Contribution ID: **207** Type: **Session**

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

Monday 13 October 2025 14:30 (1h 30m)

Significance of the Issues
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.

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's mission is to build a nationally coordinated infrastructure that supports the transformation of hospital-based Electronic Medical Record (EMR) data into the OMOP CDM format across Australia. The OMOP CDM is and open-source, internationally recognised data standard that enables consistent structuring of observational health data across multiple different sources such as hospitals, primary care systems, and disease registries. By transforming diverse local healthcare data into the OMOP CDM format, AHDEN will enable researchers to apply a common suite of analytic tools and methods to gain insights more efficiently, enhancing reproducibility and supporting collaborative research without compromising data security or privacy. Ultimately, AHDEN will strengthen national research capacity, foster data-driven health policy, and unlock the full potential of real-world data for improving population health.

Approach, Structure, and Format
This Session will showcase the AHDEN initiative and the power of the OMOP CDM to enable a scalable, federated infrastructure for health data research. Presentations will demonstrate the technical foundations of the OMOP CDM format, including syntactic and semantic harmonisation, as well as approaches to governance, security, and distributed analytics. The session will highlight the strengths of the OMOP CDM in enabling privacy-preserving data analytics at local, national, and international scales. Participants will gain practical insights into the challenges and successes of mapping Australian EMR data to the OMOP CDM and see how this infrastructure supports the generation of evidence for regulatory, clinical, and policy applications.

Proposed Speakers and Topics
1) Professor Nicole Pratt, AHDEN Project Lead, University of South Australia. (10 minutes)
Professor Pratt will introduce the vision and mission of AHDEN and outline the national and international significance of building a federated health data infrastructure.
2) Associate Professor Graeme Hart, University of Melbourne (15 minutes)
Associate Professor Hart will describe the technical processes involved in syntactic and semantic harmonisation of health data using the OMOP CDM, highlighting the challenges and solutions in applying this model to Australian EMR systems
3) Roger Ward, Solutions Architect, Australian Research Data Commons (15 minutes)
Mr Ward will focus on the data governance and privacy-preserving infrastructure that underpins AHDEN. He will explain how the federated model ensures compliance with privacy regulations while enabling scalable research.
4) Professor Clair Sullivan, University of Queensland (15 minutes)

Professor Sullivan will present progress on mapping Queensland's statewide EMR observation data to the OMOP CDM. She will highlight the clinical and operational benefits of standardisation at a jurisdictional level.
5) Professor Nicole Pratt, AHDEN Project Lead, University of South Australia) (15 minutes) Professor Pratt will present a series of impactful clinical applications that have been enabled through the use of the OMOP CDM, including evidence generation of the safety and effectiveness of all second-line diabetes medications, real-time response to emerging health threats during the COVID-19 pandemic, and investigation of rare adverse events supporting global pharmacovigilance efforts for medicine regulators.
6) Panel discussion (20 minutes)
The session will conclude with a 20-minute panel discussion where all speakers will respond to audience questions and reflect on the future of federated research in Australia

This session directly addresses the growing demand for national-scale health data infrastructure that is privacy-preserving, methodologically rigorous, and interoperable. By showcasing AHDEN's approach to standardising EMR data through the OMOP CDM, the session will demonstrate the feasibility and value of federated health data research in Australia. Attendees will leave with a clear understanding of how this infrastructure supports timely, high-quality evidence generation that can inform clinical practice, regulatory decision-making, and health policy both nationally and globally.

Contribution Type: Session

Primary author: PRATT, Nicole (University of South Australia)

Co-authors: Prof. SULLIVAN, Clair (Queensland Health); Prof. HART, Graeme (University of Melbourne); Mr WARD, Roger (ARDC)

Presenters: Prof. SULLIVAN, Clair (Queensland Health); Prof. HART, Graeme (University of Melbourne); PRATT, Nicole (University of South Australia); Mr WARD, Roger (ARDC)

Track Classification: SciDataCon2025 Specific Themes: Infrastructures to Support Data-Intensive Research - Local to Global