Using OHDSI Data Network for Capturing Real-World Evidence: Our Experience with a Multi-Country Study on an Obese and Overweight Cohort

PRESENTER: Hamed Abedtash

INTRODUCTION:

Objectives: We aimed to assess the feasibility of conducting Network Research on OHDSI data network through a multi-country cohort characterization study on obese and overweight population using six distributed electronic health records or claims databases.

Methods: Adoption of OMOP CDM has enabled conducting “Network Research” by simultaneously executing the same analysis or protocol on a number of harmonized data sources independent of the source coding systems and database structure.

Cohort Definition:

• Age ≥ 18 years or older
• Either of 2 of the below events indicating obesity diagnosis 6 months apart during the study period. The first diagnosis date is the index date.
  - BMI ≥27 kg/m2
  - waist circumference ≥102 cm in men and ≥88 cm in women
• Systolic blood pressure ≥130 mmHg
• Diastolic blood pressure ≥80 mmHg
• History of medications
• Smoking status

Results:

We found the OHDSI Network Research a feasible and efficient approach to conduct multi-country observational studies. In particular, the level of transparency during the analysis process was encouraging.

LESSONS LEARNED:

Efficient method.
It was an exceedingly efficient method to analyze multi-database studies where the average time to analyze each data node was 2.6 weeks.

Transparent process.
Since the data was formatted in OMOP CDM, we could ask vendor further quality-check questions on existing data points, data coverage, and data transformation quality consistently across to ensure calculated measures are valid.

Ensure validity of concept mappings at the first place.
Unmapped source codes may pose selection and measurement biases; therefore, we asked the analyst to curate the list of source codes that were not mapped to OMOP standard concepts. To address this issue, we reviewed the list of concepts relevant to our study to ensure validity of mappings in each database.

Recommendations:

Validate the quality of data transformation.
Ensure relevant source codes are mapped to standard concepts in the OMOP repository to analyze calculations and selection bias. Although OMOP CDM enables quick analysis of multiple distributed RWD repositories, there is a potential risk that not all OMOP-transformed databases have the same data transformation quality due to the complexity of embedded semantic network and OMOP-specific conventions.

Validate code lists before starting data analysis.
In one instance, the data coverage of “fasting blood glucose” variable was reported very low (2%). Upon our review of the list of LOINC codes that TPO had used in the analysis, we noticed one important LOINC code (2345-7) was missing. The code was not included in the analysis because there was no mention of “fasting” in the code description, while the code is a legitimate laboratory test code for measuring fasting glucose level in blood because one of the requirements of the test is that “patients should fast for 12 hours”. Upon including this code into the analysis, the data coverage jumped to 47% from 2% for the US database, and similarly data coverage improved in other data sources.

Hamed Abedtash
Eli Lilly & Company, Indianapolis, IN