Australian Health Data Evidence Network (AHDEN): Building a National Data Infrastructure for Standardised, Federated Health Data Research

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Background

Australia's healthcare system generates a vast amount of data, however, data systems are highly fragmented, with information captured across diverse and often incompatible systems. This lack of interoperability creates major barriers to the integration and analysis of health data at scale, limiting the nation's ability to conduct efficient, multi-centre research and generate timely, actionable evidence for health policy and clinical care. Internationally, federated data networks such as the European Health Data and Evidence Network (EHDEN) and the Observational Health Data Sciences and Informatics (OHDSI) community have demonstrated the value of a harmonised infrastructure using the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM). These models promote standardisation, preserve privacy, and enable research that is scalable, reproducible, and globally collaborative.

Methods

To address this critical need in the Australian context, The University of South Australia (UniSA), with co-investment from the Australian Research Data Commons (ARDC), has established the Australian Health Data Evidence Network (AHDEN). AHDEN is working with State and Territory Departments of Health in Australia to build a nationally coordinated infrastructure that supports the transformation of hospital-based Electronic Medical Record (EMR) data into the OMOP CDM format and will enable researchers to generate insights more efficiently, enhancing reproducibility without compromising data security or privacy. Ultimately, AHDEN will strengthen national research capacity to unlock the full potential of real-world data for improving population health.

Results

The AHDEN initiative is leveraging the power of the OMOP CDM to enable a scalable, federated infrastructure for health data research in Australia. To achieve this vision AHDEN will:

1. Support the **implementation of the OMOP Common Data Model (CDM)** across five jurisdictional nodes in Australia (South Australia, Queensland, Victoria, NSW and ACT).

2. Enable enhanced **collaboration** across jurisdictions to facilitate a coordinated approach to research that delivers high priority and high-quality insights from existing EMR data.
3. **Build capacity** across Australia in the harmonisation, management and use of healthcare data to accelerate innovation and boost data science skills.
4. **Facilitate the creation of shared workflows and tools** for data harmonisation and open-source analytics to create efficiency's for leveraging health data.
5. Build a community of practice to **advocate for consistency of approach in data harmonisation and data governance strategy** across all levels of health care and government