

Submission Id: 4955

Title

A Novel Method for Utilizing Electronic Health Record Data in Condition-specific Research

Priority 1 (Research Category)

Big Data

Presenters

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Abstract

Context: Large sets of Electronic Health Record (EHR) data are a practical tool to gain insights into cross sectional or longitudinal trends of conditions or diseases that affect millions of people. However, EHR data tends to be notoriously messy and unstandardized from one system to another, making it unpopular with many researchers. EHR repositories can standardize the data from multiple systems using models such as the Observational Medical Outcomes Partnership Common Data Model v6 (OMOP CDM v6). Utilizing one such repository, the study team defined questions and proxies related to Opioid Use Disorder (OUD) and implemented a way to organize packets of information into value sets.

Objective: Design a methodology to approach using EHR data to study a specific condition of interest to data-focused researchers.

Study Design and Analysis: Mixed methods study including literature reviews, analysis of EHR data, and value set creation.

Setting or Dataset: American Academy of Family Physicians (AAFP) National Research Network.

Population Studied: Secondary data analysis.

Instrument: The open-source application for data and analytics, ATLAS, was used to obtain codes of the conditions, measurements, observations, medications, or procedures related to the topic being researched.

Outcome Measures: A novel mixed methods approach to effectively conduct analyses on a condition or disease utilizing EHR repository data.

Results: The study team applied the mixed methodology to conduct analyses of diagnosis and treatments for OUD in a dataset of four million patient records from 2010 to 2020. The first step was to conduct a literature search on best practices for diagnosing and treating OUD, common comorbidities,

and the medications and/or behavioral therapy associated with treatment, along with other necessary proxies. The next search was for interactions between opioids and other drugs or diseases, and potential contraindications. Lastly, value sets were created to contain ICD9, ICD10, SNOMED, LOINC, HCPCS, CPT, and RxNorm codes, and these were used to identify patients diagnosed with OUD and describe the accompanying follow-up care.

Conclusions: The study team developed the mixed methodology to efficiently analyze longitudinal patterns of care in patients with OUD. Because EHR data includes demographic information, further analysis can be done to distinguish differences in personal characteristics, such as gender, race, age, and geographic region.