An R Package to implement Patient-level Drug Utilisation Studies using the OMOP common data model

Software demonstration: DrugUtilisation

Background: DARWIN-EU® aims to produce reliable, transparent, reproducible and fast evidence running studies across many databases in Europe. Patient-level drug utilisation studies can provide crucial information to enable rational drug usage. We built an R package that standardises the way Drug Utilisation Studies are conducted within DARWIN-EU®.

Methods

Development approach
- Employment of a test-driven development methodology
- Conduction of unit testing using simulated OMOP CDM data
- Design of user interface in collaboration with epidemiologists
- Multiple database management systems are supported using the DBI and CDMConnector environment.

Conclusions
- DrugUtilisation characterises utilisation of predefined drugs at the patient level across databases mapped to the OMOP common data model.
- This package comprises multiple functionalities, including identification of drug users, getting drug use information and characterization of individuals.
- These functionalities will have practical applications across various clinical settings.

Functionalities

Drug users' cohorts
1. Create prevalent and new user cohorts based on ingredients and/or concept sets to identify treatment episodes. Minimum days of prior observation, collapsing gap, prior use washout and/or dates range can be required

Drug use information
2. Compute the daily dose of prescription in drug exposure.
3. Calculate drug use (duration, initial dose, cumulative dose, number of prescriptions) for a treatment episode.

Characterisation
4. Flag if an indication is present within a certain window before drug initiation.
5. Summarise characteristics of people within a certain cohort: age, sex, number of visits, prior observation time and prespecified covariates.
6. Count concepts (or concept sets) recorded before and after index date within specified time windows.

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