Department of Health & Social Care

NHS England

# Technical annex: cardiovascular disease modern service framework

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## Purpose

This is the technical annex setting out the approach to taken by the Department of Health and Social Care (DHSC) and NHS England to develop the cardiovascular disease modern service framework (CVD MSF). It provides an overview of how the CVD MSF was developed, including:

- the approach to stakeholder engagement
- the approach taken to identify the 12 priorities
- the evidence supporting the 12 priorities and wider actions
- the approach taken to identify challenge areas

# Introduction

This government has committed to reducing premature mortality from heart disease and stroke by 25% within the next decade. Progress against this ambition will be tracked through a nationally published metric, currently published in the mortality profile on Fingertips[1] and updated annually.

The 10 Year Health Plan set out a commitment to publish a new generation of modern service frameworks, building on the success of the original national service frameworks in driving improvement, consistency and equity in care.

The CVD MSF is an early priority. Its outcome goal - the overarching ambition underpinning the priorities and innovations set out within the framework - is to accelerate progress towards the government's premature mortality ambition. The CVD MSF sets out:

- the best evidenced interventions that, when delivered equitably across the health and care system, will best support progress towards this ambition
- a vision for the future
- challenge areas where significant progress is possible but more innovative ideas and products are needed

[1] Fingertips is due to be replaced, however the indicator will continue to be published on the new public health data service. For more information see the 'New service updates' section of the Fingertips guidance page.

# Scope

The scope of this work was informed by a holistic, health and care system approach to cardiovascular-kidney-metabolic (CVKM) conditions across the CVD pathway and life-course.

Reducing premature deaths from heart disease and stroke by 25% over the next decade will also require wider determinants that shape health. However, action to address the wider determinants of health falls outside the scope of the CVD MSF.

# Approach taken to develop the CVD MSF

The CVD MSF has been led by 2 clinical co-chairs, Dr Jessica Randall-Carrick and Sir Andrew F Goddard, supported by a joint DHSC and NHS England team.

The approach to develop the CVD MSF was underpinned by:

- extensive stakeholder engagement
- a strong grounding in evidence

## Stakeholder engagement

The CVD MSF was informed by structured engagement with a wide range of stakeholders. This included stakeholders from across the NHS, local government, professional bodies including royal colleges, academia, patient and public voice partners, charities, third sector partners and industry. Engagement took place between September 2025 and April 2026 to inform, test and build consensus around an implementable CVD MSF.

A task and finish group was formed to guide the work. This group brought together expertise and insights from key charity, clinical, public health, patient voice and academic partners involved across the CVD pathway and health and care system. See annex C in the CVD MSF for the task and finish group terms of reference.

Combined, this engagement helped to:

- identify the best evidenced actions delivered by the health and care system to reduce premature mortality from heart disease and stroke within the next decade
- identify the most significant opportunities for innovation to drive progress towards the premature mortality ambition

- understand patient and professional experiences to inform the priorities and delivery expectations set out in the MSF

- identify how best to support national and system stakeholders to deliver the priorities set out in the MSF

As well as guiding the development of the CVD MSF, the insights from this engagement will also support the subsequent delivery plan to be published in the autumn.

**Feedback from multidisciplinary professional and system stakeholders**

Engagement from health and care system stakeholders identified the following priorities for the CVD MSF:

- shift the system focus towards prevention, intervening earlier to identify risk, implement prevention interventions and reduce the impact of CVD on the public, patients and the wider health and care system

- adopt a CVKM approach that avoids siloed care and supports an integrated prevention and management approach across related conditions and clinical pathways

- reduce health inequalities and unwarranted variation as core to the delivery of the MSF, taking a proportionate universalist approach, and using data and outreach to support more consistent outcomes across population groups, providers and geography

- enable cross-pathway care across the life-course, from early prevention and diagnosis through to end-of-life care

- consider improving a wider set of outcomes beyond premature mortality, such as morbidity, disability and patient experience

- focus on the implementation of interventions that are deliverable within existing system resources, recognising the absence of additional funding within the CVD MSF

- prioritise consistent delivery and scale-up of existing, evidence-based interventions for major CVD risk factors and conditions across clinical pathways and local systems

- support a range of delivery models, including using new workforce approaches that extend prevention and care beyond traditional healthcare settings, including into community models

- recognise digital, technology and medicine innovations as critical enablers to streamline clinical pathways and support patient care over the next decade

- align with other MSFs, where possible, including those confirmed for severe mental illness, frailty and dementia, sepsis, and children and young people

**Feedback from patient, carer and public partners engagement**

Engagement with the patient, carer and public voice community included the charity and voluntary sector organisations, the NHS health and well-being alliances, the Race Equality Engagement Group together with Caribbean and African Health Network, and people and communities' engagement groups at a national and local system level.

The main themes emerging from these groups include:

- prevention and early identification are critical across the life course but often difficult to access or act on

- communication about treatment and medicines needs to be clearer, more empathetic and in plain English

- access to tests, diagnosis, medicines, monitoring and rehabilitation varies widely

- people want clear next steps, reliable follow-up and better co-ordination across services post discharge, including linking with relevant mental health support

- wider life pressures, poverty and structural barriers have a significant impact on health, and the health and care system has an important role to play in connecting people with other services and support to help them navigate those barriers

- care should reflect the whole person and multiple conditions, not single diseases

- community-led and peer-support approaches are trusted to reach underserved groups, especially those people not currently engaging with health services

- services should be co-designed with the communities that need them so they're fit-for-purpose and improve engagement and outcomes

- digital tools are helpful for many but risk excluding others without access, skills or confidence to meaningfully engage with them. In-person support must continue to be available for those who want or need it

- cardiac rehabilitation is highly valued but unevenly offered and should be consistently available

Patient, carer and public community voices consistently emphasised the need for clear communication, co-ordinated support and recognition of the wider determinants of health. These insights, alongside the clinical and economic evidence base, informed the development of the CVD MSF.

We are grateful for important contributions from these stakeholders.

# Identifying the goal and priorities

MSFs set out a small number of priorities that, when delivered consistently and equitably, will have the greatest contribution on the defined outcome goal.

A wide range of national and regional stakeholders were engaged to agree the outcome goal and identify and agree evidence-based priority actions for the CVD MSF.

## Outcome goal

In the health mission, the government committed to reducing premature mortality from heart disease and stroke by 25% within the next decade. Following significant engagement with analytical and clinical leads, this ambition was defined based on those cardiovascular conditions (including cerebrovascular disease) that are considered either preventable, treatable or both. Progress against this ambition is tracked through a nationally published metric, currently published in the mortality profile on Fingertips[2] and updated annually.

There was broad consensus the government CVD ambition was a suitable outcome goal for the CVD MSF.

[2] Fingertips is due to be replaced, however the indicator will continue to be published on the new public health data service. For more information see the 'New service updates' section of the Fingertips guidance page

Evidence-based and innovation priorities were therefore identified largely on their contribution towards achieving this ambition.

### Premature mortality forecast assessment

We have projected possible scenarios for heart disease and stroke mortality to 2034 to determine possible mortality numbers that would need to be avoided in order to meet the 25% target. These scenarios take into account the effect of the changing age structure of the population over 10 years.

If there was no change in age-specific mortality rates from 2024 over the following 10 years, we estimate the effect of England's ageing population alone would account for an increase of approximately 4,000 deaths from heart disease and stroke in 2034 compared to 2024. Under this assumption we estimated that England would need to see approximately 9,000 fewer premature deaths from heart disease and stroke by 2034 than would be expected in order to meet the target. This includes 5,000 fewer than the number of deaths in 2024 in addition to the 4,000 resulting from an ageing population.

Using an alternative scenario where mortality rates in those aged 70 to 74 continue to decrease from 2024 in line with historical trends, we expect England's ageing population will account for a smaller increase in heart disease and stroke mortality. Under this assumption we estimate around 7,400 premature deaths need to be prevented in order to meet the 25% reduction target.

These are simple forecasts of future mortality based on linear projections of historic age-specific mortality rates. However, additional improvement in mortality risk may result from longer term trends in population health such as earlier improvements in dietary or physical activity behaviours in younger people influencing mortality outcomes in the 10-year period. It is also possible that future advancements in medications and treatments could bring further improvements to disease management.

## Evidence-based priorities

Evidence-based priorities were developed and refined through an iterative, cyclical process. Using a structured assessment framework, priorities were repeatedly identified, tested, challenged and refined with clinicians, subject matter experts, policy and programme leads, and members of the task and finish group, to assess the strength of the evidence base and their deliverability in practice.

Throughout, priorities were assessed to ensure alignment with the core outcome goal. The approach helped focus the final set of proposals on actions delivered by

the health and care system that are most likely to be deliverable within the current context and will have the greatest impact on this goal.

### Triangulating evidence and insights

Inspired by the National Institute for Health and Care Excellence (NICE) principles for independent, evidence-based decision making, and recognising the complexity of the topic, a 3-part approach was used to triangulate multiple sources of evidence and agree the final set of priorities for the CVD MSF.

The approach integrated 3 complementary workstreams:

### Premature mortality outcomes assessment

Where possible, NHS England and DHSC analysts estimated the number of deaths under 75 that could be prevented in year for a long list of priorities. A range of modelling approaches was used with input from clinical and public health experts. The analysis was subsequently peer reviewed by academic experts. We thank Dr Lois Kim (University of Cambridge) and Dr Ben Lacey (University of Oxford) for their helpful feedback which informed the final analysis. Technical details of the modelling approach are set out later in this document.

### Contextual factor assessment

The widely recognised ‘APEASE’ behavioural framework (which stands for acceptability, practicability, effectiveness, affordability, side-effects, and equity), was adapted and used to agree the additional contextual factors against which a long-list of proposed priorities would be assessed. Clinical and programme leads agreed these factors should:

- impact on CVD wider outcomes (beyond premature mortality)
- impact on service demand and economic inactivity
- impact on patient experience and the CVD pathway
- have potential to reduce inequalities
- be feasibly scaled (including workforce and infrastructure considerations)
- be aligned with pathway transformation and the 10 Year Health Plan

These factors were consistently assessed across a long-list of priorities, producing a set of individual fact files to support comparison and prioritisation.

### Expert-led assessment

This workstream captured the clinical and public health expertise that informed development of the other 2 workstreams, including continuous engagement to shape both the modelling and the contextual fact files.

In addition, the task and finish group reviewed a long-list of proposed priorities and produced a ranked list, which was used to inform system and stakeholder expectations and to triangulate the outputs of the other 2 workstreams.

### Decision-making

A triangulation committee, chaired by the CVD MSF clinical co-chairs and comprising clinical experts and programme and policy leads from DHSC and NHS England, reviewed the evidence and sought consensus on which interventions should form the priorities for the CVD MSF.

The National Quality Board and ministers endorsed the 12 priorities identified for the CVD MSF.

### Defining national standards

For the 12 priorities, the CVD MSF adopts a delivery-focused approach to defining national standards. These describe:

- metrics which form the basis for how progress will be tracked transparently for each priority, aligned to the evidence base, relevant guidance and established metrics where possible
- baseline performance against the standard
- 3-year and 10-year ambitions to inspire progress in the short-term and long-term
- equity metrics for each standard, focused on improving performance in areas with the poorest performance, to narrow the gap and drive more consistent improvement across the country

These were developed in collaboration with clinical experts and stress-tested through multiple rounds of engagement.

## Developing the principles for equitable implementation

If action is delivered in a one-size-fits-all manner, there is a risk that the already persistent inequalities could widen. Researchers at Health Equity Evidence Centre, Queen Mary University of London, developed evidence-informed guiding principles

for equitable implementation of the CVD MSF based on a library of Health Equity Evidence Centre evidence briefs.

While developed to inform the CVD MSF, the principles are intentionally transferable, and are intended to support equitable design, commissioning, delivery and evaluation across health and care services, including other MSFs and future public health initiatives. We thank Dr John Ford, Dr Hannah Mohammad and Dr Elliot Clissold for this important work.

# Evidence supporting the 12 priorities

## Summary of contextual evidence

The sections below provide a high-level summary of the contextual technical evidence for the 12 priorities set out in the CVD MSF. They are grouped according to 4 themes, as reflected across the priorities in the MSF:

- finding the missing millions
- driving treatment to target
- ensuring timely, equitable, high-quality acute care
- living with CVD and expanding access to rehabilitation

## Finding the missing millions

### Priority 1: smoking cessation

Smoking substantially increases the risk of CVD and premature death from CVD, including heart disease and stroke.[3] However, cardiovascular risk falls rapidly after quitting[4] [5] [6] [7].

Combining behavioural support with nicotine replacement therapy, stop smoking medications or vapes (e-cigarettes), significantly boosts long term quit rates, particularly with better adherence. Interventions delivered by local Stop Smoking Services and NHS tobacco dependence programmes are especially effective.

People who smoke and access structured support are up to 3 times more likely to quit compared to those who try to quit unaided.[8] Recent data suggests that over 50% of people accessing structured support successfully quit based on self-reported outcomes in community settings[9]. When commissioned and targeted well, these services can play a central role in reducing inequalities by proactively engaging high-risk groups.

People who smoke are also more likely to attend or be admitted to hospital[10]. Hospital-based tobacco dependency services are a valuable opportunity to engage with people who may not be in contact or engage with community Stop Smoking Services. Hospital initiated opt-out models show high uptake (around 79%) and achieve 6 month quit rates of approximately 35%[11].

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[3] Gallucci G and others. 'Cardiovascular risk of smoking and benefits of smoking cessation' Journal of Thoracic Disease 2020: volume 12, issue 7, pages 3866 to 3876 (viewed on 15 June 2026)
[4] Banks E and others. 'Tobacco smoking and risk of 36 cardiovascular disease subtypes: fatal and non-fatal outcomes in a large prospective Australian study' BMC Medicine 2019: volume 17, article number 128 (viewed on 15 June 2026)
[5] Wu AD and others. 'Smoking cessation for secondary prevention of cardiovascular disease' Cochrane Database of Systematic Review 2022: issue 8 (viewed on 15 June 2026)
[6] Royal College of Physicians. 2018. 'Hiding in plain sight: Treating tobacco dependency in the NHS' (viewed on 15 June 2026).
[7] European Society of Cardiology. 'Quitting smoking nearly halves heart attack risk, cutting down does little' 2024 (viewed on 15 June 2026)
[8] National Centre for Smoking Cessation and Training. 'Stop smoking services: increased chances of quitting' 2025 (viewed on 16 June 2026)
[9] NHS England. 'Statistics on Local Stop Smoking Services in England - April 2024 to March 2025 (Q4, Annual)' 2025 (viewed on 13 May 2026)
[10] Royal College of Physicians. 'Hiding in plain sight: Treating tobacco dependency in the NHS' 2018 (viewed on 15 June 2026)
[11] Robin J and others. 'Evaluation of a hospital-initiated tobacco dependence treatment service: uptake, smoking cessation, readmission and mortality' BMC Medicine 2024 (viewed on 13 May 2026)

The health impacts of smoking extend beyond the person who smokes themselves, with babies and children particularly vulnerable to the impacts of second and third-hand smoke exposure.

Rates of smoking are significantly higher in some groups, including people working in routine and manual occupations, people with serious mental illness, and people living in the most deprived areas of England[12]. It is therefore critical that all people who smoke are identified and offered evidence-based support to quit smoking through multiple channels to maximise engagement opportunities[13].

**Priority 2: CVKM case-finding**

The single greatest opportunity to reduce premature mortality from heart disease and stroke lies in tackling CVKM risk factors, which drive most heart attacks and strokes[14] [15]. Conditions such as high blood pressure, high cholesterol, atrial fibrillation, high blood sugar and chronic kidney disease, often cluster together, sharing common risk factors and compounding one another's effects on overall cardiovascular risk.

Early identification and diagnosis of CVKM risk factors[16] combined with behavioural change,[17] effective and low-cost treatment[18] and high rates of adherence[19] to care plans can dramatically reduce cardiovascular risk. Increasing evidence demonstrates that a holistic CVKM approach - identifying clusters of CVKM risk factors together - offers a significant opportunity to reduce premature deaths and narrow health

[12] NICE. 'Smoking cessation: What is the prevalence of smoking?' 2026 (viewed on 13 May 2026)
[13] Action on Smoking and Health. 2025. 'Smoking Statistics' (viewed on 16 June 2026)
[14]Liu X and others. 'Cardiovascular-kidney-metabolic syndrome modifies smoking-related risk for cardiovascular diseases: findings from an observational cohort study in UK Biobank' BMC Public Health 2025: volume 25, article number 1609 (viewed on 13 May 2026)
[15] Yang C and others. 'Sex differences in cardiovascular-kidney-metabolic risk factors associated with degenerative valvular heart disease' European Journal of Preventative Cardiology 2025: volume 32, issue 17pages 1705 to 1715 (viewed on 13 May 2026)
[16] Lemp JM and others. 'Use of lifestyle interventions in primary care for individuals with newly diagnosed hypertension, hyperlipidaemia or obesity: a retrospective cohort study' Journal of the Royal Society of Medicine 2022: volume 115, issue 8, pages 289 to 299 (viewed on 13 May 2026)
[17] Heath L and others. 'Obesity, metabolic risk and adherence to healthy lifestyle behaviours: prospective cohort study in the UK Biobank' BMC Medicine 2022 (viewed on 13 May 2026)
[18] Leslie KH and others. 'Adherence to cardiovascular medication: a review of systematic reviews' Journal of Public Health 2019 (viewed on 13 May 2026)
[19] Nieuwkerk PT and others. 'Intervention to Improve Adherence to Lipid-Lowering Medication and Lipid-Levels in Patients With an Increased Cardiovascular Risk' The American Journal of Cardiology 2012: volume 110, issue 5, pages 666 to 67 (viewed on 13 May 2026)

inequalities.[20] This is especially the case when implemented proactively in community and primary care settings to reach underserved groups[21].

Cumulative exposure to these modifiable CVKM risk factors underpins a wide range of other health conditions. Addressing these shared CVKM risk factors through sustained behaviour change and clinical management will deliver significant benefits across the health system, extending well beyond cardiovascular outcomes.

## Driving treatment to target

### Priority 3: SGLT2is

Sodium-glucose co-transporter 2 inhibitors (SGLT2is) lower blood sugar by causing kidneys to excrete excess glucose in urine. NICE guidance recommends their use[22] for the management of type 2 diabetes, chronic heart failure[23] and chronic kidney disease[24], as their protective benefits are seen rapidly. These include reductions in heart failure hospitalisations, slowing the progression of chronic kidney disease, lower rates of cardiovascular mortality and all-cause readmissions. Other potential benefits include modest weight loss and improvements in blood pressure[25].

SGLT2is are highly cost-effective, particularly in early treatment adoption to delay disease progression and reduce long term healthcare costs[26]. In high-risk groups (for example, those with established cardiovascular disease or chronic kidney disease), SGLT2is can deliver cost savings over time (typically within 2 to 16 years) due to the prevention of costly admissions for acute cardiovascular events and progression of

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[20] Wang N and others. 'Educational inequalities in cardiovascular diseases and their mediating factors across different generations: a prospective cohort study' European Heart Journal - Quality of Care and Clinical Outcomes 2025 (viewed on 13 Mary 2026)
[21] Woringer M and others. 'Evaluation of community provision of a preventive cardiovascular programme - the National Health Service Health Check in reaching the under-served groups by primary care in England: cross sectional observational study' BMC Health Services 2017 (viewed on 13 May 2026)
[22] NICE. 'NICE guideline (NG28): Type 2 diabetes in adults: management' 2015 (viewed on 13 May 2026)
[23] NICE. 'Clinical knowledge summaries: Diabetes - type 2: SGLT-2 inhibitors' 2026 (viewed on 13 May 2026)
[24] NICE. 'NICE guideline (NG203) Chronic kidney disease: assessment and management | Guidance' 2021 (viewed on 13 May 2026)
[25] Benham JL and others. 'Systematic review and meta-analysis: SGLT2 inhibitors, blood pressure and cardiovascular outcomes' Heart & Vasculature 2021 (viewed on 13 May 2026)
[26] Darba J and others. 'Chronic Kidney Disease (CKD): Systematic Review of the Cost Effectiveness of SGLT2 Inhibitors and Other Novel Nephroprotective Drugs' Pharmacoeconomics 2026 (viewed on 16 June 2026)

kidney disease[27]. The benefits (reduction in CVD related death or worsening of condition) for people with heart failure have been shown within 26 days[28].

Additionally, NICE has indicated that switching patients with type 2 diabetes to a clinically equivalent generic version, following the recent expiration of patents, could generate cumulative savings of £560 million nationally for 2025 to 2026 and 2026 to 2027[29].

Systematic support for adherence and persistence is essential to achieving and sustaining treatment to target.

**Priority 4: hypertension treatment to target for people without CVD**

Cardiovascular mortality is strongly linked to how well hypertension is detected and treated[30] which is considered one of the most effective ways to reduce cardiovascular disease,[31] including heart attack, stroke and chronic kidney disease.

Even small improvements in blood pressure control can deliver substantial reductions in cardiovascular risk and events. Evidence underpinning NICE[32] guidance shows that lowering blood pressure by only 10 mmHg systolic is associated with approximately:

- 20% reduction in major cardiovascular events
- 17% reduction in coronary heart disease
- 27% reduction in stroke
- 28% reduction in heart failure

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[27] McEwan and others. 'Estimating the value of sodium-glucose cotransporter-2 inhibitors within the context of contemporary guidelines and the totality of evidence' Diabetes, Obesity and Metabolism 2023 (viewed on 16 June 2026)
[28] Chen KY and others. 'Time to Benefit of Sodium-Glucose Cotransporter-2 Inhibitors Among Patients With Heart Failure' JAMA Network Open 2023 (viewed on 13 May 2026)
[29] NICE. 'Major changes to type 2 diabetes treatment could save thousands of lives' 2026 (viewed on 13 May 2026)
[30] Al-Alusi MA and others. 'A deep learning digital biomarker to detect hypertension and stratify cardiovascular risk from the electrocardiogram' npj Digital Medicine 2025: volume 8, article number 120 (viewed on 13 May 2026)
[31] McCarthy CP and others. 'Centennial Collection: From treating hypertension to lowering cardiovascular disease risk' Hypertension 2024 (viewed on 13 May 2026)
[32] Ettehad D and others. 'Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta-analysis' The Lancet 2016 (viewed on 13 May 2026)

Treating hypertension to target is also cost-effective. Financial savings are achieved through reduced cardiovascular events and reductions in healthcare utilisation such as hospital admissions and long-term care needs which more than offset the cost of treatment[33].

Systematic support for adherence and persistence is essential to achieving and sustaining treatment to target.

**Priority 5: lipid optimisation for people without CVD**

Modelling across integrated care boards (ICBs) suggests that systematic lipid optimisation could prevent large numbers of heart attacks and strokes[34].

Large-scale randomised trials and meta-analyses provide robust evidence that lowering low-density lipoprotein (LDL) cholesterol in people without established CVD substantially reduces the risk of first cardiovascular events, supporting a proactive, risk-based approach to treatment optimisation[35].

Each 1 mmol/L reduction in LDL-cholesterol is associated with a 22% reduction in major vascular events after 1 year[36] [37].

Modelling and trial evidence also indicate that absolute benefits are greatest when lipid-lowering therapy is targeted at those with the highest underlying cardiovascular risk, such as people with established cardiovascular disease, diabetes, chronic kidney disease, familial hypercholesterolaemia or elevated predicted risk (for example, QRISK score of equal to or greater than 10%)[38].

Systematic support for adherence and persistence is essential to achieving and sustaining lipid optimisation.

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[33] NICE. 'Resource impact report: Hypertension in adults: diagnosis and management (update) (NG136)' 2019 (viewed on 13 May 2026)
[34] UCLPartners. 'Size of the Prize - Cholesterol | Tableau Public' 2025 (viewed on 16 June 2026)
[35] Marston NA and others. ' Evolocumab to Reduce First Major Cardiovascular Events in Patients Without Known Significant Atherosclerosis and With Diabetes: Results From the VESALIUS-CV Trial' JAMA 2026 (viewed on 13 May 2026)
[36] Cholesterol Treatment Trialists' (CTT) Collaboration. 'Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials' The Lancet 2010 (viewed on 13 May 2026)
[37] NHS England. 'Improving lipid management to reduce cardiovascular disease and save lives' 2023 (viewed on 13 May 2026)
[38] Baigent C and others. 'Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins' The Lancet 2005 (viewed on 16 June 2026)

**Priority 6: 9 diabetes care processes**

Gaps in routine diabetes monitoring and risk factor management are associated with increased emergency admissions and avoidable complications, including foot disease and amputation[39].

There are 9 core care processes for diabetes recommended by NICE to manage the condition and reduce the risk of complications[40]. It is well evidenced that delivering all 8 of the annual care processes, mainly in primary care, enables early detection and proactive management of glycaemic, cardiovascular, kidney and foot risk, reducing complications, amputations and premature mortality[41]. National evidence shows it improves treatment[42] patient experience and value for money, while tackling inequalities driven by deprivation and variation in access.

The ninth process, retinal screening, is important for detecting early diabetic retinopathy, the leading cause of preventable blindness in working age adults[43]. It is delivered through the national NHS Diabetic Eye Screening Programme.

**Priority 7: blood pressure and cholesterol optimisation for people with CVD**

People living with established CVD remain at high risk of further heart attacks and strokes especially when blood pressure and cholesterol are not well managed[44] [45]. Many leave hospital with untreated or only partially treated risk factors, and fragmented follow-up means the opportunities to stabilise disease are often missed[46].

Evidence shows that bringing blood pressure and lipids to guideline-recommended targets is one of the most effective ways to reduce recurrent cardiovascular events

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[39] Gunn LH and others. 'Associations between attainment of incentivised primary care indicators and emergency hospital admissions among type 2 diabetes patients: a population-based historical cohort study' Journal of the Royal Society of Medicine 2021 (viewed on 16 June 2026)
[40] NICE. 2015. 'NICE guideline (NG28): Type 2 diabetes in adults: management' (viewed on 16 June 2026).
[41] NHS Digital. 'National Diabetes Audit 2021-22, Report 1: Care Processes and Treatment Targets, Detailed Analysis Report' 2023. (viewed on 13 May 2026).
[42] Radwan TF and others. 'Improving the management of type 2 diabetes through large-scale general practice: the role of a data-driven and technology-enabled education programme' BMJ Open Quality 2021 (viewed on 13 May 2026)
[43] The Lancet Diabetes & Endocrinology. 'Under the lens: diabetic retinopathy' The Lancet Diabetes & Endocrinology 2020: volume 8, issue 11, page 869 (viewed on 14 May 2026)
[44] Wonderling D and others. 'Secondary prevention of cardiovascular disease, including cholesterol targets: summary of updated NICE guidance' BMJ 2024 (viewed on 19 June 2026)
[45] Revankar S and others. 'Key Concepts in Cardiovascular Secondary Prevention: A Case-Based Review' American Journal of Cardiology 2025 (viewed on 19 June 2026)
[46] Wonderling D and others. 'Secondary prevention of cardiovascular disease, including cholesterol targets: summary of updated NICE guidance' BMJ 2024 (viewed on 19 June 2026)

and prevent further complications[47]. For example, every 1 mmol/L reduction in LDL-cholesterol is tied to a 22% reduction in major vascular events after 1 year[48] [49].

These benefits are particularly significant for people with multimorbidity[50] and those in more deprived communities[51] who experience higher rates of uncontrolled risk factors and gain the greatest absolute benefit from systematic optimisation.

Non-adherence to lipid-lowering[52] and antihypertensive[53] therapy is common and is associated with higher rates of recurrent events. Systematic support for adherence and persistence is essential to achieving and sustaining treatment to target.

### Priority 8: 4 pillars therapy for HFrEF [54] [55]

Approximately 45% of people with heart failure have heart failure with reduced ejection fraction (HFrEF), which is associated with a poorer prognosis than other heart failure phenotypes[56].

People living with HFrEF face high risks of deterioration, recurrent hospital admissions and premature death, yet many do not receive the full combination of guideline-directed medical therapies (GDMT)[57]. Quadruple therapy combines an angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor blocker

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[47] Cholesterol Treatment Trialists' (CTT) Collaborators. 'The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: meta-analysis of individual data from 27 randomised trials' The Lancet 2012 (viewed on 14 May 2026)
[48] NHS England. 2023. 'Improving lipid management to reduce cardiovascular disease and save lives' (viewed on 14 May 2026)
[49] Cholesterol Treatment Trialists' (CTT) Collaboration. 'Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials' The Lancet 2010 (viewed on 13 May 2026)
[50] Wang N and others. 'Intensive LDL cholesterol-lowering treatment beyond current recommendations for the prevention of major vascular events: a systematic review and meta-analysis of randomised trials including 327 037 participants' The Lancet Diabetes and Endocrinology 2020: volume 8, issue 1, page 36 to 49 (viewed on 16 June 2026)
[51] Ratnasabesar V and Kunadian V. 'Health inequalities across England and their impact on cardiovascular diseases | Heart' Heart 2026 (viewed on 16 June 2026)
[52] Basios A and others. 'Prevalence and determinants of adherence to statin therapy: a systematic review and meta-analysis' European Journal of Preventive Cardiology 2025 (viewed on 16 June 2026)
[53] De Vera MA and others. 'Impact of statin adherence on cardiovascular disease and mortality outcomes: a systematic review' British Journal of Clinical Pharmacology 2014 (viewed on 16 June 2026).
[54] NICE. 'Guidance (SG106): Chronic heart failure in adults: diagnosis and management | Guidance' 2025 (viewed on 16 June 2026)
[55] McDonagh TA and others. '2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure' European Heart Journal 2021: volume 42, issue 36, pages 3,599 to 3,726 (viewed on 16 June 2026)
[56] National Institute for Cardiovascular Outcomes Research (NICOR). 'National Heart Failure Audit' 2025 (viewed on 16 June 2026)
[57] Jalloh MB and others. 'Multi-level implementation strategies to improve uptake of evidence-based therapies in heart failure' European Heart Journal 2023 (viewed on 19 June 2026)

(ARB) or angiotensin receptor-neprilysin inhibitor (ARNI), beta-blocker (BB), mineralocorticoid receptor antagonist and SGLT2i, and is considered one of the most impactful treatment strategies in cardiovascular medicine[58] [59].

When used together and carefully adjusted for each person, these 4 treatments are associated with substantial reductions in mortality and hospital admissions[60] for heart failure. They are also associated with improved symptoms, greater clinical stability and better quality of life[61]. Because each works in a different way, combining them slows the progression of heart failure and delivers additive benefit, particularly for people with multiple long-term conditions[62].

Systematic support for adherence and persistence is essential to achieving and sustaining impact.

## Ensuring timely, equitable, high-quality acute care

### Priority 9: specialised and organised stroke care

Stroke outcomes improve significantly when people receive timely assessment, rapid imaging and co-ordinated, evidence-based care delivered by specialist multidisciplinary stroke teams[63].

Improving access to specialist and organised stroke care represents a major opportunity to reduce avoidable mortality, disability and future health and social care needs and also reduces unwarranted geographical variation in access. Evidence

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[58] Vaduganathan M and others. 'Estimating lifetime benefits of comprehensive disease-modifying pharmacological therapies in patients with heart failure with reduced ejection fraction: a comparative analysis of 3 randomised controlled trials' The Lancet 2020: volume 396, issue 10244, pages 121 to 128 (viewed on 16 June 2026)
[59] Greene SJ and others. 'Simultaneous or Rapid Sequence Initiation of Quadruple Medical Therapy for Heart Failure—Optimizing Therapy With the Need for Speed' JAMA Cardiology 2021 (viewed on 16 June 2026).
[60] Tromp J and others. 'A systematic review and network meta-analysis of pharmacological treatment of heart failure with reduced ejection fraction' JACC Heart Failure 2022 (viewed 16 June 2026)
[61] Margaryan R and others. 'Network Meta-Analysis of Quality of Life in Heart Failure With Reduced Ejection Fraction' Circulation: Heart Failure 2025: volume 18, number 12 (viewed on 16 June 2026)
[62] Shahid I and others. 'Bridging gaps and optimizing implementation of guideline-directed medical therapy for heart failure' Progress in Cardiovascular Diseases 2024: volume 82 (viewed on 16 June 2026)
[63] Langhorne P and others. 'Organised inpatient (stroke unit) care for stroke: network meta-analysis' Cochrane Database of Systematic Reviews 2020 (viewed on 14 May 2026)

indicates that patients treated in dedicated stroke units are more likely to survive and be independent and living at home one year after their stroke[64].

A significant opportunity for improvement lies in faster identification, imaging, transfer and treatment of eligible patients, alongside increasing procedure numbers[65].

Specialist and organised stroke unit care comprises rapid swallow screening and dysphagia management, early multidisciplinary therapy, prevention and management of stroke complications and early transfer to a matched care model of community stroke rehabilitation[66].

For an acute ischaemic stroke, time is brain. Intravenous thrombolysis and mechanical thrombectomy as part of a wider reperfusion pathway are highly effective treatments for a proportion of patients with ischaemic stroke, with trials showing improved survival and substantially better functional recovery compared with best medical therapy alone[67].

**Priority 10: multiple therapies for intracerebral haemorrhage**

Intracerebral haemorrhage (ICH) is a type of haemorrhagic stroke in which a blood vessel inside the brain bursts and leaks blood into the surrounding tissue, sometimes deep within the brain. This bleeding damages brain cells and affects how the body functions[68].

About 11% of all patients presenting to hospital in the UK and Ireland with acute stroke have ICH as the cause[69].

Standardising a multi-modal care bundle for acute ICH is essential; single therapies alone have repeatedly failed to deliver meaningful outcome improvements, whereas co-ordinated early interventions - blood pressure reduction, reversal of anticoagulation - consistently improve functional recovery and reduce serious

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[64] Langhorne P and others. 'Organised inpatient (stroke unit) care for stroke: network meta-analysis' Cochrane Database of Systematic Reviews 2020 (viewed on 14 May 2026)
[65] NHS England. 'National Stroke Service Model: Integrated Stroke Delivery Networks' 2021 (viewed on 17 June 2026)
[66] Intercollegiate Stroke Working Party. 'National Clinical Guideline for Stroke for the UK and Ireland' 2023 (viewed on 12 May 2026)
[67] NICE. 'NICE guidance (NG128): Stroke and transient ischaemic attack in over 16s: diagnosis and initial management' 2019 (viewed on 14 May 2026).
[68] Stroke Association. 'Haemorrhagic stroke' No publication date cited (viewed on 14 May 2026)
[69] Intercollegiate Stroke Working Party. 'National Clinical Guideline for Stroke for the UK and Ireland' 2023 (viewed on 12 May 2026)

adverse events[70]. Timely access to specialist stroke care should also include consideration of neurosurgical intervention where clinically indicated.

### Priority 11: timely primary percutaneous coronary intervention (pPCI) for ST-elevation myocardial infarction (STEMI)

Outcomes from a STEMI improves substantially when blood flow is restored quickly, and pPCI is the optimal reperfusion treatment[71] [72].

pPCI involves mechanically opening the blocked coronary artery, usually with a balloon and stent to rapidly restore blood flow to the heart muscle and limit permanent damage during a STEMI[73].

Timely pPCI intervention minimises the extent of myocardial damage and significantly reduces mortality up to 30% in comparison with thrombolysis[74]. National audit standards recommend 'call-to-balloon times' (time from the patient 999 call to the re-opening of artery using reperfusion pPCI therapy) under 150 minutes and 'door-to-balloon' (from arrival at hospital to re-opening of artery using reperfusion pPCI therapy) times under 60 minutes[75].

Every 30-minute delay increases 1-year mortality risk[76] and call-to-balloon times above 180 minutes nearly double 30-day mortality[77] [78]. Ensuring timely access to pPCI therefore represents one of the highest-impact opportunities to reduce death, complications, increased risk of heart failure and long-term disability from heart

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[70] Parry-Jones AR and others. 'Acute care bundles should be used for patients with intracerebral haemorrhage: An expert consensus statement' European Stroke Journal 2024 (viewed on 14 May 2026)
[71] European Society of Cardiology. '2023 Acute Coronary Syndromes' 2023 (viewed on 16 June 2026)
[72] NICE. 'Quality standard (QS68): Quality statement 6: Primary PCI for acute STEMI | Acute coronary syndromes in adults' 2020 (viewed 19 June 2026)
[73] NHS England. 'Primary Percutaneous Coronary Intervention service specification' (PDF, 239 KB) 2013 (viewed on 16 June 2026)
[74] Huynh T and others. 'Comparison of Primary Percutaneous Coronary Intervention and Fibrinolytic Therapy in ST-Segment-Elevation Myocardial Infarction' Circulation 2009: volume 119, number 24 (viewed on 16 June 2026)
[75] NICOR. 'Myocardial Ischaemia National Audit Project (MINAP) Overview of Quality Improvement (QI) metrics' (PDF, 149 KB) 2024 (viewed on 19 June 2026)
[76] Park J and others. 'Prognostic Implications of Door-to-Balloon Time and Onset-to-Door Time on Mortality in Patients With ST-Segment-Elevation Myocardial Infarction Treated With Primary Percutaneous Coronary Intervention' Journal of the American Heart Association 2019: volume 8, number 9 (viewed on 16 June 2026)
[77] Scholz KH and others. 'Impact of treatment delay on mortality in ST-segment elevation myocardial infarction (STEMI) patients presenting with and without haemodynamic instability: results from the German prospective, multicentre FITT-STEMI trial' European Heart Journal 2018 (viewed on 16 June 2026)
[78] Varcoe RW and others. 'Impact of call-to-balloon time on 30-day mortality in contemporary practice' Heart 2017 (viewed on 16 June 2026)

attacks. Delivery of these standards relies on a co-ordinated, end-to-end cardiac network approach, integrating ambulance services, emergency departments and specialised heart attack centres (pPCI-capable centres) to enable rapid diagnosis, direct conveyance and immediate access to treatment[79]. This requires co-ordinated regional pathways across ambulance services and hospitals to minimise delays to reperfusion, as emphasised in NICE quality standards[80] [81].

## Living with CVD and expanding access to rehabilitation

### Priority 12: rehabilitation

Specialist rehabilitation is a core component of effective CVD pathways, supporting recovery, reducing recurrent events, and improving long-term outcomes following acute cardiovascular events[82]. Cardiovascular rehabilitation, also known as cardiac rehabilitation (CR), is a highly evidence-based approach to secondary prevention[83].

It combines structured exercise, education, medicine optimisation, behavioural change and psychological support to address the clinical, physical and emotional impacts of CVD[84]. It delivers rapid and sustained benefits, associated with reduced mortality and hospital readmissions within the first year, alongside longer-term improvements in functional capacity, quality of life, independence and return to work[85] [86].

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[79] NICE. 'Quality standard (QS68): Quality statement 6: Primary PCI for acute STEMI | Acute coronary syndromes in adults' 2020 (viewed 19 June 2026)
[80] Scholz KH and others. 'Impact of treatment delay on mortality in ST-segment elevation myocardial infarction (STEMI) patients presenting with and without haemodynamic instability: results from the German prospective, multicentre FITT-STEMI trial' European Heart Journal 2018 (viewed on 16 June 2026)
[81] Varcoe RW and others. 'Impact of call-to-balloon time on 30-day mortality in contemporary practice' Heart 2017 (viewed on 16 June 2026)
[82] Dibben G and others 'Exercise-based cardiac rehabilitation for coronary heart disease' Cochrane Database of Systematic Reviews 2021: issue 11 (viewed on 19 June 2026)
[83] NICE. 2020. 'NICE guidance (NG185): Acute coronary syndromes' (viewed on 19 June 2026)
[84] British Association for Cardiovascular Prevention and Rehabilitation. 'Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation 2023 (4th edition)' (PDF, 491 KB) 2023 (viewed 16 June 2026).
[85] McGregor G and others. 'Does contemporary exercise-based cardiac rehabilitation improve quality of life for people with coronary artery disease? A systematic review and meta-analysis' BMJ Open 2020 (viewed 14 May 2026)
[86] Dalal HM and others. 'Clinical review: Cardiac rehabilitation' BMJ 2015 (viewed 16 June 2026).

## Premature mortality assessment

For the 12 priorities, we set out the combined impact of the 12 priorities and important caveats and limitations for the modelling presented. Numbers are rounded down to the nearest 10 (if under 1,000) or 50 (if over 1,000).

### Methods overview

A range of modelled approaches estimating stroke and heart disease premature mortality reduction were used to inform the priorities in the CVD MSF. For triangulation, mortality impacts for 19 potential priorities were estimated. Throughout this process, DHSC and NHS England analytical teams worked closely with colleagues, including National Clinical Directors, to understand evidence and data sets and define the modelling approaches.

The estimation methods for the 12 priorities include the following broad approaches:

### Internally produced existing DHSC or NHS England models

The existing models that were available to DHSC or NHS England analysts and were repurposed for use in this exercise. These approaches are replicable and DHSC or NHS England had direct access to the underlying methods. Many of the data sources used to estimate treatment populations available to DHSC and NHS England may not be publicly accessible.

### Externally produced model, either published publicly or locally maintained by NHS England

DHSC and NHS England used 2 externally produced and maintained models to support this exercise. These have been used where there was no suitable internal model and to our knowledge the external model was the best available source at the time. Two were created by the Sheffield Centre for Health and Related Research (ScHARR) and are complex individual-level simulation models used for return-on-investment analysis for treatment and detection of CVD risk factors, including hypertension, lipid management and diabetes. One of these models was used to support the national standards ambition impacts, referred to here as the ‘CVD ROI tool’[87].

[87] Sheffield Centre for Health and Related Research. 'CVD Prevention Return on Investment Tool' (viewed on 8 May 2026)

The third is a Markov state model created by the Centre for Health Economics at York University and used to estimate health and economic benefits of increasing the levels of cardiac rehabilitation in patients with acute coronary syndrome (ACS).

Although all 3 models are supported by documentation, the methods used cannot be interrogated directly by DHSC or NHS England analysts.

**Internally produced novel estimates**

Where there was no off-the-shelf model that could be used, novel estimates were produced within DHSC or NHS England. These vary in method and complexity depending upon the requirement of the population of interest and intervention application.

In general, these combined internal eligible treatment population sources projected over 10 years with peer-reviewed published estimates of relative risk reduction or other literature sources, as well as estimates of baseline mortality either taken from locally held data sets or from literature.

These novel estimates are all replicable and DHSC or NHS England have direct access to the underlying methods and data. Many of the data sources used to estimate treatment populations are available to DHSC or NHS England and these may not be publicly accessible.

**Indicative combined impact of implementing the CVD MSF priority actions**

A combined estimate was required to determine the potential contribution of the CVD MSF priorities as a whole on the government's premature mortality ambition in the event the 3-year and 10-year ambitions were met.

Aggregating the potential combined impact of the 12 priorities set out in the CVD MSF on premature mortality from heart disease and stroke is likely to overestimate in circumstances where:

- the intervention mechanisms behind the priority actions are overlapping
- the populations they affect are overlapping

The outline below is an assessment of such areas of potential overlap identified from the priorities, and the approach taken to calculate a single combined estimate that mitigates these overlaps partially or fully.

**Area of potential overlap 1: SGLT2i prescribing for heart failure**
SGLT2i prescribing for people with heart failure is captured under priority 3 (SGLT2is). SGLT2si are also one of 4 pillars for heart failure (priority 8). Therefore, the impact of prescribing to this population group is duplicated across both priorities. We assumed this may have a high level of impact on a combined estimate.

To mitigate this overlap, our above analysis of the impacts of priority 3 (SGLT2i) excludes patients with heart failure and limits to people with chronic kidney disease and type 2 diabetes only, so the impact of prescribing SGLT2i for heart failure patients is only captured in modelling for priority 8 (4 pillars treatment for HFrEF).

**Area of potential overlap 2: blood pressure and cholesterol management in people with CVD**
Priority action 7 includes optimising both blood pressure and cholesterol in patients with CVD. This is a direct overlap of the population affected, as many CVD patients will have their blood pressure managed in addition to cholesterol. We assumed this may have a high level of impact on a combined estimate.

Research has shown that BP and lipid management in CVD patients is not additive in reducing in CVD mortality[88] and quantifying the multiplicative relationship is unclear. Lipid management is essential in patients with existing CVD to reduce the risk of recurrent CVD events and showed larger risk reductions for mortality compared to blood pressure management. Therefore, only the modelled impacts of lipid management have been included for priority 7.

**Area of potential overlap 3: overlap in populations affected by blood pressure and cholesterol management in people at risk of developing CVD**
Blood pressure and lipid management in people at risk of CVD (priorities 4 and 5) may include some of the same people (if they both have hypertension and are indicated for cholesterol management). This is a partial overlap of the population affected. We assume this may have a medium level of impact on any combined estimate.

To mitigate this, priority actions 4 and 5 have been modelled together as a combined effect in the CVD ROI tool, so includes patients with combined or singular risk factors.

[88] Sundström J and others. 'Synergistic effects of blood pressure-lowering drugs and statins: systematic review and meta-analysis' BMJ Evidence Based Medicine 2018 (viewed on 14 May 2026)

**Area of potential overlap 4: heart failure as a subset of CVD**
The population of people with existing diagnosed CVD includes a subset of patients who will have heart failure. We assume this may have a medium level of impact on a combined estimate.

To mitigate this subset effect and avoid direct overlap between CVD populations covered by priority action 7 and priority action 8, the impacts of lipid management (priority 7) excludes all heart failure patients in the eligible population. This is a slightly conservative approach, as lipid management in some heart failure patients is clinically indicated, but the evidence of effect is less clear than patients with ischaemic heart disease or stroke.

**Area of potential overlap 5: those with ICH included in both stroke care and multiple therapies priorities**
Acute management of stroke will include dedicated stroke care, which is covered in priority action 9. However, a subset of these patients will be ICH patients (also covered by priority 10) and we assumed this may have a medium level of impact on a combined estimate.

To partially mitigate against this, modelling assumes 10% of deaths avoided due to stroke care (priority 9) are in patients with ICH (priority 10). ICH represents around 13% of stroke cases, using the sentinel stroke national audit programme (SSNAP) reports[89]. However, due to severity ICH patients are likelier to be seen quicker[90] so will probably reflect a smaller proportion of deaths prevented by the stroke care metric (which is based on treatment time). Therefore, 10% crossover selected as a reasonable estimate.

**Area of potential overlap 6: relationship between case-finding and treatment to target**
When modelled independently, case-finding via the NHS Health Check (priority 2) and treatment measures (priorities 4 and 5) theoretically could overlap in terms of longer-term mortality impacts. Both accelerated case-finding (with treatment optimisation measures unchanged) and increased treatment optimisation (with current case finding) should ultimately result in an increased number of patients optimised on treatment, including some patients who would end up newly optimised

[89] King's College London. 'Sentinel stroke national audit programme October 2023 to September 2024' (viewed on 4 June 2026)
[90] Kay R and others. 'Hospital arrival time after onset of stroke' Journal of Neurology, Neurosurgery, and Psychiatry 1992 (viewed on 19 June 2026)

in both model scenarios. We assume this partial overlap in patient groups may have a medium level of impact to any combined estimate.

To partially mitigate this, modelling assumes 10% of deaths avoided due to case finding (priority 2) would also be avoided in treatment scenario (priorities 4 and 5) as well. We consider this conservative as we are measuring in-year avoided events, and it is relatively less likely that both model scenarios will result in an avoided death in the same year. It is also possible that the interventions are additive, as some additional deaths would be prevented by improving case-finding concurrently with increasing existing patient optimisation.

**Area of potential overlap 7: overlap of SGLT2i and diabetes treatment interventions**

Populations receiving SGLT2i treatment (priority 3) and diabetes care processes (priority 6) will overlap with each other and with those subject to other treatment interventions. SGLT2i are indicated specifically for people with type 2 diabetes alongside the care processes, and the eligible populations for both priorities may also be eligible for blood pressure or cholesterol management (priorities 4 and 5, or priority 7). This is a complex partial overlap relationship and may be of medium level of impact to calculating a combined estimate.

To partially mitigate this effect, the combined estimate was calculated under 2 different scenarios to show a lower and higher impact effect:

- high end: assume 50% of deaths prevented by diabetes care processes (priority 6) would also be prevented by SGLT2i (priority 3); assume 20% of deaths prevented by blood pressure and cholesterol treatment would also be prevented by SGLT2i due to the presence of diabetes and CKD diagnosis in hypertension and high CVD risk patients (priorities 4 and 5)

- low end: do not include deaths prevented by SGLT2i (priority 3) or diabetes care processes (priority 6) - that is, assume they are not additive to all other treatment interventions

As noted above, heart failure patients (priority 8) were not counted when measuring impacts for SGLT2is (priority 3) due to direct overlap with SGLT2i treatment.

**Area of potential overlap 8: smoking cessation**

There is a low likelihood that smoking cessation activity (priority 1) may overlap with targeted interventions such as treating patients at risk of CVD or established CVD with drug therapies, acute care or rehabilitation interventions.

To mitigate this risk, we have not included deaths prevented by smoking cessation (priority 1) in the combined figure. Targeted interventions have a negligible impact as the numbers of deaths prevented due to smoking cessation are very small and the significance of these to any combined estimates is very low.

**Combined impact of priorities**

Table 1 shows the final analysis to arrive at a combined figure. This groups the priority areas into 'components', which capture the mitigations shown above. Priorities 11 and 12 are retained as is as they are likely to have minimal overlap with other areas. Numbers are rounded down to the nearest 10 (if under 1,000) or 50 (if over 1,000). Total values are calculated using unrounded components and include the mitigations as described above. Therefore, the rows may not sum to the totals due to rounding.

We estimate that the potential overall impact of delivering the 12 priorities set out in the CVD MSF to the level set out in the 3-year ambition could be to prevent between around 1,600 and 2,400 deaths from heart disease and stroke in year 3. For year 10, the equivalent figure is between around 3,850 and 4,900 deaths. Note that both 'low end' and 'high end' estimates assume ambition levels for year 3 or year 10 are reached across all priority actions. This is a much less likely scenario than any individual ambition being met.

The components in the table have been calculated to account for one another, and so only the total figures above should be used. Other limitations and caveats are discussed later.

Table 1: indicative combined impact of delivering the 12 priorities in the CVD MSF to the 3 and 10-year ambitions (where aggregation is possible)

| **Component** | **Contribution to impact on under 75 heart disease and stroke mortality of meeting all ambitions in year 3** | **Contribution to impact on under 75 heart disease and stroke mortality of meeting all ambitions in year 10** |
|---|---|---|
| Case finding (priority 2 minus 10%) | 100 | 1,000 |
| Management of at-risk patients (priorities 4 and 5, modelled together) | 260 | 710 |
| Management of patients with CVD (priorities 7 and 8) | 800 | 470 |

| Component | Contribution to impact on under 75 heart disease and stroke mortality of meeting all ambitions in year 3 | Contribution to impact on under 75 heart disease and stroke mortality of meeting all ambitions in year 10 |
|---|---|---|
| Acute stroke interventions (priority 9 minus 10%, and priority 10) | 380 | 760 |
| Acute intervention for STEMI (priority 11, modelled separately) | 150 | 180 |
| Cardiac rehab (priority 12, modelled separately) | Not available | 770 |
| SGLT2i and diabetes care (priority 3 minus 20% of priorities 4 and 5, and priority 6 minus 50%) | 810 | 1,000 |
| Low end estimate of combined impact (not including SGLT2i or diabetes care) | 1,600 | 3,850 |
| High end estimate of combined impact (all components) | 2,400 | 4,900 |

**Limitations of the modelling and caveats**

The modelling approach and assumptions have been externally peer reviewed by academic experts. However, there remain important limitations and caveats, as set out below.

Firstly, assessment was undertaken using multiple independently calculated methods for each of the priorities. Where the methods differed between priority actions, comparisons may be impacted. The modelled assessments were the best attempt within the rapid timescales required to deliver the CVD MSF. As such the estimates are considered minimally viable outcomes.

For most of the 12 priorities, mortality outcomes are not able to be modelled directly against the target definition of heart disease and stroke under 75 mortality. Where this was not available, a narrower definition (such as coronary heart disease) may have been used, which may exclude wider benefits. Although wider, overall CVD mortality is likely to be a suitable proxy, as nearly 90% of CVD mortality under 75 is within the agreed heart disease and stroke definition. This proportion is likely to be higher still for the deaths that would be prevented by action by delivering the 12 priorities to the 3 and 10-year ambitions.

The robustness of the evidence base varied between the priorities and in most cases, they are likely to be higher end estimates. Detailed descriptions are detailed earlier to outline the evidence base used and likely impact on the resulting estimates.

The combined estimates have been developed for the purposes of showing potential total effect across all 12 priorities (assuming optimisation across all areas together) and the methodology is detailed above.

The level of ambition varies for each priority, and extreme results may reflect this. Baseline and ambitions are shown in tables 1 to 15 in the CVD MSF. The analysis has taken account of the ambitions provided and sought to map to these as closely as possible. However, we have not assessed the feasibility of ambitions in relation to resource or historic performance.

## Value for money

Following the identification of the 12 priorities, we undertook further analysis to assess the value for money of the interventions. Estimates for priorities 1, 2, 5, 7 and 12 were calculated over 3 years and 10 years (based on the ambition at year 3 being met and that level maintained to year 10). It was only possible to calculate these impacts for this subset of the priorities in which the impact on future CVD events could be calculated. Results from this modelling are summarised below for those priority actions where it was possible to generate quantified estimates.

### Estimation methods of value for money outcomes

Following the identification of the 12 priorities and assessing mortality impact, we undertook an extended analysis of 6 areas to assess the impact of avoiding events on NHS demand for services and loss to the labour market. The selected areas were those where avoided CVD events, the basis for both models used could be calculated in a consistent way to the analyses of premature mortality set out earlier.

However, for these analyses we calculated avoided CVD events in people of all ages, rather than restricting it to those aged under 75 years. The 6 priority areas were:

- priority 1, standard 2b: smoking cessation (community): proactively identify smokers and offering evidence-based cessation support

- priority 2: CVKM case-finding and stratification (ABCDE): systematically identify and stratify people with emerging or established risk

- priority 4: hypertension: ensure people with hypertension are treated to evidence-based targets and priority 5: lipid optimisation (primary prevention): optimise lipid management for people at risk of CVD

- priority 7: secondary prevention: optimise blood pressure and cholesterol for people living with CVD

- priority 12: cardiac rehabilitation: improve access for all suitable patient groups

For priorities 2, 4, 5, 7 and 12 we calculated the CVD cases avoided over 10 years, if the 3-year ambition was achieved at year 3, but no further improvement was undertaken over the following 7 years. For priority area 1a, we used the single 5% minimum quitting ambition for each local authority as used in the mortality impact analysis.

To calculate CVD events avoided, no further adaptions to the modelling methods were required for priority 1a, 2, 4 or 5.

For priority 7 we used a similar methodology of calculating impact using a relative risk reduction of heart attacks and strokes, by lowering cholesterol by 1mmol/L, by increasing the proportion of patients with CVD who reached NICE NG238 guidance threshold targets for either LDL-c cholesterol or non-HDL cholesterol. The relative risks were taken from the composite risks for heart attacks and strokes separately calculated by the economic analysis paper published with the NICE NG238 guidance[91]. We calculated baseline prevalence from the CVDPREVENT audit data using patients with CVD (excluding heart failure) in 2025. The relative risk of a heart attack or stroke was applied to baseline prevalence for an eligible cohort of patients each year increasing linearly to meet the 3-year ambition by year 3, then remained the same up to year 10. The relative risk effect was applied for 5 years for each starting cohort of patients where lipid improvement was applied.

For priority 12 (rehabilitation), estimates of CVD events avoided, NHS demand and labour market outcomes were all generated using the same model used for the mortality analysis. This therefore did not use the same models for NHS demand and labour market outcomes as the other priority areas modelled and cannot be directly compared.

[91] NICE. '[Cardiovascular disease: risk assessment and reduction, including lipid modification Cost-utility analysis: escalation of lipid-lowering treatment for secondary prevention of CVD: NICE guideline NG238: Economic analysis report December 2023]' 2023 (viewed on 14 May 2026)

### NHS demand impact

For priority 1a, 2, 4 and 5 the impact of NHS demand was derived from an internal novel model of additional NHS activity related to CVD diagnosis. The number of additional NHS interactions, through any specialty or pathway, associated with each CVD event was estimated from NICE longitudinal analysis of linked Clinical Practice Research Datalink (CPRD, an extract of primary care data) and Hospital Episode Statistics (HES) data between 2000 and 2020.

Analysis estimated number of interactions in each setting from 5 years before a CVD event to 10 years after. The number of interactions was measured as number of consultations in primary care and number attendances or appointments within secondary care (in A&E, Inpatient, Critical Care, Outpatient and Diagnostics settings).

The additional NHS demand was attributed to each CVD event based on the number of interactions in years, comparing the period from one year before the event to 10 years after to the period 2 to 5 years before the event[92]. No adjustment was made in this analysis for age or differing mortality rates between those who do or do not experience an CVD event. The additional NHS demand over 10 years was adjusted for the difference in survival between patients with CVD compared to the general population. The NHS demand model could not be directly applied to priority 7 as the demand model was developed to compare additional NHS activity before and after first CVD events. Priority 7 only includes people with existing CVD who are already accessing NHS care services after initial event or diagnosis.

### Labour market impacts

The economic and fiscal labour market impacts were also estimated using a novel modelled analysis. It estimates the labour market impacts of interventions that prevent the following CVD events:

- stroke
- heart attack
- angina

[92] Analysis of CVD interactions in each NHS setting was undertaken on CPRD and HES linked data between 2000 and 2020 with interactions before and after each CVD event captured over a 15 year period.

- heart failure

This modelling takes into consideration the reduced numbers of people with CVD events dying, leaving the labour market, or working less due to an event. The model takes CVD events occurring in people aged 16 to 67 years as inputs. For this reason, CVD events calculated from priority 1 standard 2, and priorities 2, 4, 5 and 7 required a further weighting factor to estimate the proportion of events in those aged 16 to 67. This was undertaken using the distribution of incident disease in England calculated by the Global Burden of Disease 2023 study.

The model uses estimates from an ONS study[93] to calculate the average change in the probability of being in paid employment. This includes people who die or drop out of work after having a hospitalisation for stroke, a heart attack, heart failure, or CKD (based on first hospitalisation for each condition). It also contains estimates on the average change in monthly pay after having these conditions. Monthly pay change estimates are available for all individuals after an event, as well as specifically individuals who remain in work.

Internal DHSC data provided the mortality rate before reaching hospital of people who suffer a stroke or heart attack, as this these cases are not picked up by the ONS study and is therefore needed to be estimated separately.

The model translates CVD events into whole-time equivalents (WTE) gained. This enables converts all measures of economic output (for example, sickness absence, or a reduction in work hours) converted to a comparable metric. In addition, it uses median wage data (by CVD condition) from the ONS study to estimate the earnings gained from preventing these conditions. Fiscal impacts were projected over 10 years using benefits data from the Office of Budget Responsibility and average payment estimates with ONS study probabilities, as well as derived tax impacts. Attrition factors, which account for people leaving the labour market due to natural churn (for instance due to sickness or retirement) and general mortality, are applied to the estimate of people dying before reaching hospital care, but not explicitly included in other hospitalised events, as the ONS study accounts for this in its calculations.

[93] ONS Health Research Group. 'Impact of health conditions requiring hospitalisation on earnings, employment and benefits receipt, England' (tables 64 to 70) 2025 (viewed on 14 May 2026). Note that the model uses the ONS sensitivity analysis rather than central estimates, as these take account of earnings or employment lost due to mortality

## Results

### Priority 1: smoking cessation, standard 2

Analysis related to every local authority meeting a minimum of smoking population setting a quit date.

Based on internal analysis, increasing smoking cessation activity in each Local Authority in accordance with the recommended minimum expected ambition (5% of the smoking population setting a quit date), could prevent over 1,300 CVD events over a decade (if implemented from year 1)[94].

Reducing CVD events by this amount could also gain the equivalent of 490 additional years of full-time work over 10 years and increase earnings by £15.5 million as well as generate fiscal benefits of £8.6 million through reduced benefits payments and increased tax revenues over 10 years. Over 3 years, earnings could rise by £1.9 million with fiscal impacts of £800,000[95]. This assumes all smoking events are avoided are in people without existing CVD[96].

Reaching the minimum expectation would also reduce NHS demand by potentially avoiding over 3,000 primary care consultations as well as over 4,000 secondary care attendances and admissions over the 3-year time frame. Over a decade, over 19,000 primary care consultations and over 18,000 secondary care attendances and admissions could be avoided.

### Priority 2: CVKM case-finding

Based on internal analysis, increasing the proportion of people receiving an NHS Health Check per year in accordance with the recommended 3-year ambition could prevent more than 26,500 CVD events over a decade[97], and reduce NHS demand by avoiding 350,000 primary care consultations as well as over 360,000 secondary care attendances and admissions over the same time frame.

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[94] This analysis uses the number of persons with a heart attack or stroke admission as a proxy for all CVD events, and out of hospital events (deaths) are not accounted for. Therefore, it represents a potential underestimate of the impact of optimising smoking cessation

[95] Note that all earnings and fiscal impacts are reported as undiscounted figures.

[96] In reality, smoking events would be expected to be avoided among both people who are at risk of CVD - who will likely be the majority, as well as people who already have CVD. However, we are not able to discern the proportion of events avoided in each group. Labour market impacts are estimated for each of these groups separately, so the analysis has had to assume either all events are avoided among people at risk of CVD or all events avoided are among people with CVD, while the true labour market impacts are likely to be somewhere in between.

[97] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.

Reducing CVD events by this amount could also gain the equivalent of 1,600 additional years of full-time work over 10 years[98] and increase earnings by £53 million. This would have a positive fiscal impact from reducing benefits and increasing taxes, by a potential £30 million over the same time frame.[99]

In the shorter term, increasing the proportion of people receiving an NHS Health Check in accordance with the recommended 3-year ambition could prevent over 1,750 CVD events over 3 years and reduce NHS demand by avoiding over 16,500 primary care consultations and over 20,000 secondary care attendances and admissions over the same time frame.

**Priorities 4 and 5: hypertension treatment to target and lipid optimisation for people without CVD**

Based on internal analysis, increasing the proportion of patients at risk of CVD[100] treated with lipid lowering therapy in accordance with the recommended 3-year ambition could prevent over 28,000 CVD events or diagnoses over a decade[101]. Increasing treatment to target for hypertension in accordance with the recommended 3-year ambition could prevent over 19,500 CVD events or diagnoses over the same time period. If both 3-year ambitions are met, the combined effect over a decade could reduce NHS demand by avoiding over 620,000 primary care consultations and almost 600,000 secondary care attendances and admissions over the same time frame.

Reducing CVD events by this amount could also gain the equivalent of 4,430 additional years of full-time work over 10 years[102] and increase earnings by £139 million. This would have a positive fiscal impact from reducing benefits and increasing taxes, by a potential £83 million over the same time frame[103].

In the shorter term, increasing optimisation of lipid management in accordance with the recommended 3-year ambition could avoid almost 6,000 CVD events or diagnoses over 3 years, whilst increasing treatment to target of those with hypertension over 3 years could avoid almost 3,000 CVD events or diagnoses. The combined effects of both would reduce NHS demand by potentially avoiding over

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[98] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.
[99] Note that all earnings and fiscal impacts are reported as undiscounted figures.
[100] with CVD QRISK greater than or equal to 10%, or CKD or high-risk diabetes
[101] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.
[102] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.
[103] Note that all earnings and fiscal impacts are reported as undiscounted figures.

73,000 primary care consultations and over 88,000 secondary care attendances and admissions over the same time frame.

**Priority 7: blood pressure and cholesterol optimisation for people with CVD**
Note: estimates only refer to lipid management independently, without any additional impact of blood pressure optimisation patients with CVD.

Based on internal analysis, increasing the proportion of patients with established CVD meeting NICE threshold guidance levels of cholesterol[104] through treating optimally with lipid lowering therapy could prevent up to 9,500 CVD events over the next decade in accordance with the recommended 3-year ambition[105].

Reducing CVD events by this amount could also gain the equivalent of more than 1,600 additional years of full-time work over 10 years[106] and increase earnings by £56.7 million. This would have a positive fiscal impact from reducing benefits and increasing taxes by a potential £36.5 million over the same time frame[107].

In the shorter term, increasing optimisation of lipid management for people with CVD in accordance with the recommended 3-year ambition could prevent over 3,000 CVD events over 3 years, as well as gain the equivalent of 140 additional years of full-time work over 3 years, and increase earnings by £6 million over the same time frame - incurring a positive fiscal impact of £3.2 million[108].

**Priority 12: rehabilitation**
Based on internal analysis using a model produced by the Centre for Health Economics (CHE) at the University of York[109] this method increases the proportion of patients accessing or starting CR among eligible ACS patients.

Increasing CR uptake in accordance with the recommended 10-year ambition this could prevent up to 1,172 heart attack events and 13,662 hospitalisations over 10 years and reduce subsequent NHS health care costs by £36,464,460[110]. It could

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[104] Patients with GP-recorded CVD (narrow definition) whose most recent LDL-cholesterol is less than or equal to 2.0 mmol/l or non-HDL cholesterol is less than or equal to 2.6 mmol/l in the preceding 12 months.
[105] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.
[106] This assumes that the ambition reached in year 3 is maintained for the remainder of the 10-year period.
[107] Note that all earnings and fiscal impacts are reported as undiscounted figures.
[108] Note that all earnings and fiscal impacts are reported as undiscounted figures.
[109] The model assumes that the number of patients accessing cardiac rehabilitation is static each year
[110] Health care cost reductions estimated are due to reduced hospitalisations, heart attacks, coronary artery bypass grafts (CABG) and percutaneous coronary interventions (PCIs).

also lead to 993 people returning to work over 10 years and increase earnings by £103,508,786[111].

In the shorter term, increasing the proportion of patients accessing or starting CR in accordance with the recommended 3-year ambition could prevent 53 heart attack events over 3 years, reduce NHS health care costs by £2,111,377 and increase earnings by £6,617,000[112].

# Evidence supporting the wider actions

The wider actions focus on ensuring that a broader set of proven, evidence-based interventions continues to be delivered consistently and at scale, even where they are not included in the 12 immediate priorities.

Together, they help sustain strong performance, reduce morbidity, improve longer-term outcomes, while the system concentrates on rapid improvement in the highest-impact priority actions.

## Finding the missing millions

**Identify people living with overweight or obesity and, at every opportunity, refer them to evidence-based weight management services suitable for their needs. Ensure joined up provision of evidence-based weight management services to all those who need it.**

Excess weight is a major driver of CVKM risk, increasing the likelihood of developing hypertension, type 2 diabetes[113] metabolic dysfunction-associated steatotic liver disease (MASLD)[114] peripheral arterial disease (PAD), and heart failure[115]. Clinically

[111] Note that all earnings and fiscal impacts are reported as undiscounted figures.
[112] Note that all earnings and fiscal impacts are reported as undiscounted figures.
[113] Pidd K and others. 'Effects of weight loss and weight gain on HbA1c, systolic blood pressure and total cholesterol in 3 subgroups defined by blood glucose: a pooled analysis of 2 behavioural weight management trials in England' BMJ Open 2025 (viewed on 16 June 2026)
[114] Suresh MG and others. 'Cardiovascular Implications in Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD): A State-of-the-Art Review' Korean Circulation Journal 2025 (viewed on 16 June 2026)
[115] Rayner JJ and others. 'Obesity and heart failure: exploring the cardiometabolic axis' Cardiovascular Research 2025 (viewed on 19 June 2026)

meaningful weight loss improves blood pressure, HbA1c and lipid profiles, delivering sustained reductions in cardiometabolic risk and future CVD events[116].

Weight management interventions are effective across age groups and levels of multimorbidity. National evaluation of the NHS Digital Weight Management Programme shows an average weight loss of 3.9kg among programme completers and 2.2kg across all participants, demonstrating meaningful population-level benefit[117]. Emerging evidence also indicates that digital support can complement pharmacological approaches, including GLP-1 agonists, when used appropriately[118].

Systematic identification of people living with overweight and obesity remains inconsistent[119][120] and access to the full range of evidence-based treatment options varies across England due to local commissioning and service capacity[121]. More proactive case-finding and clear, equitable referral routes into digital and community-based services are therefore essential, alongside consistent access to NICE-recommended behavioural interventions and weight-loss medicines where clinically indicated.

### Find and refer eligible people to Healthier You - NHS Diabetes Prevention Programme (NHS DPP)

The NHS Diabetes Prevention Programme is one of the largest population level programmes globally and has shown to reduce progression to type 2 diabetes among adults with non-diabetic hyperglycaemia and women with previous gestational diabetes. Practices offering the programme have seen a 7% reduction in population-level diabetes incidence over 2 to 3 years[122], with people referred experiencing a 20% lower risk of developing diabetes rising to 37% among those

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[116] Pidd K and others. 'Effects of weight loss and weight gain on HbA1c, systolic blood pressure and total cholesterol in 3 subgroups defined by blood glucose: a pooled analysis of 2 behavioural weight management trials in England' BMJ Open 2025 (viewed on 16 June 2026)
[117] Wise J. 'NHS Weight loss programme produces moderate benefit, analysis shows' BMJ 2024 (viewed on 12 May 2026)
[118] Johnson H and others. 'Digital engagement enhances dual GIP/GLP-1 receptor agonist and GLP-1 receptor agonist efficacy: A retrospective cohort analysis of a digital weight loss service on outcomes and safety' Diabetes, Obesity and Metabolism 2026 (viewed on 16 June 2026)
[119] McLaughlin JC and others. 'Epidemiology of adult overweight recording and management by UK GPs: a systematic review' British Journal of General Practice 2017 (viewed on 19 June 2026)
[120] NHS England. 2025. National Obesity Audit, October 2025 - December 2025 [Management Information] - NHS England Digital (viewed 19 June 2026)
[121] Mahase E. 'Obesity: Only half of England has access to comprehensive weight loss services' BMJ 2024 (viewed 19 June 2026)
[122] McManus E and others. 'Population level impact of the NHS Diabetes Prevention Programme on incidence of type 2 diabetes in England: An observational study' The Lancet Regional Health Europe 2022 (viewed on 16 June 2026)

completing sessions[123], and resulting in wider CVKM benefit, including lower incidence of CHD, stroke, heart failure and chronic kidney disease[124]. Diabetes is one of the strongest independent risk factors for coronary heart disease, stroke and heart failure[125] with nearly one in 3 CVD deaths in England occurring in people living with diabetes[126].

Despite national scale, inequalities in uptake and completion persist, particularly among more deprived and disabled populations[127]. More systematic identification of people at highest risk, proactive referral, and better integration of NHS DPP follow-up within wider CVKM pathways, including NHS Health Checks and primary care reviews, are essential to maximise impact.

**Refer eligible people into the NHS type 2 path to remission programme**

The NHS Type 2 Diabetes Path to Remission Programme is a 12-month behavioural intervention combining structured total-diet replacement, coaching and clinical monitoring across primary and community care. Early outcomes show that among those completing the programme with recorded follow-up, 32% achieve remission of type 2 diabetes, with an average weight loss of 15.9kg. These findings demonstrate that early, intensive intervention following diagnosis offers a significant opportunity to reduce long-term morbidity and premature mortality[128].

Trial evidence (DiRECT) demonstrates additional benefits, including improvements in blood pressure, lipid profiles and reduced medication requirements, with a proportion of participants maintaining remission for up to 5 years, supporting sustained reductions in CVKM risk[129].

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[123] Ravindrarajah R and others. 'Referral to the NHS Diabetes Prevention Programme and conversion from nondiabetic hyperglycaemia to type 2 diabetes mellitus in England: A matched cohort analysis' PLoS Medicine 2023 (viewed on 16 June 2026)
[124] NHS England. 'NHS diabetes prevention scheme helps one million people' 2025 (viewed on 16 June 2026)
[125] The Emerging Risk Factor Collaboration. 'Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies' The Lancet 2010 (viewed 19 June 2026)
[126] Diabetes.co.uk. 'Almost 1 in 3 heart disease deaths in England linked to diabetes' 2025 (viewed 19 June 2026)
[127] Chatzi G and others. 'Could diabetes prevention programmes result in the widening of sociodemographic inequalities in type 2 diabetes? Comparison of survey and administrative data for England' Journal of Epidemiology and Community Health 2023 (viewed 19 Jun 2026)
[128] Valabhji J and others. 'Early findings from the NHS Type 2 Diabetes Path to Remission Programme: a prospective evaluation of real-world implementation' The Lancet Diabetes and Endocrinology 2024 (viewed 19 Jun 2026)
[129] Lean ME and others. 'Primary care-led weight management for remission of type 2 diabetes (DiRECT): an open-label, cluster-randomised trial' The Lancet 2018 (viewed on 16 June 2026).

Completion rates and structured follow-up vary between areas which limits the programme's impact. Systematic identification, proactive referral and consistent, equitable access to high quality remission support are essential to maximise benefit, particularly for underserved communities.

**Support people to move more as part of managing their health and well-being**

Physical activity has an important role in preventing CVD and improving outcomes for people living with CVD, including conditions such as peripheral arterial disease. Adults who achieve the UK Chief Medical Officer's Physical Activity Guidelines can reduce the risk of cardiovascular disease by up to 35%. However, only 2 in 3 adults in England do[130]. Evidence suggests that not meeting these guidelines explains up to 9% of premature mortality and 6% of cases of coronary heart disease[131]. Moving or doing some form of physical activity is better than none and, for some already active people, more can produce even greater reductions of CVD risk[132].

Physical activity is also an important part of cardiac rehabilitation, with evidence indicating that for people recovering from myocardial infarction or coronary revascularisation, completing exercise-based cardiac rehabilitation is linked to lower cardiovascular mortality, reducing risk from 10.4% to 7.6% compared with no rehabilitation[133] [134].

The Government and NHS England have made sustained commitments to increase physical activity across the life course, including national digital tools, community partnerships, active travel and embedding activity within routine prevention, treatment and long-term condition management pathways.

To maximise impact, physical activity should be treated as a core preventative across health and care, with consistent advice, brief interventions and signposting. Expanding access to low-barrier digital and community options, alongside action with local partners to create safe and inclusive environments, will help to make active lives the default choice.

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[130] Sport England. 'Active Lives Adult Survey November 2024-25 Report' 2026 (viewed on 16 June 2026)
[131] Lee IL and others. 'Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy' The Lancet 2021: volume 380, issue 9838, pages 219 to 229 (viewed on 16 June 2026)
[132] UK Chief Medical Officers. 'Physical activity guidelines' 2019 (viewed 16 June 2026)
[133] NICE. 'Guidance (NG185): Acute coronary syndromes' 2020 (viewed on 26 June 2026)
[134] Lord Darzi. 'Independent Investigation of the National Health Service in England: Technical Annex' 2024' page 198 (viewed on 26 June 2026)

## Driving treatment to target

### Ensure those with recorded atrial fibrillation who are assessed as being at high-risk of stroke, are treated with a direct-acting anti-coagulant or, where these are not suitable, a vitamin K antagonist

Atrial fibrillation (AF) increases stroke risk 5-fold[135] and evidence consistently shows that direct oral anticoagulants (DOACs) are at least as effective as warfarin at preventing ischaemic stroke and systemic embolism, while also reducing all-cause mortality[136]. This benefit is seen across all major DOACs and across age groups, including older and higher-risk populations who account for the greatest burden of avoidable harm. DOACs also offer substantial safety, equity and system benefits that underpin their first-line role in national guidance. Along with avoiding strokes, they reduce the risk of bleeding events (compared to warfarin) and lower monitoring requirements, making them cost effective[137] [138].

England has made major progress in treating atrial fibrillation, with around 9 in 10 eligible patients now anticoagulated and the majority receiving a DOAC in line with NICE guidance[139]. NHS England estimates that rapid DOAC rollout since 2022 has prevented approximately 17,000 strokes and approximately 4,000 deaths[140].

Further gains depend on systematically identifying people with AF who remain untreated or sub-optimally treated, particularly in more deprived populations and among those with multimorbidity, frailty or cognitive impairment. Embedding anticoagulation optimisation within routine long-term condition, medicines optimisation and neighbourhood care, supported by population health data and closer use of community pharmacy, will be central to close remaining gaps and reducing inequity.

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[135] Wolf PA and others. 'Duration of atrial fibrillation and imminence of stroke: the Framingham study' Stroke 1983 (viewed on 16 June 2026)
[136] Liew A and others. 'Comparing mortality in patients with atrial fibrillation who are receiving a direct-acting oral anticoagulant or warfarin: a meta-analysis of randomized trials' Journal of Thrombosis and Haemostasis 2014: volume 12, issue 9, pages 1,419 to 1,424 (viewed on 16 June 2026)
[137] NICE. 'Evidence | Atrial fibrillation: diagnosis and management: Evidence Review G1: Anticoagulant therapy for stroke prevention in people with atrial fibrillation' 2021 (viewed 16 June 2026)
[138] NICE. 'Evidence | Atrial fibrillation: diagnosis and management: Evidence Review G2: Anticoagulant therapy: health economics analysis' 2021 (viewed 16 June 2026)
[139] CVDPREVENT. 'CVDP002AF: Patients with GP recorded atrial fibrillation and with a CHADS2 or CHA2DS2-VASc score of 2 or more, who are currently treated with any oral anticoagulant' 2025 (viewed 16 June 2026)
[140] NHS England. 'Thousands of lives saved by the NHS thanks to rapid rollout of blood thinners' 2023 (viewed 16 June 2026)

Systematic support for adherence and persistence is essential to achieving and sustaining treatment to target.

### Ensure people living with both type 1 and type 2 diabetes are treated to the 3 treatment targets - glucose, blood pressure, and cholesterol - to reduce their cardiovascular risk

Achieving the 3 NICE diabetes treatment targets - HbA1c, blood pressure and cholesterol - delivers substantial and cost-effective reductions in cardiovascular events, complications and premature mortality[141]. Each 1% reduction in HbA1c lowers risk of myocardial infarction by approximately 14% and microvascular complications by approximately 37%[142]. Tight blood pressure control reduces stroke by 44%, diabetes-related deaths by 32% and microvascular disease by 37%[143], while statin therapy reduces major vascular events by 20-25% per 1mmol/L LDL-C reduction[144] [145].

People living with diabetes continue to experience high rates of cardiovascular morbidity and premature mortality, driven by inconsistent achievement of these targets[146]. Outcomes are worse in more deprived areas and among Black and South Asian communities, reflecting both higher prevalence and variation in access and delivery[147]. Systematic support for adherence and persistence is essential to achieving and sustaining treatment to target.

Consistent, proactive optimisation across HbA1c, blood pressure and cholesterol, supported by integrated pathways, population health data and tailored support, will be critical to reducing variation and improving outcomes at scale.

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[141] Zobel EH and others. 'The importance of addressing multiple risk markers in type 2 diabetes: Results from the LEADER and SUSTAIN 6 trials' Diabetes, Obesity and Metabolism 2021 (viewed 16 June 2026)
[142] Zobel EH and others. 'The importance of addressing multiple risk markers in type 2 diabetes: Results from the LEADER and SUSTAIN 6 trials' Diabetes, Obesity and Metabolism 2021 (viewed 16 June 2026)
[143] UK Prospective Diabetes Study Group. 'Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38' BMJ 1998 (viewed on 16 June 2026).
[144] McCormack T and Marc E. 'The use of statins in people with diabetes in primary care' Diabetes and Primary Care 2005: volume 7, number 3 (viewed 16 June 2026)
[145] Vijan S and others. 'Pharmacologic lipid-lowering therapy in type 2 diabetes mellitus: background paper for the American College of Physicians' Annals of Internal Medicine 2004 (viewed on 16 June 2026)
[146] Lee IL and others. 'Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy' The Lancet 2021: volume 380, issue 9838 (viewed on 16 June 2026)
[147] NHS England. 'National Diabetes Audit 2021-22, report 1 Health inequalities in diabetes, 2017-18 to 2021-22' 2023 (viewed on 19 June 2026)

**Provide annual reviews for people with heart failure**

Structured annual reviews for people with heart failure are a key component of ongoing management, include assessment of symptoms, functional capacity, medication optimisation, renal function, iron status and comorbidities, enabling systematic monitoring and timely intervention as recommended by NICE[148]. Optimised management substantially reduce mortality and hospital admissions each year, particularly through ensuring people are on guideline-directed medical therapy (GDMT)[149]. National evidence shows that only a minority of patients on heart failure registers receive fully optimal therapy[150], despite GDMT being associated with substantial reductions in mortality and hospitalisation (around 60 to 70% when used in combination) and reducing hospitalisations[151].

Recent NICE guidelines also recommend the consideration of IV Iron infusion for those with iron deficiency where oral iron is not tolerated, is ineffective, or when rapid increase in haemoglobin is required[152], as it is associated with an approximately 28% reduction in heart failure hospitalisations and cardiovascular death at 12 months.

Many patients remain on sub-optimal therapy, with high levels of non-adherence contributing to higher rates of hospitalisation and mortality[153]. Heart failure populations are complex, with high rates of chronic kidney disease, diabetes and other long-term conditions, significantly increasing the risk of deterioration, hospitalisation and death without proactive management[154].

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[148] NICE. 'Guidance (NG106): Chronic heart failure in adults: diagnosis and management' 2025 (viewed on 16 June 2026)
[149] Jalloh MB and others. 'Multi-level implementation strategies to improve uptake of evidence-based therapies in heart failure' European Heart Journal 2023 (viewed 19 June 2026)
[150] Harrington J and others. 'Improving guideline-directed medical therapy for heart failure with redjuced rejection fraction: a review of implementation strategies' Journal of Cardiac Failure 2024: volume 30, issue 2, pages 376 to 390 (viewed on 16 June 2026)
[151] Tromp J and others. 'A systematic review and network meta-analysis of pharmacological treatment of heart failure with reduced ejection fraction' JACC: Heart Failure 2022: volume 10, number 2 (viewed on 16 June 2026)
[152] NICE. 'Guidance (NG106): Chronic heart failure in adults: diagnosis and management' 2025 (viewed on 16 June 2026)
[153] Murray-Thomas T and others. 'Non-adherence to medications prescribed to patients with heart failure in general practice: prevalence, risk factors and association with mortality and hospitalisation' Open Heart 2025 (viewed 16 June 2026)
[154] Pasea L and others. 'Risk factors, outcomes and healthcare utilisation in individuals with multimorbidity including heart failure, chronic kidney disease and type 2 diabetes mellitus: a national electronic health record study' Open Heart 2023 (viewed 16 June 2026)

With accurate coding, proactive case-finding and closer integration with specialist teams, structured annual reviews should be used to optimise treatment, detect deterioration early and reduce unplanned admissions.

## Ensuring timely, equitable, high-quality acute care

### Achieve rapid referral-to-treatment and diagnosis times for people with suspected heart failure using the national breathlessness pathway

Timely and accurate diagnosis of heart failure is critical to improving outcomes, as delays in diagnosis are associated with higher rates of hospitalisation, emergency presentation and mortality[155]. Many people experience symptoms such as breathlessness for prolonged periods prior to diagnosis, with a significant proportion diagnosed during unplanned hospital admission, which is associated with poorer outcomes and more advanced disease[156].

NICE guidance[157] recommends that people with suspected heart failure undergo natriuretic peptide testing to prioritise referral, with those at highest risk receiving specialist assessment and echocardiography within 2 weeks, and others within 6 weeks. Achieving these referral-to-treatment (RTT) timeframes enables earlier diagnosis and initiation of management.

Earlier diagnosis allows for timely initiation of guideline-directed medical therapy and specialist care, which are associated with improvements in symptoms, reduced hospital admissions and lower mortality[158]. Patients diagnosed in community settings have significantly better outcomes than those diagnosed following hospital admission, reflecting the importance of early identification and intervention[159].

The national breathlessness pathway provides a structured, standardised approach to the assessment of people presenting with chronic breathlessness, supporting earlier identification of underlying causes including heart failure. By aligning clinical

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[155] Taylor CJ. 'Earlier heart failure diagnosis in primary care' British Journal of General Practice 2023 (viewed 19 June 2026)
[156] Mant J & Okwose NC. 'Diagnosis of heart failure in primary care: missed opportunities' The Lancet Primary Care 2025 (viewed on 19 Jun 2026)
[157] NICE. 'Guidance (NG106): Chronic heart failure in adults: diagnosis and management' 2025 (viewed on 16 June 2026)
[158] Taylor CJ. 'Earlier heart failure diagnosis in primary care' British Journal of General Practice 2023 (viewed 19 June 2026)
[159] Lawson CA and others. 'Health inequalities and trends in heart failure diagnosis in primary care in England, 2000-21: a national retrospective cohort data-linkage study' The Lancet Primary Care 2025: volume 1, issue 6 (viewed on 16 June 2026)

practice with guideline recommendations, the pathway enables systematic triage, appropriate use of natriuretic peptide testing, and timely referral[160] for echocardiography and specialist assessment, reducing unwarranted variation and delays in diagnosis.

Embedding the breathlessness pathway across primary and secondary care, supported by clear referral processes, diagnostic capacity and multidisciplinary collaboration, represents a key opportunity to improve outcomes and reduce pressure on urgent and emergency care services by enabling earlier, more proactive management of heart failure[161].

**Initiate CVKM risk factor treatment (secondary prevention) for people found to be living with risk factors in acute settings and ensure a personalised plan for optimisation is communicated on discharge**

Acute admissions are often the first point at which high-risk conditions are identified. Initiating secondary prevention before discharge following an acute cardiovascular event is a highly effective, low-cost intervention that improves long-term outcomes, reduces unwarranted variation in care, and supports more integrated management across the care pathway[162]. Initiating secondary prevention before discharge is a low-cost, high-impact intervention that reduces variation, strengthens long-term management and supports more integrated cardiovascular care[163].

Discharge from secondary care following CVD admission in England is not reliably standardised, with incomplete initiation of secondary prevention[164], variable referral to cardiac rehabilitation[165] and weak communication to primary care[166]. These gaps occur at a time of high post-discharge risk and are strongly associated with avoidable deterioration, readmission and premature CVD mortality[167]. These risks

[160] NICE. 'Guidance (NG106): Chronic heart failure in adults: diagnosis and management' 2025 (viewed on 16 June 2026)
[161] Wang H and others. 'Importance of early diagnosis and treatment of heart failure across the spectrum of ejection fraction. European Heart Journal 2023: volume 44, issue Supplement 2 (viewed on 16 June 2026)
[162] NICE. 'Guidance (NG185): Acute coronary syndromes' 2020 (viewed on 26 June 2026)
[163] NICE. 'Quality standard (QS99): Secondary prevention after a myocardial infarction' 2015 (viewed on 19 June 2026)
[164] NICOR. 'Myocardial Ischaemia National Audit Project (MINAP) (Heart attack) - NICOR' (viewed on 19 June 2026)
[165] NHS England. 'National Audit of Cardiac Rehabilitation' 2025 (viewed on 16 June 2026).
[166] Boddy N and others. 'How can communication to GPs at hospital discharge be improved? A systems approach' British Journal of General Practice Open 2022 (viewed 19 Jun 2026)
[167] Lawson C and others. 'Trends in 30-day readmissions following hospitalisation for heart failure by sex, socioeconomic status and ethnicity' eClinicalMedicine 2021 (viewed on 17 June 2026)

are greatest immediately after discharge[168] [169] and disproportionately affect people more in deprived groups[170] [171]. Gaps in follow-up, including for conditions such as acute kidney injury, further increase the risk of long-term complications[172].

Improvement will require a systematic approach to discharge. Core therapies should be initiated prior to discharge, including anticoagulation for high-risk AF, guideline-directed therapy for heart failure, lipid lowering after acute events and antihypertensives where indicated. Specialist input, clear discharge summaries and automatic referral to cardiac rehabilitation should be routine, supported by neighbourhood teams to optimise medicines and adherence.

**Improve access to aortic valve (AV) interventions**

Severe aortic stenosis is common, increasingly prevalent with an ageing population, and associated with very high mortality if left untreated. An estimated 291,448 adults aged 55 and over in the UK are living with severe aortic stenosis, with around 199,059 already symptomatic; without proactive management, approximately 59.3% are projected to die within 5 years[173]. NICE guidance is clear that timely diagnosis and appropriate intervention improve both survival and quality of life[174].

Delays in access to treatment directly worsen outcomes. Evidence shows that patients waiting for aortic valve replacement face substantial mortality risk, with deaths rising markedly over a 6-month wait[175] [176] and national pathway work, for example, through the Getting It Right The First Time (GIRFT) aortic stenosis pathway, has highlighted the importance of treatment within an accelerated

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[168] Fluck D and others. 'Early emergency readmission frequency as an indicator of short-, medium- and long-term mortality post-discharge from hospital' Internal Emergency Medicine 2020 (viewed 19 June 2026)
[169] ONS. 'Association between time spent in emergency care and 30-day post-discharge mortality, England' 2021 (viewed 19 June 2026)
[170] Lawson C and others. 'Trends in 30-day readmissions following hospitalisation for heart failure by sex, socioeconomic status and ethnicity' eClinicalMedicine 2021 (viewed on 17 June 2026)
[171] NHS Digital. 2025. 'Compendium - Emergency readmissions to hospital within 30 days of discharge' (viewed on 19 June 2026)
[172] NICE. 'Quality standard (QS76): Quality standard 6: Clinical review after hospital discharge, Acute kidney injury' 2023 (viewed 19 Jun 2026)
[173] Strange GA and others. 'Uncovering the treatable burden of severe aortic stenosis in the UK' Open Heart 2022 (viewed on 17 June 2026)
[174] NICE. 'Guideline (NG208): Heart valve disease presenting in adults: investigation and management' 2021 (viewed on 17 June 2026)
[175] Martins IM and others. Wait time impact on prognosis for patients awaiting an aortic valve replacement Portugese Journal of Cardiology 2025 (viewed on 17 June 2026)
[176] Malaisrie SC and others. 'Mortality while waiting for aortic valve replacement' The Annals of Thoracic Surgery 2014 (viewed on 17 June 2026)[177] Banovic M and others. 'Aortic Valve Replacement Versus Conservative Treatment in Asymptomatic Severe Aortic Stenosis: The AVATAR Trial' Circulation 2021: volume 145, number 9 (viewed on 17 June 2026)

timeframe for those at highest risk. Earlier intervention through SAVR or TAVI reduces death, stroke, unplanned cardiovascular hospitalisation and heart failure admissions, while also shortening hospital stay and preventing avoidable clinical deterioration[177]. Health inequalities further compound these risks, with variation in access to diagnosis and intervention by geography, sex, deprivation, age and frailty leading to later presentation, longer waits and poorer outcomes[178].

Faster diagnosis and streamlined referral pathways and reduced waits to SAVR or TAVI are critical to improving outcomes. Central to this is a multidisciplinary Heart Team - bringing together cardiology, cardiac surgery, imaging, anaesthetics and specialist nursing - to enable rapid triage, robust risk stratification and patient-centred shared decision-making. By integrating expertise across specialties, this structured MDT approach supports timely, evidence-based treatment decisions, helping to prevent premature deaths, reduce emergency admissions and symptom burden, and improve functional status and quality of life for a growing older population.

Emerging pathway models such as single point of access and Rapid Access to Valve Assessment[179] have shown that waits can be reduced substantially, demonstrating a practical route to more equitable access and better cardiovascular outcomes within a 5-year horizon.

**Increase access and speed to 24/7 mechanical thrombectomy for patients following an acute ischaemic stroke and increase access and speed to thrombolysis for patients assessed as eligible following an acute ischemic stroke**

Rapid access to recommended reperfusion therapies - intravenous thrombolysis and mechanical thrombectomy are critical to improving outcomes following acute ischaemic stroke. Both treatments restore blood flow to the brain, and their effectiveness is highly time dependent, reflecting the principle that 'time is brain'[180].

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[177] Banovic M and others. 'Aortic Valve Replacement Versus Conservative Treatment in Asymptomatic Severe Aortic Stenosis: The AVATAR Trial' Circulation 2021: volume 145, number 9 (viewed on 17 June 2026)
[178] Rice CT and others. 'Impact of gender, ethnicity and social deprivation on access to surgical or transcatheter aortic valve replacement in aortic stenosis: a retrospective database study in England' Open Heart 2023 (viewed on 19 June 2026)
[179] NHS Transformation Unit. 'Developing and implementing the Rapid Access to Valve Assessment (RAVA) pathway for the Greater Manchester region' (viewed 19 June 2026)
[180] Risitano A and Toni D. 'Time is brain: timing of revascularization of brain arteries in stroke' European Heart Journal Supplements 2020: volume 22, issue supplement L (viewed on 17 June 2026

Intravenous thrombolysis is the established first-line treatment when delivered within 4.5 hours of symptom onset. Earlier administration is strongly associated with improved functional outcomes and reduced mortality, while treatment delays are linked to worse recovery[181]. Evidence shows that achieving very rapid treatment times significantly increases the likelihood of independence at 3 months compared with longer delays[182].

For patients with large vessel occlusion, mechanical thrombectomy provides substantial additional benefit. Landmark trials demonstrated that thrombectomy significantly improves functional outcomes compared with standard medical care. Meta-analysis of these trials shows a marked reduction in disability[183] [184].

The benefit of thrombectomy is also highly time sensitive. Each hour of delay from stroke onset to treatment is associated with significantly reduced odds of functional independence and loss of long-term healthy life years[185].

Mechanical thrombectomy is one of the most clinically effective and cost-effective acute interventions available for selected patients with ischaemic stroke[186]. Future improvement in outcomes will be generated from expanding equitable access, reducing treatment delays, strengthening thrombectomy networks, increasing workforce capacity and ensuring consistent 24/7 service provision across England[187].This would lead to reduced stroke related mortality and long-term disability, improved quality of life, enhanced vocational rehabilitation and reduced need for long-term health and social care support.

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[181] NICE. 'Technology appraisal guidance (TA264): Alteplase for treating acute ischaemic stroke' 2012 (viewed 19 June 26)
[182] Langhorne P & Ramachandra S, Stroke Unit Trialists' Collaboration. 'Organised inpatient (stroke unit) care for stroke: network meta-analysis' Cochrane Database of Systematic Reviews 2020, (viewed 17 June 2026)
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## Living with CVD

### Expand access to specialist stroke rehabilitation using the Integrated Community Stroke Service model

Specialist stroke rehabilitation is a critical component of recovery, reducing recurrence and improving long-term outcomes. A large 2025 meta-analysis of integrated post-stroke care showed that co-ordinated specialist care significantly reduced recurrent stroke and improved quality of life[188]. Reduced recurrent stroke is particularly relevant for people under 75, where absolute life-years lost are greatest. National and international guidelines consistently recommend ongoing specialist rehabilitation beyond the acute phase, recognising that long-term morbidity drives health loss and mortality risk[189] [190] [191].

Access to stroke rehabilitation services exists across England, including inpatient care, early supported discharge and integrated community stroke services. However, availability, workforce capacity and intensity of provision vary widely between systems[192]. Areas with higher deprivation, where stroke burden is greatest, often have poorer access to timely and comprehensive rehabilitation[193].

Improving outcomes will require consistent access to stroke-skilled early supported discharge, alongside expansion of multidisciplinary rehabilitation workforce. Extending group-based therapy, telerehabilitation and self-management support will help increase reach, reduce variation and ensure more equitable recovery for people following stroke.

### Incorporate personalised support for people living with heart failure as part of cardiac rehabilitation, including appropriate psychological support

Exercise-based cardiac rehabilitation, as recommended by NICE[194], is associated with clinically meaningful improvements in health-related quality of life (HRQoL) and

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physical function in people with heart failure (including HFrEF and HFpEF)[195], and with fewer unplanned hospital admissions and, in some populations, improved longer-term outcomes.

Rehabilitation is a core component of effective long-term management, supporting recovery, stability and reduced risk of deterioration[196][197].

Uptake among people with heart failure remains low, with fewer than 15 to 20% of eligible patients accessing cardiac rehabilitation[198], compared with much higher uptake after myocardial infarction or revascularisation.145 Access and participation are lower among people in more deprived areas, older adults, women and those with multimorbidity, reinforcing existing health inequalities in access and outcomes[199] [200]. Although home-based and digitally supported models are shown to be as effective as centre-based programmes[201], they are not consistently commissioned or scaled.

Improving outcomes requires heart failure to be treated as a priority indication for cardiac rehabilitation. Referral should be embedded within discharge and outpatient pathways, supported by electronic systems, alongside expansion of flexible delivery models - including home-based, digital and hybrid approaches - to increase access and completion.

The 2018 National Confidential Enquiry into Patient Outcome and Death highlighted that earlier palliative care, advance care planning, and escalation discussions in advanced heart failure may improve quality of life and help prevent unnecessary admissions[202].

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# Identifying innovation priorities and opportunities

There was wide engagement across the health and innovation ecosystem to inform:

- an ambitious vision for the future
- the challenge areas where further evidence and innovation is needed to drive progress towards the premature mortality ambition

Following initial engagement with clinical, system and programme experts, 5 primary themes were identified and used to frame subsequent engagement:

- digital transformation
- pharmaceutical advances
- genomics and precision medicines
- service model redesign
- medical technology ('medtech')

Engagement and testing with policy, horizon scanning and research teams, clinicians and external stakeholders developed a roadmap for forthcoming developments across these themes over different timeframes. Building from this engagement, challenge areas were scoped and agreed with clinical experts to help focus public, academic and private partners efforts.

A series of digital transformation workshops with clinicians and digital experts to develop a 10-year vision for a digital first pathway.

To begin working in partnership with the wider eco-system, a phase 1 of strategic partnerships was launched. In February, a webinar was held for interested organisations, and a market engagement notice was published inviting strategic partnership proposals around prevention, engagement and community-based delivery. A planned phase 2 of partnerships will follow MSF publication and will focus on clinical management and treatment of CVD risk factors, CVD and on acute care.