The Observational Health Data Sciences and Informatics (or OHDSI, pronounced "Odyssey") program is a multi-stakeholder, interdisciplinary collaborative to bring out the value of health data through large-scale analytics. All our solutions are open-source.

OHDSI has established an international network of researchers and observational health databases with a central coordinating center housed at Columbia University.

The purpose of a study of Wang et al. was to develop and validate a model to predict a patient's risk of hemorrhagic transformation within 30 days of initial ischemic stroke.

They utilized a retrospective multicenter observational cohort study design to develop a Lasso Logistic Regression prediction model with a large, US Electronic Health Record dataset which structured to the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM). To examine clinical transportability, the model was externally validated across 10 additional realworld healthcare datasets include EHR records for patients from America, Europe and Asia.

In the database the model was developed, the target population cohort contained 621,178 patients with ischemic stroke, of which 5,624 patients had HT within 30 days following initial ischemic stroke. 612 risk predictors, including the distance a patient travels in an ambulance to get to care for a HT, were identified. An area under the receiver operating characteristic curve (AUC) of 0.75 was achieved in the internal validation of the risk model. External validation was performed across 10 databases totaling 5,515,508 patients with ischemic stroke, of which 86,401 patients had HT within 30 days following initial ischemic stroke. The mean external AUC was 0.71 and ranged between 0.60-0.78.

A HT prognostic predict model was developed with Lasso Logistic Regression based on routinely collected EMR data. This model can identify patients who have a higher risk of HT than the population average with an AUC of 0.78. It shows the OMOP CDM is an appropriate data standard for EMR secondary use in clinical multicenter research for prognostic prediction model development and validation. In the future, combining this model with clinical information systems will assist clinicians to make the right therapy decision for patients with acute ischemic stroke ¹⁾.

1)

Wang Q, Reps JM, Kostka KF, Ryan PB, Zou Y, Voss EA, Rijnbeek PR, Chen R, Rao GA, Morgan Stewart H, Williams AE, Williams RD, Van Zandt M, Falconer T, Fernandez-Chas M, Vashisht R, Pfohl SR, Shah NH, Kasthurirathne SN, You SC, Jiang Q, Reich C, Zhou Y. Development and validation of a prognostic model predicting symptomatic hemorrhagic transformation in acute ischemic stroke at scale in the OHDSI network. PLoS One. 2020 Jan 7;15(1):e0226718. doi: 10.1371/journal.pone.0226718. eCollection 2020. PubMed PMID: 31910437.

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