AuSCR Data Access approved projects

Title	Australian Stroke Alliance Evaluation and Optimisation modelling
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AuSCR role	Data provision
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Status	In progress
Summary	The Australian Stroke Alliance's comprehensive program covers a wide range of initiatives to improve urgent stroke care in rural and remote areas of Australia, including innovative brain scanners and Australia's first digital telestroke platform implemented in new air and road ambulances. Aims: To estimate the health and economic benefits of new imaging technologies and pre-hospital models of stroke care implemented as part of the Australian Stroke Alliance (ASA) Program. Proposed methodology: A decision analytic model will be designed to estimate costs and health burden associated with stroke in Australia over a lifetime. The methods used will be aligned to modelling conducted for the Economic Impact of Stroke 2024 Report (published by the Stroke Foundation), in which model inputs from Australian government resources and population statistics combined with best available data on stroke incidence, risk factors, treatment, costs and burden of stroke. Data in the AuSCR will be used to quantify the proportions of patients accessing ambulance services, acute treatments in hospital, and health services accessed after discharge from hospital. Data collected in the AuSCR on outcomes after stroke will be used in Markov models with functional dependence (measured by the modified Rankin Scale and death) used as the health states. Costs according to functional dependence will be applied in each cycle of the model to estimate costs over a lifetime. Disability weights will be applied according to functional dependence to estimate the disability adjusted life years (DALYs) associated with stroke over a lifetime. The modelled trajectories of costs and health burden per person will be used as a foundation for estimating the impact of each component of the ASA Program. Per person costs and DALYs produced from the economic modelling will also be used in a multi-method visualisation-simulation model for the purposes of investigating the costs and benefits of various scenarios of operating and resourcing health services to diagnose, treat and transfer patients with stroke from rural and remote areas to stroke capable services. The multi-method model architecture incorporates both discrete-event and agent-based simulation methodologies. We have built this model by utilising the specialised multi-method simulation modelling software AnyLogic. AnyLogic facilitates both visual on-screen dynamic simulation with an interactive visual interface and formal comparison via in-silico factorial experiments.