

Cardiac Rehabilitation and Secondary Prevention Roundtable: Australian Implementation and Research Priorities



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Keywords

Cardiovascular Disease • Cardiac Rehabilitation • Secondary Prevention • Heart Disease
• Prevention • Health Services

Cardiovascular disease (CVD), including coronary heart disease (CHD) and stroke, is the leading cause of death and disease burden globally [1]. CVD resulted in >1.1 million hospitalisations in 2015-16, and incurs the highest level of health care sector expenditure in Australia (11-12% of total health expenditure) [2]. CHD accounts for the greatest single disease morbidity (>500,000 bed-days annually) and nearly one fifth of all deaths with a total cost of \$1.14 billion annually [2]. Over 65,000 Australians experience an acute coronary event (heart attack or unstable angina) each year [3], and, importantly, around a third of these occur in people who have prior CHD and are therefore largely preventable [4,5]. However, Australian data from SNAPSHOT ACS demonstrates that *only* one-quarter of patients with acute coronary syndrome (ACS) receive optimal care (medicines, referral to cardiac rehabilitation and lifestyle advice) at hospital discharge [6]. Follow-up data of the same cohort has shown that almost 20% of patients admitted to hospital with ACS die

within 3 years of discharge, and 40% experience another CVD hospitalisation [7]. With an ageing population, more people surviving initial ACS events, and burgeoning lifestyle-related health problems, the health burden of CVD is escalating globally [8]. Thus, improving post-discharge care through secondary prevention strategies (healthy living, adherence to medicines) is a current national and international priority [9,10].

There is extensive evidence that participation in cardiac rehabilitation improves outcomes *but* referral, access, adherence, and sustainability remain suboptimal [6,11,12]. Reasons are well documented and include lack of transport, work/social commitments and lack of perceived need [13,14]. From a systems perspective, the practicalities and costs of providing traditional cardiac rehabilitation programs to all who are eligible (>70,000 patients/year) across wide geographical areas with cultural and linguistic diversity is a major barrier. Furthermore, the benefits of cardiac rehabilitation may not be

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sustained because the majority of programs follow a model that is over 30 years old [15], and, are not responding to major advancements in medical care, surgery and changes in society on terms of diversity and technology. Taken together, three-quarters of Australian cardiac rehabilitation programs continue to follow the traditional model [16]. Therefore, the time is ripe for reform and research in secondary prevention and cardiac rehabilitation to reduce the burden of CVD, improve equity of care and maximise outcomes for Australians.

Opportunities for a United Approach

Calls for reform, recommendations and policy statements highlighting the evidence-practice gaps have consistently and repeatedly come from peak bodies across Australia including the Australian Cardiovascular Health & Rehabilitation Association (ACRA) [15,17], the National Heart Foundation of Australia (NHFA) [18], the Australian Cardiovascular Alliance (ACvA) [19], the National Secondary Prevention Alliance (SPA) [8], and the Australian Commission on Quality & Safety in Healthcare (ACQSHC) who developed Clinical Care Standard for ACS including Standard #6 which recommends service accreditation and post-discharge care [20]. These calls have been echoed by the World Heart Federation (WHF), which released a “Roadmap for Secondary Prevention” [10]. Australia is therefore in a strong position to achieve step-change improvements in secondary prevention and cardiac rehabilitation. Furthermore, Federal and State Health Ministers and their offices have recognised the urgent need for both investment in research as well as nation-wide changes in the implementation of research that benefit the entire Australian community. More recently under the stewardship of the ACvA, the cardiovascular clinical and research community have aimed to increase the visibility of cardiovascular research as a National Health Priority Area [19]. This has seen the successful unification of researchers from across the nation and the translational pipeline to advocate for the \$220 million Medical Research Future Fund (MRFF) funded ‘Mission for Cardiovascular Health. ACvA continues to focus on innovative strategies to drive improved collaboration, translation and ultimately health outcomes and to impact Australian cardiovascular health via six flagships – Drug Discovery, Precision Medicine, Bioengineering, Big Data, Clinical Trials, and Implementation Policy to facilitate strategic collaboration [19]. Overall, reform is long overdue and the time is ripe for transforming care and research of cardiac rehabilitation and secondary prevention in Australia.

Preliminary Consultation

In September and October 2019, widespread consultation was sought via an online survey. The online survey was

circulated electronically by stakeholder organisations such as ACRA, ACvA and the Cardiac Society of Australian and New Zealand (CSANZ). Feedback and input were sought on research and implementation priorities for secondary prevention and cardiac rehabilitation. Respondents were asked to consider their priorities within the context of the six ACvA flagships.

A total of 164 people responded to the survey and they represented a variety of multidisciplinary backgrounds (34% nursing, 17% cardiology, 14% allied health). Respondents represented all states and territories and one-quarter were based in regional/remote areas of Australia. Implementation priorities identified from the survey included the need to increase referral, uptake and access to cardiac rehabilitation; governance and processes to enable national real-time data collection; and, to provide multiple/flexible modes of delivery. Research priorities identified from the survey included ‘big data’ collection and analysis to improve care and service delivery, evaluation of new flexible models of delivery, and clinical trials to improve equity and a need to define optimal interventions. Responses were collated, presented and considered prior to and during the Roundtable discussion.

Why a Roundtable?

In response to a request from the Australian Federal Minister for Health seeking advice on priorities to address cardiac rehabilitation and secondary prevention of heart disease, a Strategy Roundtable was held on 16 October 2019 at Canberra’s Shine Dome in the Australian Capital Territory (ACT). The overarching purpose was to convene and document a whole-of-nation discussion amongst consumers, policy-makers and multidisciplinary experts to identify actionable research and implementation priorities addressing gaps in secondary prevention and cardiac rehabilitation across Australia that align with the six ACvA flagships.

The 40 Roundtable attendees represented national clinical societies, universities, research institutes, hospitals, state-based clinical networks, peak bodies, not-for-profits (e.g., NHFA), consumer organisations (e.g., Heart Support Australia, Cardiomyopathy Association of Australia) and Advanced Health and Translation Research Centres (AHRTCs) together with state, territory and federal health departments. Attendees were multidisciplinary and represented consumers, clinical expertise (cardiology, nursing, allied health, primary care), and government, policy, health services, epidemiology and economics professionals. At the Roundtable, a series of presentations were given, and ideas were shared via formal and informal presentations. There were also three periods of small and large group discussion where attendees were asked to consider implementation and research priorities. Discussions were documented by an allocated scribe and transcribed for later collation and synthesis.

Implementation Priorities Identified

There was extensive discussion about priorities for implementation in the area of secondary prevention and cardiac rehabilitation. Much discussion focussed on data, equity and access. The importance of governance and improving systems was also considered vital. Specific discussions are summarised below.

1. *Data*: Collection of consistent national cardiac rehabilitation and secondary prevention data with appropriate governance and processes established. This would enable use of performance metrics for benchmarking and to measure quality improvement but would require consideration of incentives to optimise data collection and establishment of a national coordinating body with capacity to influence health systems. In the longer-term these data would need to link with electronic medical records and the National Cardiac Registry.

2. *Availability of flexible models*: These should be personalised and tailored according to need, patient preference and level of risk (to ensure treatment optimisation) and could be delivered using digital health technology.

3. *Utilisation of existing resources*: Primary care and hospital-based health care professionals ought to be provided with a 'menu' of programs and resources available for secondary prevention and management on discharge – these would include availability of patient resources, cardiac rehabilitation programs (via NHFA online Cardiac Services Directory - <https://www.heartfoundation.org.au/cardiac-services-directory>) along with Chronic Disease Management and Team Care Arrangements already available via Medicare and existing telehealth and digital interventions.

4. *Better decision-making*: Development and implementation of algorithms that support providers in decision-making or identify patients at varying levels of risk. This will enable triage of patients to the most appropriate treatment options and allow more personalised care while minimising costs and maximising benefits (reduction in new events and hospitalisations) in those at greatest need.

5. *Importance of system levers*: Nation-wide collection of standardised Patient Reported Outcome Measures and Patient Reported Experience Measures to elucidate what patients want and guide improvements. Other levers could include incentive payments and national benchmarking.

Research Priorities Identified

Data collection and assessment of quality with an overarching need to improve access and equity were identified as priorities. Discussion about priorities for research in the area of secondary prevention and cardiac rehabilitation highlighted the need for 'implementation research' that is multidisciplinary, collaborative and is based on implementation science frameworks. Specific research discussions aligned with ACvA flagships are summarised below.

1. *Big data*: Collection and analysis of large datasets to identify inequities in access and outcomes that also enable research to improve care and service delivery in an efficient way. Such data are not currently collected nationally for cardiac rehabilitation but could enable detailed analysis and interpretation of current practices and evidence-practice gaps.

2. *Clinical trials*: Clinical trials to evaluate flexible and more personalised models of care that are synergistic and integrated across Area Health Services and Primary Care. These should be robust and ensure appropriate representation of disadvantaged groups such as women, people experiencing socioeconomic disadvantage, Indigenous populations and those living in rural and remote areas.

3. *Medication optimisation and adherence*: Research studies are needed to explore new ways of improving medication adherence that also optimise regimens for individuals and vulnerable groups. Research that finds new ways people can take evidence-based medicines and enables more personalised combinations could enhance both adherence and effectiveness. For example, could agents be delivered by skin patch or an annual 'heart disease vaccination.'

4. *Implementation and health services research*: Given the extent of existing evidence, research is needed to identify more efficient ways to deliver real world interventions at scale and reform health services. For example, research that expands data-driven quality improvement in primary care to cardiac rehabilitation services and research that improves uptake and implementation of current evidence-based digital health interventions.

5. *Bioengineering and technology*: Many ideas and concepts were floated, common priorities were that these must all be developed using co-design processes, be user-friendly, meaningful to patients and evidence-based. Hence, the need for both pilot testing and large-scale yet agile development.

Next Steps

A number of next steps for both implementation and research in the area of secondary prevention and cardiac rehabilitation are summarised in [Figure 1](#). There was clear consensus that these must be multidisciplinary, collaborative and consider the whole-of-pipeline research expertise. We also propose the establishment of an Advisory Group to progress activities. Importantly, all research and implementation in the area of secondary prevention and cardiac rehabilitation should be multidisciplinary and collaborative and have state and federal representation. Our leadership community will also continue to aim to seek research funding via existing nationally competitive schemes and opportunistic calls. Ideally, research should support the ACvA Flagships and advocate to the Mission for an ongoing focus on the importance of secondary prevention and cardiac rehabilitation in the context of optimising overall cardiovascular health for all Australians.

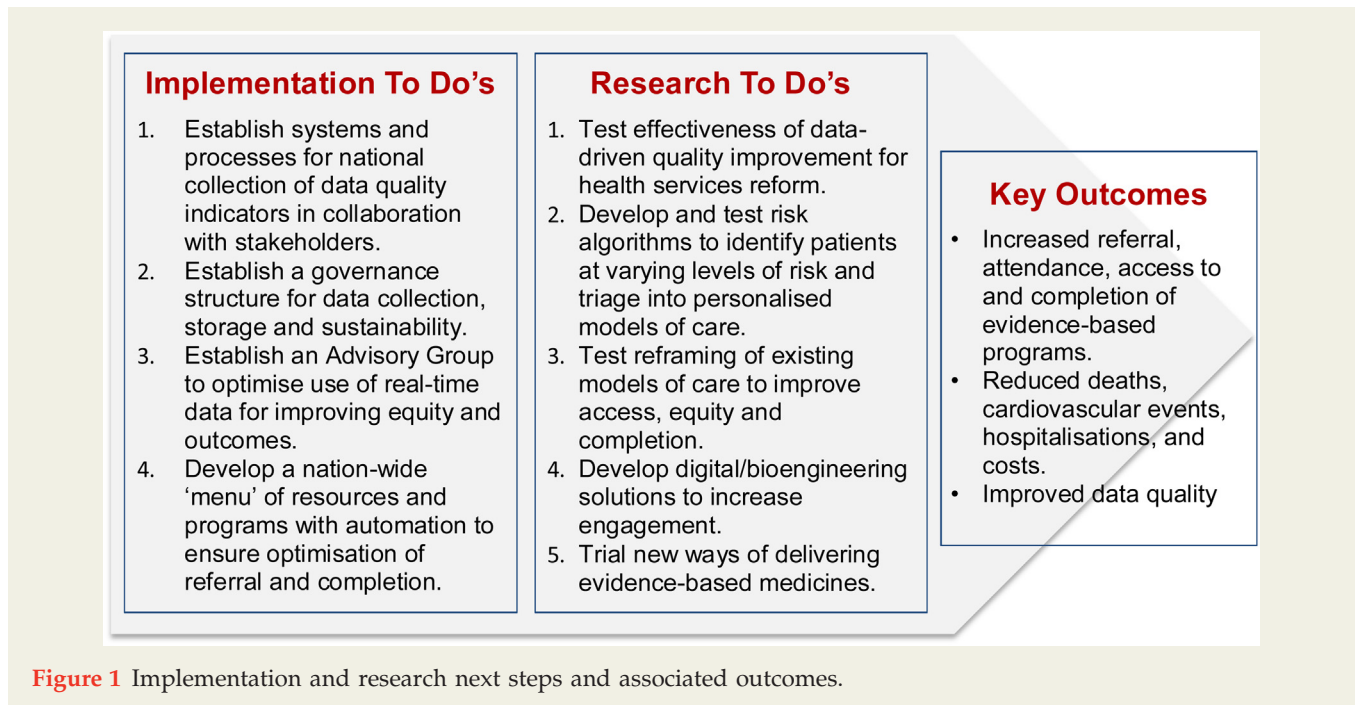


Figure 1 Implementation and research next steps and associated outcomes.

Acknowledgements

We acknowledge the contributions of all attendees at the Roundtable on the 16th October 2016 - Carolyn Astley (Flinders University, SA), Jason Agostino (Australian National University, ACT), Emily Banks (Australian National University, ACT), Alexander Clark (NHFA), Bridie Carr (NSW Agency for Clinical Innovation), Robyn Clark (Flinders University, SA), Pete Ellis (Government of South Australia), Cate Ferry (NHFA), Marianna Gale (NSW Ministry of Health), Kim Gray (Austin Health, Vic), Monica Glasgow (Heart Support Australia), David Gist (consumer representative), Charlotte Hespe (University of Notre Dame), Jeroen Hendriks (University of Adelaide, SA), Quan Huynh (Baker Heart & Diabetes Institute, Vic), Wendy Keech (Health Translation SA), Michelle Lander (The Canberra Hospital, ACT), Andrew Maiorana (Fiona Stanley Hospital, WA), Adrienne O'Neil (Deakin University, Vic), Samara Phillips (Statewide Clinical Network QLD), Judy Hunter Quinn (Cardiomyopathy Association of Australia), Julie Ratcliffe (Flinders University, SA), Bill Stavreski (NHFA), Tim Shaw (University of Sydney, NSW), Bernie Towler (Department of Health), Emma Thomas (NHFA), Philip Tideman (Statewide Cardiac Network, SA), Peter Thompson (Western Australian Health Translation Network), Andrew Wilson (Victorian Health Department) and Robert Zecchin (Western Sydney Local Health District, NSW). We also thank those who provided administrative support: Caroline Wu (University of Sydney, NSW), Elizabeth Valle (University of Sydney, NSW), Maria Tchan (ACvA) and Meg Ryan (NHFA).

References

- [1] Roth GA, Huffman MD, Moran AE, Feigin V, Mensah GA, Naghavi M, *et al.* Global and regional patterns in cardiovascular mortality from 1990 to 2013. *Circulation* 2015;132:1667–78.
- [2] AIHW. Cardiovascular disease snapshot; 2018, Cat. no:CVD 83.
- [3] Australian Institute of Health and Welfare. Australia's health 2016. Australia's health series no. 15. Cat. no. AUS 199. Canberra: AIHW; 2016.
- [4] Briffa TG, Hobbs MST, Tonkin A, Sanfilippo FM, Hickling S, Ridout SC, *et al.* Population trends of recurrent coronary heart disease event rates remain high. *Circ Cardiovas Qual Outcome* 2011;4:107–13.
- [5] Chew D, French J, Briffa T, Hammett CJ, Ellis CJ, Ranasinghe I, *et al.* Acute coronary syndrome care across Australia and New Zealand: the SNAPSHOT ACS study. *Med J Aust* 2013;199:185–91.
- [6] Redfern J, Hyun C, Chew DP, Astley C, Chow C, Aliprandi-Costa B, *et al.* Prescription of secondary prevention medications, lifestyle advice and reference to rehabilitation among acute coronary syndrome inpatients. *Heart* 2014;100:1281–8.
- [7] Redfern, Hyun K, Brieger D, Chew D, French J, Hammett C, *et al.* SNAPSHOT ACS follow-up – what happens to Australian patients in the 3 years after hospital discharge on behalf of SNAPSHOT Investigators *Heart Lung Circ* 2019;28:S373.
- [8] Redfern J, Chow C, on behalf of Secondary Prevention Alliance. Secondary prevention of coronary heart disease in Australia: a blueprint for reform. *Med J Aust* 2013;198:70–1.
- [9] Taking Preventative Action – A Response to Australia: The Healthiest Country by 2020 –The Report of the National Preventative Health Taskforce. Commonwealth of Australia; 2010.
- [10] Perel P, Avezum A, Huffman M, Pais P, Rodgers A, Vedanthan R, *et al.* Reducing premature cardiovascular morbidity and mortality in people with atherosclerotic vascular disease: The World Heart Federation roadmap for secondary prevention of cardiovascular disease. *Glob Heart* 2015;10:99–110.
- [11] Scott IA, Lindsay KA, Harden HE. Utilisation of outpatient cardiac rehabilitation in Queensland. *Med J Aust* 2003;179:341–5.
- [12] Astley CM, Chew DP, Keech W, Nicholls S, Beltrame J, Horsfall M, *et al.* The impact of cardiac rehabilitation and secondary prevention programs on 12-month outcomes: linked data analysis. *Heart Lung Circ* 2020;29:475–82.

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- [13] Grace SL, Gravelly-Witte S, Brujal J, Monette G, Suskin N, Higginson L, et al. Contribution of patient and physician factors to cardiac rehabilitation enrolment. *EJPC* 2008;5:548–56.
- [14] Neubeck L, Freedman B, Clark AM, Briffa T, Bauman A, Redfern J. Participating in cardiac rehabilitation: a systematic review and meta-synthesis of qualitative data. *Eur J Cardiovasc Prev Rehabil* 2012;19(3):494–503.
- [15] Briffa T, Kinsman L, Maiorana AJ, Zecchin R, Redfern J, Davidson PM, Paull G, Nagle A, Denniss R. An integrated and coordinated approach to preventing recurrent coronary heart disease events in Australia: a policy statement. *Med J Aust* 2009;190:683–6.
- [16] Redfern J. The evolution of physical activity and recommendations for patients with coronary heart disease. *Heart Lung Circ* 2016;25:759–64.
- [17] Woodruffe S, Neubeck L, Clark RA, Gray K, Ferry C, Finan J, et al. ACRA core components of CVD secondary prevention and cardiac rehabilitation. *Heart Lung Circ* 2015;24:430–41.
- [18] National Heart Foundation. Reducing risk in heart disease. An expert guide to clinical practice for secondary prevention of coronary heart disease. Updated; 2012.
- [19] Figtree G, Jennings G, Nicholls S, Graham RM. The Australian cardiovascular alliance—towards an integrated whole-of-nation strategy to address our major health burden. *Heart Lung Circ* 2019;28:198–203.
- [20] Australian Commission on Safety and Quality in Health Care. Acute coronary syndromes clinical care standard. Sydney: ACSQHC; 2014.