

Finding inspiration within prominent national cardiovascular disease plans

THOUGHT LEADERSHIP FORUM
ON CARDIOVASCULAR DISEASE

THINK PIECE



About the Thought Leadership Forum on Cardiovascular Disease

The Thought Leadership Forum on Cardiovascular Disease is a project from The Health Policy Partnership (HPP), advised by a multidisciplinary group of senior stakeholders seeking to ignite greater political urgency in cardiovascular disease (CVD). It was established in 2022 to stimulate new strategic debates in CVD to ultimately accelerate policy leadership and health system transformation in the societal interest.

HPP acts as Secretariat to the Forum, providing research, lead authorship and editorial oversight. The Forum and all its outputs are independent, non-promotional and free from commercial bias, representing a broad societal and expert-based consensus for the consideration of policymakers. All participants in the Forum provide their time for free and on an advisory basis. HPP retains editorial control of all outputs.

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About this think piece

This think piece seeks to address a major knowledge gap by establishing a clearer picture of existing strategic responses to CVD by national governments, and distilling their main characteristics. It is not a structured review of national CVD strategies and its purpose is not to assess the comparative merits of individual strategies; lack of inclusion does not equate to a judgement of any kind. Our aim is to shed more light on what components such strategies typically contain, and to inspire CVD leaders, advocates and decision-makers across Europe and globally at a time of rapidly changing debate on CVD.

This document was written by Aditi Karnad, Ed Harding, Matt Handcock and Joe Farrington-Douglas, and edited by Madeleine Murphy and Kasia Trojanowska, all at HPP. Using stakeholder recommendations to guide us, we conducted a rapid environment scan of existing literature to find strategies that were comprehensive and, ideally, current. This formed the basis for interviews with key stakeholders. Editorial comments were received from sponsors, participants in the Forum and selected external experts. No one interviewed for this think piece was remunerated for their contribution.

This think piece will be followed by a second think piece in Autumn 2022, exploring the linkages between CVD and wider societal goals.

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To find out more, please read our inaugural discussion paper, *Making the case for political urgency in cardiovascular disease*, or contact us at CVDTLF@hpolicy.com



Executive summary

National policies to address the growing burden of cardiovascular disease (CVD) have suffered in the face of the global COVID-19 pandemic, but there remains a need to address it. CVD continues to be the leading cause of death in high-income countries in Europe and around the world, and the burden of disease is likely to rise in the future.^{1,2} This is underlined by the plateauing of improvements in CVD mortality rates and by widening gaps in health inequalities, largely driven by CVD.²

Arguably, CVD is one of the most tangible areas of healthcare for governments to invest in when rebuilding health systems after the pandemic. One of the most visible contributions of central leadership in CVD is the development of comprehensive plans and strategies, to guide investments and policy improvements.

However, decision-makers and CVD advocates have lacked a clear overview of substantive national CVD plans and what those plans include. This is largely a result of national CVD plans being limited and often outdated, and reflects an apparently low level of political ambition and awareness of CVD compared with other chronic diseases.^{3,4}

We analysed nine prominent examples of existing national CVD plans to explore what greater political leadership in CVD might look like. Several common elements were found within these plans:

- Implementation and governance
- Measurable policy targets
- Population-level prevention and health promotion
- Screening and early detection
- Risk factor management and comorbidities
- Diagnosis
- CVD management and treatment
- Healthcare delivery
- Digital health approaches
- Effective use of data solutions
- CVD research
- Innovation
- Wider determinants of health

Drawing on our analysis and supported by insights from experts and stakeholders, we propose three essential areas for CVD policy that any government should consider:

- **Clear commitments for implementation and investment**
- **Political vision founded on a clear assessment of the current environment and context**
- **Harnessing the power of data research and innovation to transform the health system**

Revitalising the debate on CVD

National governments face a significant challenge in responding to the combined pressures of the COVID-19 pandemic, population ageing and growing social inequalities. Tackling non-communicable diseases (NCDs), which include cardiovascular disease (CVD), is fundamental to the future of healthy societies. It is a key ambition of both the World Health Organization and the United Nations' Sustainable Development Goal 3.⁵

Tackling CVD could provide an opportunity for tangible wins as health systems seek to build back better. People living with CVD have seen huge disruptions to care services in the past two years of a global pandemic, with serious consequences for their health outcomes.⁶ Future resilience to infectious disease will likely reflect successes and failures in managing NCDs; notably, a person with CVD is three times more likely to develop severe symptoms or die from COVID-19 infection than a person without CVD.⁷ In addition, CVD shares a number of risk factors with other NCDs, such as diabetes and cancer, and improvements in chronic disease management for CVD could translate into benefits for other disease areas.

National and devolved governments are typically top-tier decision-makers in healthcare, holding the ultimate remit as to the impact of health systems on people's lives and the value obtained to society. One of the main ways for governments to have a tangible impact in CVD is to develop, reinvigorate and implement high-level, comprehensive plans and strategies.

This think piece aims to contribute to the growing ambition among CVD stakeholders to catalyse an essential debate on what greater political leadership in CVD should look like. We hope it sparks discussion among decision-makers concerning what governments should be aiming for in the next generation of national CVD plans. In time, this vision might evolve into a stronger consensus as to which evidence-based interventions and cost-effective programmes governments should be seeking to fund and implement.

We recognise that countries will be at different stages in the development of their national CVD plans, where some will already have strategies in place and others may be just starting out. Regardless of what stage a country is at in this process, it can take inspiration from the examples we have identified.

⁷ Finding inspiration within prominent national cardiovascular disease plans

What characterises prominent national CVD plans?

Having set out to catalyse an essential debate on what greater political leadership in CVD should look like, we identified nine national CVD plans.

Several themes were evident across most or all of these plans. Most addressed the need for action along the CVD care pathway in terms of prevention, screening, early detection and treatment, and articulated the need for improvement in health service delivery as well as high-quality data. There was often less attention paid to the diagnosis of CVD, research funding, innovation, wider determinants of health and implementation (*Table 1*).

No strategic plan, no matter how sophisticated, signalled a comprehensive long-term approach to investment in CVD across all domains. Admittedly, England's NHS Long Term Plan and Australia's National Strategic Action Plan for Heart Disease and Stroke both aspired to improvements across a broad range of policy domains, yet stakeholders report that, in practice, financial follow-through in terms of a dedicated budget and systemic actions are inconsistent, in part as a result of pandemic-related disruptions.⁸⁻¹² Nevertheless, each policy has particular attributes that are likely to be of interest to other governments and CVD advocates, as they develop their own national or local vision of excellence.

Here, we highlight areas of inspiration within the national CVD plans.

We have also presented significant examples of systemic, centrally led programmes, to showcase initiatives that could inspire and be integrated into future national strategies.

A full list of the plans and strategies identified can be found in the *Appendix*.



Table 1. Policy domains within the nine national CVD plans analysed

	Policy name	Implementation and governance	Measurable policy targets	Population-level prevention and health promotion	Screening and early detection	Risk factor management and comorbidities	Diagnosis	CVD management and treatment	Healthcare delivery	Digital health approaches	Effective use of data solutions	CVD research	Innovation	Wider determinants of health
Australia	National Strategic Action Plan for Heart Disease and Stroke ¹²	●	●	●	●	●	●	●	●	●	●	●		●
England	NHS Long Term Plan ⁸	●	●	●	●	●	●	●	●	●	●	●	●	●
Estonia	National Strategy for Prevention of Cardiovascular Diseases ¹³	●	●	●	●						●			
Ireland	Changing Cardiovascular Health: National Cardiovascular Health Policy ¹⁴		●	●	●	●	●	●	●	●	●	●		
Japan	National Plan for Promotion of Measures Against Cerebrovascular and Cardiovascular Disease ¹⁵	●	●	●	●			●	●			●	●	
Mexico	Nationwide Strategy for the Prevention, Treatment and Rehabilitation of Cardiovascular Disease ¹⁶			●	●	●	●	●						
Poland	National Cardiovascular Disease Prevention and Treatment Programme ¹⁷	●	●	●	●	●	●	●			●			
Scotland	Heart Disease Action Plan ¹⁸	●	●	●	●	●	●	●	●	●	●			●
US	Million Hearts 2027 ¹⁹		●	●		●		●		●				●



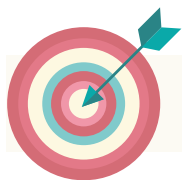
Implementation and governance

“Regrettably, CVD plans too infrequently address the challenges of their implementation and what is required to meet their objectives, such as adequate time and resource, and a dedicated budget to cover the necessary costs and workforce requirements.”

Professor Huon Gray CBE, UK

The proper implementation of a CVD plan’s actions or recommendations is vital to facilitate progress and ensure success. The Scottish plan included a section on governance, clearly outlining which bodies were responsible for the implementation of specific actions or priorities, with each body required to produce an annual implementation plan.¹⁸ A National Heart Disease Task Force had been established to oversee implementation, alongside a Task Force Executive Group to ensure continuous progress. The Australian and Japanese plans also called for the establishment of national advisory groups to monitor implementation.^{12 15} Japan’s plan outlined a dedicated three-year implementation period for action to be taken. The plan was developed following the Basic Act on Measures against Stroke, Heart Diseases and Other Cardiovascular Diseases 2018, which clarifies the responsibilities of the national government, local government, medical insurers, bodies engaged in health, medical or welfare services, and citizens in addressing CVD.²⁰

In some countries, where healthcare is the responsibility of local jurisdictions, recommendations will need to be implemented at the local or regional level. The Australian plan stated that implementation would be the responsibility of states and territories, which would be able to prioritise the actions based on local need, provider capacity and capability.¹² The plan recommended conducting a five-year review, with one-year and three-year checks to assess progress. The English plan proposed a similar strategy, calling on local health authorities to produce implementation strategies for its commitments and indicating that each authority would receive a five-year financial allocation to support implementation.⁸



Measurable policy targets

Setting an overarching goal for a CVD plan can provide a clear and accountable end point against which to measure progress and the value of public investment. The US plan was built around the goal to prevent one million heart attacks and strokes within five years.¹⁹ Smaller targets and priorities were set for each year to help meet that goal; these were largely quantifiable and included building healthy communities and focusing on priority populations. England's plan aimed to prevent up to 150,000 heart attacks, strokes and cases of dementia over a ten-year period, and included both quantifiable milestones and objectives such as working with partners to improve the community response.⁸ The Japanese plan had two main goals: to extend healthy life expectancy by three years by 2040, and to reduce deaths from cerebrovascular disease and CVD.¹⁵ It had ten more specific targets that aimed to enhance service provision of healthcare and welfare services.

Defining clear priority areas in a CVD plan can help to identify where change is needed. The plans from Australia, Ireland and Scotland assigned clear actions within each of their priority areas, with Ireland's plan further clarifying which governing body was responsible for each action.^{12 14 18} The actions in the Irish plan were focused around milestones such as implementation of a community-based awareness programme, the development of indicators for data collection, or investment in the use of telehealth. The plan also proposed quantifiable ten-year targets for health behaviours that can influence cardiovascular health at the population level, such as healthy body weight, nutrition, physical activity, blood pressure and cholesterol.¹⁴





Population-level prevention and health promotion

Promotion of healthy behaviours across the life course is fundamental to prevent the development of CVD risk factors. The processes associated with the development of CVD can begin early in life and are influenced by the cumulative effect of modifiable behaviours and environmental exposure over time;²¹ this was recognised in a handful of national CVD plans.¹⁵⁻¹⁷ For example, recognising the country's high rates of obesity among both children and adults, Mexico's strategy recommended the implementation of a childhood education programme to improve knowledge about the body and heart, promote healthy diets and exercise, and provide support for children with their emotions and health behaviours.¹⁶ The Polish plan also suggested piloting an educational programme for children and adolescents, to be expanded nationally if found to be effective.¹⁷ The Irish plan highlighted the importance of population-based strategies, including public education, legislation and reduction of fat in foods, to prevent CVD risk factors such as obesity, diabetes, blood pressure and cholesterol from an early age.¹⁴

National initiatives can raise awareness of CVD risk factors and promote healthy behaviours at a population level. Almost all the CVD plans recognised the importance of national awareness campaigns and/or health education programmes in providing support and advice on prevention of CVD risk factors, such as by improving physical activity, promoting healthier diets and smoking cessation.^{8 12-19} Estonia's strategy focused on similar themes and considered areas within the health service that would need to be improved, such as primary care and training for family doctors, nurses and school nurses.¹³ One of the priorities in the US plan is specific to building healthy communities, and includes air quality (in terms of particle pollution) alongside common themes of tobacco use and physical activity. It links to tools and resources for clinicians, public health officials and the general public.^{19 22} The Irish plan included a comprehensive section on CVD risk factors and the promotion of healthy behaviours, recognising the role of increasing rates of obesity and diabetes in CVD mortality trends.¹⁴ It called for improved awareness of the need for regular monitoring of blood pressure, cholesterol and diabetes symptoms, especially where there was family history. The Australian and Irish plans stressed that the CVD plan should work in tandem with existing national policies in obesity and diabetes.^{12 14} Many governments have national programmes in place to encourage healthy behaviours across the whole population; these are equally relevant to universal prevention and mitigation of disease beyond CVD.



Screening and early detection

Early identification of people at risk of developing CVD is critical to ensure swift intervention. Several policies had a strong focus on identifying high-risk conditions, including high blood pressure, high blood glucose, raised cholesterol and atrial fibrillation (AF, an irregular and/or rapid heart rhythm).^{8 12 14 16-18}

Population-level screening and early detection should form a key component of any CVD policy, to help identify people with elevated CVD risk factors. A number of plans recommended health check-ups to screen for behavioural health risk factors, including those associated with CVD,^{8 12 15 18} and in two countries, Australia and England, comprehensive health screening programmes are already established.^{23 24} Australia's dedicated heart health check programme intends to screen for CVD in people aged 45 and over, and in Aboriginal or Torres Strait Islander persons from the age of 30.²⁴ A general practitioner (GP) assesses a person's risk of having a heart attack or stroke in the next five years and develops a plan to improve their CVD risk factors.^{9 24} The Australian plan also calls for the risk assessment for heart disease and stroke to be combined with a type 2 diabetes check for people found to be at high risk.¹² In England, the National Health Service (NHS) health check assesses whether a person is at risk of developing health conditions such as heart disease and diabetes, and includes tests for CVD risk factors.²³ For example, during the health check individuals are asked about their lifestyle and family history, have their weight and height checked, get their blood pressure measured and receive a blood test looking for risk factors such as high blood glucose and elevated cholesterol. The checks have also been expanded to include genetic screening for familial hypercholesterolaemia (FH).^{10 25}

Other examples of nationwide early intervention programmes are described in *Initiatives 1-3*.

Prevention and early detection should be kept at the forefront of CVD policy. During the [COVID-19] pandemic, unfortunately, these programmes were largely stopped. But the reality is that they should continue to be prioritised, based on health, economic and ethical reasons.

Jules Payne, HEART UK



Initiative 1. Cardio 50, Italy

CARDIO 50 is a CVD risk assessment and active prevention programme operating across 11 Italian regions. The programme is targeted at 50-year-olds who are enrolled through active outreach.²⁶ Following an initial consultation, participants are categorised based on behavioural risk factors (e.g. smoking) and biological risk factors (e.g. cholesterol levels, diabetes, obesity), triggering a personalised response from a multidisciplinary support team tasked with reducing the person's CVD risk.²⁷ The initiative has successfully identified and treated large numbers of people at high risk of cardiovascular events.²⁸

Following the success of CARDIO 50, the programme has been adapted and piloted in three other European countries – Romania, Lithuania and Luxembourg – under the name YOUNG 50.²⁶ Launched in May 2019, YOUNG 50 aims to refine the CVD risk assessment model and intervention strategy used in CARDIO 50 to improve CVD awareness and outcomes.²⁶



Initiative 2. National screening programme for familial hypercholesterolaemia, Slovenia

Slovenia began screening all five-year-olds for familial hypercholesterolaemia (FH) in 1995; this initiative has since been formally mandated as part of an already established blood check-up programme.²⁹ Children are screened for elevated cholesterol levels during scheduled visits to primary care paediatricians, in accordance with clinical guidelines. Those found to have elevated cholesterol are then referred to a dedicated lipid clinic at the University Children's Hospital in Ljubljana for genetic FH testing.³⁰ Approximately 20,000 children are screened annually through this two-step approach.³⁰ The programme has been recognised as a best-practice initiative for FH screening by the European Commission.³¹



Initiative 3. Preventive Medical Examinations, Russia

Following the First Global Ministerial Conference on Healthy Lifestyles and NCD Control in Moscow (2011), the Russian government passed legislation to implement specific measures to reduce mortality and morbidity from non-communicable diseases (NCDs).³² A core part of the policy was the implementation of Preventive Medical Examinations, an organised initiative among the adult population.³³ Adults are invited for a comprehensive evaluation of their behavioural and biological NCD risks – including blood pressure, blood glucose levels and obesity – every three years for people between the ages of 18 and 39, and annually for those over 40.³⁴ A specialist multidisciplinary team provides personalised prevention counselling during follow-up appointments, in response to a person's assessed risks.³²





Risk factor management and comorbidities

CVD, high blood pressure and elevated cholesterol don't often occur in isolation – people are living with multiple challenges. We must take down the walls between CVD, obesity and diabetes, and have a more holistic approach to CVD care.

Dr Laurence Sperling, Emory University, US

Following the identification of individuals living with CVD risk factors, risk factor management and timely preventive treatment can avert or slow down the progression of disease. The US plan covered risk factor management via medical interventions such as: improving appropriate aspirin use as part of secondary prevention and anticoagulant use for AF,³⁵ blood pressure monitoring and control through medication and lifestyle modification;³⁶ and cholesterol management, including treatment for FH, statin therapy and additional medications such as PCSK9 inhibitors.^{19 37} It also linked to guidance on hypertension control focusing on equipping care teams, population health management and individual support, and explaining how to effectively measure improvements in hypertension control.³⁸ The Australian plan included a dedicated priority to improve the detection and management of high blood pressure.¹² The Scottish plan outlined the importance of treating and controlling major CVD risk factors, detailing its plans to implement community-based programmes and develop indicators to support quality improvement.¹⁸ Mexico's strategy additionally prioritised the detection and control of overweight and obesity as well as diabetes.¹⁶ It reported on the implementation of group workshops with specialised exercise plans where control of those risk factors would be measured every month for a year. The strategy also highlighted the importance of recognising comorbidities in people with CVD, especially those over the age of 50. None of the plans included recommendations for the clinical management of obesity, outside of addressing behavioural determinants. The English, Japanese and US plans also referred to the implementation of strategies such as improving the 'ABCs': aspirin therapy for people who need it (or management of AF in the English plan), blood pressure control, management of cholesterol levels and smoking cessation.^{8 15 19} *Initiatives 4 and 5* showcase approaches to risk factor management in England, Ireland and Lithuania.



Initiative 4. NHS MyAction, England; Croí MyAction, Ireland

First developed for NHS England, the MyAction programme was based on principles from the 2005 EUROACTION study.³⁹ It is a 16-week lifestyle modification and therapeutic support programme targeted at people with CVD and those at high risk.³⁹ It is nurse-led, family-centric and supported by a multidisciplinary team of dietitians, physiotherapists and cardiologists based in the community.

The programme begins with an initial CVD risk assessment before curating a personalised, family-based support package.⁴⁰ The key aims are to promote positive changes in unhealthy behaviours such as smoking, poor diet and lack of exercise, and to review therapeutic goals for CVD risk factors such as obesity, diabetes and hypertension.⁴⁰

The intervention was adapted by Croí in Ireland, where the programme was recognised as a best-practice example of a community-based CVD prevention programme by the European Commission.⁴¹



Initiative 5. Health promotion for people belonging to the cardiovascular disease risk group, Lithuania

As part of a legal mandate in 2014, the Lithuanian government established a health education programme for adults at risk of CVD (diabetes was added in 2016).^{42,43} Organised by primary healthcare facilities and municipal public health bureaus, the programme teaches participants about CVD risk factors, as well as exploring how changes in behaviours such as exercise and diet can reduce risk.⁴³ Multidisciplinary teams are used to increase awareness of risk factors and their prevention and correction. The programme has been recognised as a best-practice initiative by the European Commission.^{42,44}



Diagnosis

CVD must be diagnosed promptly and accurately to ensure that people receive appropriate treatment without delay. Some CVD plans had a combined component on diagnosis and treatment, and few specifically covered CVD diagnosis in detail.^{8 16-18} The Scottish plan focused on ensuring timely diagnosis of heart disease and driving improvements in access to diagnostic tests,¹⁸ whereas England's plan highlighted that greater access to echocardiograms in primary care was essential.⁸ Mexico's strategy referred to an existing, comprehensive protocol, Código Infarcto, which outlines a set of coordinated actions for healthcare professionals involved in diagnosing heart attack.¹⁶ The strategy also emphasised the need to perform an electrocardiogram (ECG) and assess biomarker levels for every person with a suspected heart attack in order to make an accurate diagnosis.

Investment in research to identify new diagnostic methods could facilitate significant improvements in the diagnosis of cardiovascular conditions and more efficient models of care. The Scottish plan noted the necessity of fostering innovation in diagnostic techniques and the development of pilot models of care for diagnosis, including the provision of ECGs, blood tests or echocardiography in community settings.¹⁸ The Polish plan echoed this, while also highlighting the effectiveness of ultrasounds for CVD diagnosis.¹⁷





CVD management and treatment

Acute cardiovascular care

Hospitals and urgent care settings play a crucial role in providing prompt and effective cardiovascular care. The Irish plan recommended approaches to delivering care in hospital and emergency settings.¹⁴ It included sections on acute cardiac care pathways for several conditions, such as heart attack and heart failure, as well as intensive cardiac care, cardiac surgery and acute stroke care. It also summarised how specialist cardiac services should be organised, suggesting which personnel and facilities would be required to provide effective, high-quality care. Australia's plan included several objectives for the treatment of cardiovascular conditions.¹² It made recommendations to ensure treatment was accessible to the whole population, and paid considerable attention to the provision of stroke care.

Continuity of care and cardiac rehabilitation

It is vital that people with known CVD, or those who have experienced a cardiovascular event, receive effective secondary prevention and cardiac rehabilitation to prevent recurrent events. Most plans addressed rehabilitation and recognised the importance of programmes aimed at preventing repeat cardiovascular events (secondary prevention).^{8 12 14-16 18 19} Mexico's plan noted that secondary prevention programmes should provide lifestyle modification advice and outline medical therapies, to control risk factors such as high blood pressure and cholesterol and reach guideline-based targets. It also considered adherence to medication.¹⁶ The plan summarised the key stages at which cardiac rehabilitation should be provided, and which specific exercises should be advised at each stage. It recommended starting cardiac rehabilitation early during a person's stay in the intensive care unit and included self-management advice following discharge. The Irish plan covered cardiac rehabilitation comprehensively, outlining that rehabilitation services should be provided in every healthcare setting, including both private and public hospitals and community care.¹⁴ It also pointed out that services should be accessible to rural and vulnerable communities, and recommended increased investment to ensure adequate staffing and facilities. The US plan included a goal of ensuring 70% participation in cardiac rehabilitation among eligible individuals. It aimed to improve awareness of the value of cardiac rehabilitation, increase referrals of eligible patients and reduce barriers to participation. It provided links to several resources, including a quality improvement tool for hospitals.^{19 45}

Access to cardiac rehabilitation could be significantly improved through virtual delivery using telehealth and other digital health solutions.

The Australian and Scottish plans considered how to improve access to cardiac rehabilitation programmes using flexible models of care, such as telehealth, online services and smartphone applications.^{12 18} The Scottish plan provided useful context around the impact of the COVID-19 pandemic on rehabilitation, highlighting that it acted as a catalyst for more digital and virtual-only services.¹⁸



Healthcare delivery

Multidisciplinary and integrated cardiovascular care

CVD often requires comprehensive, multidisciplinary care to enable continuous monitoring and management of comorbidities and risk factors. Ireland's plan outlined the roles of different settings – primary care, hospital and emergency services, and community-based care – highlighting the need for multidisciplinary teams supported by cardiac-specific and stroke-specific care pathways and shared care models.¹⁴ It noted that general clinical care pathways should encompass CVD prevention, early detection, treatment, rehabilitation and palliative care. The English plan proposed the establishment of community hubs (e.g. community pharmacies) that will play a key role in many integrated, multidisciplinary teams.⁸ The Scottish plan discussed the importance of providing nationally agreed care pathways that encompass the whole cardiovascular care pathway, support effective integration across clinical boundaries and take a whole-system approach.¹⁸ The plan called for expansion of existing cardiac models of care and networks, such as the Heart Failure Hub, Cardiac Rehabilitation Champion and national networks. It recommended establishing a national network to develop clinical consensus on guidelines, treatments and pathways for CVD, and support healthcare professionals in implementing them.

Expansion and diversification of the healthcare workforce

A strong and well-trained healthcare workforce is vital for delivering timely and effective cardiovascular care services. The English, Irish and Scottish plans all had sections dedicated to workforce planning.^{8,14,18} They recognised where shortages in personnel existed, such as nursing, and where additional training and support was required, including primary care. The Irish plan highlighted the need for more stroke consultant physicians, non-consultant hospital doctors, nurses, technical support staff for CVD diagnostics, primary and community care services, and the core roles needed in a CVD multidisciplinary team.¹⁴

A sizeable proportion of CVD care falls to acute care settings, but countries are increasingly recognising the role of healthcare professionals outside of cardiology in the provision of cardiac care. The Scottish plan considered how CVD care and long-term management could be provided by specialist nurses and cardiac physiologists, not just in urgent care but also in primary care, community care and the third sector.¹⁸ The Australian, English and Irish plans stressed the role of GP surgeries, pharmacies and other health centres in the management of risk factors and chronic disease.^{8,12,14} Australia's plan recommended measures to incentivise general practice and allied health services to provide ongoing preventive or post-discharge CVD care.¹²



Digital health approaches

Digital health approaches such as telehealth show great promise in ensuring accessible prevention, diagnosis and management of CVD and its risk factors. Although not CVD-specific, the English plan included a section on digitally enabled care and highlighted a number of initiatives already being used to improve healthcare delivery.⁸ Examples include electronic patient records and care plans, decision support and artificial intelligence (AI) tools, the Electronic Prescription Service and the NHS e-Referral Service, which allows people to book hospital appointments online. The Scottish plan recommended the adoption and expansion of telehealth to facilitate communication between CVD care teams and support people living in remote areas to manage their own health.¹⁸ It suggested creating posts for consultants able to provide telehealth CVD support, a need also recognised in the Australian policy.¹² The Polish plan proposed an inter-hospital network model called TELESTROKE, to provide more effective stroke treatment and allow collaboration between regional and local treatment centres.¹⁷



Effective use of data solutions

Data [are] precious. The first step is to standardise health data across regions and countries. After that, we must improve the efficiency of data collection using automation, and therefore enable the production of more sophisticated CVD data reports to inform CVD policy.

Dr Peter Vasko, SWEDEHEART, Sweden

High-quality CVD data collection and data monitoring systems are crucial for facilitating a comprehensive understanding of outcomes and gaps in care. Several national CVD policies considered the effective use of data and called for the urgent development of a national cardiovascular registry or audit containing high-quality, standardised, interoperable data and indicators.^{12 14 17 18} The Australian and Polish plans highlighted that data on risk factors and CVD-related conditions were essential. The Polish plan noted the need for data on the costs of CVD treatment, while the Australian plan stated that any data collection should also include measures of inequality within the population.^{12 17} The Irish plan highlighted the need for data on service provision and health outcomes, and suggested that national population health surveys could be conducted as a way of collecting data on lifestyles.¹⁴ The Scottish plan pointed out that data on timescales and interventions would need to be linked from a wide range of sources, including primary, secondary and tertiary care, and community settings.¹⁸ The English plan recommended that captured data be made available for clinical research and published as open data, so that the performance of NHS services could be assessed.⁸ England already has a national primary care audit called CVDPREVENT, which automatically extracts data from general practice on the diagnosis and management of six CVD risk factors.¹⁰ ⁴⁶ Additionally, England's National Institute for Cardiovascular Outcomes Research collects and manages data from six national clinical audits as part of the National Cardiac Audit Programme.⁴⁷ The programme includes audits on adult cardiac surgery, heart rhythm management, congenital heart disease in children and adults, and heart failure. Other examples of CVD data registries are described in *Initiatives 6 and 7*.



Initiative 6. SWEDEHEART, Sweden

SWEDEHEART is a nationwide, multidimensional CVD registry created by merging four regional CVD registries.^{48,49} Its primary purpose is to facilitate the research and development of evidence-based therapies for acute and chronic CVD. Importantly, data can be used in conjunction with other national registries for registry-based trials and wider research⁵⁰ – the registry has been used to study the links between CVD and cardiometabolic risk factors such as diabetes and obesity.^{49,51,52}

SWEDEHEART collects data on the quality and type of care received by CVD patients in all Swedish hospitals, to measure and compare performance.^{48,49} This allows for the identification of leading care practices and underperforming units. Increasingly, data from the registry are being used for digital decision-support systems and risk-prediction tools.⁵⁰



Initiative 7. EUROHEART, Estonia

The EUROHEART programme is an initiative from the European Society of Cardiology to promote collaboration between national CVD registries. It provides support through tools such as a common licensable IT platform.⁵³ Estonia was the first country to pilot the initiative.

Building on the success of registries such as SWEDEHEART, EUROHEART aims to generate consistent observational data across Europe and expand the scope of registries to include direct quality development, device monitoring and registry-based randomised controlled trials.⁵⁴



CVD research

Investment in research for preventive and therapeutic CVD strategies can facilitate improvements in cardiovascular care. The Japanese plan stated an aim to promote collaboration between industry and academia in research and development.¹⁵ The Irish plan expressed support for research programmes focusing on cardiovascular health, and called for the establishment of a national advisory group to determine priorities for research and health technology assessment in CVD.¹⁴ The Australian plan made research a priority area to address.¹² It highlighted the need to progress the existing Medical Research Future Fund, which includes an AUD \$220 million research programme called the Cardiovascular Health Mission, set up in 2019 to improve heart health and reduce stroke in Australia over ten years.^{9,55} The plan also outlined the importance of establishing ‘six flagships’ as part of the Mission, such as those dedicated to clinical trials, precision medicine and medical treatment discovery.¹² *Initiative 8* describes a similar example of a CVD research programme in Denmark.



Initiative 8. Danish Cardiovascular Academy, Denmark

Launched in 2021, the Danish Cardiovascular Academy counts Denmark’s leading experts in CVD research among its membership. The academy is tasked with improving diagnosis, treatment and prevention in CVD by pooling knowledge and resources.⁵⁶ It will develop a training network of researchers to improve information sharing while awarding more than 100 PhD and post-doctorate grants over a six-year period.⁵⁷ There is a specific focus on interdisciplinary collaboration and enhanced communication between researchers and clinicians to ensure a multifaceted approach to research.⁵⁶ The academy has expressed a firm commitment to integrate the patient perspective in shaping the future research agenda.⁵⁷



Innovation

Innovation can bring significant benefits to people living with CVD and can complement a well-constructed national CVD plan, but it was rarely covered in any of the national plans. Despite its benefits to individuals and potential contribution to any well-functioning healthcare strategy, innovation was only included in England's plan. However, it should be noted that some countries have substantive innovation programmes with relevance to CVD. In England, although the NHS Long Term Plan did not mention CVD-specific innovation, it demonstrated clear intent to speed up the innovation pipeline in the NHS, with the aim of getting proven and affordable innovations to patients more quickly. It called for investment in spreading innovation between organisations by funding Academic Health Science Networks (AHSNs).⁸ These networks connect academic institutions, local authorities, non-governmental organisations and industry with the NHS, to develop innovative solutions with an aim to facilitate change across the healthcare sector and improve patient outcomes.⁵⁸ For example, to address the plan's goal of reducing the incidence of CVD, the AHSNs are delivering a national programme to improve the management of cholesterol in people at high risk of CVD, increase the detection of FH and optimise the use of medicines on the cholesterol management pathway.⁵⁹ The plan also outlines the development of an advisory service for innovators, the Accelerated Access Collaborative, that would be linked to the AHSNs.⁸ The collaborative is a partnership between different bodies, such as the AHSNs, patient groups and industry, that seeks to accelerate the adoption and spread of cutting-edge treatments and diagnostic tools by offering support for providers.⁶⁰



Wider determinants of health

Inequity drives a large part of CVD, so tackling those primary factors is incredibly important. [CVD] cannot be solved by focusing on health alone.

Professor Garry Jennings, Baker Heart and Diabetes Research Institute, Australia

Policies should acknowledge that a range of social, cultural, economic and environmental factors can disproportionately increase a person's likelihood of developing CVD. The Australian, English, Irish, Scottish and US plans all recognised the importance of addressing health inequalities.^{8 12 14 19} The Australian plan included a specific component on social determinants of health and identified priority populations that were likely to face disadvantages.¹² It provided examples of actions to meet the needs of these groups, such as ensuring access to interpreters and linking with relevant healthcare services. The Irish plan, although it did not provide concrete priorities, drew attention to the importance of working across multiple sectors – including education, sports and leisure, the food industry and the media – to reduce inequalities in cardiovascular health.¹⁴ The English plan outlined actions such as targeting a higher share of healthcare funding towards regions with high health inequalities. It identified a need to support carers from vulnerable communities and partner with local charities and social enterprises that support at-risk groups.⁸ NHS England has since launched a national programme, Core20PLUS5, to support the reduction of health inequalities at the national level; one of its five clinical areas of focus is CVD, specifically with regard to identifying hypertension.⁶¹ The Scottish plan summarised the impact of the COVID-19 pandemic on widening health inequalities.¹⁸ It recommended involving people from typically underrepresented population groups in the decision-making process relating to their care. The US plan had a strong focus on health equity, emphasising several populations that are generally underrepresented, including: pregnant and postpartum women with hypertension, people from ethnic minority groups, people with lower incomes and those who live in rural areas.^{19 62}

Where next?

The nine national CVD plans and eleven initiatives we explored demonstrate that there are many inspiring examples across the world for CVD leaders, advocates and decision-makers to learn from.

Drawing on our analysis and guided by stakeholder recommendations and interviews with experts, we have identified three essential areas of focus for governments to emulate in their plans.



Essential areas of focus for governments

Political vision founded on a clear assessment of the current environment and context

- Assessing the current burden of CVD and the implications of future drivers of demand, such as indirect and direct costs, population ageing and changing patterns of chronic disease
- Evaluating the potential societal return on investment, including the impacts of improvements in CVD on life expectancy and workforce participation, and understanding how CVD correlates with societal inequalities
- Investigating the barriers to achieving optimal, guideline-based CVD care in the current health system and making recommendations to address them
- Analysing the role of CVD in the COVID-19 pandemic and where improvements in CVD care might support health system sustainability and resilience

Clear commitments for implementation and investment

- Sustaining investment in CVD relative to the burden of disease, opportunity for improvement in health outcomes, and societal and economic benefit
- Establishing national improvement agencies and centres of excellence
- Investing in and expanding the health workforce, including clinical delegation and community-based roles
- Ensuring alignment with wider national strategies or plans, such as a plan for NCDs, a national health strategy, or a post-pandemic plan for health system sustainability

Harnessing the power of data research and innovation to transform the health system

- Investing in national data collection and integrated data systems, including electronic health records
- Partnering with academia, industry and others to fill in the gaps in CVD research
- Expanding digital solutions, remote monitoring and telehealth
- Developing improvement programmes and cross-sectoral advisory task forces

From here, there is an urgent need for a clearer international consensus on the domains of quality in CVD plans and strategies, and the level of ambition that governments should aim for. There is currently no high-level consensus on what an effective national CVD plan should look like; achieving this will take further research and more in-depth, structured stakeholder consultation. A logical next step towards this would be to conduct a detailed investigation of whether the national plans and programmes highlighted here could be deemed successful in terms of implementation and improvements in CVD outcomes.

We aim for this think piece to be a timely and useful contribution to national advocates, and potentially lay the ground for an international consensus. By showcasing real-world plans and strategies, we hope to inspire debate and raise decision-makers' ambitions. We encourage our colleagues from across the CVD and NCD community to help us advance this debate.

Appendix

Identifying prominent examples of national CVD plans and initiatives

Through a rapid environment scan, we identified nine prominent examples of national CVD plans. Although our main focus was on high-income countries in Europe, we also identified insightful examples in middle-income countries and internationally (*Table A1*). Our aim was not to carry out an exhaustive search of national CVD plans, but to lay out tangible choices to policymakers based on inspirational, real-world examples. We found three main categories of plans relevant to CVD: dedicated CVD strategies; plans focusing specifically on CVD prevention; and wider strategies that focused on healthcare or non-communicable diseases with a specific component on CVD. We also found some recently expired CVD strategies that showcased strategic ambition.

Table A1. National CVD plans analysed in this think piece

Country	Policy	Duration
Australia	National Strategic Action Plan for Heart Disease and Stroke ¹²	Ongoing since 2020
England	NHS Long Term Plan ⁸	Ongoing since 2019
Estonia	National Strategy for Prevention of Cardiovascular Diseases ¹³	2005 to 2020
Ireland	Changing Cardiovascular Health: National Cardiovascular Health Policy ¹⁴	2010 to 2019
Japan	National Plan for Promotion of Measures Against Cerebrovascular and Cardiovascular Disease ¹⁵	Ongoing since 2020
Mexico	Nationwide Strategy for the Prevention, Treatment and Rehabilitation of Cardiovascular Disease ¹⁶	Ongoing since 2015
Poland	National Cardiovascular Disease Prevention and Treatment Programme ¹⁷	2017 to 2021
Scotland	Heart Disease Action Plan ¹⁸	Ongoing since 2021
US	Million Hearts 2027 ¹⁹	2022 to 2027

We also found some relevant centrally led programmes that were not overarching strategic plans but were significant, government-backed efforts to address CVD. We selected 11 examples of such initiatives (Table A2). While they were not the subject of our core analysis, we have included them throughout this document as initiatives that could inspire national decision-makers in building comprehensive CVD strategies.

Table A2. Nationwide systemic initiatives with a CVD component

Country	Type of initiative	Name
Australia	National CVD risk factor screening programme	Heart Health Checks ^{24*}
Australia	National CVD research programme	Medical Research Future Fund – Cardiovascular Health Mission ^{55*}
Denmark	National CVD research programme	Danish Cardiovascular Academy ⁵⁶
England	National risk factor screening programme	NHS Health Checks ^{23*}
England and Ireland	Regional risk factor modification programme	MyAction ^{39 40}
Estonia	Regional CVD registry	EUROHEART ⁵⁴
Italy	National CVD risk assessment and prevention programme	CARDIO 50 ²⁸ (expanded to YOUNG 50) ²⁶
Japan	National CVD law	The Cerebrovascular and Cardiovascular Disease Control Act ^{20*}
Lithuania	National health education programme	Health Promotion for People Belonging to the Cardiovascular Disease Risk Group ⁴²
Russia	National CVD screening programme	Preventive Medical Examinations ³³
Slovenia	National CVD risk factor screening programme	National Screening Programme for Familial Hypercholesterolemia ³⁰
Sweden	National CVD registry	SWEDEHEART ⁴⁸

**These initiatives were identified within the national plans and are included in the main analysis.*

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