Economic impact of sudden cardiac arrest

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Background: Each year, there are approximately 5,000 out-of-hospital cardiac arrests (OHCAs) in the state of Victoria, Australia (population 6.4 million, state healthcare budget AUD$2.9 billion / €1.8 billion). Mortality from OHCA approaches ninety percent. High mortality rates and survivors not returning to work is likely to have an adverse effect on the Victorian economy but this has not been previously investigated.

Purpose: To model the economic impact of OHCA mortality and survivors not returning to work.

Methods: Data on all OHCAs transported by Ambulance Victoria from July 2017 - June 2018 in Victoria, Australia was collected, including age, gender, survival to hospital, survival to discharge, and survival to 12 months. Cases were excluded if arrest was precipitated by trauma, exsanguination, overdose, terminal illness, hanging, SIDS, electrocution, sepsis, respiratory causes, drowning, or neurological causes. Pre-arrest employment status of patients was modelled using the Australian Bureau of Statistics Economic Security dataset, which provides contemporary employment rates for gender-matched five-year cohorts for Australians aged 15-79 years. For survivors to 12 months, pre-arrest and post-arrest work status were confirmed. Economic impact was then calculated to a five year horizon utilizing a Markov model with probabilistic sensitivity analysis.

Results: 4,934 arrests meeting the inclusion criteria were transported by Ambulance Victoria in twelve months, of whom 4,639 were determined to be cardiac arrests without any exclusion criteria as a precipitant. 695 patients survived to hospital (15.0%), and 325 to discharge (7.0%). At 12 months, 303 patients were alive (6.5% of overall cases, 93.2% of those discharged from hospital). Economic modelling of age and gender-matched data indicated that 1516 patients (35%) would have been employed pre-cardiac arrest, but only 216 survivors (4.7%) would be employed at five years post-arrest. Using Markov modelling incorporating estimated earnings and the pre-determined value of a statistical life, the annual economic burden of cardiac arrest approximated AUD$4 billion (€2.5 billion) at a five-year horizon.

Conclusion: The annual economic impact of cardiac arrest in Victoria, Australia is approximately AUD$4 billion (€2.5 billion) in a five-year horizon. As the annual Victorian state budget for all healthcare is AUD$2.93 billion (€1.8 billion), our data suggests that the economic impact of cardiac arrest is under-appreciated. Therefore, research in this area and providing state-of-the-art care for all cardiac arrest patients should be a healthcare priority.