



Jinying Chen, PhD

Assistant Professor

Department of Medicine, Boston University Chobanian & Avedisian School of Medicine

“This award will provide me with training and experience validating information from free-text medication orders in a large real-world dataset that links EHR and Medicare data and expand my research in using natural language processing to enhance long-term care related studies.”

Dr. Chen is an assistant professor in the Section of Preventive Medicine and Epidemiology & Data Science Core, Department of Medicine at Boston University Chobanian & Avedisian School of Medicine. Dr. Chen’s research focuses on methodological innovations in data science to support public health, health services, and implementation research. Her methodological expertise includes natural language processing (NLP), machine learning/deep learning, biostatistics, and big data analytics. She collaborates with researchers from diverse backgrounds, and has led or contributed to several key research efforts including digital interventions for smoking cessation, monitoring for electronic health record (EHR)-based clinical decision support tools, transitional care in cardiovascular patients, automated extraction of information (e.g., COVID-19 and pain symptoms, hypoglycemia events, cognitive test results) from EHR free text, and using NLP and machine learning to support cohort creation, digital biomarker generation and risk prediction for Alzheimer’s Disease.

Validating Free-text Medication Orders by Leveraging Natural Language Processing

Integrating EHR data into Minimum Data Set (MDS) could generate a unique, high-quality information resource to support evidence-based health care for nursing home (NH) residents but this task is nontrivial. In particular, the free-text EHR fields, such as medication orders, require specialized analytics methods to process and analyze. This study aims to validate information from free-text medication orders in the LTC Data Cooperative EHR data by leveraging natural language processing (NLP) techniques. This Real World Data Scholar Award will provide Dr. Chen with the necessary training and experience using the LTC Data Cooperative EHR data to: 1) Assess the completeness of drug indication information in LTC EHR data, and 2) Validate and characterize NLP-extracted drug indication information from medication orders. This study will generate evidence to demonstrate the completeness and validity of drug indication information buried in the free text of EHR medication orders. These findings will provide insight into the extent to which free-text medication orders can be used to enhance health services research in NH residents. This work will lay the foundation for a future study to assess the relationships between symptoms, treatment, medication addiction, and cognitive impairment in the context of pain, and their combined effects on long-term health outcomes in the NH patients.