Transition Database for a harmonized mapping of German patient data to the OMOP CDM – The ‘German TDB’

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Background

- Initial situation:
  - Design and implementation of an reference ETL job within MIRACUM (Medical Informatics in Research and Care in University Medicine) [1] using Pentaho Data Integration [2]
  - Including static definition of mapping of German patient data, esp. of four basic modules of the Core Data Set of the Medical Informatics Initiative Germany (MI-I): Person, Visit, Diagnosis, Procedure [3]

- Problems of static definition of mapping:
  - Lack of transparency
  - Difficult to maintain
  - High level of manual effort
  - Lack of consistency

Methods

Semantic Mapping
- Semantic mapping of German patient data to OMOP Standard Concepts
- Consensus and documentation of individual mappings by an interdisciplinary team of medical doctors, IT specialists and data scientists

Design and implementation of the German TDB
- Creation of several tables within one database (PostgreSQL) for every kind of source information using the naming convention of OHDSI
- Fill database with SQL statements

Results

- Solution: Design and implementation of the Transition Database of German Vocabularies (German TDB) as an extension tool of the reference ETL job
- Advantages:
  - Increased transparency and interoperability
  - Nationwide consistency and comparability of mapping
  - Easy maintaining and versioning of mapping
  - Simple and fast installation without additional software

Figure 2: Example of static mapping ("reason of admission") within the reference ETL process

Figure 3: Example of mapping ("reason of admission") with the help of the German TDB

Conclusions

- Optimized utilization of the OMOP CDM in Germany by using the German TDB as an extension tool of the reference ETL job
- Already successful implementation and use in the data integration center of the University Hospital Carl Gustav Carus in Dresden
- Provision for further MIRACUM partner sites within another release of the reference ETL job
- Possible adoption of the approach regarding other national specifics or different terminologies (esp. Orpha Codes in the context of rare diseases [4] and LOINC) because of high flexibility and fast deployment
- Extension within the OHDSI Community with further locally specific mappings is conceivable

References: