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Hospital Electronic Health Records as a research resource: data linkage, national scale-up, and five-year Impact of the National Centre for Healthy Ageing Data Platform

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Background

Established in 2020, the National Centre for Healthy Ageing (NCHA) Data Platform is Australia's first linked hospital-based electronic health record (EHR) research database covering all residents within a geographic region. Recent activities have expanded its scope, reach, and innovation.

Approach

The platform houses internally linked data for >1 million people, 4 million clinical encounters (2015 onwards) from two acute hospitals, two sub-acute hospitals, and >10 community health services serving 300,000 residents. Automated weekly updates and data improvement processes enhance reliability. Semi-automated extraction and streamlined ethics/governance enable rapid data access within a Trusted Research Environment. Expansion efforts include an AI pipeline to extract concepts from clinical notes and linkage to local, state, and national datasets (e.g., primary care, medication, aged care, Medicare, cohort studies). National collaborations are exploring expansion to other Australian regions.

Results

The platform has overcome barriers to optimising EHR data for research, providing a test-bed for national and international priorities. Researchers have leveraged the platform for >60 projects, securing >\$20M in grants on topics including dementia, aged care, medication use, homelessness, environmental health, and healthcare redesign. NLP models have been trained to detect dementia and opioid harms. Linked state and commonwealth data for 179,089 residents aged over 60 years (2010–2021) achieved 98.4% accuracy. Expansion feasibility is being explored through a national working group, and future inclusion in the National Person Level Integrated Data Asset.

Conclusion

The NCHA Data Platform exemplifies how linked EHR data can advance population health research and underpin data-driven innovation across domains.

