Department of Veteran's Affairs and pScanner

Transforming the National Department of Veterans Affairs Data Warehouse to the OMOP Common Data Model

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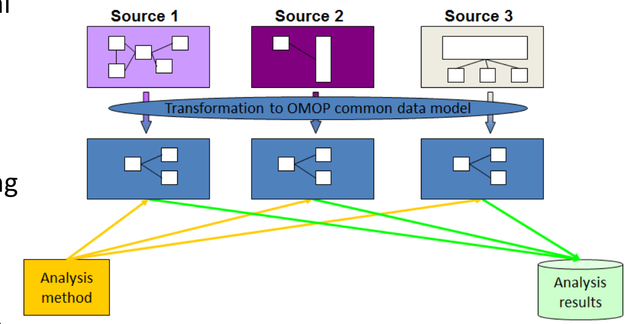
This poster describes the conversion of the national Department of Veterans Affairs (VA) healthcare network's corporate data warehouse to a common data model (CDM) suitable for distributed observational research: the Observational Medical Outcomes Partnership (OMOP) CDM. The CDM allows shared data analysis to have syntactic and semantic interoperability through standardized terminologies such as ICD, RxNorm, SNOMED, CPT, HCPSC, and LOINC. Observational outcomes from electronic medical record systems are becoming more important in comparative effectiveness research, particularly as post marketing surveillance research.[1] Although randomized clinical trials (RCTs) are the most prominent and strongest research strategy for determining safety and efficacy of new treatments or products, RCTs are expensive, slow, and often do not represent the real world conditions in which the product will be used.[2] In addition, RCTs may not represent the real world population that will use the treatment or last long enough to identify all the adverse events associated with the treatments.[2]



The VA has the largest integrated healthcare system in the US with electronic health record coverage from the late 1990s. It is one of the few healthcare systems with extended longitudinal records of covered Veterans and has continuity in patient coverage because eligibility is not related to the changes in health insurance seen in other health systems. The VA corporate data warehouse has undergone an initial transformation into OMOP CDM with large-scale data population beginning in 1999 (1998 for drugs). There are approximately 16,927 thousand unique patients in the dataset (see Table 1), with 11,368 thousand of those having at least one encounter (5,559 thousand patients enrolled with no encounters). Drug cost and procedure cost are pending load. As part of a cooperative effort with the patient-centered Scalable National Network for Effectiveness Research (pSCANNER), we are also transforming the OMOP CDM to the PCORnet data model. VA's OMOP data will be available for initiatives of VA researcher groups and research initiatives of PCORnet. The Observational Health Data Sciences and Informatics (ODHSI) community is developing a suite of data characterization, data quality, cohort generation, comparative effectiveness analysis, and surveillance tools (www.ohdsi.org), and VINCI plans on participating in tool development and supporting use of these tools within the computing infrastructure to support observational cohort analytics. For example, an ODHSI shared quality tool indicates 255,552 records of Sodium Chloride 9mg/ml irrigation solution had a quantity of 1000, e.g. source data used ml vs. bag to record quantity. Strategies to address these types of variations are a future challenge.

Table 1: VA Domains and Record Count

Domains	Records
Persons	16,927,000
Deaths	5,173,000
Organizations	3,000
Locations	20,539,000
Care Site	861,000
Provider	973,000
Visits	2,002,743,000
Procedures	2,817,943,000
Drug exposures	4,068,709,000
Drug Era	661,069,000
Observations	9,507,140,000
Observation Period	25,587,000
Conditions	2,470,374,000
Condition Era	1,038,159,000

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2. Fleurence RL, Naci H, Jansen JP. The critical role of observational evidence in comparative effectiveness research. Health Affairs. 2010;29(10):1826-1833.

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