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CHOLESTEROL ROADBLOCKS AND SOLUTIONS

Tackling a leading risk factor for CVD

A report from Australia's National Roundtable
on Cholesterol | 30 June 2022, Canberra

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Definitions

Acute coronary syndrome: a range of heart conditions involving a sudden reduction in blood flow to the heart muscle, such as heart attack.

Atherosclerosis: the build-up of fatty material (plaque) inside the arteries. Plaque consists of fat, cholesterol and other substances. The arteries can become hardened and narrowed, reducing the flow of blood and oxygen to the heart and other parts of the body. When atherosclerosis occurs in the coronary arteries, this is called coronary heart disease. Atherosclerosis affecting other parts of the body is called cerebrovascular disease (brain) and peripheral arterial disease (legs).

Cardiovascular event: heart attack, stroke, or death from a vascular cause.

Cholesterol: a waxy, fat-like substance necessary to make hormones and vitamin D, and to help digest food. There are two types of lipoproteins that carry cholesterol to and from cells. One is low-density lipoprotein (LDL) cholesterol, which is considered the ‘bad’ cholesterol, because it contributes to fatty plaque build-up on the coronary artery walls. The other is high-density lipoprotein (HDL) cholesterol and can be thought of as the ‘good’ cholesterol because it carries LDL-C away from the arteries and back to the liver to be broken down and then passed as waste. For the purposes of the roundtable and report, the term ‘cholesterol’ denotes all atherogenic lipoproteins.

Lipids: cholesterol and other fats in the blood – includes triglycerides.

Primary prevention of cardiovascular disease: health care designed to stop blood vessel disease developing, targeting people without existing heart disease or related conditions.

Secondary prevention of cardiovascular disease: health care designed to prevent serious outcomes like heart attacks and strokes in people with a diagnosis of cardiovascular disease.

Familial hypercholesterolaemia (FH): is an inherited genetic disorder present from birth that markedly elevates plasma LDL cholesterol and greatly increases risk of premature heart disease.

Key messages from the 2022 National Roundtable on Cholesterol

Experts from around Australia met on 30 June 2022 in Canberra to find the best solutions to Australia's cholesterol problem. Roundtable participants agreed that a substantial proportion of heart attacks and strokes could be prevented by taking practical, cost-effective steps to increase awareness of cholesterol as a leading risk factor for heart disease and join up the different parts of our health system.

The Roundtable was hosted by the Australian Heart Foundation in collaboration with the World Heart Federation. A draft of the World Heart Federation's Roadmap for Cholesterol, launched on 14 October 2022 at the World Congress of Cardiology, provided a foundation for the discussion.

The Roundtable focused on cholesterol as one important cause of heart disease and stroke in Australia, recognising that many other risk factors contribute to an individual's risk. In line with local and international clinical guidelines, cholesterol should be considered in the context of an individual's overall (or 'global') risk of heart disease and stroke, particularly when the goal is to prevent heart disease before it develops. The Roundtable discussion also considered the challenges of managing high cholesterol in individuals with known heart disease or with genetic high cholesterol disorders.

Purpose of this report

This report provides a summary of the discussion at the National Cholesterol Roundtable in June 2022.

Barriers and solutions discussed in this forum have been synthesised and summarised. The statements in this report do not necessarily represent the individual views of every Roundtable attendee, and were not the result of a formal consensus process.

Uncontrolled cholesterol still causes too much avoidable heart disease and stroke in Australia.

There is clear evidence that people's risk of heart disease and related conditions such as stroke increases as their level of 'bad' (low-density lipoprotein; LDL) cholesterol increases.^{1,2} The Australian Institute of Health and Welfare estimates that high cholesterol is responsible for more than a third of all the years of healthy life lost by Australians due to heart disease.³

High cholesterol is not the only risk factor for heart disease and stroke – it contributes to a person's overall risk along with other factors like raised blood pressure, smoking, diabetes and heart disease in the family.

We are still not reaching target cholesterol levels that could significantly reduce heart attacks and strokes.

Among people who attend Australian general practices with cardiovascular disease (mainly heart disease or stroke), almost half are not achieving target plasma cholesterol levels, even though most are prescribed cholesterol-lowering medicines.⁴ Worse, there is still a high proportion of people not prescribed cholesterol-lowering medicines despite having a diagnosis of cardiovascular disease, or being at high risk of developing it.⁵

Among people hospitalised with heart attack or angina (chest pain), almost half still have higher-than-recommended cholesterol levels 12 months later – often because their medication is not being adjusted to make sure they reach treatment targets or they are not taking their medicines.^{6,7} In fact, most people experiencing long-term chest pain due to blocked arteries in the heart do not reach cholesterol targets.⁸

Familial hypercholesterolaemia (FH), a genetic condition, is the most severe form of cholesterol disorder. People with FH have very high levels of low density lipoprotein (LDL) cholesterol and are at increased risk of developing heart disease at a younger age. Approximately 100,000 people in Australia have FH, but most are undiagnosed and inadequately treated.⁹

The National Roundtable on Cholesterol was sponsored by Amgen (October 2022 AU-17679) and Novartis.



We know how to control cholesterol and prevent heart disease and stroke – what’s stopping us?

Measuring and managing cholesterol (along with other risk factors) prevents people developing cardiovascular disease (heart disease, stroke and other blood vessel diseases), and improves health and survival in people who already have cardiovascular disease.¹

Australian and international treatment guidelines set out the best combinations of lifestyle changes and medicines that have been proven to reduce the risk of heart disease and strokes.^{6,10}

The problem is, this is not happening – Why? Roundtable attendees examined the most significant barriers standing in the way of best practice.

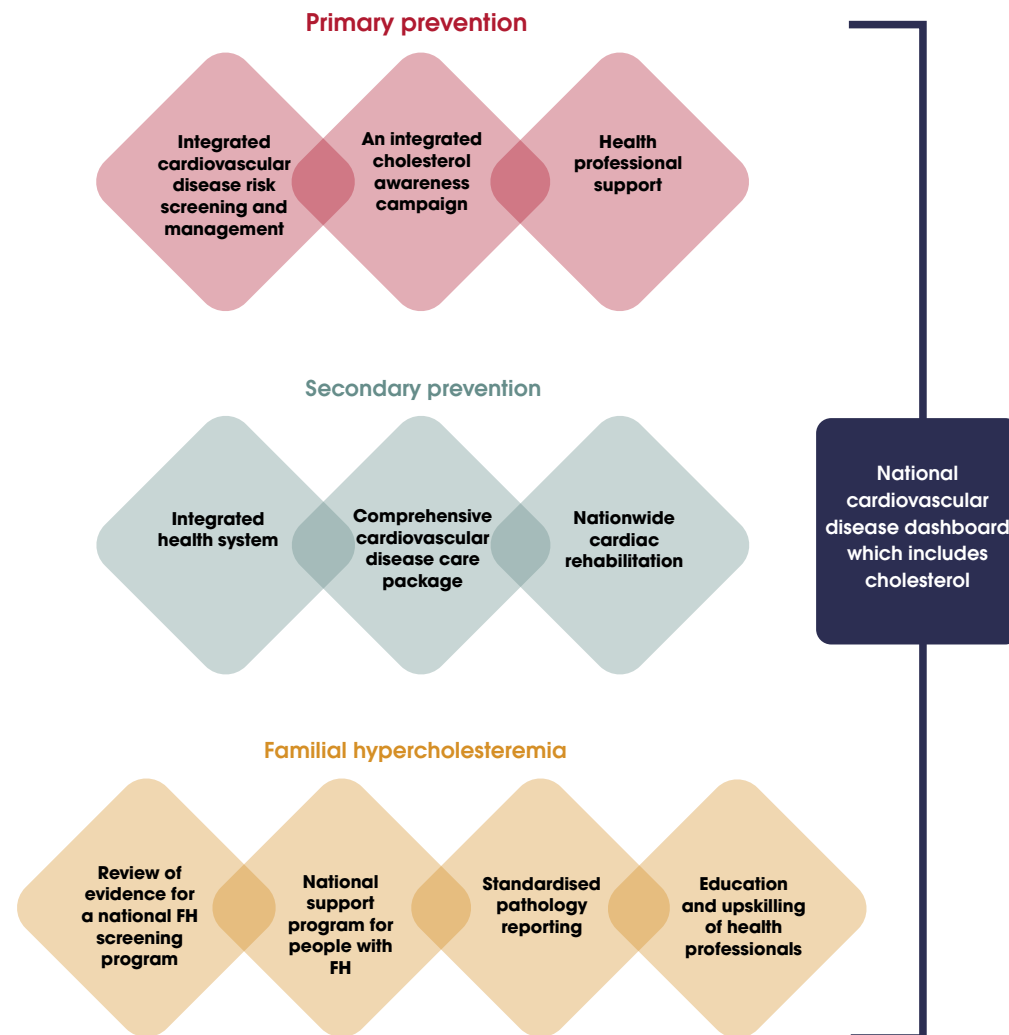
Biggest roadblocks to optimal plasma cholesterol management in Australia

<p>Consumer level</p> <p>Lack of awareness of the need to have a cardiovascular disease risk assessment and how cholesterol contributes to heart disease risk, and the importance of controlling it well</p> <p>Attitudes of complacency or fear of diagnosis</p> <p>Poor adherence to medicines</p> <p>Misinformation – incorrect health information from websites or social media</p>	<p>Clinician level</p> <p>Competing priorities in general practice (time pressures, patients with multiple conditions, GP shortages)</p> <p>Lack of confidence escalating lipid lowering treatments</p> <p>Gaps in knowledge and education on cholesterol management</p>
<p>Health system level</p> <p>Lack of a structured national cardiovascular disease risk assessment program, including measurement of cholesterol levels</p> <p>Lack of integrated electronic records and linked data systems</p> <p>Fragmentation of care across primary, secondary and tertiary levels</p> <p>Inequitable access to health care</p>	<p>Evidence gaps</p> <p>Effective and scalable implementation strategies not yet identified</p> <p>Lack of a national integrated dataset on clinically confirmed cardiovascular risk factors</p> <p>Lack of up-to-date clinical guidelines for lipid management</p> <p>Lack of data specific to high-risk populations</p>

Time to take control

Roundtable participants considered many solutions put forward in previous reports and discussed new ideas, before voting on the highest-priority actions.

Priority solutions





Primary prevention

Better cholesterol screening and management to prevent cardiovascular disease before it develops

- **Integrated cardiovascular risk screening and management** – a well-designed national system to identify people at elevated risk of future cardiovascular disease who are likely to benefit from lowering cholesterol, and recall them for advice, treatment and support
- **An integrated cholesterol awareness campaign** – a range of strategic educational initiatives targeting healthy young adults, age-groups at risk of cardiovascular disease, and health professionals, with consistent messages to support the national cardiovascular disease risk screening and management system
- **Health professional support** – education and tools to promote best practice management of cholesterol, along with improved chronic disease management plans and input from allied health professionals



Secondary prevention

Effective cholesterol management to prevent heart attacks and strokes in people with cardiovascular disease

- **Integrated health system** – joined-up cardiovascular care across all levels of our health system (hospital, primary care, allied health, cardiologists), with well-defined pathways for patients in transition between providers
- **Comprehensive cardiovascular disease care package** – a standardised package of risk factor assessment and management for people with cardiovascular disease, initiated during hospital admission and proactively followed up in the community
- **Nationwide cardiac rehabilitation** – digitally enabled cardiac rehabilitation programs to ensure this effective support is available to all Australians who have had a heart attack or angina



Familial hypercholesterolaemia

Effective early detection and care for people with this inherited condition

- **Review of evidence for a national FH screening program** – using modelling studies to assess the benefits and cost-effectiveness of various strategies to detect FH in individuals and families, with early effective treatment to prevent cardiovascular disease
- **National support program for people with FH** – coordinated support and education for people with FH and their carers
- **Standardised pathology reporting** – a nationwide system for pathology services to flag very high 'bad' (low-density lipoprotein) cholesterol and ensure potential FH cases and their doctors are directly notified
- **Education and upskilling of health professionals** – up-to-date cholesterol management education for clinicians, built into undergraduate and postgraduate learning programs

National cardiovascular disease dashboard which includes cholesterol – an integrated platform to enable tracking of clinical cardiovascular indicators in real time.

This platform can be used by health providers and policy makers to improve quality of care and target initiatives

Next steps

This Roundtable report provides the basis for identifying key roadblocks and priority solutions to address the devastating disease burden caused by high cholesterol in Australia. With further stakeholder consultation, a clear action plan for Australia can be developed and implemented by the cardiovascular sector in collaboration with key policy makers.



Introduction

Introduction

Coronary heart disease is the leading single cause of disease burden and death in Australia.^{11,12}

There is clear evidence of a strong link between elevated 'bad' (low-density-lipoprotein (LDL)) plasma cholesterol levels and heart disease.^{1,2} The Australian Institute of Health and Welfare estimates that high cholesterol is responsible for more than a third of all the years of healthy life lost to heart disease in Australia.³

As one important risk factor for heart disease among others, cholesterol should always be considered within the context of an individual's global risk of cardiovascular disease (CVD).

"Nowadays there is no debate about the role of cholesterol in cardiovascular disease".

Cardiologist Roundtable participant

Why a roundtable, and why now?

Despite the proven efficacy of cholesterol-lowering medicines and lifestyle management, too many Australians are still not receiving interventions to help achieve target cholesterol levels to prevent heart disease and strokes.^{5-9,13-15}

There are also approximately 100,000 Australians with familial hypercholesterolaemia (FH) which puts them at high risk of heart disease and stroke – yet most of these people are either undiagnosed or inadequately treated.⁹

Partnering with the World Heart Federation, the Heart Foundation brought together experts from around Australia for a national roundtable. The roundtable aimed to identify practical actions to improve the management of cholesterol levels in Australia, as part of broader CVD risk reduction, focusing on health system policy and organisation to meet the needs of clinical practice and community.



There are an estimated **1.15 million Australian patients** at high risk of CVD¹².

Source: ABS. National Health Survey: First Results, 2017-18. In: Statistics. ABo, editor. Canberra 2019.

Cardiovascular disease is far from "solved" and continues to be Australia's biggest killer. Together, heart disease and stroke are the leading causes of premature death, disability and avoidable hospital admissions.

Australian Government Department of Health (2021)¹⁶

Participants

Participants included patient advocates, cardiologists, general practitioners, epidemiologists, public health workers and researchers, health evidence implementation researchers, dietitians, psychologists, pharmacists, exercise physiologists, endocrinologists, data experts, and pharmaceutical industry representatives and sponsors (Figure 1). These experts were drawn from metropolitan, rural and remote regions and represented a range of special interests including academic research and teaching, rural and remote health, Indigenous health, peak medical bodies and pharmaceutical industry. See Appendix for a full list of attendees.



Figure 1: Word cloud summarising the skills and affiliations of Roundtable attendees

World Heart Federation roundtables provide a meeting forum for stakeholders in the health sector to identify the most important barriers to the primary and secondary prevention of CVD and develop local and national solutions.

Roundtables are the basis for developing a national plan of action, to be implemented in partnership with governments and policy makers, healthcare professionals, academic and research institutions, nongovernment organisations, health advocates and businesses.



Program

Leading cardiologists gave an overview of the current status of cholesterol management in Australia. Through discussion, intensive small-group work and an informal consensus process, participants:

- identified a wide range of roadblocks to optimal cholesterol management and CVD prevention, and agreed on a list of high-priority issues
- proposed clinical, implementation and policy solutions to address the roadblocks identified
- agreed on the highest priorities for a national action plan to improve cholesterol management and reduce heart disease and stroke in Australia.

Purpose of this report

This report provides a summary of the discussion at the National Cholesterol Roundtable in June 2022.

The Roundtable discussion provides the foundation for ongoing engagement with the healthcare sector, to evaluate the gap between current practice and research evidence and to develop a national action plan to reduce the burden of high cholesterol in Australia.

Barriers and solutions discussed in this forum have been synthesised and summarised.

We know that effective management of cholesterol saves lives

Strategically timed measurement and management of blood cholesterol is central to primary and secondary prevention of CVD.¹

Identifying people likely to benefit from cholesterol lowering

Current expert consensus is that clinicians should request, and laboratories should measure and report, the full lipid profile:^{1,17} total cholesterol (including LDL cholesterol, high-density-lipoprotein (HDL) cholesterol and non-HDL cholesterol), triglycerides, and other lipid fractions where possible.¹

Cholesterol should be measured and interpreted as part of CVD risk assessment, and through the use of a validated risk prediction equation in the primary prevention setting.

In secondary prevention, where people are demonstrably at high risk of CVD, LDL cholesterol should be lowered to recommended target levels, irrespective of the presence of other risk factors.

Managing cholesterol

Lifestyle strategies, such as healthy eating patterns and physical activity, are recommended for all Australians, for their beneficial effects on blood lipids and CVD outcomes, including reduced mortality.¹⁸

For people without CVD, cholesterol-lowering treatment is currently recommended for those with a greater than 15% probability of a cardiovascular event (e.g., heart attack or stroke) within the next 5 years, estimated using the Australian CVD risk calculator.¹⁸ New Australian guidelines for the assessment and management of CVD risk are currently in development and will be available after May 2023.

Intensive cholesterol-lowering treatment is recommended for all patients with atherosclerotic CVD, unless clinically inappropriate.⁸ In people with acute coronary syndrome (such as heart attack) or stroke caused by a blocked artery, effective cholesterol-lowering treatment reduces the risk of recurrence.^{6,10}

For people with FH, early detection and closely monitored cholesterol-lowering treatment is recommended to reduce CVD risk.⁹

LDL cholesterol level is the main target of cholesterol-lowering treatment,¹⁷ but some patients have abnormally high levels of other categories of lipids, such as triglycerides.⁸ Effective cholesterol management may require combinations of medicines.

Current guidelines recommend sequential addition of medicines to reach targets (Figure 2),^{9,17}

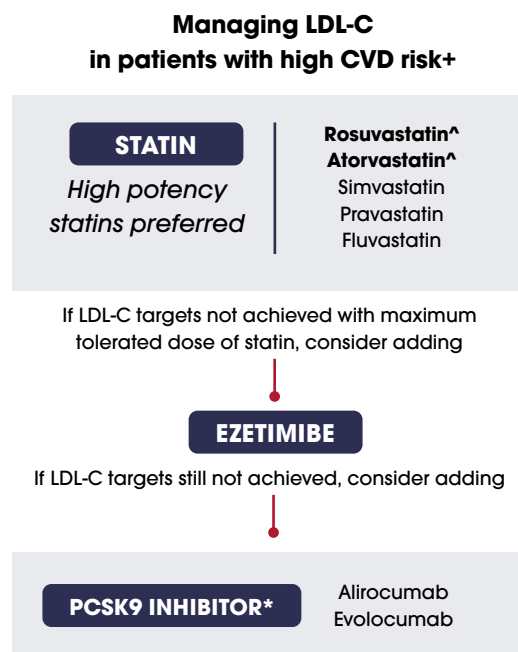


Figure 2: Practical guide to pharmacological lipid management – flowchart

Sources: Practical guide to pharmacological lipid management¹⁹
⁺ Defined as patients with established CVD, high absolute CVD risk score >15% or who are at clinically determined high risk
[^] High potency statins
^{*} Visit Product Information and PBS website for more details on PCSK9 inhibitor clinical indications and PBS subsidies



Recent data shows **40% of high-risk patients** had an LDL-C result that did not meet the recommended LDL-C target of **<1.8 mmol/L⁴**

Source: Carrington M, Cao T, Haregu T, Gao L, Moodie M, Yiallourou S, et al. CODE RED: Overturning Australia's cholesterol complacency. Melbourne, Australia: Baker Heart and Diabetes Institute.; 2020

The role of cholesterol in cardiovascular disease is well established

Professor Stephen Nicholls, Co-Chair of the World Heart Federation's new global Cholesterol Roadmap, summarised current understanding of the links between plasma cholesterol and CVD risk:

- Atherosclerosis results from retention of apolipoprotein B (apoB)-containing lipoproteins, mostly in the form of low-density lipoproteins (LDL) in the blood vessel wall. LDL cholesterol is a causal risk factor for CVD, and a cumulative independent risk factor for atherosclerotic CVD over a person's lifespan.
- Although elevations in LDL cholesterol are common, they are often not detected. Most cardiovascular events such as heart attacks or strokes occur in people without extremely high LDL cholesterol, so effective prevention must involve assessment of an individual's overall CVD risk, not just their LDL cholesterol level.
- The risk of atherosclerotic CVD can be reduced effectively by lowering LDL cholesterol levels. This can be achieved using lifestyle changes and by prescribing treatments from various pharmacological classes (statins, ezetimibe, fibrates, colestyramine, proprotein convertase subtilisin/kexin type 9 inhibiting IgG1 monoclonal antibodies (PCSK9 inhibitors)), with different effects on blood lipids, which can be interchanged or combined as needed.
- Familial hypercholesterolaemia is more common than previously recognised. Its serious consequences are largely preventable through early screening and treatment.

LDL cholesterol is a causal risk factor for cardiovascular disease, and a cumulative independent risk factor for atherosclerotic cardiovascular disease over a person's lifespan.

Professor Stephen Nicholls



Part 1. Where are we now?

Part 1. Where are we now?

Professor Garry Jennings AO, Chief Medical Advisor, Heart Foundation, gave an overview of best-practice cholesterol management and the current status of cholesterol control in Australia.

Uncontrolled cholesterol still causes too much avoidable heart disease and stroke in Australia.

There is clear evidence that people's risk of heart disease and related conditions like stroke increases as their level of LDL cholesterol increases.^{1,2} The Australian Institute of Health and Welfare estimates that high cholesterol is responsible for more than a third of all the years of healthy life that Australians are losing due to heart disease.³

Assessment of an individual's global risk of CVD quantitatively integrates a broader range of risk factors, such as blood pressure level, smoking status, diabetes and family history of CVD.

We are still not reaching target cholesterol levels that could significantly cut cardiovascular disease rates.

Among people who attend Australian general practices with CVD (mainly heart disease or stroke), almost half are not achieving recommended cholesterol levels, even though most are prescribed cholesterol-lowering medicines.⁴ Worse, there is still a high proportion of people who are not prescribed these medicines despite having a diagnosis of CVD or being at high risk of developing it.⁵ Furthermore, only a small percentage are referred to allied health professionals for support with healthy lifestyle programs.

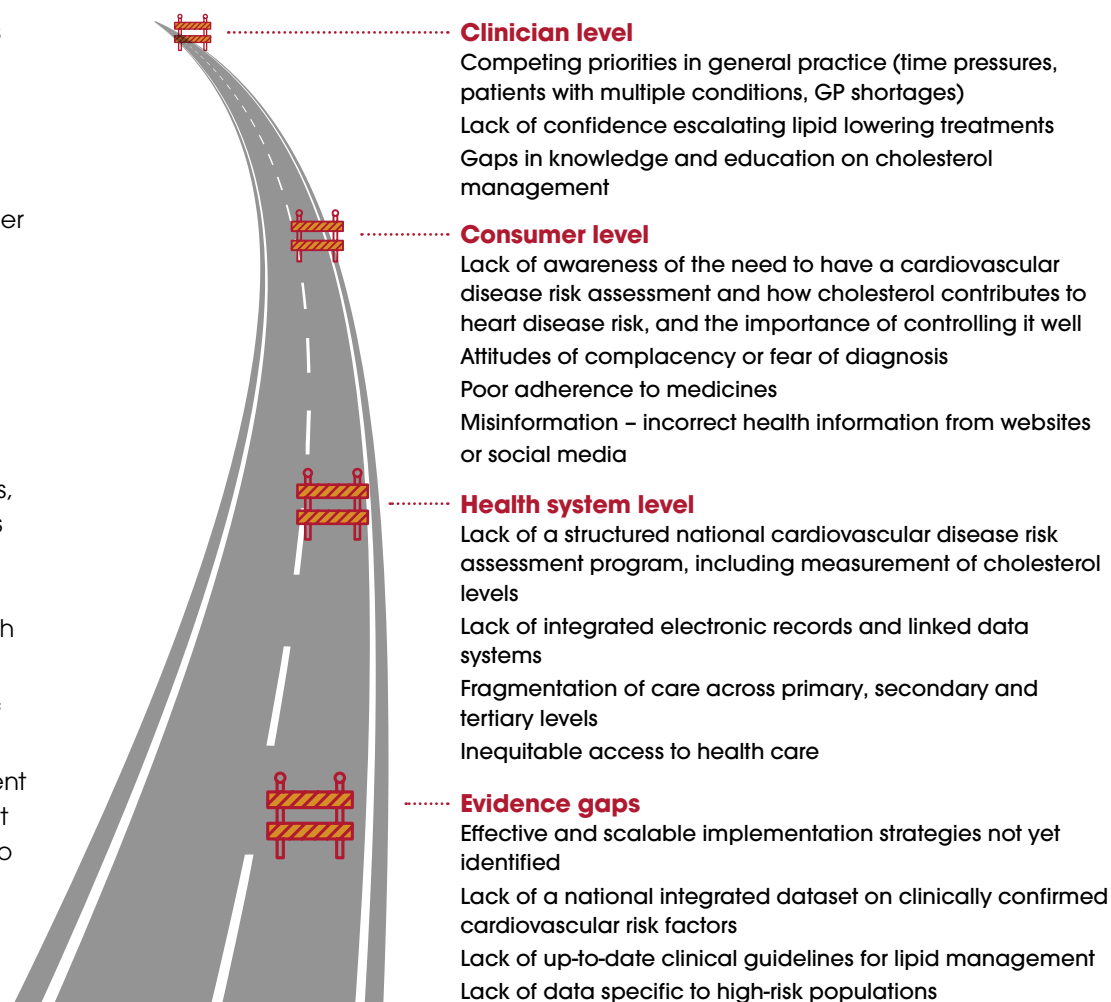
Among people hospitalised with heart attack or angina (chest pain), almost half still have higher-than-recommended cholesterol levels 12 months later – often because their medication is not being adjusted to make sure they reach treatment targets, or because they do not adhere to their medication regimen.^{6,7} Even most people experiencing long-term chest pain due to blocked arteries in the heart do not reach cholesterol targets.⁸

There are approximately 100,000 people with familial hypercholesterolaemia in Australia, but most are undiagnosed and inadequately treated.⁹

What are the roadblocks to cholesterol management in Australia?

Roundtable experts examined the most significant barriers standing in the way of best practice (Figure 3).

Figure 3: Biggest roadblocks to optimal cholesterol management in Australia



Roadblocks for consumers

People in our communities are often unaware of what high cholesterol means, or that it can cause heart disease and strokes.

Risk must be managed throughout life, starting while young. We are distracted by the belief that high cholesterol is more relevant to men than women, and to older people than young people. Many people are getting the wrong information about cholesterol or side-effects of cholesterol treatment from unreliable sources, like the internet and social media.

Most of us don't know our overall risk of CVD, or how our cholesterol level is contributing to this risk. We don't think we could be at risk of heart disease, or we put off knowing our risk until it's too late. Many people are also unaware that CVD runs in their family – this can prevent early diagnosis of FH and effective treatment.

Even individuals with known CVD often are not aware that intensive cholesterol management is critical to lowering their chances of a recurrent cardiovascular event.

High cholesterol levels produce no direct physical sensation, so many people do not realise that they are at risk of CVD and lack motivation to reduce their risk. More than 50% of patients starting statin treatment for the first time stop taking it within a year.⁸ This can be due to many reasons, including cost, accessibility, fear of side effects and the false belief that they are too young to worry about heart disease.

“If a woman told her friends she had never had a cervical cancer test, they would be horrified. But if an Australian 50-year-old stated she had never had a heart check, her peers are likely to be unaware that this is recommended or even available.”

Researcher Roundtable participant



New data shows that **NEARLY ONE IN TWO** people who have had a cardiovascular event may not meet the recommended target for **LDL-C OR 'BAD' CHOLESTEROL**

Roadblocks for clinicians

Roundtable participants reported that doctors may lack confidence in adjusting patients' medication until they achieve recommended cholesterol targets. Medical education for students and GPs does not cover cholesterol management in enough depth, and they need more support to do this well. This is particularly a challenge given the introduction or pending introduction of several new lipid lowering medication classes in Australia.

In the primary prevention setting, cholesterol measurement as part of overall CVD risk assessment is suboptimal, with half of eligible Australians aged 45 years and over not having regular assessments of risk factors such as cholesterol, blood pressure, smoking and diabetes status.²⁰

GPs manage all a person's health conditions at the same time, often without enough time to focus closely enough on cholesterol. COVID-19 has made it even harder to deliver preventive care. Many patients have several health conditions, including mental illness, not just elevated cholesterol. Attendees reported that heart disease is a common cause of death in people with serious mental illness, yet their preventive care is often overlooked.

General Practice Management Plans, intended to enable multidisciplinary care, are ideal for cholesterol management, but we need more consultation time to do a good job.

GP Roundtable participant

Within national guidelines, only total cholesterol and HDL cholesterol levels have previously been required to calculate the risk of heart attacks and strokes in people without known CVD.¹⁷ Total cholesterol may underestimate the risk of heart disease in people with elevated triglycerides.^{17,21}

Some analysts argue that the current focus on primary prevention leads to the neglect of secondary prevention.^{4,22}

Low referral rates show we are underusing the expertise of allied health professionals such as accredited practising dietitians and exercise physiologists, for dietary and lifestyle education to improve cholesterol management. GP participants called for more direct collaboration with specialists and allied healthcare professionals, including sharing of medical records.

Problems in the health system

CVD risk assessment and management – and cholesterol assessment and management within this – are not appropriately systematised and embedded within the Australian health system.

Cardiovascular care is fragmented across primary care, specialist and hospital levels. Better integration between state-funded and federally funded parts of our healthcare system would give us a powerful opportunity to reduce heart attacks and strokes through thorough cholesterol management.

Within general practice, care by multiple GPs has been identified as a contributing factor to failure to effectively manage cholesterol and prevent CVD.²³ Effective management of cholesterol requires patient engagement and motivation, regular follow-up, careful liaison with specialists, and careful adjustment of medication over time.²³

Participants reported that a lack of Integrated electronic records across health systems prevents integrated seamless care. Without efficient real-time communication between records held by different doctors, hospitals and pathology laboratories, diagnosis and management can be delayed by the need for unnecessary repetition of tests.

Reporting of lipid results by laboratories is not standardised.²² Routine reporting of LDL cholesterol for every cholesterol test would greatly improve GPs' decision-making. There is also no mechanism to ensure that the finding of elevated cholesterol levels is communicated to the patient.

The lack of effective screening for FH in primary care leads to a low detection rate and under-management.²⁴ Primary care infrastructure is currently inadequate to enable prompt testing of a patient's close relatives.²⁴

There are waiting lists for general practice consultations in some regions, and there is inequitable access to cardiac rehabilitation and to some specialised tests.

“There is a huge variation in the quality of cardiac rehabilitation across the country.”

Consumer Roundtable participant

There is limited access to newer medicines due to prescribing restrictions. PCSK9 inhibitors are subsidised by the Pharmaceutical Benefits Scheme only for specialist treatment of people with familial homozygous and heterozygous hypercholesterolaemia or non-familial hypercholesterolaemia with symptomatic atherosclerotic CVD and additional risk factors after treatment with other classes (or contraindications).

Current administrative requirements to obtain newer medicines for specialised treatment can discourage prescribers.

Roundtable participant



Gaps in evidence and evidence translation

We need more evidence before we know the best way to test, treat and monitor cholesterol for the prevention of CVD – including how to motivate people to manage their cardiovascular health.

To deliver cardiovascular healthcare more effectively, we need to understand patients' experiences. Real-world implementation research is needed to bridge the gap between the evidence and clinical practice change. Implementation science will help us better understand which strategies are likely to be more effective in improving CVD risk assessment and cholesterol management, and which can be scaled nationally.

Despite Australia's significant gains over past decades, we still have extensive knowledge gaps in cardiovascular disease, from the biology of common diseases to systems for equitable delivery of world-best care to all Australians.

Australian Government Department of Health (2021)¹⁶

There is still a lack of data on some high-risk groups including Aboriginal and/or Torres Strait Islander peoples, people with chronic kidney disease, people living in rural and remote regions, and groups with the worst levels of socioeconomic deprivation.

Australia has not run large enough observational studies to capture local risk factors and has had to rely on datasets collected in other populations. We need to collect national data to fine-tune risk prediction algorithms for the Australian population.

Participants noted the current lack of nationwide data to monitor national progress on key indicators including cholesterol screening rates and achievement of cholesterol targets.

Some participants noted the lack of up-to-date integrated, comprehensive national cholesterol management guidelines. Others supported the fact that current guidance for health professionals is integrated into guidelines focusing on primary or secondary CVD prevention or on a particular diagnosis such as stroke, diabetes or familial hypercholesterolaemia.

Multiplicity of guidelines influencing Australian practice

Current Australian guidelines that include lipid management recommendations

National guidelines for the management of cardiovascular disease risk (2012)¹⁸ – update due 2022

Guidance on the care of people with FH (2021)⁹

Guidelines for preventive activities in general practice (2018)²⁵

Therapeutic Guidelines: Cardiovascular (2018)¹⁷

Consensus statement on the management of type 2 diabetes in young adults aged 18–30 years (2022)²⁶

Clinical guidelines for stroke management¹⁰

Other guidelines influencing Australian practice

European Society of Cardiology/European Atherosclerosis Society guidelines for the management of dyslipidaemias (2019)²

World Heart Federation Cholesterol Roadmap (2017)¹

American College of Cardiology/American Heart Association guideline on the management of blood cholesterol (2019)²⁷





Part 2. Looking forward

Part 2. Looking forward

Participants proposed and debated potential strategies to overcome the most important roadblocks to optimal primary prevention, secondary prevention and management of familial hypercholesterolaemia.

Top-priority solutions to Australia's cholesterol problem from national experts



Primary prevention

Integrated cardiovascular risk screening and management

An integrated cholesterol awareness campaign

Health professional support



Secondary prevention

Integrated health system

Comprehensive cardiovascular disease care package

Nationwide cardiac rehabilitation



Familial hypercholesterolaemia (FH)

Review of evidence for a national FH screening program

National support program for people with FH

Standardised pathology reporting

Education and upskilling of health profession

National cardiovascular disease dashboard which includes cholesterol

An integrated platform to enable tracking of clinical cardiovascular indicators in real time.

Managing cholesterol to prevent heart disease before it starts

Develop systems to detect elevated cholesterol levels, to inform cardiovascular disease risk screening and management

Roundtable participants agreed that CVD in Australia could be significantly reduced by a national integrated program to identify and recall people for comprehensive CVD risk assessment and management, including systematic cholesterol screening.

An effective program might involve a system for triggering follow-up from the moment elevated LDL cholesterol (or another lipid abnormality) is identified by a pathology laboratory, which might include direct notification of patients. For individuals without CVD, this trigger point should align with a comprehensive approach to CVD risk assessment. The national system would facilitate automatic entry to treatment and support programs using clinical prompts in clinical software and online access to results during monitoring.

Design an integrated cholesterol awareness campaign

Participants agreed that an effective national CVD risk assessment and management initiative must be supported by a coordinated awareness and education campaign designed to target different age groups and communities and educate consumers on the link between cholesterol and overall heart health. Key messages for the public include the importance of screening for elevated cholesterol as part of a heart health check, relevant messaging on FH and disorders of inherited elevated lipoprotein(a), and healthy lifestyles for all Australians including adolescents and young adults.

Strengthen medical, allied health and nursing education

The Roundtable identified a need for more education and supporting tools for clinicians on cholesterol assessment and management, including undergraduate education, continuing professional development and audit-and-feedback programs.

Making it happen

Participants discussed a range of ideas to support these efforts to improve CVD prevention:

- the use of polypills (combinations of aspirin, one or more blood-pressure-lowering medicine and cholesterol-lowering medicines) among high-risk groups such as those recovering after a heart attack and people with diabetes, to reduce costs and promote adherence to treatment
- digital tools (education, apps, text messaging) to support adherence to treatment and lifestyle management
- updated comprehensive national cholesterol management guidelines
- support for multidisciplinary teams to provide reliable, understandable information and behaviour-change support programs to patients
- shifting the funding model from reimbursement for separate items towards bundles of holistic preventive care, which might include tailored assessments such as coronary artery calcium scores and strategies to promote adherence.

Case study: The Lumos Program in NSW – sharing of acute care data between primary health networks and hospitals within a region

Lumos is an ethically approved program that securely links encoded data from general practices to other health data in NSW, including hospital, emergency department, mortality, and others.

The Lumos program is the first of its kind in Australia. It was piloted in 2016 and scaled up in early 2020, bringing together data from different health settings to support policy, evaluation and reform.

Administrative data held by NSW health is linked to data for patients attending participating general practices across NSW, breaking down barriers and supporting partnership work. The Lumos data asset reveals unique insights only achievable by synthesising information from these various health care settings. Stakeholders are able to see their patients' journey far more completely than ever before.

Source: Lumos evaluation report 1 (2021)²⁸

Managing cholesterol to prevent repeat heart attacks and strokes in people with cardiovascular disease

Integrate healthcare system levels and support the transition of care

Roundtable participants agreed that integration, coordination and streamlining of care across hospital, primary care, allied health care and specialist levels of the health system would represent a highly effective investment. This would involve redesign of the linkages between providers (e.g., communication, shared electronic medical records, handover protocols) to ensure seamless transition between health services and make the health system easier to navigate for patients.

Offer a comprehensive standardised package of cholesterol assessment and management triggered by hospital discharge for heart disease or stroke

The Roundtable agreed on the need for an initiative designed to ensure that patients discharged from hospital after a heart attack, stroke or other CVD event are automatically connected to effective follow-up, and enter a program of systematic care and monitoring. Standardising the clinical management and support offered to cardiac patients post discharge has the potential to improve adherence to best-practice clinical care.

Offer nationwide digitally supported cardiac rehabilitation

The Roundtable recommended investment in digitally enabled technology to improve cardiac rehabilitation programs after a heart attack. Participants could be offered long-term monitoring and support via phone apps, with frequent contact to support adherence to medication and lifestyle changes.

Making it happen

Participants discussed ideas to support integrated cardiovascular care:

- a greater role for dietitians and exercise physiologists to address lifestyle risk factors and improve function and quality of life
- encouragement for patients to enrol with a single general practice to improve continuity of care
- incorporation of lipid management into cardiology training curricula.

“There is a big window of opportunity in the space between hospital and discharge back to the community.”

GP Roundtable participant

Caring for people with familial hypercholesterolaemia

Review of evidence for a national FH screening program

The Roundtable agreed on the need to investigate the case for a nationwide initiative for early identification of FH through mass population screening or newborn screening, further investigation and counselling for those identified at screening, and targeted screening of relatives (cascade screening).

Further research is needed to determine whether such a program would meet the criteria for a national screening program and, if so, identify optimal program design.

This will involve data gathering, modelling, cost-benefit analysis, and qualitative research exploring community attitudes and acceptance. The Roundtable acknowledged that the program design must also address the ethical considerations that apply to any genetic screening.

Offer a national support program for people with FH

Roundtable participants called for greater interaction between patient organisations, healthcare professionals and policy makers, to improve outcomes for people with FH. Better understanding the support needs of people living with FH can form the foundation for tailored support strategies.

Active involvement of pathology laboratories in follow-up of cholesterol results

Roundtable participants identified pathology laboratories as a key point in the patient care pathway. There is an opportunity to reinforce preventive care through systems to ensure that cholesterol tests are not only performed and reported following a nationally standardised protocol, but that any findings that suggest the possibility of FH are communicated to the patient and clinician in a way they can understand and act on.

Health professional education

The Roundtable agreed on the ongoing need for education and upskilling of health professionals in identifying and managing FH. There is also a need to ensure that FH is adequately covered in the curricula of medical faculties, cardiology training programs and training for subspecialties such as genetic counselling.

Making it happen

Roundtable participants' ideas to support better detection and management of FH included:

- standardisation of methods for interpreting and reporting cholesterol results by pathology laboratories (e.g., standardised capture of data, including family history, and automatic calculation of DUTCH lipid score in primary care software, with routine flagging of probable FH on reports and records)
- streamlining access to genetic testing and counselling
- promoting the messages that high cholesterol can run in families, and that the best chance of preventing heart disease and strokes is to detect it early.

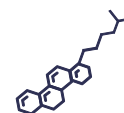
The Roundtable acknowledged existing excellent resources on which to build new initiatives, including a well-established FH registry, the fact that Australia has world leaders in FH research, and the FH Australasia Network (www.athero.org.au/fh).

"We need to collect national data to fine-tune risk prediction algorithms for the Australian population."



Cardiovascular disease has not been solved. One of ten neglected risk factors is **ELEVATED CHOLESTEROL**

New data shows that **NEARLY ONE IN TWO** high-risk people who have had a cardiovascular event may not meet the recommended target for **LDL-C OR 'BAD' CHOLESTEROL**



Cholesterol is a modifiable disease risk factor

Tracking our progress

Establish a national cardiovascular disease dashboard that includes cholesterol

Roundtable participants proposed nationwide linked data to track key clinical cardiovascular indicators in real time. The dashboard would provide clinicians, medical organisations such as primary healthcare networks and policy makers with tools to track whether targets for screening and cholesterol levels are being met, and to target implementation activities to the lowest performing regions.

This dataset would support feedback to primary care health professionals and could be linked to incentive systems for providers, hospitals and primary healthcare networks.

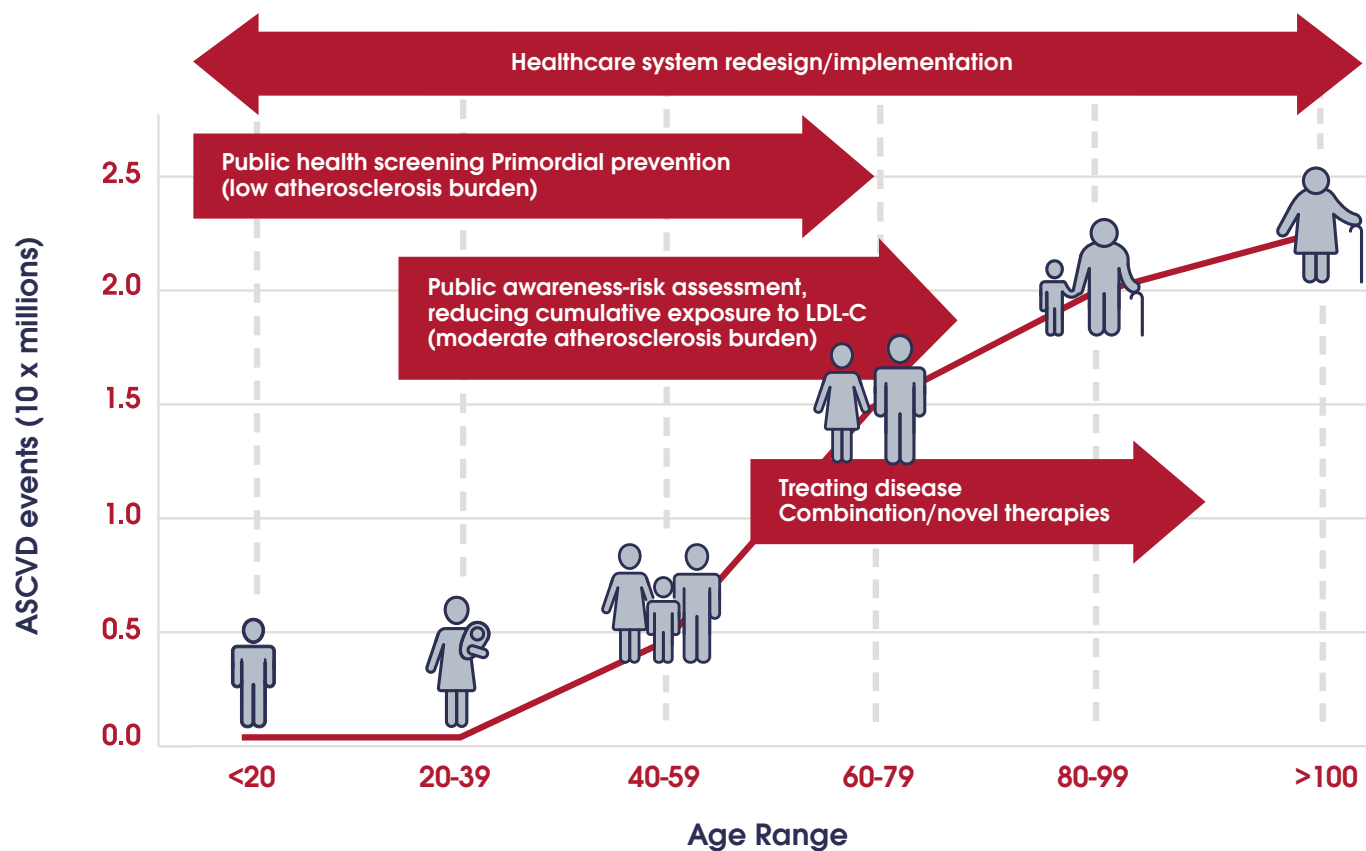


Figure 4: Strategic healthcare investment over the life course

ASCVD = atherosclerotic cardiovascular disease



Conclusions and next steps

Conclusions – high priorities for a national action plan



Primary prevention

Better cholesterol screening and management to prevent cardiovascular disease before it develops

- **Integrated cardiovascular risk screening and management** – a well-designed national system to identify people at elevated risk of future cardiovascular disease who are likely to benefit from lowering cholesterol, and recall them for advice, treatment and support
- **An integrated cholesterol awareness campaign** – a range of strategic educational initiatives targeting healthy young adults, age-groups at risk of cardiovascular disease, and health professionals, with consistent messages to support the national screening and management system
- **Health professional support** – education and tools to promote best practice management of cholesterol, along with improved chronic disease management plans and input from allied health professionals



Secondary prevention

Effective cholesterol management to prevent heart attacks and strokes in people with cardiovascular disease

- **Integrated health system** – joined-up cardiovascular care across all levels of our health system (hospital, primary care, allied health, cardiologists), with well-defined pathways for patients in transition between providers
- **Comprehensive cardiovascular disease care package** – a standardised package of risk factor assessment and management for people with cardiovascular disease, initiated during hospital admission and proactively followed up in the community
- **Nationwide cardiac rehabilitation** – digitally enabled cardiac rehabilitation programs to ensure this effective support is available to all Australians who have had a heart attack or angina



Familial hypercholesterolaemia

Effective early detection and care for people with this inherited condition

- **Review of evidence for a national FH screening program** – using modelling studies to assess the benefits and cost-effectiveness of various strategies to detect FH in individuals and families, with early effective treatment to prevent cardiovascular disease
- **National support program for people with FH** – coordinated support and education for people with FH and their carers
- **Standardised pathology reporting** – a nationwide system for pathology services to flag very high ‘bad’ (low-density lipoprotein) cholesterol and ensure potential FH cases and their doctors are directly notified
- **Education and upskilling of health professionals** – up-to-date cholesterol management education for clinicians, built into undergraduate and postgraduate learning programs

National cardiovascular disease dashboard which includes cholesterol – an integrated platform to enable tracking of clinical cardiovascular indicators in real time.

This platform can be used by health providers and policy makers to improve quality of care and target initiatives

Next steps

This Roundtable report provides the basis for identifying key roadblocks and priority solutions to address the devastating disease burden caused by high cholesterol in Australia. With further stakeholder consultation, a clear action plan for Australia can be developed and implemented by the cardiovascular sector in collaboration with key policy makers.

Appendix

2022 National Roundtable on Cholesterol attendees

Facilitator

Professor Mary Haines, Adjunct Professor at the University of Sydney, School of Public Health, Menzies Centre for Health Policy and Economics.

Speakers

Professor Garry Jennings AO, Chief Medical Advisor of the National Heart Foundation and Professor of Medicine, University of Sydney and Monash University (former Director of Cardiology at The Alfred Hospital, Melbourne and Executive Director of Baker Heart and Diabetes Institute)

Professor Stephen Nicholls, Professor of Cardiology at The University of Adelaide and Clinical Director of the Victorian Heart Hospital.

Attendees

Professor Emily Banks, Australian National University

Kerryn Brimms, Heart Foundation

Laureate Professor Clare Collins, The University of Newcastle

Professor Sandra Eades, The University of Melbourne

Professor Gemma Figtree, Australian Cardiovascular Alliance, The University of Sydney, and Royal North Shore Hospital

Alexandra Gray, Sanofi

Professor Christian Hamilton-Craig, The University of Queensland and Noosa Hospital

Professor David Hare, Austin Health and The University of Melbourne

Jenni Harman, Meducation

Dr Marie Hartley, Amgen

Associate Professor Charlotte Hespe, The University of Notre Dame

Lisa Kalman, Heart Foundation

Associate Professor Karam Kostner, Mater Health, University of Queensland

Disu Liang, Australian Government Department of Health and Aged Care

David Lloyd, Heart Foundation

Dr Salvatore Mangiafico, Sanofi

Professor Jennifer May, The University of Newcastle

Julie-Anne Mitchell, Heart Foundation

Genine McNeill, Australian Government Department of Health and Aged Care

Dr Rebecca McQualter, Novartis

Professor Mark Morgan, Royal Australian College of General Practitioners and Bond University

Professor Anushka Patel, The George Institute

Miriam Pavic, Consumer

Dr Vanessa Prescott, Australian Institute of Health and Welfare

Associate Professor Peter Psaltis, Australian Atherosclerosis Society

Natalie Raffoul, Heart Foundation

Dr Amanda-Jane Ruth, Industry representative

Dr Mitchell Sarkies, Macquarie University, Australian Institute of Health Innovation

Bob Stirling, Consumer

Dr David Thomson, Amgen

Chloe Truesdale, Heart Foundation

Dr Natalie Ward, University of Western Australia

Professor Gerald Watts, Australian Atherosclerosis Society, FH Australasia Network, and The University of Western Australia

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Natalie Raffoul, Healthcare Programs Manager, Heart Foundation

Garry Jennings, Chief Medical Advisor, Heart Foundation

Jenni Harman, Medical Writer, Meducation

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