SOLVE CHD

NHMRC SYNERGY GRANT

Transforming post-hospital care for people with heart disease in Australia

OVERVIEW

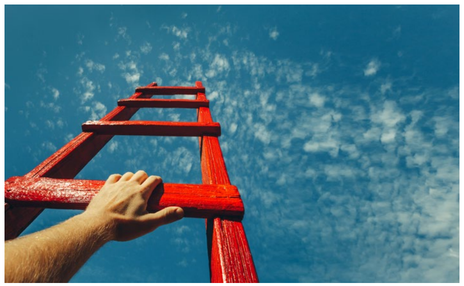
Solving the long-standing evidence-practice gap associated with cardiac rehabilitation and secondary prevention of coronary heart disease (SOLVE-CHD) is an NHMRC synergy grant. Our multidisciplinary team is made up of consumers, researchers and clinicians with allied health, nursing, cardiology, public health, health economics and psychology backgrounds as well as consumer advisors.

SOLVE-CHD builds on previous and current efforts. In particular, the Australian Cardiac Rehabilitation Measurement Taskforce where there has been national consensus regarding quality indicators for cardiac rehabilitation. SOLVE-CHD is delivering interlinked service reform and research across 4 key activities.

DATA & QUALITY

NEW PROJECTS

CAPACITY BUILDING



NETWORK

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1. **Transformative data & quality**: Collection of real-time, consistent jurisdictional and national cardiac rehabilitation data with appropriate governance established. This will ultimately reduce inequity, improve patient outcomes and systems efficiency through performance metrics, benchmarking, and quality improvement. These data will be collected real-time and will be linked with electronic medical records.

2. **New research**: Development and investigation of novel interventions that utilise technology within the context of personalised models of care, usefulness, patient reported outcomes and value for money. 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. Examples include the potential of virtual reality, peer support and telehealth approaches.

3. **Capacity building**: Identify and cultivate multidisciplinary research capacity, community engagement and future health research leaders. Implement a program of project (small EMCR catalysts & pilot funds) and people support (PhD Scholarships & Postdoc Fellowships) as well as opportunities for travel and exchange between working environments (where possible). Funds will support answering question relevant to SOLVE-CHD.

4. **Network**: We are establishing a virtual secondary prevention network to support and unify researchers, clinicians, government, non-government, and consumers. This will help facilitate sharing of solutions, building partnerships and provide a conduit for sharing resources.

AUSTRALIAN CARDIAC REHABILIATION QUALITY INITIATIVE

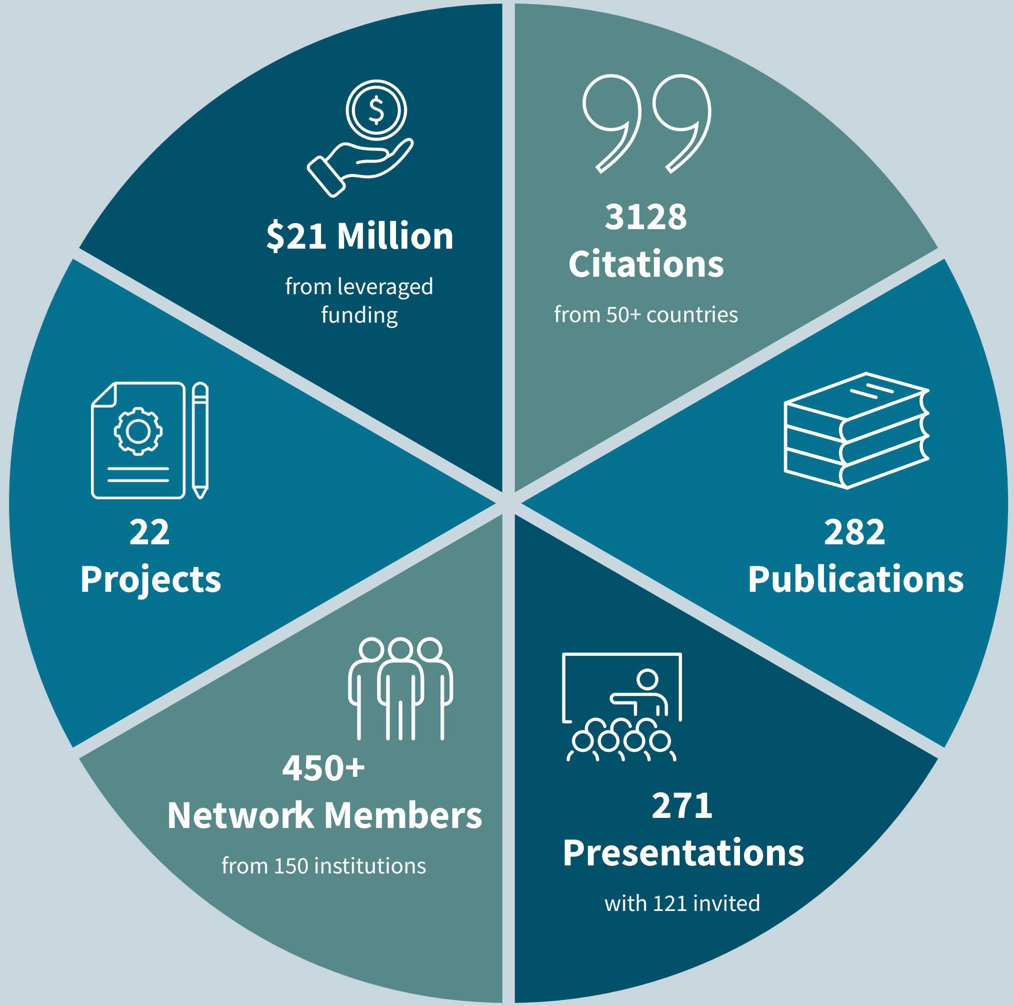
There is growing momentum both nationally and internationally to improve and unify the monitoring of cardiac rehabilitation, aiming to enhance the quality of care and outcomes for people with coronary heart disease. Accurate health care quality measurement relies on systems that capture care delivery and patient outcomes effectively, and this can be strengthened in Australia. Developing a national strategy for better data and quality standards remains a priority for Australian cardiac rehabilitation programs.

To address this, key partners including the Australian Cardiovascular Health and Rehabilitation Association (ACRA), SOLVE-CHD, and the International Council of Cardiovascular Prevention and Rehabilitation (ICCPR) have teamed up. ACRA supports multidisciplinary health professionals in delivering best practices in cardiovascular care. SOLVE-CHD, funded by NHMRC, aims to improve post-discharge care through data integration, technology, partnerships, and capacity building. ICCPR promotes cardiovascular disease prevention and rehabilitation globally.

Our long-term vision for Australian cardiac rehabilitation services includes:

- A well-trained workforce
- Access to electronic recording systems and a reporting platform/dashboard for quality indicators, feedback, and advocacy
- Delivery of care in line with evidence and international quality standards

HIGHLIGHTS



SOLVE CHD

OUR PEOPLE

Investigators

- Prof Julie Redfern, Bond University
- Prof Tom Briffa, University of Western Australia
- Prof Robyn Gallagher, University of Sydney
- Prof Adrienne O'Neil, Deakin University
- Prof Garry Jennings, National Heart Foundation of Australia & University of Sydney
- Prof David Brieger, ANZ Research Institute & University of Sydney
- Emeritus Prof David Wood, National University of Ireland Galway
- Emeritus Prof Adrian Bauman, University of Sydney
- A/Prof Carolyn Astley, Australian Cardiovascular Health and Rehabilitation Association
- Prof Clara Chow, University of Sydney
- Prof Gemma Figtree, University of Sydney
- Dr Karice Hyun, University of Sydney
- Christine Connors, Top End Health Service
- A/Prof Simon Poon, University of Sydney
- Rachelle Foreman, Brisbane North PHN
- Dr Robert Herkes, Australian Commission on Safety and Quality in Health Care
- Prof Peter Thompson, Harry Perkins Institute of Medical Research; Sir Charles Gairdner Hospital University of Western Australia (deceased)
- Steve Woodruffe, Southern Queensland Rural Health
- Dr Emma Thomas, University of Queensland
- Cate Ferry, previously National Heart Foundation of Australia

Affiliate Appointments

- Dr Christian Verdicchio, Heart Support Australia
- Robert Zecchin, Western Sydney Local Health District
- Dr Susie Cartledge, Monash University
- Dr Nicole Freene, University of Canberra

Research Administration Support

- Julia Ning, University of Sydney
- Jessie Zhou, University of Sydney
- Emily Li, University of Sydney
- Wendy Shi, University of Sydney

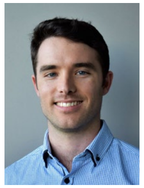
POSTDOCS & HDRS

Dr Sarah Gauci | Post-Doctoral Research Fellow | Deakin University | sarah.gauci@deakin.edu.au

Sarah is an Associate Research Fellow at the Food & Mood Centre, Deakin University. Sarah's current research explores the interrelationship between cardiovascular health, lifestyle and mental health/cognition. Sarah is the current secretary of the Australian Cardiovascular Health and Rehabilitation (ACRA) VIC/TAS committee.

Dr Ling Zhang | Post-Doctoral Research Fellow | University of Sydney | ling.zhang1@sydney.edu.au

Ling is a registered nurse and NAATI-certified translator whose research focuses on understanding the health information needs and the critical role of patient education across cardiac recovery trajectory, with a specific focus on underserved patient groups.



Dr Matthew Hollings | Post-Doctoral Research Fellow | University of Sydney | matthew.hollings@sydney.edu.au

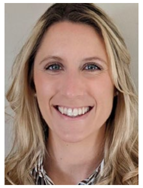
Matthew is an exercise physiologist whose research focuses on the importance of exercise for health and performance, with a particular interest in resistance training. His projects are centred around improving the quality and uptake of exercise and physical activity for persons with cardiovascular disease.

Dr Dion Candelaria | Post-Doctoral Research Fellow | University of Sydney | dion.candelaria@sydney.edu.au

Dion is a registered nurse and his research investigated the influence of cardiac rehabilitation service delivery on patient outcomes. His doctoral work has been internationally recognised and was awarded the prestigious Research Dissertation Award by Sigma Nursing.

Dr Nikky Gordon | Post-Doctoral Research Fellow | University of Western Australia | nikky.gordon@uwa.edu.au

Nikky is an exercise physiologist with clinical and research experience in cardiovascular disease primary and secondary prevention. Her research focuses on improving access to and quality of cardiovascular rehabilitation and secondary prevention, especially in rural and remote areas.



Dr Georgia Chaseling | Post-Doctoral Research Fellow | University of Sydney | georgia.chaseling@sydney.edu.au

Georgia is thermal and cardiovascular physiologist. Her research focuses on understanding the physiological and physical factors that determine human heat strain, heat-related health problems and developing sustainable measures to mitigate the health issues that are aggravated by climate change.

Dr Dean Picone | Post-Doctoral Research Fellow | University of Sydney | dean.picone@sydney.edu.au

Dean is a Senior Research Fellow in the School of Health Sciences at the University of Sydney. He is a NHMRC EL1 Fellow (2023-7). His research is focused on improving blood pressure management by optimising measurement techniques to facilitate screening for high blood pressure and accurate diagnosis in all populations.

Dr Niamh Chapman | Post-Doctoral Research Fellow | University of Sydney | niamh.chapman@sydney.edu.au

Niamh is a 2023 Heart Foundation Postdoctoral Research Fellow. Her research focuses on digital health service innovation to improve blood pressure measurement and prevent cardiovascular disease.

Rebecca Raeside | Conferred PhD Candidate | University of Sydney | rebecca.raeside@sydney.edu.au

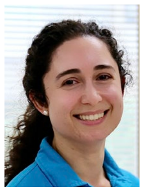
Rebecca is a PhD candidate with a background in public health. Her PhD research embraces the digital revolution by exploring and testing the potential of Health4Me, a co-designed digital health strategy to reduce the cardiovascular and chronic disease risk of young people.

Joe Weddell | PhD Student | University of Sydney | joseph.weddell@sydney.edu.au

Joe is a PhD candidate, associate lecturer, and clinical nurse specialist with a background in cardiac intensive care. His research focuses on barriers to education and support after heart attack, for example, in people experiencing "brain fog" and spontaneous coronary artery dissection (SCAD), and potential support strategies such as online resources and peer support interventions.

Deborah Manandi | PhD Student | University of Sydney | deborah.manandi@sydney.edu.au

Deborah is a PhD candidate whose research focuses on investigating and finding strategies to reduce socioeconomic disparities in accessing cardiac rehabilitation. She is supported by the Research Training Program (RTP) Tuition Fee Offset and Stipend scholarships.



Tiffany Ellis | PhD Student | University of Sydney | tiffany.ellis@sydney.edu.au

Tiffany is a PhD Candidate and physiotherapist working in the acute hospital setting. Her PhD aims to improve the transition between hospital and home in people who have recently suffered a heart attack.

SOLVE CHD

OUR PROJECTS

National CR Data Capture | Funded by SOLVE-CHD | Led by Prof Robyn Gallagher

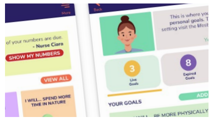
Evaluating record keeping and data entry as part of routine care in cardiac rehabilitation programs across Australia

Lack of service data for cardiac rehabilitation in many countries limits understanding of program delivery, benchmarking and quality improvement initiatives. This study aimed to describe current practices, management, utilisation and engagement with quality indicators in Australian cardiac rehabilitation programs.

My Heart Mate | Funded by Medical Research Future Fund & SOLVE-CHD | Led by Prof Robyn Gallagher

A gamified mobile app for secondary prevention in coronary heart disease patients

Recurrence of cardiac events is common after a first event, leading to hospitalisations and increased health burden. Patients have difficulties achieving the lifestyle changes required for secondary prevention and access to prevention programs is limited. The RCT evaluates a novel game-based mobile app MyHeartMate, as a strategy for accessing secondary prevention for reducing CVD risk factors in patients at high risk of further CVD events.



INTERCEPT | Funded by SOLVE-CHD | Led by Prof Catriona Jennings

Nurse-led virtual program to improve secondary prevention in post-acute coronary syndrome (ACS) patients in the COVID-19 era with a nurse (prescriber) intervention using SMART technology

The objectives of the INTERCEPT program are to deliver an innovative cardiac nurse specialist (prescriber) prevention programme virtually using a specially designed App to manage lifestyle, risk factors and adherence with cardioprotective medications.

Value for money in cardiac rehabilitation | Funded by SOLVE-CHD | Led by Dr Sameera Senanayake

Long-term cost-effectiveness of a hybrid cardiac telerehabilitation

This study will determine the long-term cost-effectiveness of a hybrid cardiac tele-rehabilitation and if it should be implemented in the Australian context. Following a comprehensive literature search, we chose the Telerehab III trial, a multicentre RCT that investigated the effectiveness of a long-term hybrid cardiac telerehabilitation program.

Extreme heat and poor air quality on cardiorespiratory morbidity in NSW | Funded by University of Sydney | Led by Dr Georgia Chaseling

Identifying at-risk populations for cardiorespiratory morbidity from heat & poor air quality

The health burden associated with extreme heat and bushfires across Australia has resulted in a significant number of excess deaths and emergency department visits for people with cardiovascular and respiratory diseases. The extent of the burden of morbidity across Australia for different cardiovascular diseases, age, sex, and ethnicity remains unclear. This project addresses the urgent priority of identifying at-risk populations.

At the heart of the matter | Funded by Deakin University | Led by Dr Sarah Gauci

Co-designing a lifestyle based mental health intervention for patients following a cardiovascular event

This project will explore patient needs through group modelling techniques and using the experienced-based co-design framework to co-design a lifestyle intervention tailored towards patients' mental health needs following a heart event.

Chinese speakers and education for heart problems | Funded by University of Sydney | Led by Dr Ling Zhang

A patient education app for Chinese-speaking heart attack survivors

Patient education is essential and recommended in clinical guidelines to tackle high recurrence after a heart attack. However, current education methods do not always reach patients from culturally and linguistically diverse backgrounds, such as Chinese-speaking immigrants, who often have health literacy and language issues. This project aims to co-adapt a patient education app for Chinese-speaking heart attack survivors.

Avatar Based Discharge Education for patients with ACS | Funded by Western Sydney Local Health District | Led by Tiffany Ellis

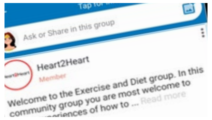
Effect of an avatar-based discharge education app on knowledge and behaviour in people after acute coronary syndrome: a randomised controlled trial

An avatar-based discharge education app based on the Six Steps to Cardiac Recovery will be downloaded to participants' devices. This is a novel and engaging way to provide self-delivered, evidence-based secondary prevention information during the hospital admission and remains accessible after discharge. This trial aims to evaluate the effect of the app on individuals with ACS.

TEACH-RA Study | Funded by SOLVE-CHD | Led by Prof Jeroen Hendriks

Telehealth **E**ducation **A**nd **C**ounselling program to optimise secondary prevention of **H**eart disease for patients with cardiovascular disease living in **R**ural **A**ustralia

This project, run in collaboration with iCC NET SA, evaluates the feasibility of an innovative, tailored telehealth education and counselling program for patients with cardiovascular disease living in rural areas. The study involves delivery of tailored education and counselling through teleconsultation. It is currently recruiting.



Heart2Heart | Funded by Medical Research Future Fund | Led by Prof Julie Redfern

Implementation of a peer support program for people with heart disease

This study evaluates a scalable digital peer support program (Heart2Heart) for helping to manage heart conditions and improving social connections for people with coronary heart disease. The Heart2Heart project is a randomised controlled trial. The intervention involves access to online discussion groups and resources, and moderation from health professionals through a mobile application implemented across Australia.

QUICR | Funded by Medical Research Future Fund | Led by Prof Robyn Gallagher & Dr Dion Candelaria

Identifying and addressing barriers and enablers to implementing best-practice cardiac rehabilitation: Quality Improvement in Cardiac Rehabilitation (QUICR) Cluster-Randomised Controlled Trial

Cardiac rehabilitation participation is low and quality is highly variable. In this type-2 hybrid effectiveness-implementation cluster RCT, we will harness the collective drive and expertise of cardiac rehabilitation clinicians in finding solutions to shared problems through a collaborative quality improvement program supported by an electronic data platform.

Physical activity and heart attack risk | Funded by National Heart Foundation Australia| Led by Dr Matthew Hollings

Exploring physical activity & heart attack risk in Australian adults with no CV risk factors

Standard modifiable cardiovascular risk factors (SMuRFs; hypertension, diabetes, smoking, hypercholesterolaemia) increases the risk of cardiovascular events; however, 1/4 heart attacks in Australia occur without these risk factors. This study will leverage follow-up data from >200,000 individuals in the 45&Up study to determine whether physical activity level is similarly protective against CV events for individuals without SMuRFs.

MeasureIt! | Funded by Medical Research Future Fund | Led by Prof Nicole Freene

A very brief intervention for physical activity behaviour change in cardiac rehabilitation

When clinicians regularly measure physical activity (taking <5 minutes), this simple intervention can increase physical activity levels in insufficiently active adults. 'Measure It!' includes a self-report and objective measure of physical activity (wearable activity tracker steps) plus very brief physical activity advice. This promising, efficient, and scalable approach to increasing physical activity engagement and adherence among insufficiently active cardiac rehabilitation attendees if effective, will improve recovery following a heart event and reduce the risk of repeat events.

HeartPath+ | Funded by Medical Research Future Fund | Led by Dr Susie Cartledge

Targeting self-efficacy and health literacy through patient education to prevent recurrent heart events in Australians with heart disease

HeartPath+ is a education website helping patients in their journey from hospital to cardiac rehabilitation. New features will be guided by the Health Literacy Intervention Model and designed through co-design. A pilot effectiveness/implementation study to evaluate the intervention effectiveness to increase self-efficacy for patients and families to actively manage health in addition to secondary outcomes including self-efficacy and health literacy.

PANDA Trial | Funded by Medical Research Future Fund | Led by Prof Thomas Astell-Burt

Physical Activity in Nature for Cardiometabolic Diseases in People Aged 45y+

72% (about 1 million people) of physically inactive Australians aged 45y+ with cardiometabolic diseases would accept a nature prescription. About half of whom spend less than 2 hours a week in nature, so there is both demonstrated need and demand for this intervention. We will address this by co-designing and evaluating a nature prescription intervention that sustains physical activity and maximises cardiometabolic health.

Cognitive Impairment in Acute Coronary Syndrome: Screening Practices and Nurse Involvement | Led by Emma Zhao

A mixed-methods study to assess the prevalence of cognitive impairment in ACS patients and explore the screening challenges faced by nurses.

Cognitive impairment frequently accompanies ACS and affects recovery and secondary prevention, yet it often goes undetected. Nurses are crucial in early detection and management. This project aims to study the prevalence and impact of cognitive impairment in ACS patients, evaluate nurses' screening practices, and identify screening barriers to enhance understanding, management, and patient care in ACS secondary prevention.

Optimising cardiac rehabilitation outcomes for individuals without standard modifiable risk factors | Funded by National Health & Medical Research Council | Led by Dr Matthew Hollings

Evaluating cardiorespiratory fitness for cardiac rehabilitation patients in ethnically diverse area of Western Sydney

The efficacy of cardiac rehabilitation for improving fitness differs with patient ethnicity, psychosocial and physical characteristics. This study will evaluate the cardiorespiratory fitness for cardiac rehabilitation patients in a diverse ethnic population of Western Sydney. We hope the findings of this study will create a positive impetus for fitness as a novel and modifiable marker of prognosis within the ethnically-diverse cardiac rehabilitation context in Australia, and help advocate for funding to support the implementation of fitness assessments in across Australian programs.

SPAN **Secondary Prevention in All in Need** | Funded by Medical Research Future Fund | Led by Prof Tom Briffa

Assisted self-management to prevent new life-threatening events for all in need after a heart attack (SPAN)

This study will establish the value of moving to a personalised, focused approach of preventing new attacks compared to routine care after a heart attack. It allows survivors to identify the key aspects to reducing their risk, the approach taken, goals set and maintaining engagement with health professionals in the three months after leaving hospital.

Improve the outcome of patients with blocked leg arteries | Funded by National Heart Foundation Australia | Led by Prof Jon Golledge

Reducing adverse events and improve quality of life of people with blocked leg arteries

PAD-medical is a holistic medical and rehabilitation program that consists of personalised treatment sessions delivered via telehealth to monitor control of key risk factors, optimise prescribed medications, supervise exercise and provide behaviour support counselling. This RCT will test the efficacy of PAD-medical in achieving reduction in CV risk and improving quality of life and physical performance in people with blocked leg arteries.

NETWORK

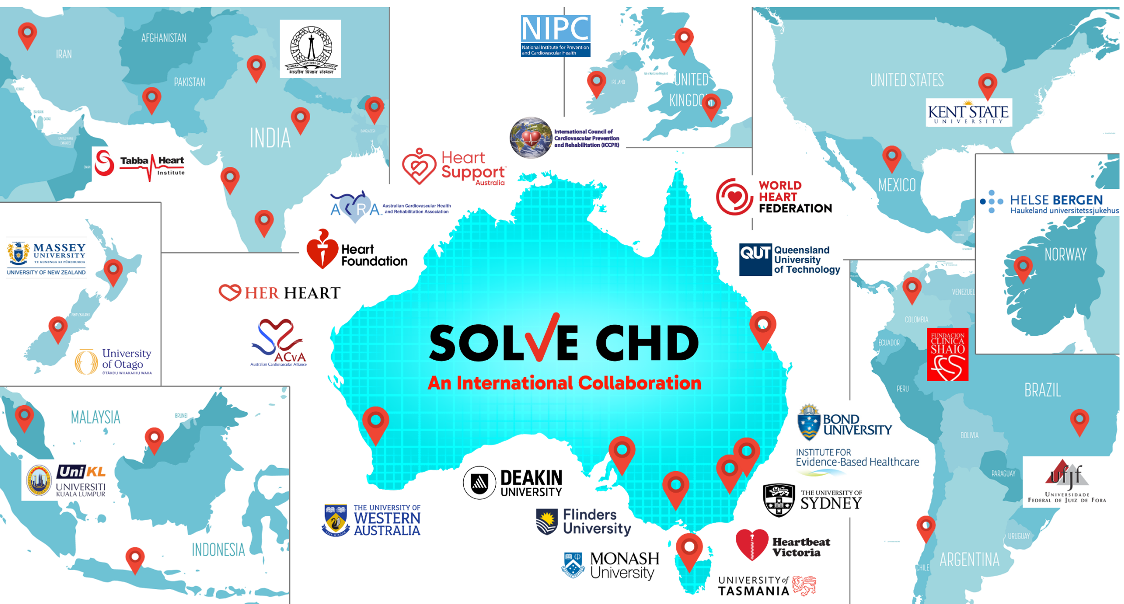
The SOLVE-CHD Network continued to expand and deepen its impact throughout 2024, reinforcing its position as a global leader in cardiac rehabilitation and secondary prevention. Now comprising over **450 members** from more than **150 institutions** across 20 countries with focus in Australia, the Network reflects a vibrant and growing community committed to advancing cardiovascular health.

Our influence continues to grow through active leadership in key global organisations, including the World Heart Federation (WHF) and the International Council of Cardiovascular Prevention and Rehabilitation (ICCPR). These roles position SOLVE-CHD at the forefront of advocacy and global policy development, ensuring our work contributes meaningfully to advancing cardiovascular care worldwide.

As we look ahead, the SOLVE-CHD Network remains committed to advocacy, evidence-based practice, and global collaboration. Together, we aim to transform post-hospital care and ensure equitable access to high-quality cardiac rehabilitation services around the world.

Join the SOLVE-CHD Network:

solvechd.org.au/join



"SOLVE-CHD's progress over the past year is a true reflection of what we can achieve through collaboration and shared purpose. I'm proud of how our network continues to grow, uniting talent and innovation to improve outcomes in cardiac rehabilitation. With momentum and commitment, we look forward to reaching new milestones together."

SOLVE CHD

Chief Investigators

Professor
Julie Redfern

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Professor
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