Name:	Rohit Vashisht
Affiliation:	Stanford School of Medicine Stanford University
Email:	rohitv@stanford.edu
Presentation type (s):	**Lightning Talk**

Learning Effective Clinical Treatment Pathways for Type-2 Diabetes from Observational Data

Rohit Vashisht, PhD[1], Ken Jung, PhD[1], Alejandro Schuler MS[1], Juan Banda, PhD[1] and Nigam H. Shah, MBBS, PhD[1]

[1]Center for Biomedical Informatics Research, Stanford University School of Medicine, Stanford, California, USA

Abstract

The treatment guidelines for Type-2 Diabetes (T2D) remain ambiguous for second line therapy. When the initial prescription of Metformin results in adverse effects or patient-level hemoglobin A1c goals are not met, there is little guidance on which second line drug to initiate. Considerable variation has been reported in the practice of managing T2D across healthcare systems globally. We developed an approach to learn effective clinical treatment pathways in T2D from observational clinical data. Data from over 101 million patients in seven healthcare systems across four countries was organized into the OMOP common data model. Treatment pathways, representing T2D medication trajectory of each patient, were built and compared across healthcare systems to understand variation in treatment response. The drug efficacy of second-line drugs among Sulfonylureas, DPP4-Inhibitors and Thiazolidinediones was assessed for reduction in HbA1c <= 7%, occurrence of myocardial infarction, as well as kidney and eye related disorders. The study was executed and assessed for reproducibility at each of the healthcare system individually. The results obtained from each healthcare system were combined via a meta-analysis. DPP4-Inhibitors were identified as best second-line drug after Metformin in reducing the HbA1c levels of patients with T2D. The second line drugs examined did not differ in their effect in preventing myocardial infarction, kidney or eye related disorders.