

# Scaling the OHDSI Common Data Model into Large Enterprises: Insights from the DoD Military Health System

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**Background:** The Observational Health Data Sciences and Informatics (OHDSI) common data model (CDM) has successfully demonstrated its ability to enable large-scale observational research by standardizing data across various organizations. Despite this, deploying and adopting a CDM across large enterprise healthcare networks, such as the Department of Defense (DoD) Military Health System (MHS), presents unique challenges and opportunities. This study explores the feasibility and strategies for adopting a CDM within such a complex and large-scale healthcare system.

**Methods:** The DoD MHS, a global healthcare network encompassing of 51 medical centers, over 480 clinics, hospital ships, and serving over 9.6 million beneficiaries, provides a comprehensive case study for understanding how OHDSI can scale. The MHS has a workforce of over 130,000 professionals in addition of providing care through a network of private sector healthcare providers, who submit claims to the DoD. Given this distributed ecosystem, effective data integration, standardization, and analysis is critical.

For this project, the OHDSI CDM was implemented. To accomplish that, an enterprise framework was developed to ensure consistent data mapping, enable adoption, and address the unique needs of the DoD such as operational medicine and medical readiness.

**Findings:** Two key areas emerged as crucial to successfully scale and adopt the OHDSI CDM within the MHS: *governance* and *IT infrastructure*.

The first area of consideration was governance. Dedicated data stewards for most domain within the CDM was vital in our project. These stewards worked as champions, spearheading the approval, validation, and implementation processes across their respective domains.

In addition, designated use case owners were critical in validating the usability of the CDM and establishing priorities. The partnership between use case owners, functional champions, and data steward helped establish policies and the creation of a transition plan to move from existing data metrics to those leveraging a CDM.

The second area of consideration was a scalable technical implementation. The adoption of secure cloud-based solutions enabled scalable and flexible CDM deployment. Distributing the ETL jobs across different servers, utilizing staging tables (instead of raw source tables), employing object storage to decrease costs, and supporting multiple CDMs proved to be critical for the implementation. Providing regular training sessions for analysts to support with the adoption of the CDM proved critical for the transition to a CDM.

Finally, ongoing work focuses on securing, adding authentication services, and stress-testing some of the OHDSI tools to scale across thousands of users.

**Results:** The implementation across DoD health demonstrated that the OHDSI CDM could be effectively scaled within large, complex enterprise systems like the MHS. The structured governance and scalable IT infrastructure proved to be the two most critical areas to consider, plan, and pre-plan for a successful implementation of a CDM across large enterprises

**Conclusion:** This study confirms that the OHDSI CDM is not only scalable for research projects, but also adaptable to the unique challenges and needs of large healthcare networks.