘KEIN ADIPOSITAS’) will populate cdm.measurement.

See also [Business Rules Summary](#_j9zarehtx8gy) (rules n.10 and 11):

10. rule regarding duplicates

11. rule about calculating date of first contact of patient

**Field Mapping (n.5.2) - records from src.patient (using src.patient.adipositas)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| condition\_occurrence\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.5.2 above | Yes |  |
| condition\_concept\_id |  | 433736 | Yes | 433736 = ‘Obesity’ |
| condition\_start\_date |  | Populate with date of first contact of patient | Yes |  |
| condition\_end\_date |  | NULL |  |  |
| condition\_type\_concept\_id |  | 38000245 | Yes | 38000245 = ‘EMR problem list entry’ |
| stop\_reason |  | NULL |  |  |
| provider\_id | cdm.person.provider\_id | See mapping rule n.5.2 above |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and condition\_start\_date |  |  |
| condition\_source\_value | src.patient.adipositas | Populate with ‘ADIPOSITAS’ |  |  |
| condition\_source\_concept\_id |  | 0 |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

### 

### Table Name: PROCEDURE\_OCCURRENCE

**Summary**

The PROCEDURE\_OCCURRENCE table contains records of activities or processes ordered by, or carried out by, a healthcare provider on the patient to have a diagnostic or therapeutic purpose.

**Mapping rules**

##### Rule n.1: records from src.prescription\_events

This table is populated from:

* src.prescription\_events
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.prescription\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.1) - records from src.prescription\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| procedure\_occurrence\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.1 above | Yes |  |
| procedure\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| procedure\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| procedure\_type\_concept\_id |  | 38003622 | Yes | 38003622 = ‘Procedure recorded as diagnostic code’ |
| modifier\_concept\_id |  | 0 |  |  |
| quantity |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and procedure\_date |  |  |
| procedure\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  |  |
| procedure\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.1 above |  | \*added field |

##### Rule n.2.1: records from src.action\_events (using src.action\_events.problem\_id)

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.action\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.action\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.2.1) - records from src.action\_events (using src.action\_events.problem\_id)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| procedure\_occurrence\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2.1 above | Yes |  |
| procedure\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2.1 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| procedure\_date | src.action\_events.date\_of\_event |  | Yes |  |
| procedure\_type\_concept\_id |  | 38003622 | Yes | 38003622 = ‘Procedure recorded as diagnostic code’ |
| modifier\_concept\_id |  | 0 |  |  |
| quantity |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and procedure\_date |  |  |
| procedure\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2.1 above |  |  |
| procedure\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2.1 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.2.1 above |  | \*added field |

##### 

##### Rule n.2.2: records from src.action\_events (using src.action\_events.text)

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value

From src.action\_events we populate only records that are associated with patients from cdm.person table. Also, we populate only records that are associated with src.action\_events.text that is equal to ‘Integrated Care’.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Field Mapping (n.2.2) - records from src.action\_events (using src.action\_events.text)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| procedure\_occurrence\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2.2 above | Yes |  |
| procedure\_concept\_id |  | 0 | Yes |  |
| procedure\_date | src.action\_events.date\_of\_event |  | Yes |  |
| procedure\_type\_concept\_id |  | 38000275 | Yes | 38000275 =  ‘EMR order list entry’ |
| modifier\_concept\_id |  | 0 |  |  |
| quantity |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and procedure\_date |  |  |
| procedure\_source\_value | src.action\_events.text | See mapping rule n.2.2 above |  |  |
| procedure\_source\_concept\_id |  | 0 |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### 

##### Rule n.3: records from src.problem\_events

This table is populated from:

* src.problem\_events
* cdm.person
  + (src.problem\_events.patient\_id +‘<space>–<space>‘ + src.problem\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.problem\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.problem\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.3) - records from src.problem\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| procedure\_occurrence\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.3 above | Yes |  |
| procedure\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| procedure\_date | src.problem\_events.date\_of\_event |  | Yes |  |
| procedure\_type\_concept\_id |  | 38003622 | Yes | 38003622 = ‘Procedure recorded as diagnostic code’ |
| modifier\_concept\_id |  | 0 |  |  |
| quantity |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.problem\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and procedure\_date |  |  |
| procedure\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  |  |
| procedure\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.3 above |  | \*added field |

### Table Name: OBSERVATION

**Summary**

The OBSERVATION table captures clinical facts about a Person obtained in the context of examination, questioning or a procedure. Any data that cannot be represented by any other domains, such as social and lifestyle facts, medical history, family history, etc. are recorded here.

**Mapping rules**

##### Rule n.1.1: records from src.prescription\_events (using src.prescription\_events**.problem\_id**)

This table is populated from:

* src.prescription\_events
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.prescription\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9 and 10):

3. populating records from source tables according to corresponding domain\_id (‘Observation’ , ‘Spec Anatomic Site’)

5. rule about diagnosis\_certainty (populate also records that are associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’, regardless of domain of corresponding concept)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n.1.1) - records from src.prescription\_events (using src.prescription\_events.problem\_id)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| observation\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.1.1 above | Yes |  |
| observation\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2 | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| observation\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| observation\_time |  | NULL |  |  |
| observation\_type\_concept\_id |  | 38000276 | Yes | 38000276 = ‘Problem list from EMR’ |
| value\_as\_number |  | NULL |  |  |
| value\_as\_string |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id | See mapping rule n.1.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |
| qualifier\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and observation\_date |  |  |
| observation\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code |  |  |  |
| observation\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1 |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.1.1 above |  | \*added field |

##### Rule n.1.2: records from src.prescription\_events (using src.prescription\_events.therapy\_id)

This table is populated from:

* src.prescription\_events
* src.therapy
  + src.prescription\_events.therapy\_id = src.therapy.therapy\_id
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.1 and 10):

1. rule about populating in cdm.observation (instead of cdm.drug\_exposure and cdm.device\_exposure) records associated with unmapped src.therapy.WHO\_ATC5\_CODE where src.therapy.substance has value = ‘KEINE ZUORDNUNG’

10. rule regarding duplicates

**Field Mapping (n.1.2) - records from src.prescription\_events** **(using src.prescription\_events.therapy\_id)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| observation\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.1.2 above | Yes |  |
| observation\_concept\_id |  | 0 | Yes |  |
| observation\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| observation\_time |  | NULL |  |  |
| observation\_type\_concept\_id |  | 38000275 | Yes | 38000275 =  ‘EMR order list entry’ |
| value\_as\_number |  | NULL |  |  |
| value\_as\_string |  | NULL |  |  |
| value\_as\_concept\_id |  | 0 |  |  |
| qualifier\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and observation\_date |  |  |
| observation\_source\_value | src.therapy.substance | See mapping rule n.1.2 above |  |  |
| observation\_source\_concept\_id |  | 0 |  |  |
| unit\_source\_value |  | NULL |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### Rule n.2.1: records from src.action\_events (using src.action\_events.problem\_id)

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.action\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.action\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9 and 10):

3. populating records from source tables according to corresponding domain\_id (‘Observation’ , ‘Spec Anatomic Site’)

5. rule about diagnosis\_certainty (populate also records that are associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’, regardless of domain of corresponding concept)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n.2.1) - records from src.action\_events (using src.action\_events.problem\_id)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| observation\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2.1 above | Yes |  |
| observation\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2 | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| observation\_date | src.action\_events.date\_of\_event |  | Yes |  |
| observation\_time |  | NULL |  |  |
| observation\_type\_concept\_id |  | 38000276 | Yes | 38000276 = ‘Problem list from EMR’ |
| value\_as\_number |  | NULL |  |  |
| value\_as\_string |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id | See mapping rule n.2.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |
| qualifier\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and observation\_date |  |  |
| observation\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code |  |  |  |
| observation\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2.1 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1 |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.2.1 above |  | \*added field |

##### Rule n.2.2: records from src.action\_events (using src.action\_events.text)

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value

From src.action\_events we populate only records that are associated with patients from cdm.person table. Also, we populate only records that are associated with src.action\_events.text that is not equal to ‘Integrated Care’.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Field Mapping (n.2.2) - records from src.action\_events (using src.action\_events.text)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| observation\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2.2 above | Yes |  |
| observation\_concept\_id | src.action\_events.text, src.action\_events.specialty | **IF src.action\_events.text = ‘Sick Leave’**  THEN populate with 4073182;  **IF src.action\_events.text = ‘Hospitalization’**  THEN populate with 4147710;  **IF src.action\_events.text = ‘Referral’:**  cdm.source\_to\_concept\_map.source\_code = src.action\_events.specialty and cdm.source\_to\_concept\_map.target\_vocabulary\_id = ‘SNOMED’  AND  IF cdm.source\_to\_concept\_map.target\_concept\_id IS NOT NULL  THEN Populate with  cdm.source\_to\_concept\_map.target\_concept\_id  ELSE Populate with 0 | Yes | 4073182 = ‘On sick leave from work’;  4147710 = ‘Referral to hospital’,  See [Appendix B: 4.4 Referral Mapping](#_gb0fbxa99yk3)) |
| observation\_date | src.action\_events.date\_of\_event |  | Yes |  |
| observation\_time |  | NULL |  |  |
| observation\_type\_concept\_id |  | 38000275 | Yes | 38000275 =  ‘EMR order list entry’ |
| value\_as\_number |  | NULL |  |  |
| value\_as\_string |  | NULL |  |  |
| value\_as\_concept\_id |  | 0 |  |  |
| qualifier\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and observation\_date |  |  |
| observation\_source\_value | src.action\_events.text, src.action\_events.specialty | **IF src.action\_events.text = 'Referral':**  IF src.action\_events.specialty IS NULL  THEN Populate with src.action\_events.text  ELSE  Populate with with combination of  src.action\_events.text and action\_events.specialty fields, using ‘<space>–<space>‘ delimiter between values  **For all other values from src.action\_events.text:** Populate with src.action\_events.text |  |  |
| observation\_source\_concept\_id |  | 0 |  |  |
| unit\_source\_value |  | NULL |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### Rule n.3: records from src.problem\_events

This table is populated from:

* src.problem\_events
* cdm.person
  + (src.problem\_events.patient\_id +‘<space>–<space>‘ + src.problem\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.problem\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.problem\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 9 and 10):

3. populating records from source tables according to corresponding domain\_id (‘Observation’ , ‘Spec Anatomic Site’)

5. rule about diagnosis\_certainty (populate also records that are associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’, regardless of domain of corresponding concept)

9. not populating from source tables records associated with ICD10 codes (src.medical\_event\_list.icd10\_4\_code OR src.medical\_event\_list.icd10\_3\_code) from ‘Death list’

10. rule regarding duplicates

**Field Mapping (n.3) - records from src.problem\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| observation\_id |  | *Identity* | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.3 above | Yes |  |
| observation\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2 | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| observation\_date | src.problem\_events.date\_of\_event |  | Yes |  |
| observation\_time |  | NULL |  |  |
| observation\_type\_concept\_id |  | 38000276 | Yes | 38000276 = ‘Problem list from EMR’ |
| value\_as\_number |  | NULL |  |  |
| value\_as\_string |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id | See mapping rule n.3 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |
| qualifier\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| provider\_id | cdm.provider.provider\_id | src.problem\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and observation\_date |  |  |
| observation\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code |  |  |  |
| observation\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above  AND  IF medical\_event\_list.diagnosis\_certainty = "Exclusion of": populate with 0  ELSE  Populate with lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1 |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| qualifier\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.3 above |  | \*added field |

### Table Name: MEASUREMENT

**Summary**

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

Observations differ from Measurements in that they do not require a standardized test or some other activity to generate clinical fact. Typical observations are medical history, family history, the stated need for certain treatment, social circumstances, lifestyle choices, healthcare utilization patterns, etc. If the generation clinical fact requires a standardized testing such as lab testing or imaging and leads to a standardized result, the data item is recorded in the MEASUREMENT table. If the clinical fact observed determines a sign, symptom, diagnosis of a disease or other medical condition, it is recorded in the CONDITION\_OCCURRENCE table.

**Mapping rules**

##### Rule n.1: records from src.prescription\_events

This table is populated from:

* src.prescription\_events
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.prescription\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.1) - records from src.prescription\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.1 above | Yes |  |
| measurement\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| measurement\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | 44818701 | Yes | 44818701 = ‘From physical examination’ |
| operator\_concept\_id |  | 0 |  |  |
| value\_as\_number |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |  |
| unit\_concept\_id |  | 0 |  |  |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  |  |
| measurement\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.1 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| value\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.1 above |  | \*added field |

##### Rule n.2: records from src.action\_events

This table is populated from:

* src.action\_events
* cdm.person
  + (src.action\_events.patient\_id +‘<space>–<space>‘ + src.action\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.action\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.action\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.2) - records from src.action\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.2 above | Yes |  |
| measurement\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| measurement\_date | src.action\_events.date\_of\_event |  | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | 44818701 | Yes | 44818701 = ‘From physical examination’ |
| operator\_concept\_id |  | 0 |  |  |
| value\_as\_number |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |  |
| unit\_concept\_id |  | 0 |  |  |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.action\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of  person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above |  |  |
| measurement\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.2 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| value\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.2 above |  | \*added field |

##### 

##### Rule n.3: records from src.problem\_events

This table is populated from:

* src.problem\_events
* cdm.person
  + (src.problem\_events.patient\_id +‘<space>–<space>‘ + src.problem\_events.practice\_id) =cdm.person.person\_source\_value
* src.medical\_event\_list
  + src.problem\_events.problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

From src.problem\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.3, 5, 10):

3. populating records from source tables according to corresponding domain\_id

5. rule about diagnosis\_certainty (populate only records that are not associated with src.medical\_event\_list.diagnosis\_certainty = ’Exclusion of’)

10. rule regarding duplicates

**Field Mapping (n.3) - records from src.problem\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.3 above | Yes |  |
| measurement\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above | Yes | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| measurement\_date | src.problem\_events.date\_of\_event |  | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | 44818701 | Yes | 44818701 = ‘From physical examination’ |
| operator\_concept\_id |  | 0 |  |  |
| value\_as\_number |  | NULL |  |  |
| value\_as\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.value\_as\_concept\_id |  |  |  |
| unit\_concept\_id |  | 0 |  |  |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.problem\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  |  |
| measurement\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rule n.3 above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| unit\_source\_value |  | NULL |  |  |
| value\_source\_value |  | NULL |  |  |
| diagnosis\_certainty | src.medical\_event\_list.diagnosis\_certainty | See mapping rule n.3 above |  | \*added field |

##### Rule n.4: records from src.tests\_and\_prevention\_events

This table is populated from:

* src.tests\_and\_prevention\_events
* cdm.person
  + (src.tests\_and\_prevention\_events.patient\_id +‘<space>–<space>‘ + src.tests\_and\_prevention\_events.practice\_id) =cdm.person.person\_source\_value

From src.tests\_and\_prevention\_events we populate only records that are associated with patients from cdm.person table. We don’t populate from src.tests\_and\_prevention\_events records associated with test\_category equal to ‘SMOKER’ or ‘ADIPOSITY’.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Field Mapping (n.4) - records from src.test\_and\_prevention\_events**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.4 above | Yes |  |
| measurement\_concept\_id | src.tests\_and\_prevention\_events.test\_category | cdm.source\_to\_concept\_map.source\_code=src.tests\_and\_prevention\_events.test\_category  AND  cdm.source\_to\_concept\_map.target\_vocabulary\_id = ‘LOINC’ or ‘SNOMED’  AND  IF  cdm.source\_to\_concept\_map.target\_concept\_id  IS NOT NULL  THEN  cdm.source\_to\_concept\_map.target\_concept\_id  ELSE 0 | Yes | Find target concept  cdm.source\_to\_concept\_map.target\_concept\_id  using  src.tests\_and\_prevention\_events.test\_category (See [Appendix B: 4.2 Test Mapping](#_9bw8er6h290e)) |
| measurement\_date | src.tests\_and\_prevention\_events.date\_of\_event |  | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | IF src.tests\_and\_prevention\_events.test\_category is equal to  1) ‘HEIGHT’,  2) ‘WEIGHT’,  3) ’BODY MASS INDEX’,  4) ‘BLOOD PRESSURE DIASTOLIC’,  5) ‘BLOOD PRESSURE SYSTOLIC’  THEN 44818701  ELSE 44818702 | Yes | 44818701 = ‘From physical examination’;  44818702 = ‘Lab result’ |
| operator\_concept\_id |  | 4172703 |  | Qualifier operator ‘=’ |
| value\_as\_number | src.tests\_and\_prevention\_events.value |  |  |  |
| value\_as\_concept\_id |  | 0 |  |  |
| unit\_concept\_id | cdm.source\_to\_concept\_map.target\_concept\_id | cdm.source\_to\_concept\_map.source\_code=src.tests\_and\_prevention\_events.test\_unit\_long  AND  cdm.source\_to\_concept\_map.target\_vocabulary\_id = ‘UCUM’’  AND  IF cdm.source\_to\_concept\_map.target\_concept\_id  IS NOT NULL  THEN  cdm.source\_to\_concept\_map.target\_concept\_id  ELSE 0 |  | See Appendix B: [4.3 Test Unit Mapping](#_q46oj2u2iuuu) |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.tests\_and\_prevention\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value | src.tests\_and\_prevention\_events.test\_category |  |  |  |
| measurement\_source\_concept\_id |  | 0 |  |  |
| unit\_source\_value | src.tests\_and\_prevention\_events.test\_unit\_long |  |  |  |
| value\_source\_value | src.tests\_and\_prevention\_events.value |  |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### 

##### Rule n.5.1: records from src.patient (using lk.biometric\_concept\_lk)

This table is populated from:

* [lk.biometric\_concept\_lk](#_fm0sydhl83ap)
* cdm.person
  + src.biometric\_concept\_lk.patient\_id = patient\_id in (cdm.person.person\_source\_value)

From src.biometric\_concept\_lk we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rules n.10 and 11):

10. rule regarding duplicates

11. rule about calculating date of first contact of patient

**Field Mapping (n.5.1) - records from src.patient (using lk.biometric\_concept\_lk)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.5.1 above | Yes |  |
| measurement\_concept\_id | lk.biometric\_concept\_lk.concept\_id |  | Yes |  |
| measurement\_date |  | Populate with date of first contact of patient | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | 44818701 | Yes | 44818701 = ‘From physical examination’ |
| operator\_concept\_id |  | 4172703 |  | Qualifier operator ‘=’ |
| value\_as\_number | lk.biometric\_concept\_lk.value\_as\_number |  |  |  |
| value\_as\_concept\_id |  | 0 |  |  |
| unit\_concept\_id | lk.biometric\_concept\_lk.unit\_concept\_id |  |  |  |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.person.provider\_id | See mapping rule n.5.1 above |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value | lk.biometric\_concept\_lk.source\_value |  |  |  |
| measurement\_source\_concept\_id |  | 0 |  |  |
| unit\_source\_value |  | NULL |  |  |
| value\_source\_value | lk.biometric\_concept\_lk.value\_as\_number |  |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

##### Rule n.5.2: records from src.patient (using src.patient.adipositas)

This table is populated from:

* src.patient
* cdm.person
  + src.patient.patient\_id = patient\_id in (cdm.person.person\_source\_value)

From src.patient we populate only records where src.patient.adipositas = 2 (‘KEIN ADIPOSITAS’). Records where src.patient.adipositas = 1 (‘ADIPOSITAS’) will populate cdm.condition\_occurrence.

See also [Business Rules Summary](#_j9zarehtx8gy) (rules n.10 and 11):

10. rule regarding duplicates

11. rule about calculating date of first contact of patient

**Field Mapping (n.5.2) - records from src.patient (using src.patient.adipositas)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| measurement\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rule n.5.2 above | Yes |  |
| measurement\_concept\_id |  | 4183890 | Yes | 4183890 = ‘Normal weight’ |
| measurement\_date |  | Populate with date of first contact of patient | Yes |  |
| measurement\_time |  | NULL |  |  |
| measurement\_type\_concept\_id |  | 44818701 | Yes | 44818701 = ‘From physical examination’ |
| operator\_concept\_id |  | 0 |  |  |
| value\_as\_number |  | NULL |  |  |
| value\_as\_concept\_id |  | 0 |  |  |
| unit\_concept\_id |  | 0 |  |  |
| range\_low |  | NULL |  |  |
| range\_high |  | NULL |  |  |
| provider\_id | cdm.person.provider\_id | See mapping rule n.5.2 above |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and measurement\_date |  |  |
| measurement\_source\_value |  | Populate with ‘KEIN ADIPOSITAS’ |  |  |
| measurement\_source\_concept\_id |  | 0 |  |  |
| unit\_source\_value |  | NULL |  |  |
| value\_source\_value |  | NULL |  |  |
| diagnosis\_certainty |  | NULL |  | \*added field |

### Table Name: DEVICE\_EXPOSURE

**Summary**

The device exposure domain captures information about a person’s exposure to a foreign physical object or instrument that which is used for diagnostic or therapeutic purposes through a mechanism beyond chemical action.

The distinction between Devices or supplies and procedures are sometimes blurry, but the former are physical objects while the latter are actions, often to apply a Device or supply.

**Mapping Rules**

This table is populated from:

* src.prescription\_events
* src.therapy
  + src.prescription\_events.therapy\_id = src.therapy.therapy\_id
* cdm.person
  + (src.prescription\_events.patient\_id +‘<space>–<space>‘ + src.prescription\_events.practice\_id) =cdm.person.person\_source\_value
* cdm.source\_to\_concept\_map
  + cdm.source\_to\_concept\_map.source\_code=src.therapy.substance
  + AND source\_to\_concept\_map.source\_vocabulary\_id = ‘GE\_DEVICE\_CODE’
  + AND source\_to\_concept\_map.target\_vocabulary\_id = ‘SNOMED’

From src.prescription\_events we populate only records that are associated with patients from cdm.person table.

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.10):

10. rule regarding duplicates

**Note**

Substance = ‘DISPOSABLE BABY NAPKINS’ maps to concept\_id 45763249 (‘Infant nappy’) under domain\_id = ‘Observation’. It is a bug and it will be fixed in the next version of vocabulary ‘SNOMED’, so domain\_id of this concept will be ‘Device’.

**Field Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| device\_exposure\_id |  | Identity | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rules above | Yes |  |
| device\_concept\_id | src.therapy.substance | See mapping rules above | Yes | Find target concept\_id cdm.source\_to\_concept\_map.target\_concept\_id  using src.therapy.substance (See [Appendix B: 4.5 Device Mapping](#_nysuu7bwcy3t)) |
| device\_exposure\_start\_date | src.prescription\_events.date\_of\_event |  | Yes |  |
| device\_exposure\_end\_date |  | NULL |  |  |
| device\_type\_concept\_id |  | 44818707 | Yes | 44818707 = ‘EHR Detail’ |
| unique\_device\_id |  | NULL |  |  |
| quantity |  | NULL |  |  |
| provider\_id | cdm.provider.provider\_id | src.prescription\_events.practice\_id=cdm.provider.provider\_source\_value |  |  |
| visit\_occurrence\_id | cdm.visit\_occurrence.visit\_occurrence\_id | Populate with cdm.visit\_occurrence.visit\_occurrence\_id related to combination of person\_id, provider\_id and drug\_exposure\_start\_date |  |  |
| device\_source\_value | src.therapy.substance | See mapping rules above |  |  |
| device\_source\_ concept\_id |  | 0 |  |  |

### Table Name: VISIT\_OCCURRENCE

**Summary**

The visit domain contains the spans of time a person continuously receives medical services from one or more providers at a care site in a given setting within the healthcare system.

**Mapping Rules**

Table is populated from event tables:

* cdm.procedure\_occurrence
* cdm.drug\_exposure
* cdm.condition\_occurrence
* cdm.measurement
* cdm.observation
* cdm.device\_exposure

**Field Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| visit\_occurrence\_id |  | Generate unique visit\_occurrence\_id for each distinct combination of:   * person\_id * provider\_id * \_date   from event tables (see mapping rules above). | Yes |  |
| person\_id | cdm.procedure\_occurrence.person\_id,  cdm.drug\_exposure.person\_id,  cdm.condition\_occurrence.person\_id,  cdm.measurement.person\_id,  cdm.observation.person\_id,  cdm.device\_exposure.person\_id |  | Yes |  |
| visit\_concept\_id |  | 9202 | Yes | 9202 = 'Outpatient Visit' |
| visit\_start\_date | cdm.procedure\_occurrence.procedure\_date,  cdm.drug\_exposure.drug\_exposure\_start\_date,  cdm.condition\_occurrence.condition\_start\_date,  cdm.measurement.measurement\_date,  cdm.observation.observation\_date,  cdm.device\_exposure.device\_exposure\_start\_date |  | Yes |  |
| visit\_start\_time |  | NULL |  |  |
| visit\_end\_date | cdm.procedure\_occurrence.procedure\_date,  cdm.drug\_exposure.drug\_exposure\_start\_date,  cdm.condition\_occurrence.condition\_start\_date,  cdm.measurement.measurement\_date,  cdm.observation.observation\_date,  cdm.device\_exposure.device\_exposure\_start\_date |  | Yes |  |
| visit\_end\_time |  | NULL |  |  |
| visit\_type\_concept\_id |  | 44818518 |  | 44818518 = ‘Visit derived from EHR record’ |
| provider\_id | cdm.procedure\_occurrence.provider\_id,  cdm.drug\_exposure.provider\_id,  cdm.condition\_occurrence.provider\_id,  cdm.measurement.provider\_id,  cdm.observation.provider\_id,  cdm.device\_exposure.provider\_id |  |  |  |
| care\_site\_id | cdm.provider.care\_site\_id | provider\_id from event tables = cdm.provider.provider\_id |  |  |
| visit\_source\_value |  | NULL |  |  |
| visit\_source\_concept\_id |  | 0 |  |  |

### Table Name: OBSERVATION\_PERIOD

**Summary**

The OBSERVATION\_PERIOD table contains records which uniquely define the spans of time for which a Person is at-risk to have clinical events recorded within the source systems, even if no events in fact are recorded (healthy patient with no healthcare interactions).

**Mapping rules**

Observation\_period was established after populating event tables:

* cdm.procedure\_occurrence,
* cdm.condition\_occurrence,
* cdm.drug\_exposure,
* cdm.measurement,
* cdm.observation,
* cdm.device\_exposure

Every patient should have only one observation period. Observation Period should be the range of each person’s transaction from event tables, using the earliest and the latest events from these tables.

**Field Mapping**

|  |  |  |  |
| --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Comment** |
| observation\_period\_id |  | Generate a unique observation\_period\_id for each distinct person\_id |  |
| person\_id | cdm.procedure\_occurrence.person\_id,  cdm.drug\_exposure.person\_id,  cdm.condition\_occurrence.person\_id,  cdm.measurement.person\_id, cdm.observation.person\_id,  cdm.device\_exposure.person\_id | Use person\_id from cdm event tables |  |
| observation\_period\_start\_date | cdm.procedure\_occurrence.procedure\_date,  cdm.drug\_exposure.drug\_exposure\_start\_date,  cdm.condition\_occurrence.condition\_start\_date,  cdm.measurement.measurement\_date,  cdm.observation.observation\_date,  cdm.device\_exposure.device\_exposure\_start\_date | Use the earliest date from range of each person’s transactions in all event tables |  |
| observation\_period\_end\_date | cdm.procedure\_occurrence.procedure\_date,  cdm.drug\_exposure.drug\_exposure\_start\_date,  cdm.condition\_occurrence.condition\_start\_date,  cdm.measurement.measurement\_date,  cdm.observation.observation\_date,  cdm.device\_exposure.device\_exposure\_start\_date, cdm.death.death\_date | Use the latest date from range of each person’s transactions in all event tables  **For records from cdm.drug\_exposure:**  USE FORMULA:  cdm.drug\_exposure.drug\_exposure\_end\_date =  cdm.drug\_exposure.drug\_exposure\_start\_date  +  (IF cdm.drug\_exposure.days\_supply >0  THEN cdm.drug\_exposure.days\_supply  ELSE 1)  \*  (IF cdm.drug\_exposure.refills >0  THEN cdm.drug\_exposure.refills  ELSE 1)  *IF calculated* observation\_period\_end\_date *> death\_date of patient, populate with* cdm.death.death\_date |  |
| period\_type\_concept\_id |  | 44814724 | 44814724 = ‘Period covering healthcare encounters’ |

### Table Name: PAYER\_PLAN\_PERIOD

**Summary**

Payer\_Plan\_Period was determined by populating the patient’s insurance and insurance status based on the German healthcare model. This information is only available for the patient’s most recent transaction.

Each patient has only one set of payer plan values in the source data extract, reflecting the most recent enrollment of the patient.

**Mapping rules**

Table is populated from:

* src.patient
* cdm.person
  + src.patient.patient\_id = patient\_id in (cdm.person.person\_source\_value)

From src.patient we populate only records where at least one of the following fields has value that is not NULL:

* src.patient.insurance
* src.patient.charging
* src.patient.insured

See also [Business Rules Summary](#_j9zarehtx8gy) (rule n.7):

7. rule about calculating most recent date for patient activity

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| payer\_plan\_period\_id |  | Identitty | Yes |  |
| person\_id | cdm.person.person\_id | See mapping rules above | Yes |  |
| payer\_plan\_period\_start\_date |  | Use most recent date for patient activity | Yes |  |
| payer\_plan\_period\_end\_date |  | Use most recent date for patient activity | Yes | Start and end dates should always be the same |
| payer\_source\_value | src.patient.insurance, src.patient.charging | Add ‘/‘ between values as delimiter.  AND  IF one of values is missing, replace missing value with ‘-‘  AND  IF src.patient.insurance IS NULL and src.patient.charging IS NULL  THEN Populate with NULL |  |  |
| plan\_source\_value | src.patient.insured |  |  |  |
| family\_source\_value |  | NULL |  |  |

### 

### Table Name: COST

**Summary**

The COST table captures records containing the cost of any medical entity recorded in one of the DRUG\_EXPOSURE.

**Mapping rules**

This table is populated from src.prescription\_events and src.therapy using corresponding fields from lk.drug\_exposure\_cost (See mapping rules and field mapping for lookup table [lk.drug\_exposure\_cost](#_mnibutrdfia9)). We populate only records where lk.drug\_exposure\_cost.total\_cost >0 or lk.drug\_exposure\_cost.total\_paid>0.

**Field Mapping (additional to mapping from lk.drug\_exposure\_cost)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required Field** | **Comment** |
| cost\_id |  | Identity | Yes |  |
| cost\_event\_id | lk.drug\_exposure\_cost.drug\_exposure\_id |  | Yes |  |
| payer\_plan\_period\_id | cdm.payer\_plan\_period.payer\_plan\_period\_id | Populate with cdm.payer\_plan\_period.payer\_plan\_period\_id related to combination of  person\_id and lk.drug\_exposure\_cost.drug\_exposure\_start\_date  (this date SHOULD BE BETWEEN cdm.payer\_plan\_period.payer\_plan\_period\_start\_date AND cdm.payer\_plan\_period.payer\_plan\_period\_end\_date) |  |  |

### Table Name: LOCATION

**Summary**

Location table contains the geographic location of practice.

**Mapping rules**

Table is populated from src.practice.

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| location\_id | src.practice.region | Generate unique location\_id for each distinct src.practice.region | Yes |  |
| address\_1 |  | NULL |  |  |
| address\_2 |  | NULL |  |  |
| city |  | NULL |  |  |
| state |  | NULL |  |  |
| zip |  | NULL |  |  |
| county |  | NULL |  |  |
| location\_source\_value | src.practice.region |  |  | Only 2 locations:  I (West)  II (East) |

### Table Name: CARE\_SITE

**Summary**

The CARE\_SITE table contains a list of uniquely identified institutional (physical or organizational) units where healthcare delivery is practiced.

**Mapping rules**

This table is populated from src.practice.

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| care\_site\_id | src.practice.practice\_id | Generate unique care\_site\_id for each distinct src.practice.practice\_id | Yes | System generated field |
| care\_site\_name |  | NULL |  |  |
| place\_of\_service\_concept\_id |  | Use concept id : 8940 for ‘Office’ |  |  |
| location\_id | cdm.location.location\_id | src.practice.region=cdm.location.location\_source\_value |  |  |
| care\_site\_source\_value | src.practice.practice\_id |  |  |  |
| place\_of\_service\_source\_value |  | ‘Office’ |  |  |

### 

### Table Name: PROVIDER

**Summary**

The PROVIDER table contains a list of uniquely identified healthcare providers. These are individuals providing hands-on healthcare to patients, such as physicians, nurses, midwives, physical therapists etc.

In German DA the practice is equivalent to the doctor. In multi-physician practices all providers are represented by the same ID – there is no way to distinguish between them enrollment of the patient.

**Mapping rules**

Table is populated from src.practice.

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Destination Field** | **Source Field** | **Applied Rule** | **Required field** | **Comment** |
| provider\_id | src.practice.practice\_id | Generate unique provider\_id for each distinct src.practice.practice\_id | Yes | System generated id |
| provider\_name |  | NULL |  |  |
| npi |  | NULL |  |  |
| dea |  | NULL |  |  |
| specialty\_concept\_id | cdm.source\_to\_concept\_map.target\_concept\_id | src.practice.specialty +  ‘/’ + src.practice.practice\_emphasis  =cdm.source\_to\_concept\_map.source\_code |  | See [Appendix B: 4.1 Provider Specialty Mapping](#_t1ii78sx9j22) |
| care\_site\_id | cdm.care\_site.care\_site\_id | cdm.care\_site.care\_site\_source\_value=src.practice.practice\_id |  |  |
| year\_of\_birth |  | NULL |  |  |
| gender\_concept\_id |  | 0 |  |  |
| provider\_source\_value | src.practice.practice\_id |  |  |  |
| specialty\_source\_value | src.practice.specialty,  src.practice.practice\_emphasis | src.practice.specialty +  ‘/’ + src.practice.practice\_emphasis |  |  |
| specialty\_source\_concept\_id |  | 0 |  |  |
| gender\_source\_value |  | NULL |  |  |
| gender\_source\_concept\_id |  | 0 |  |  |

## 

### Table Name: DEATH

**Summary**

The death domain contains the clinical event for how and when a Person dies.

**Mapping rules**

Table is populated from:

* src.(problem\_events/action\_events/prescription\_events)
* src.medical\_event\_list
  + src.(problem\_events/action\_events/prescription\_events).problem\_id = src.medical\_event\_list.medical\_event\_list\_id
* [lk.voc\_icd10\_to\_standard\_lk](#_x9ng4228foen)
  + src.medical\_event\_list.medical\_event\_list\_id=lk.voc\_icd10\_to\_standard\_lk.medical\_event\_list\_id

We also use the following rules to create records in cdm.death table:

1. We are creating records for all the patients having records in src.problem\_events, src.action\_events, src.prescription\_events associated with ICD10 codes (from src.medical\_event\_list) from the ’Death list’ (See [Business Rules Summary](#_j9zarehtx8gy), rule n.9).
2. src.medical\_event\_list.diagnosis\_certainty must be ‘Confirmed’ for record to be entered into the CDM Death table.
3. Each dead patient should have single record in cdm.death table. If we have multiple records associated with ICD10 code from ‘Death list’ for one patient, we should use the one with minimum death\_date (see applied rule for death\_date) that is not > date of current dataset.
4. If patients have contacts after minimum death\_date, they shouldn’t be considered as dead. Invalid contact dates (> date of current dataset) or another dates related to death shouldn’t be considered. We should consider following dates as dates of contacts:
   * src.action\_events.date\_of\_event (even if records are **related** to ICD10 codes from ‘Death list’)
   * src.prescription\_events.date\_of\_event (even if records are **related** to ICD10 codes from ‘Death list’)
   * src.problem\_events.date\_of\_event (records that are **NOT related** to ICD10 codes from ‘Death list’)
   * src.tests\_and\_prevention\_events.date\_of\_event

All records from action\_events and prescription\_events will be used to check if patient is alive even if these records are associated with death code. In such case we consider relation to death code to be invalid, because prescription\_events contains information related not only to ICD10 code, but also to drug or device exposure, and action\_events.text field contains information related to cdm.observation (‘Hospitalization’, ‘Sick Leave’, ‘Referral’ etc.) or procedure\_occurrence (‘Integrated Care’).

**NOTE:** if contact dates are invalid (> date of current dataset), they still go ‘as is’ in cdm event tables. Because of it patients may have records in cdm event tables with date of visit after death\_date (but only if date of such visit > date of current dataset).

Below are some examples (records highlighted in blue are records with min death date):

|  |  |  |
| --- | --- | --- |
| **Patient** | **Records in source event tables** | **Status** |
| 1 | * Prescription\_Events entry for 4/6/2010 tied to a medical\_event\_list entry with a death code * Problem\_Events entry for 4/7/2010 tied to a medical\_event\_list entry with a death code * Problem\_Events entry for 4/8/2010 tied to a medical\_event\_list entry with a death code | Dead |
| 2 | * Action\_Events entry for 4/6/2010 tied to a medical\_event\_list entry with a death code | Dead |
| 3 | * Problem\_Events entry for 4/6/2010 tied to a medical\_event\_list entry with a death code * Tests\_and\_prevention\_Events entry for 4/7/2010 * Problem\_Events entry for 4/8/2010 tied to a medical\_event\_list entry with a death code | Alive |
| 4 | * Prescription\_Events entry for 4/6/2010 tied to a medical\_event\_list entry with a death code * Action\_Events entry for 4/7/2010 tied to a medical\_event\_list entry with a death code * Prescription\_Events entry for 4/8/2010 tied to a medical\_event\_list entry with a death code | Alive |

**Field mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Destination Field | Source Field | Applied Rule | Required Field | Comment |
| person\_id | cdm.person.person\_id | src.(problem\_events/action\_events/prescription\_events).patient\_id  +  ‘<space>–<space>‘  +  src.(problem\_events/action\_events/prescription\_events).practice\_id  = cdm.person.person\_source\_value | Yes |  |
| death\_date | src.problem\_events.date\_of\_event  OR  src.action\_events.date\_of\_event  OR  src.prescription\_events.date\_of\_event | See mapping rules above (use min date of death for patient) | Yes |  |
| death\_type\_concept\_id |  | 38003567 | Yes | 38003567=’Medical claim diagnostic code indicating death‘ |
| cause\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rules above |  | Find target concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_2  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |
| cause\_source\_value | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rules above |  |  |
| cause\_source\_concept\_id | lk.voc\_icd10\_to\_standard\_lk.icd10\_code | See mapping rules above |  | Find source concept\_id  lk.voc\_icd10\_to\_standard\_lk.concept\_id\_1  using  lk.voc\_icd10\_to\_standard\_lk.icd10\_code |

### Table Name: FACT\_RELATIONSHIP

This table will not be populated.

### Table Name: SPECIMEN

This table will not be populated.

### Table Name: NOTE

This table will not be populated.

## Source Independent Data Mapping

Unless otherwise specified in the sections below, Source Independent Data Mapping will follow specifications as defined in ETL Mapping Specification document.

### Table Name: COHORT

This table will not be populated.

### Table Name: COHORT\_ATTRIBUTE

This table will not be populated.

### Table Name: DRUG\_ERA

All Drug Eras are recorded in the DRUG\_ERA table based on OMOP standard calculations of drugs for a patient. A persistence window of 30 days is applied.

### Table Name: DOSE\_ERA

The Dose era table contains a list of unique spans of time when Person is assumed to be exposed to a constant dose of a specific active ingredient.

### Table Name: CONDITION\_ERA

Condition Era table is constructed through an aggregation of individual Condition Occurrences recorded in the CONDITION\_OCCURRENCE table.

All Condition Eras are recorded in the CONDITION\_ERA table based on OMOP standard calculations of conditions for a patient

## Records Excluded from CDMv5 and Reasons Why

* Patients where the YOB is null.
* A small number of patients in the German DA Patient table are associated with values designed to test the HER software system the records are derived from. In such cases (identified by src.patient.active\_ind = ‘Fictitious’), that person and all their claims are excluded from the CDM.

# Appendix A: Source Table mapping to CDM

The following will be a table listing all of the fields in source data tables and how they were used. All details below are based on the standard variable and file structures as described in the Source supplied documentation.

## 3.1 Table: Action\_events

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| practice\_id | integer | cdm.person.person\_source\_value |  |
| doctor\_id | integer |  | Not used in ETL |
| patient\_id | bigint | cdm.person.person\_source\_value |  |
| age | integer |  | Not used in ETL |
| patient\_sex\_desc | character varying |  | Not used in ETL |
| age\_at\_event | integer |  | Not used in ETL |
| date\_of\_event | date | \_date field in  cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death |  |
| problem\_id | integer | Used for linking with src.medical\_event\_list in cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death | Used in ETL process, not presented in final cdm tables |
| specialty | character varying | cdm.observation.observation\_source\_value |  |
| action\_type\_id | integer |  | Not used in ETL |
| text | character varying | cdm.observation.observation\_source\_value, cdm.procedure.procedure\_source\_value |  |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.2 Table: Medical\_event\_list

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| medical\_event\_list\_id | integer | Used for linking with source event tables in cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death | Used in ETL process, not presented in final cdm tables |
| icd10\_4\_code | character varying | \_source\_value field in  cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death | Using lk.voc\_icd10\_to\_standard\_lk |
| icd10\_4\_desc | character varying |  | Not used in ETL |
| icd10\_3\_code | character varying | \_source\_value field in  cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death | Using lk.voc\_icd10\_to\_standard\_lk |
| icd10\_3\_desc | character varying |  | Not used in ETL |
| icd10\_2\_code | character varying |  | Not used in ETL |
| icd10\_2\_desc | character varying |  | Not used in ETL |
| icd10\_1\_code | character varying |  | Not used in ETL |
| icd10\_1\_desc | character varying |  | Not used in ETL |
| diagnosis\_certainty\_id | smallint |  | Not used in ETL |
| diagnosis\_certainty | character varying | Used in applied rule of cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement (only cdm.observation was populated with records associated with *diagnosis\_certainty = ‘Exclusion of’*, regardless of domain) | Used in ETL process, not presented in final cdm tables |
| diagnosis\_side\_location\_id | smallint |  | Not used in ETL |
| diagnosis\_side\_location | character varying |  | Not used in ETL |
| diagnosis\_degree\_id | smallint |  | Not used in ETL |
| diagnosis\_degree | character varying |  | Not used in ETL |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.3 Table: Patient

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| patient\_id | bigint | cdm.person.person\_source\_value |  |
| active\_ind | character varying | Used in applied rule for cdm.person (patients where *active\_ind field = ‘Fictitious’* were excluded) | Used in ETL process, not presented in final cdm tables |
| age | smallint |  | Not used in ETL |
| sex\_id | smallint |  | Not used in ETL |
| sex\_desc | character varying | cdm.person.gender\_source\_value |  |
| height | numeric | cdm.measurement.value\_as\_number, cdm.measurement.value\_source\_value | Using lk.biometric\_concept\_lk |
| weight | numeric | cdm.measurement.value\_as\_number, cdm.measurement.value\_source\_value | Using lk.biometric\_concept\_lk |
| bmi | numeric | cdm.measurement.value\_as\_number, cdm.measurement.value\_source\_value | Using lk.biometric\_concept\_lk |
| date\_of\_birth | date | cdm.person.gender\_source\_value.year\_of\_birth |  |
| health\_insureance\_id | integer |  | Not used in ETL |
| insurance | character varying | cdm.payer\_plan\_period.payer\_source\_value |  |
| health\_insurance\_membership\_id | smallint |  | Not used in ETL |
| insured | character varying | cdm.payer\_plan\_period.plan\_source\_value |  |
| charging\_id | smallint |  | Not used in ETL |
| charging | character varying | cdm.payer\_plan\_period.payer\_source\_value |  |
| smoking\_status\_id | smallint |  | Not used in ETL |
| smoking\_status | character varying | cdm.condition\_occurrence.condition\_source\_value |  |
| adipositas | smallint | cdm.condition\_occurrence.condition\_source\_value | Used in ETL process, not presented in final cdm tables |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.4 Table: Practice

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| practice\_id | integer | cdm.provider.provider\_source\_value |  |
| specialty | character varying | cdm.provider.specialty\_source\_value |  |
| num\_of\_doctors | smallint |  | Not used in ETL |
| up\_to\_date | character varying |  | Not used in ETL |
| num\_of\_pats\_curr\_qtr | integer |  | Not used in ETL |
| num\_of\_pats\_last\_qtr | integer |  | Not used in ETL |
| practice\_emphasis | character varying | cdm.provider.specialty\_source\_value |  |
| diabetology | character varying |  | Not used in ETL |
| doctor\_age\_grp | character varying |  | Not used in ETL |
| region | character varying | cdm.location.location\_source\_value |  |
| main\_doctor | integer |  | Not used in ETL |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.5 Table: Prescription\_events

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| practice\_id | integer | cdm.person.person\_source\_value |  |
| doctor\_id | integer |  | Not used in ETL |
| patient\_id | bigint | cdm.person.person\_source\_value |  |
| age | integer |  | Not used in ETL |
| patient\_sex\_desc | character varying |  | Not used in ETL |
| age\_at\_event | integer |  | Not used in ETL |
| date\_of\_event | date | \_date field in  cdm.drug\_exposure, cdm.device\_exposure,  cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death |  |
| problem\_id | integer | Used for linking with src.medical\_event\_list in cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death |  |
| therapy\_id | integer | Used for linking with src.therapy | Using lk.drug\_exposure\_cost, used in ETL process, not presented in final cdm tables |
| nbr\_of\_packs | integer | cdm.drug\_exposure.quantity | Using lk.drug\_exposure\_cost |
| daily\_dosage | numeric |  | Not used in ETL |
| unit\_of\_daily\_dosage | character varying |  | Not used in ETL |
| daily\_dosage\_in\_units\_of\_measurements | numeric |  | Not used in ETL |
| daily\_dosage\_measurement\_unit | character varying |  | Not used in ETL |
| price | numeric | cdm.cost.total\_paid | Using lk.drug\_exposure\_cost |
| sales\_price | numeric | cdm.cost.total\_cost | Using lk.drug\_exposure\_cost |
| text | character varying | cdm.drug\_exposure.sig | Using lk.drug\_exposure\_cost |
| therapy\_duration\_in\_days | numeric | cdm.drug\_exposure.days\_supply | Using lk.drug\_exposure\_cost |
| prescription\_type\_id | integer |  | Not used in ETL |
| prescription\_type\_id\_text | character varying | Used in applied rule for drug\_type\_concept\_id | Using lk.drug\_exposure\_cost, used in ETL process, not presented in final cdm tables |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.6 Table: Problem\_events

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| practice\_id | integer | cdm.person.person\_source\_value |  |
| doctor\_id | integer |  | Not used in ETL |
| patient\_id | bigint | cdm.person.person\_source\_value |  |
| age | integer |  | Not used in ETL |
| patient\_sex\_desc | character varying |  | Not used in ETL |
| age\_at\_event | integer |  | Not used in ETL |
| date\_of\_event | date | \_date field in  cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death |  |
| problem\_id | integer | Used for linking with src.medical\_event\_list in cdm.procedure\_occurrence, cdm.condition\_occurrence, cdm.observation, cdm.measurement,  cdm.death |  |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.7 Table: Tests\_and\_prevention\_events

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| practice\_id | integer | cdm.person.person\_source\_value |  |
| doctor\_id | integer |  | Not used in ETL |
| patient\_id | bigint | cdm.person.person\_source\_value |  |
| age | integer |  | Not used in ETL |
| patient\_sex\_desc | character varying |  | Not used in ETL |
| age\_at\_event | integer |  | Not used in ETL |
| date\_of\_event | date | cdm.condition\_occurrence.condition\_start\_date, cdm.measurement.measurement\_date |  |
| problem\_id | integer | Used for linking with src.medical\_event\_list in cdm.condition\_occurrence, cdm.measurement |  |
| test\_id | integer |  | Not used in ETL |
| test\_category | character varying | cdm.measurement.value\_as\_number, cdm.measurement.measurement\_source\_value |  |
| value | numeric | cdm.measurement.value\_source\_value |  |
| test\_unit\_long | character varying | cdm.measurement.unit\_source\_value |  |
| load\_row\_id | bigint |  | Not used in ETL |

## 3.8 Table: Therapy

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Type** | **Where in CDM** | **Comment** |
| therapy\_id | integer | Used for linking with src.prescription\_events | Using lk.drug\_exposure\_cost, used in ETL process, not presented in final cdm tables |
| therapy\_desc\_id | integer |  | Not used in ETL |
| therapy\_name | character varying |  | Not used in ETL |
| product\_id | integer |  | Not used in ETL |
| product\_name | character varying |  | Not used in ETL |
| product\_launch\_date | date |  | Not used in ETL |
| product\_form\_id | integer |  | Not used in ETL |
| product\_form\_name | character varying |  | Not used in ETL |
| strength | numeric |  | Not used in ETL |
| strength\_unit\_id | integer |  | Not used in ETL |
| strength\_unit | character varying | cdm.drug\_exposure.dose\_unit\_source\_value | Using lk.drug\_exposure\_cost |
| volume | numeric |  | Not used in ETL |
| volume\_unit\_id | integer |  | Not used in ETL |
| volume\_unit | character varying |  | Not used in ETL |
| packsize | numeric | cdm.drug\_exposure.quantity | Using lk.drug\_exposure\_cost |
| pack\_price | numeric |  | Not used in ETL |
| form\_launch\_date | date |  | Not used in ETL |
| out\_of\_trade\_date | date |  | Not used in ETL |
| manufacturer\_id | smallint |  | Not used in ETL |
| manufacturer\_name | character varying |  | Not used in ETL |
| manufacturer\_short\_name | character varying |  | Not used in ETL |
| atc4\_code | character varying |  | Not used in ETL |
| atc4\_desc | character varying |  | Not used in ETL |
| atc3\_code | character varying |  | Not used in ETL |
| atc3\_desc | character varying |  | Not used in ETL |
| atc2\_code | character varying |  | Not used in ETL |
| atc2\_desc | character varying |  | Not used in ETL |
| atc1\_code | character varying |  | Not used in ETL |
| atc1\_desc | character varying |  | Not used in ETL |
| who\_atc5\_code | character varying | cdm.drug\_exposure.drug\_source\_value | Using lk.drug\_exposure\_cost |
| who\_atc5\_desc | character varying |  | Not used in ETL |
| who\_atc4\_code | character varying |  | Not used in ETL |
| who\_atc4\_desc | character varying |  | Not used in ETL |
| who\_atc3\_code | character varying |  | Not used in ETL |
| who\_atc3\_desc | character varying |  | Not used in ETL |
| who\_atc2\_code | character varying |  | Not used in ETL |
| who\_atc2\_desc | character varying |  | Not used in ETL |
| who\_atc1\_code | character varying |  | Not used in ETL |
| who\_atc1\_desc | character varying |  | Not used in ETL |
| substance | character varying | cdm.device\_exposure.device\_source\_value | Using lk.drug\_exposure\_cost |
| nbr\_of\_substances | integer |  | Not used in ETL |
| generic\_original | character varying |  | Not used in ETL |
| parallel\_import | character varying |  | Not used in ETL |
| prescription\_bound | character varying |  | Not used in ETL |
| pharmacy\_only | character varying |  | Not used in ETL |
| exemption\_from\_copayment | character varying |  | Not used in ETL |
| pzn | character varying |  | Not used in ETL |
| nfc\_id | integer |  | Not used in ETL |
| nfc | character varying |  | Not used in ETL |
| nfc\_desc | character varying |  | Not used in ETL |
| load\_row\_id | bigint |  | Not used in ETL |

# Appendix B: Source to Concept Mapping

The following will be all vocabulary from source data and also any additional information that was included in the conversion process. This could include additional tables, logic, custom mapping if used.

## 4.1 Provider Specialty Mapping

|  |  |  |  |
| --- | --- | --- | --- |
| **source\_code/source\_code\_description** | **target\_concept\_id** | **concept\_name** | **target\_vocabulary\_id** |
| Dermatology/- | 38004452 | Dermatology | Specialty |
| Gynecology/- | 38004461 | Obstetrics/Gynecology | Specialty |
| Internal Medicine & General Practice with Focus/Cardiology | 38004451 | Cardiology | Specialty |
| Internal Medicine & General Practice with Focus/Gastroenterology (Endoscopy, Colonoscopy) | 38004455 | Gastroenterology | Specialty |
| Internal Medicine & General Practice with Focus/Pneumology | 38004472 | Pulmonary Disease | Specialty |
| Internal Medicine & General Practice with Focus/Rheumatology | 38004491 | Rheumatology | Specialty |
| Internal Medicine & General Practice without Focus/API1100 | 38004446 | General Practice | Specialty |
| Internal Medicine & General Practice without Focus/API420, API900, API1100 | 38004446 | General Practice | Specialty |
| Internal Medicine & General Practice without Focus/API900, API1100 | 38004446 | General Practice | Specialty |
| Neurology/- | 38004458 | Neurology | Specialty |
| Neurology/Psychiatry | 38004505 | Neuropsychiatry | Specialty |
| Neurology/Psychiatry, Psychotherapy | 38004505 | Neuropsychiatry | Specialty |
| Neurology/Psychotherapy | 38004505 | Neuropsychiatry | Specialty |
| Orthopedics/- | 38004465 | Orthopedic Surgery | Specialty |
| Otolaryngology/- | 38004449 | Otolaryngology | Specialty |
| Pediatrics/- | 38004477 | Pediatric Medicine | Specialty |
| Psychiatry/- | 38004469 | Psychiatry | Specialty |
| Psychiatry/Child and Adolescent Psychiatry | 45756756 | Child and Adolescent Psychiatry | ABMS |
| Psychiatry/Child and Adolescent Psychiatry, Psychotherapy | 45756756 | Child and Adolescent Psychiatry | ABMS |
| Psychiatry/Psychiatry, Psychotherapy | 38004469 | Psychiatry | Specialty |
| Psychiatry/Psychotherapy | 44777741 | Psychotherapy | HES Specialty |
| Urology/- | 38004474 | Urology | Specialty |

## 4.2 Test Mapping

|  |  |  |  |
| --- | --- | --- | --- |
| **source\_code/source\_code\_description** | **target\_concept\_id** | **concept\_name** | **target\_vocabulary\_id** |
| EX-SMOKER | 4310250 | Ex-smoker | SNOMED |
| HEAVY SMOKER | 4209006 | Heavy smoker | SNOMED |
| NEVER SMOKED | 4222303 | Non-smoker | SNOMED |
| NON-SMOKER | 4222303 | Non-smoker | SNOMED |
| NORMAL SMOKER | 4209585 | Moderate smoker | SNOMED |
| ADIPOSITY | 433736 | Obesity | SNOMED |
| SMOKER | 4298794 | Smoker | SNOMED |
| HEIGHT | 3036277 | Body height | LOINC |
| ALBUMINE | 3028286 | Albumin [Mass/volume] in Serum or Plasma by Electrophoresis | LOINC |
| WEIGHT | 3025315 | Body weight | LOINC |
| BODY MASS INDEX | 3038553 | Body mass index | LOINC |
| CHOLESTERIN | 3027114 | Cholesterol [Mass/volume] in Serum or Plasma | LOINC |
| CREATININE | 3017250 | Creatinine [Mass/volume] in Urine | LOINC |
| DIRECT BILIRUBIN | 3027597 | Direct bilirubin serum/plasma | LOINC |
| GLUCOSE (EMPTY STOMACH) | 3037110 | Fasting glucose [Mass/volume] in Serum or Plasma | LOINC |
| HDL-CHOLESTERIN | 3007070 | Cholesterol in HDL [Mass/volume] in Serum or Plasma | LOINC |
| LDL-CHOLESTERIN | 3028437 | Cholesterol in LDL [Mass/volume] in Serum or Plasma | LOINC |
| TRIGLYCERIDE | 3022192 | Triglyceride [Mass/volume] in Serum or Plasma | LOINC |
| URIC | 3033526 | Urate [Mass/volume] in Urine | LOINC |
| GLOM.FILTRAT.MDRD-FORMEL | 40771922 | Glomerular filtration rate/1.73 sq M.predicted [Volume Rate/Area] in Serum or Plasma | LOINC |
| GLOMERULAERE FILTRATIONSRATE | 40771922 | Glomerular filtration rate/1.73 sq M.predicted [Volume Rate/Area] in Serum or Plasma | LOINC |
| BLOOD PRESSURE DIASTOLIC | 4154790 | Diastolic blood pressure | SNOMED |
| BLOOD PRESSURE SYSTOLIC | 4152194 | Systolic blood pressure | SNOMED |
| POTASSIUM | 46235078 | Potassium [Moles/volume] in Serum, Plasma or Blood | LOINC |
| INTERNAT.NORMALIZED RATIO | 3022217 | INR | LOINC |
| ERY-HBA1C | 40758583 | Hemoglobin A1c in Blood | LOINC |
| GAMMA-GT | 3028515 | Gamma glutamyl transferase [Enzymatic activity/volume] in Urine | LOINC |

## 4.3 Test Unit Mapping

|  |  |  |  |
| --- | --- | --- | --- |
| **source\_code/source\_code\_description** | **target\_concept\_id** | **concept\_name** | **target\_vocabulary\_id** |
| Centimeter | 8582 | centimeter | UCUM |
| Gramm/Liter | 8636 | gram per liter | UCUM |
| Kilogram | 9529 | kilogram | UCUM |
| Kilogram/Meter squared | 9531 | kilogram per square meter | UCUM |
| Milligram/Deciliter | 8840 | milligram per deciliter | UCUM |
| Millilieter/Minute/1,73 m2 | 9117 | milliliter per minute per 1.73 square meter | UCUM |
| Milliliter/Minute | 8795 | milliliter per minute | UCUM |
| Millimeter HG | 8876 | millimeter mercury column | UCUM |
| Millimol/Liter | 8753 | millimole per liter | UCUM |
| Percent | 8554 | percent | UCUM |
| Units/Liter | 8645 | unit per liter | UCUM |

## 4.4 Referral Mapping

Where Text = ‘Referral’ use the list below to assign the observation\_concept\_id using the Specialty field from src.action\_events table. If the specialty to value is not listed below assign a concept id of 0.

|  |  |  |  |
| --- | --- | --- | --- |
| **source\_code/source\_code\_description** | **target\_concept\_id** | **concept\_name** | **target\_vocabulary\_id** |
| Acupuncture | 4304205 | Patient Referral to acupuncturist | SNOMED |
| Allergology | 4127756 | Referral to clinical allergist | SNOMED |
| Anatomy | 4141718 | Referral to clinical physiologist | SNOMED |
| Andrology | 4140185 | Referral to genitourinary physician | SNOMED |
| Anesthesiology | 45771092 | Referral for anesthesia management | SNOMED |
| Angiology | 4146186 | Referral to vascular surgeon | SNOMED |
| Audiology | 4204662 | Referral to audiologist | SNOMED |
| Aviation Medicine | 4141713 | Referral to Accident and Emergency doctor | SNOMED |
| Biochemistry | 4081285 | Refer for biochemical test | SNOMED |
| Cardiac Surgery | 4138651 | Referral to cardiac surgery service | SNOMED |
| Cardiology | 4204664 | Referral to cardiologist | SNOMED |
| Child and Adolescent Psychiatry | 4140188 | Referral to child and adolescent psychiatrist | SNOMED |
| Children's and Adolescent's Psychiatry and Psychotherapy | 4141570 | Referral to child and adolescent psychiatry service | SNOMED |
| Children's Diabetes | 44792642 | Referral to children's diabetes nurse specialist | SNOMED |
| Children's Gastroenterology | 4329252 | Referral to pediatric gastroenterologist | SNOMED |
| Children's Hematology | 4142451 | Referral to clinical hematologist | SNOMED |
| Children's Nephrology | 44804883 | Referral to paediatric nephrologist | SNOMED |
| Children's Neuropsychiatry | 4140178 | Referral to pediatric neurologist | SNOMED |
| Children's Pulmonology | 4138761 | Referral to pediatric pulmonologist | SNOMED |
| Children's Rheumatology | 4138659 | Referral to rheumatologist | SNOMED |
| Chiropractic Therapy | 4203752 | Referral to chiropractor | SNOMED |
| Cytological Medicine | 4140183 | Referral to clinical cytogeneticist | SNOMED |
| Dentist | 4138652 | Referral to restorative dentistry service | SNOMED |
| Dermatology | 4202186 | Referral to dermatologist | SNOMED |
| Diabetology | 4080079 | Referral to diabetologist | SNOMED |
| Diagnosis | 4138659 | Referral for diagnostic investigation | SNOMED |
| Diagnostic Radiology | 4142765 | Referral to radiologist | SNOMED |
| Diagnostics (functional and fine diagnostics) | 4138659 | Referral for diagnostic investigation | SNOMED |
| Dialysis | 4218333 | Referral for dialysis | SNOMED |
| Doctor without specified focus | 4084358 | Referral to GP | SNOMED |
| Echo Cardiology Proximal Cardiac Vessels | 4305721 | Referral for echocardiography | SNOMED |
| Emergency Medicine | 44808941 | Referral to emergency medical service | SNOMED |
| Endocrinology | 4140182 | Referral to endocrinologist | SNOMED |
| Environmental Medicine | 46273913 | Referral to community service | SNOMED |
| Epilepsy Specialist | 44805858 | Referral to epilepsy clinic | SNOMED |
| Forensic Medicine | 4127761 | Referral to forensic psychiatrist | SNOMED |
| Gastroenterology (Endoscopy, Colonoscopy) | 4203869 | Referral to gastroenterologist | SNOMED |
| General Medicine | 4202185 | Referral to general physician | SNOMED |
| Geriatrics | 4203868 | Referral to care of the elderly physician | SNOMED |
| Gynecology | 4203276 | Referral to gynecologist | SNOMED |
| Health | 4142592 | Referral to medical service | SNOMED |
| Heart and Vascular Surgery | 4146186 | Referral to vascular surgeon | SNOMED |
| Hematology | 4084360 | Referral to hematologist | SNOMED |
| Hematology and Internal Oncology | 4084360 | Referral to hematologist | SNOMED |
| Histology | 4203271 | Referral to pathology service | SNOMED |
| Hospital, Clinic, Dispensary, Polyclinic | 4127579 | Referral to establishment | SNOMED |
| Human Genetics | 4203274 | Referral to geneticist | SNOMED |
| Hygiene and Environmental Medicine | 46273913 | Referral to community service | SNOMED |
| Immunology | 4204665 | Referral to clinical immunologist | SNOMED |
| Infectious and Tropical Medicine | 44784416 | Referral to tropical medicine clinic | SNOMED |
| Institution (Workers' Welfare Organisation, Nursing Home, etc.) | 46273913 | Referral to community service | SNOMED |
| Internal Medicine | 4084358 | Referral to GP | SNOMED |
| Internal Medicine & General Practice with Focus | 4084358 | Referral to GP | SNOMED |
| Internal Medicine & General Practice without Focus | 4084358 | Referral to GP | SNOMED |
| Laboratory Medicine | 4145660 | Referral for laboratory tests | SNOMED |
| Metabolic Specialist | 4140182 | Referral to endocrinologist | SNOMED |
| Microbiology and Infectious Disease Epidemiology | 4141719 | Referral to infectious diseases physician | SNOMED |
| Naturopathy + Homeopathy | 4140199 | Referral to professional allied to medicine | SNOMED |
| Neonatology | 4141717 | Referral to neonatologist | SNOMED |
| Nephrology | 4142761 | Referral to nephrologist | SNOMED |
| Neuro Surgery | 4203870 | Referral to neurosurgeon | SNOMED |
| Neurology | 4202187 | Referral to neurologist | SNOMED |
| Neurology and Psychiatry | 4127601 | Referral to service | SNOMED |
| Neuropediatrics | 4140178 | Referral to pediatric neurologist | SNOMED |
| Neuroradiology | 4203270 | Referral to radiology service | SNOMED |
| Nuclear Medicine | 4140186 | Referral to nuclear medicine physician | SNOMED |
| Nuclear Medicine and Radiology | 4140186 | Referral to nuclear medicine physician | SNOMED |
| Oncology | 4084352 | Referral to oncologist | SNOMED |
| Ophthalmology | 4204667 | Referral to ophthalmologist | SNOMED |
| Oral and Maxillofacial Surgery | 4247380 | Referral to oral surgeon | SNOMED |
| Oral Surgery | 4293029 | Referral to oral surgery service | SNOMED |
| Orthopedics | 4080082 | Referral to orthopedic service | SNOMED |
| Other | 4127751 | Referral to doctor | SNOMED |
| Otolaryngology | 4202189 | Referral to ear, nose and throat surgeon | SNOMED |
| Pain Therapy | 4142757 | Referral to pain management specialist | SNOMED |
| Pathology | 4127752 | Referral to pathologist | SNOMED |
| Pedaudiology | 4141703 | Referral to pediatric diagnostic audiology service | SNOMED |
| Pediatric Cardiology | 4207484 | Referral to pediatric cardiologist | SNOMED |
| Pediatric Radiology | 4203270 | Referral to radiology service | SNOMED |
| Pediatric Surgery | 4204669 | Referral to pediatric surgeon | SNOMED |
| Pediatrics | 4080075 | Referral to pediatrician | SNOMED |
| Pharmacology and Toxicology | 4079633 | Referral to clinical pharmacologist | SNOMED |
| Phlebology | 44788729 | Refer to practice phlebotomist | SNOMED |
| Physical and Rehabilitation Medicine | 4142762 | Referral to rehabilitation physician | SNOMED |
| Physiology | 4141718 | Referral to clinical physiologist | SNOMED |
| Physiotherapy | 4203751 | Referral to physiotherapist | SNOMED |
| Plastic Surgery | 4140191 | Referral to plastic surgeon | SNOMED |
| Pneumology | 4127758 | Referral to respiratory physician | SNOMED |
| Prenatal Medicine | 45773165 | Referral to maternity service | SNOMED |
| Proctology | 4141846 | Referral to colorectal surgeon | SNOMED |
| Psychiatry | 4202188 | Referral to psychiatrist | SNOMED |
| Psychiatry and Psychotherapy | 4202188 | Referral to psychiatrist | SNOMED |
| Psychology | 4203866 | Referral to psychologist | SNOMED |
| Psychosomatic Medicine | 4140198 | Referral to psychotherapist | SNOMED |
| Psychotherapeutic Doctor | 4140198 | Referral to psychotherapist | SNOMED |
| Psychotherapeutic Medicine | 4140198 | Referral to psychotherapist | SNOMED |
| Psychotherapy | 4140198 | Referral to psychotherapist | SNOMED |
| Public Health System | 4142764 | Referral to public health physician | SNOMED |
| Pulmonology | 44791025 | Referral to pulmonary rehabilitation | SNOMED |
| Radiology | 4142765 | Referral to radiologist | SNOMED |
| Radiotherapy | 4142755 | Referral to radiotherapist | SNOMED |
| Radiotherapy and Diagnostic Radiology | 4142765 | Referral to radiologist | SNOMED |
| Rehabilitation | 4139566 | Referral to rehabilitation service | SNOMED |
| Rheumatology | 4141720 | Referral to rheumatologist | SNOMED |
| Social Pedagogy and - Psychiatric Center | 4127601 | Referral to service | SNOMED |
| Spa Doctor | 4138512 | Referral by physiotherapist | SNOMED |
| Specialist in Oral Surgery | 4247380 | Referral to oral surgeon | SNOMED |
| Speech Pathology and Audiology | 4086281 | Referral to audiology clinic | SNOMED |
| Speech Therapy | 4203269 | Referral to speech and language therapist | SNOMED |
| Sports Medicine | 46285215 | Referral to sport and exercise medicine service | SNOMED |
| Surgery | 4084690 | Referral to surgeon | SNOMED |
| Thoracic and Cardiovascular Surgery | 4084356 | Referral to cardiothoracic surgeon | SNOMED |
| Thoracic Surgery | 4142766 | Referral to thoracic surgeon | SNOMED |
| Thyroid gland Scintigraphy | 4081288 | Refer for imaging | SNOMED |
| Thyroid Specialist | 4140182 | Referral to endocrinologist | SNOMED |
| Transfusion Medicine | 4141573 | Referral to blood transfusion service | SNOMED |
| Trauma Surgery | 4141848 | Referral to trauma surgeon | SNOMED |
| Traumatology | 4141848 | Referral to trauma surgeon | SNOMED |
| Tropical Medicine and Virology | 44784416 | Referral to tropical medicine clinic | SNOMED |
| Urology | 4140192 | Referral to urologist | SNOMED |
| Vascular Surgery | 4146186 | Referral to vascular surgeon | SNOMED |
| Visceral Surgery | 4084690 | Referral to surgeon | SNOMED |

## 4.5 Device Mapping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **substance/source\_code/source\_code\_description** | **source\_vocabulary\_id** | **target\_concept\_id** | **concept\_name** | **target\_vocabulary\_id** |
| BANDAGES | GE\_DEVICE\_CODE | 4274503 | Bandage | SNOMED |
| CONTRACEPTIVE DEVICES | GE\_DEVICE\_CODE | 4225628 | Contraceptive device | SNOMED |
| DISPOSABLE BABY NAPKINS | GE\_DEVICE\_CODE | 45763249 | Infant nappy | SNOMED |
| DISPOSABLE MEDICAL DEVICES | GE\_DEVICE\_CODE | 4272314 | Biomedical device | SNOMED |
| DRESSING STRIPS | GE\_DEVICE\_CODE | 45763491 | Gauze strip | SNOMED |
| INHALER DEVICE | GE\_DEVICE\_CODE | 4222044 | Inhaler aid device | SNOMED |
| MEDICATED DRESSINGS | GE\_DEVICE\_CODE | 4233132 | Medicated dressing | SNOMED |
| NON-DISPOSABLE MEDICAL DEVICE | GE\_DEVICE\_CODE | 4272314 | Biomedical device | SNOMED |
| STERILE DRESSING | GE\_DEVICE\_CODE | 4222036 | Sterile dressing pack | SNOMED |