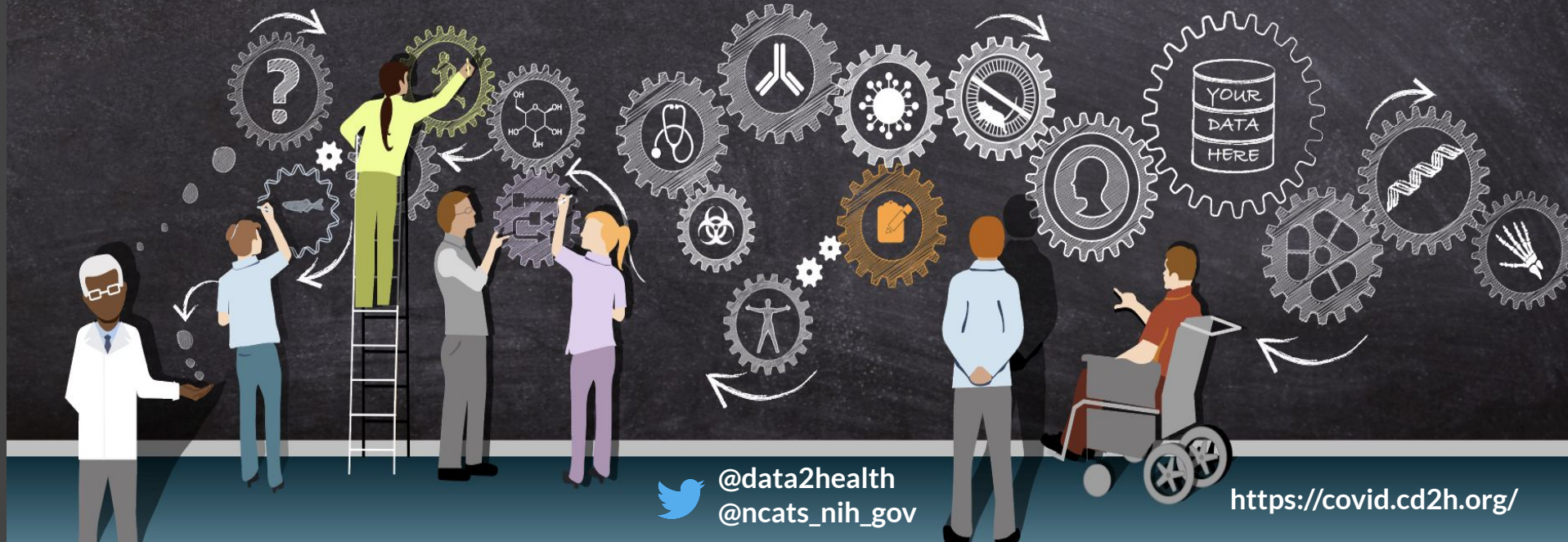
Concept Sets

Education and Training Domain Team Short Course, Spring 2024

Shawn O'Neil, CU Anschutz



@data2health
@ncats_nih_gov

https://covid.cd2h.org/

Example OMOP table: `condition_occurrence`

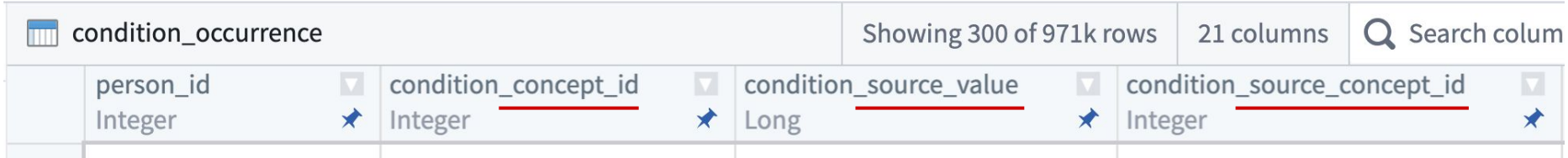
“Concept” columns encode the ‘what’...

condition_occurrence | Showing 300 of 971k rows | 21 columns | Search colum

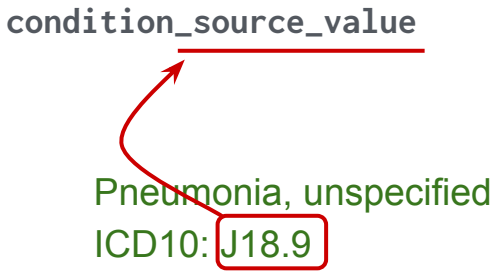
person_id Integer	condition_concept_id Integer	condition_source_value Long	condition_source_concept_id Integer

Example OMOP table: `condition_occurrence`

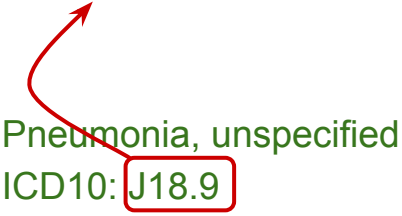
"Concept" columns encode the 'what'... *notice the naming convention!*



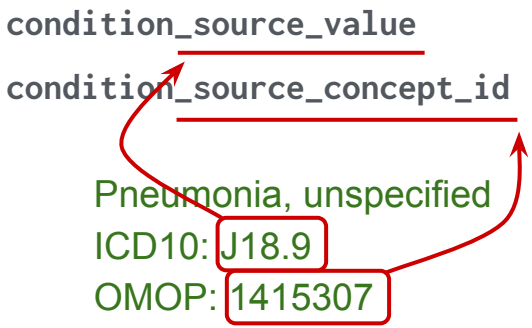
Pneumonia, unspecified
ICD10: J18.9


condition_source_value
Pneumonia, unspecified
ICD10: J18.9

`condition_source_value`



Pneumonia, unspecified
ICD10: J18.9
OMOP: 1415307


condition_source_value
condition_source_concept_id
Pneumonia, unspecified
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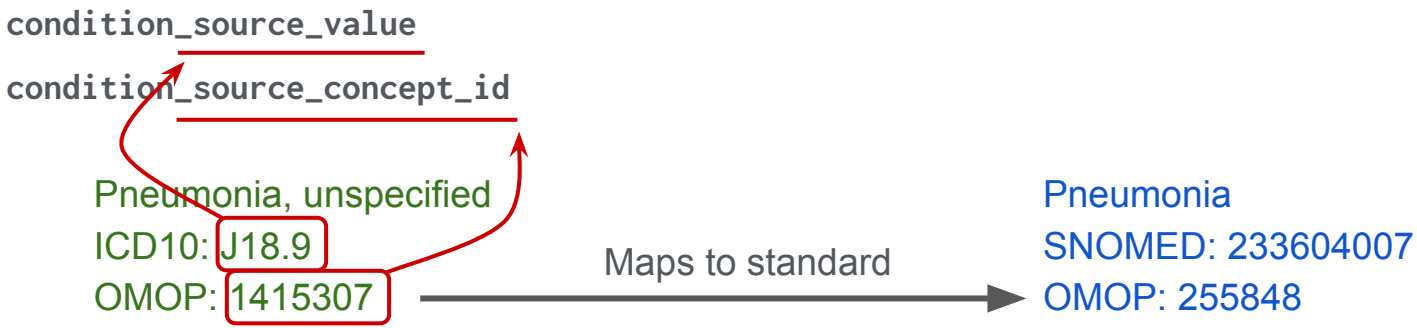
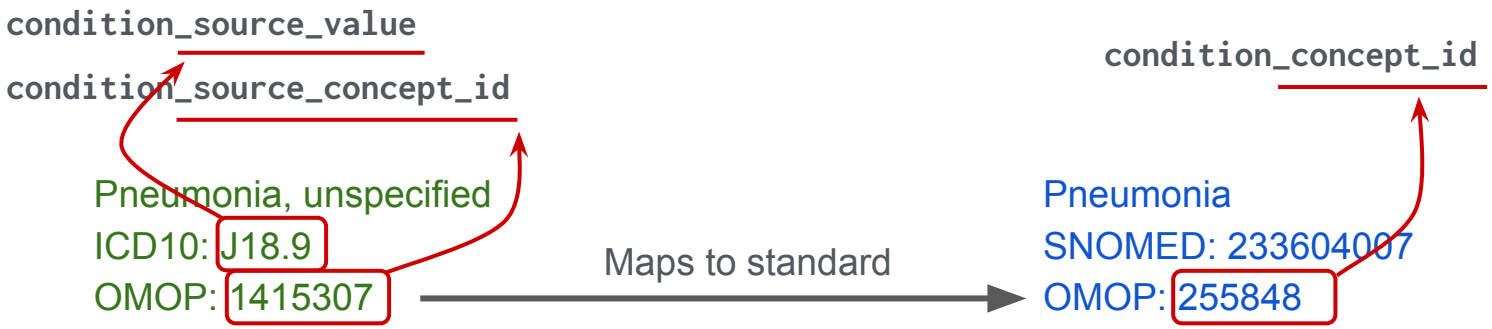
OMOP: 1415307


condition_source_value
condition_source_concept_id
Pneumonia, unspecified
ICD10: J18.9
OMOP: 1415307
Maps to standard
Pneumonia
SNOMED: 233604007
OMOP: 255848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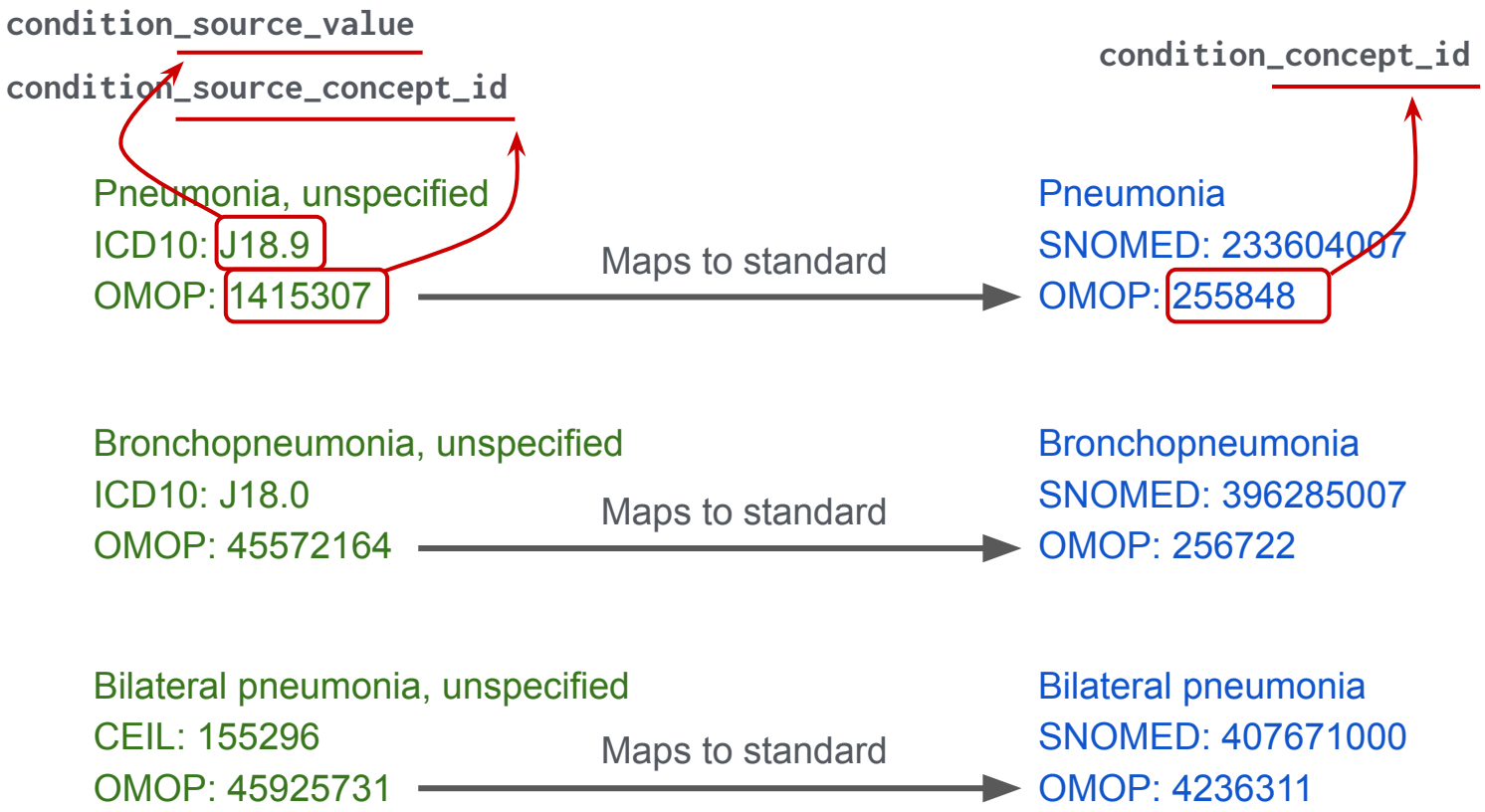
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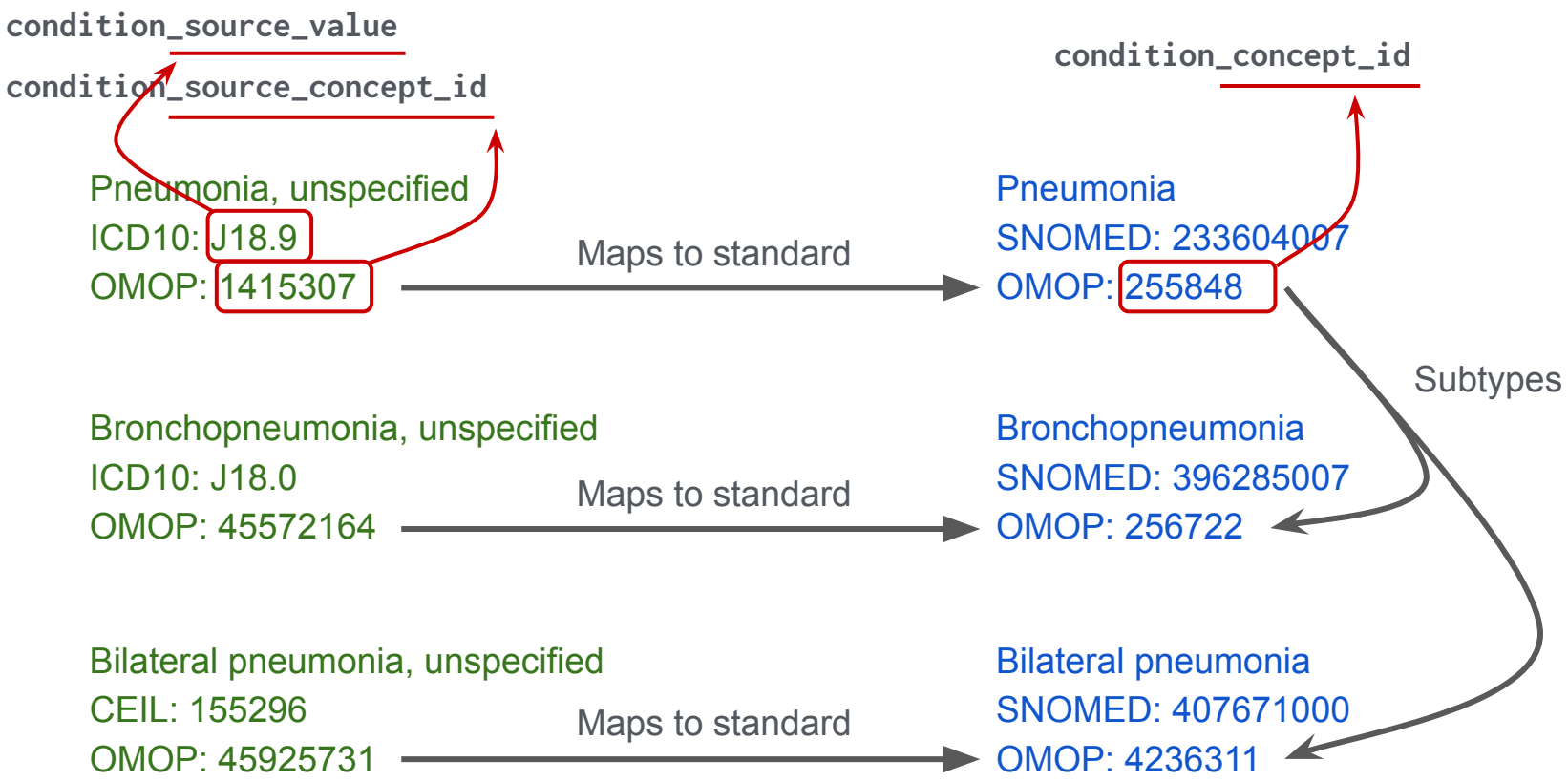
condition_source_concept_id
condition_concept_id
Pneumonia, unspecified
ICD10: J18.9
OMOP: 1415307
Maps to standard
Pneumonia
SNOMED: 233604007
OMOP: 255848
Bronchopneumonia, unspecified
ICD10: J18.0
OMOP: 45572164
Maps to standard
Bronchopneumonia
SNOMED: 396285007
OMOP: 256722
Bilateral pneumonia, unspecified
CEIL: 155296
OMOP: 45925731
Maps to standard
Bilateral pneumonia
SNOMED: 407671000
OMOP: 4236311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condition_source_concept_id
condition_concept_id
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OMOP: 1415307
Maps to standard
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SNOMED: 233604007
OMOP: 255848
Subtypes
Bronchopneumonia, unspecified
ICD10: J18.0
OMOP: 45572164
Maps to standard
Bronchopneumonia
SNOMED: 396285007
OMOP: 256722
Bilateral pneumonia, unspecified
CEIL: 155296
OMOP: 45925731
Maps to standard
Bilateral pneumonia
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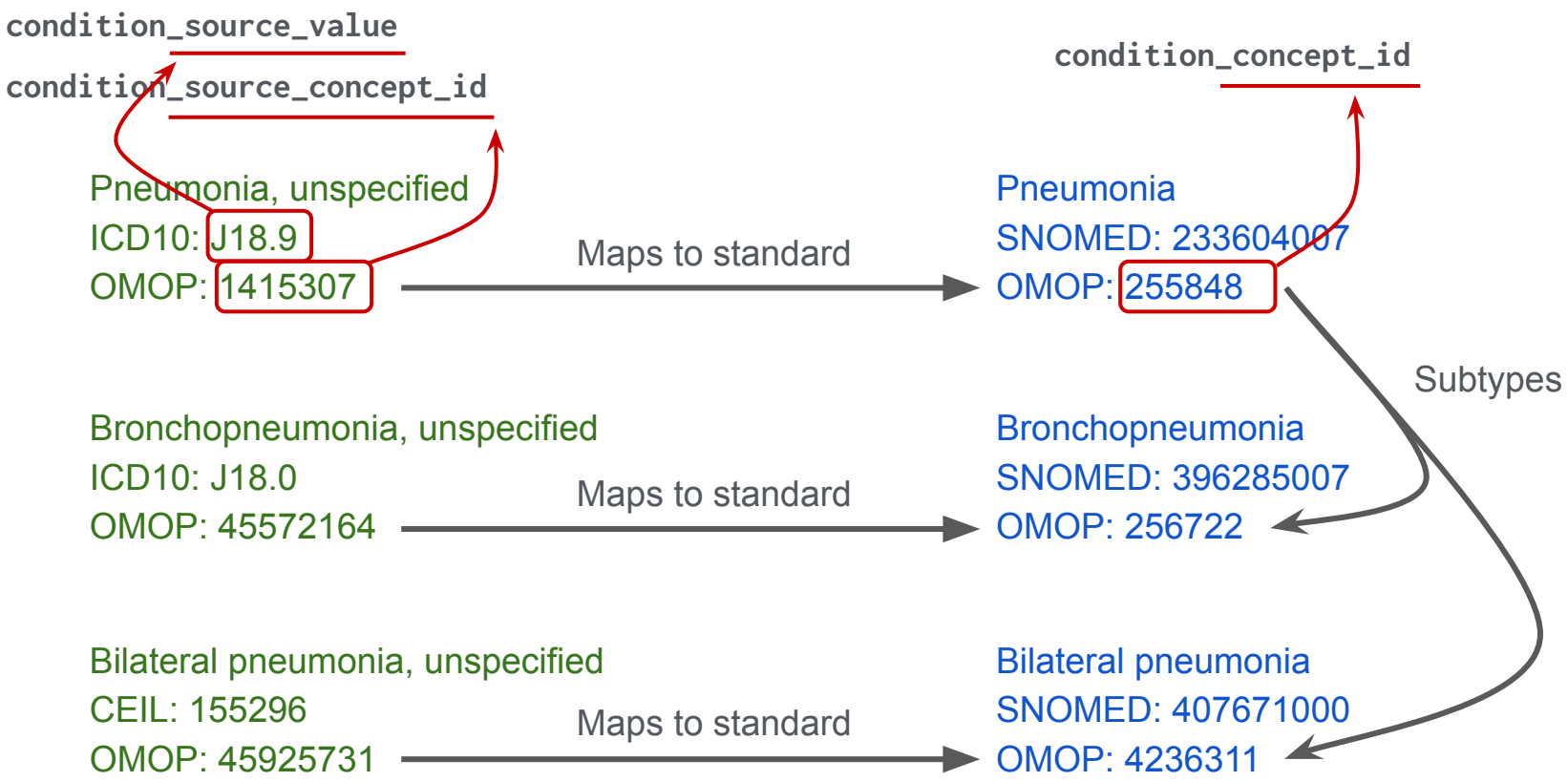
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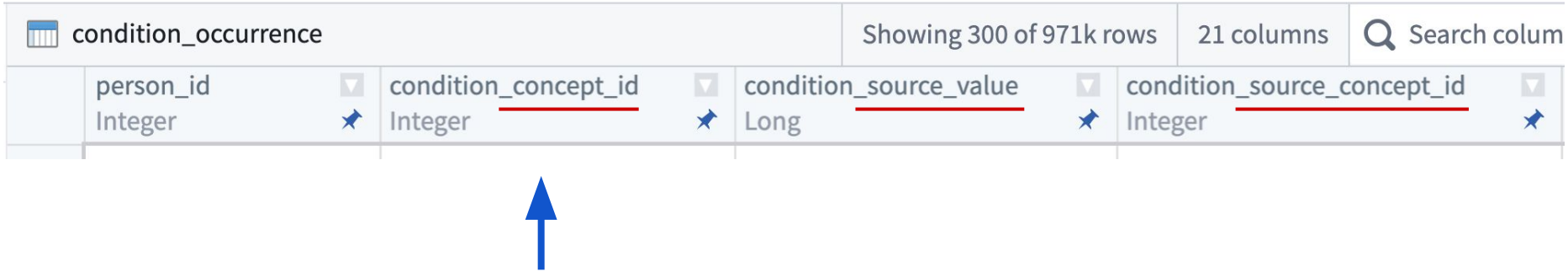
OMOP: 45925731
Maps to standard
Bilateral pneumonia
SNOMED: 407671000
OMOP: 4236311
Source info: original data, not organized
Standard concepts: mapped & organized

Example OMOP table: `condition_occurrence`



Common workflow:

1. Use the hierarchy to identify standard `concept_id` values of interest → a *concept set*

2. Extract matching rows in the `concept_id` column

OHDSI / N3C OMOP Tools

- ATHENA: https://athena.ohdsi.org
  - Search and browse concepts and the hierarchy (fast)
- ATLAS: https://atlas-demo.ohdsi.org
  - Search and browse concepts and the hierarchy (slower)
  - Build and export concept sets
- N3C Concept Set Browser

  - Browse community-created concept sets, create and import sets
- N3C `concept_set_members` table Data Catalog Clinical Data Model Resources
  - N3C concept sets are listed here for use with data