

Cardiovascular Disease Outcomes Strategy

Improving outcomes for people with
or at risk of cardiovascular disease

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Cardiovascular Disease Outcomes Strategy

Improving outcomes for people with
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Foreword

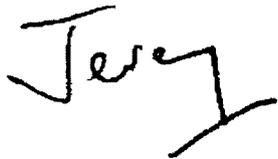
The last two decades have seen very significant achievements in the prevention and treatment of cardiovascular disease in England. But we know that there is much more to be done.

This strategy is being launched to coincide with The Lancet publication showing the UK's relatively poor mortality rates and the Department of Health's call to action to the health and care system to improve mortality rates across the board. The strategy will contribute by providing advice to local authority and NHS commissioners and providers about actions in relation to cardiovascular disease that can help deliver that ambition. But improving outcomes is not just about reducing mortality, it is also about improving people's quality of life, their experience of care and the safety of that care. While improving quality of care, we also need to look at cost effectiveness, so that we can help reduce costs at the same time as improving quality.

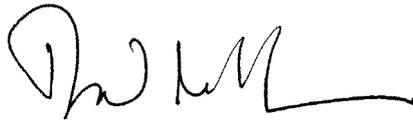
Improving cardiovascular outcomes – and reducing health inequalities – is the responsibility of a wide range of different organisations, but particularly the Department of Health, the NHS, Public Health England and local authorities. It will require further sustained and coordinated action to prevent disease and to manage it better when it does occur.

To help local authority and NHS commissioners and providers identify where there is scope to make most impact, this outcomes strategy has identified ten key actions that will deliver improvements in patient outcomes, some of which will also save money. The first and most important recommendation is that cardiovascular diseases should be considered as a single family of diseases, so that opportunities to prevent and treat the different conditions are optimal, leading to reduced mortality and morbidity, reduced inequalities in access and outcomes and improved patient experience. Many of the other actions are about doing more of the same but better or on a different scale – following National Institute for Health and Clinical Excellence (NICE) guidelines on prevention and treatment, implementing NICE quality standards, and ironing out variation for example.

This strategy has been developed following extensive engagement with a wide range of stakeholders. We would like to thank the very many people who have contributed to its development, but particularly members of the public, patients and carers who described their experiences and told us about what worked well and what worked less well. In learning from those experiences, our ambition is that all patients get the best possible care and support.



Jeremy Hunt
Secretary of State
for Health



David Nicholson
Chief Executive
NHS Commissioning Board



Duncan Selbie
Chief Executive
Public Health England

Executive summary: ambitions and actions

Cardiovascular disease (CVD) affects the lives of millions of people and is one of the largest causes of death and disability in this country. Huge improvements have been made in the prevention and treatment of CVD over the last decade, with a 40% reduction in under 75 mortality rates between 2001 and 2010. Over the same period, the difference in under 75 mortality rates between the most and least deprived areas in England has narrowed.

Despite these improvements, comparisons with other countries show that England could still do better in improving CVD mortality rates – as demonstrated by the recent Lancet article on the Global Burden of Disease Study. With an ageing population and the current levels of obesity and diabetes, unless there are improvements in prevention, past gains will not be sustained. England could also do better in terms of other outcomes, particularly the quality of life for patients living with CVD.

This outcomes strategy identifies for commissioners and providers of health (including public health) and care services the ten key actions that will make a difference in improving outcomes for CVD patients, in line with the NHS, Public Health and Adult Social Care Outcomes Frameworks, and in the context of the new structures. These actions build on continuing implementation of the National Service Frameworks for coronary heart disease, diabetes and renal services and the Stroke Strategy. It has been developed following detailed consideration of the evidence of what works best in terms of improved outcomes and with widespread consultation with patients, carers, health care professionals, charities and a range of other stakeholders.

Manage CVD as a single family of diseases

CVD is a common condition caused by atherosclerosis (furring or stiffening of the walls of arteries). Although CVD may manifest itself differently in individual patients, CVD in practice represents a single family of diseases and conditions linked by common risk factors and the direct effect they have on CVD mortality and morbidity. These include coronary heart disease, stroke, hypertension, hypercholesterolemia, diabetes, chronic kidney disease, peripheral arterial disease and vascular dementia. Many people who have one CVD condition commonly suffer from another and yet opportunities to identify and manage these are often missed. Patients often receive care from multiple different teams in a disjointed way. This results in uncoordinated care, multiple different hospital visits and, in some cases, confusing or contradictory information. This happens both in hospitals and in the community. A more co-ordinated and integrated approach is needed to assessment, treatment and care to improve outcomes, including patient experience and patient safety.

Action 1: The new improvement body in the NHS Commissioning Board (CB), NHS Improving Quality (NHS IQ), will work with all relevant interests to develop and evaluate service models to manage CVD as a family of diseases, in the community and in hospital. As part of this, NHS IQ will develop and test a standardised template that can be used in hospitals and in the community, and incorporated into service specifications, to assess fully patients with cardiovascular problems.

Improve prevention and risk management

More people could live longer and with a better quality of life if they were supported to adopt healthy lifestyles – particularly quitting smoking, eating more healthily and being more physically active. Evidence shows that these risk factors are clustered in the more disadvantaged groups of the population. Making progress in tackling these issues and reducing health inequalities will be part of local authorities' (LAs) public health responsibilities from April 2013. In order to support LAs in promoting healthy lifestyles and to empower local populations to measure the success of their LAs, there needs to be good data about prevalence of unhealthy behaviours and success in tackling them.

The NHS Health Check programme – which will also be the responsibility of LAs from April 2013 – has considerable potential to prevent CVD through earlier identification and management of risk factors and, in some cases, early detection of disease. However, implementation and take up are patchy and follow up management, whether through medical interventions or interventions to improve people's lifestyles, needs to improve. There also needs to be evaluation of its impact.

Action 2: Building on previous work from the Public Health Observatories, Public Health England (PHE) – working with the NHS CB and Health and Social Care Information Centre (HSCIC) – will make available benchmarked data about CVD risk factors and progress in tackling them, including data on NHS Health Check uptake, the problems identified, interventions offered, and outcomes.

Action 3: NHS IQ will work with PHE, LAs and the NHS to support the successful implementation of the NHS Health Check programme.

Improving and enhancing case finding in primary care

The NHS Health Check covers about 15 million adults between the ages of 40 and 74, but there is still a considerable number of people at risk of CVD who need to be assessed and managed. GPs and other primary care staff need to identify at risk patients in other ways. Many are already doing so, partly opportunistically and partly through the use of various tools to help identify patients at high risk, but this needs to become routine practice and new tools developed. Information needs to be provided that allows comparisons of expected prevalence at GP practice level with reported prevalence.

Action 4: The NHS CB will work with interested parties to develop new tools to support case finding in primary care. NHS IQ and the Strategic Clinical Networks will provide support to GP practices that have low detection rates for CVD.

Better identification of very high risk families/individuals

Identifying individuals and families at very high risk of CVD, in particular those with inherited cardiac conditions such as Familial Hypercholesterolemia (FH) and some causes of sudden cardiac death, needs to improve. Despite National Institute for Health and Clinical Excellence (NICE) guidelines, only 15% of the estimated 100,000 cases of FH in England have been diagnosed. All family members of younger people dying suddenly from a presumed cardiac death should be given the option to be tested but many are not.

Action 5: The NHS CB will take the lead, working with the Chief Coroner as appropriate, to improve the processes for identifying inherited cardiac conditions. The National Clinical Director for Heart Disease will work with all relevant stakeholders to develop and spread good practice in relation to FH and sudden cardiac death.

Better early management and secondary prevention in the community

Despite there being incentives in the Quality and Outcomes Framework (QOF) and often clear evidence based guidelines (eg from NICE), people who have been diagnosed with or at risk of a CVD are not always optimally managed in primary care. For example, people who have atrial fibrillation are not always appropriately anti-coagulated, those with diabetes do not always receive the 9 key processes of care, and people with hypertension often do not have this adequately managed – so this increases their risk of CVD. People with or at risk of CVD are not always adequately supported to improve their lifestyles. More needs to be done to improve their management, in order to improve mortality rates, quality of life, patient experience and patient safety.

Action 6: The NHS CB will work with stakeholders to identify how to incentivise and support primary care consistently to provide good management of people with or at risk of CVD. This will include Department of Health (DH) asking NICE to review the relevant QOF indicators and promotion of primary care liaison with local authorities, the third sector and PHE to ensure optimal provision of prevention services, including secondary prevention.

Improve acute care

Reacting quickly to the signs and symptoms of a heart attack or stroke saves lives and, in some cases, reduces disability. Improving bystander resuscitation rates, reducing variation in ambulance response times and improving public recognition of the symptoms of a stroke will improve outcomes for patients. And when patients get to hospital, they should have timely

access to the relevant specialist teams. A great deal has been achieved over the last decade to improve the quality of interventions in acute care – what needs to be done now is to ensure that everyone receives what is known to be optimal treatment and care.

Action 7: To improve acute care:

- **the NHS CB will work with the Resuscitation Council, the British Heart Foundation and others to promote automatic external defibrillators (AED) site mapping/registration and first responder programmes by ambulance services and consider ways of increasing the numbers trained in cardiopulmonary resuscitation (CPR) and using AEDs;**
- **PHE will continue to raise awareness of the signs and symptoms of CVD by running campaigns such as Act FAST and trialling new campaigns; and**
- **all CVD patients should have access to what is recognised as the right treatment. This includes specialist teams and 24/7 services where appropriate. NICE guidelines (and quality standards) provide evidence for what is the right treatment and clinical commissioning groups (CCGs) will wish to use these to help inform their commissioning intentions in this area. NHS IQ, working with the Strategic Clinical Networks, will build on NHS Improvement's previous work to support commissioners and providers to deliver the right services.**

Improve care for patients living with CVD

Many patients and their carers want to be empowered and supported to live as full a life as possible after diagnosis or an acute event. Yet many report that they receive little support or help, eg lack of psychological support or access to rehabilitation. Patients should have their needs assessed and care plans produced and kept under review – and the contents of the care plan delivered. Carers can also have a carer's assessment to determine their needs for support in their caring role and to look after their own health and wellbeing.

Action 8: Building on good practice in CVD and more generally, NHS IQ, working with the Strategic Clinical Networks, will develop, evaluate and disseminate approaches to assessment and care planning for CVD patients. These will include a full cardiovascular assessment (see Action 1 above) and assessment of needs generally and access to: education to support self-management; psychological support; and, where appropriate, physical activity, rehabilitation or reablement programmes, advance care planning and planning for end of life care.

Improve end of life care for patients with CVD

The great majority of people express a preference for dying in their normal place of residence, but only 38% of CVD related deaths take place there. Many people are admitted to hospital shortly before they die, whereas they could have been cared for in their usual place of residence if it had been recognised that they were approaching the end of their life

and there had been proper planning for their needs and wishes. The Views of Informal Carers for the Evaluation of Services (VOICES) survey results show that many carers report a poor experience of end of life care for CVD-related deaths.

Action 9: The NHS CB will, through NHS IQ, continue to develop and evaluate the *Transform* programme in hospitals; improve end of life care in the community including through spreading the electronic palliative care coordination systems (EPaCCS); and continue to run and use the VOICES survey as a means of monitoring quality of care at end of life.

Improve intelligence, monitoring and research and support commissioning

Information drives improvement. Several excellent audits and registries have been established over the past decade providing a wealth of good quality data on individual aspects of CVD (eg heart attack, diabetes, stroke, renal). The next step is to bring these together, linked to routinely available datasets (such as Hospital Episode Statistics (HES) and Office of National Statistics (ONS) and, in due course, the General Practice Extraction Service (GPES)).

In addition, the NHS CB will provide support for commissioners to commission for improved outcomes. For example, Commissioning Support Units will support commissioners to redesign and implement pathways to improve outcomes, and use the NHS Standard Contract as an effective lever for improvement.

Action 10: In order to improve the use of information to drive improvement:

- the NHS CB and PHE will look to establish a cardiovascular intelligence network (CVIN) bringing together epidemiologists, analysts, clinicians and patient representatives. The CVIN, working with the HSCIC, will bring together existing CVD data and identify how to use it best;
- the NHS CB will routinely make available information on the quality and outcomes of hospital based cardiovascular teams or services;
- the NHS CB and HSCIC will make available comparative data on the quality of care provided for patients with CVD by general practices;
- PHE will make available at local authority level comparative data on risk factors and CVD outcomes (see Action 2); and
- the NHS CB and PHE will work with DH and the National Institute for Health Research (NIHR) to consider possible future research priorities.

Chapter 1: Introduction

- 1.1 The Government has committed to improving health and social care outcomes across the population. Cardiovascular disease (CVD) was responsible for nearly 30% of all deaths in 2011 – and is the largest cause of disability. The Global Burden of Disease Study¹ has demonstrated that the UK does not perform well compared with a range of similar countries in terms of mortality and disability. This outcomes strategy:
- looks at those aspects of CVD where there is most opportunity to improve outcomes²; and
 - sets out what difference action in these areas might make and how these improvements might be delivered.
- 1.2 The outcomes strategy draws these actions together into ten priorities. Attached at Annex A is a summary of the impact of some of the actions suggested. At Annex B is a glossary to explain names and acronyms.

Scope of the strategy

- 1.3 CVD is an overarching term that describes a family of diseases sharing a common set of risk factors. This outcomes strategy largely focuses on conditions causing, or resulting from, atherosclerosis (furring or stiffening of the walls of arteries), particularly coronary heart disease, stroke and peripheral arterial disease (PAD).
- 1.4 It also covers other conditions such as vascular dementia, chronic kidney disease (CKD), arrhythmias, sudden cardiac death and heart failure, because they share common risk factors or have a significant impact on CVD mortality or morbidity. The complications of diabetes also share the same modifiable risk factors as CVD and having diabetes increases individuals' risk of CVD. This strategy considers the implications of diabetes on CVD risk rather than its detailed management.
- 1.5 The strategy sets out possible actions within the current legislative framework, systems architecture and financial settlement to deliver improved outcomes. The focus has been on what needs to be done to improve outcomes in relation to delivering the commitments in the Public Health, NHS and Adult Social Care Outcomes Frameworks. In addition, it identifies areas where changes could improve

1 The Lancet has published a UK digest of the ground breaking research by the Institute for Health Metrics and Evaluation based at the University of Washington, on the global burden of disease.

2 A number of conditions affecting parts of the cardiovascular system, such as congenital heart disease and venous thromboembolism, are not considered in this document, though they have been the subject of work undertaken elsewhere.

outcomes (such as more integrated working practices) but where further work is needed to establish an evidence base for change and to test new models.

1.6 A number of common risk factors are recognised as increasing the likelihood of individuals developing atherosclerosis. There are three broad groups. Fixed risk factors are by definition unmodifiable, but are taken into account in advising people about their overall risk:

- age;
- gender; and
- family history/genetic factors.

Lifestyle/behavioural risk factors reflect an individual's circumstances and choices, and can be changed for the better to reduce personal risk:

- smoking;
- physical inactivity;
- poor diet;
- obesity; and
- harmful use of alcohol.

'Bodily' risk factors reflect changes to body systems that are also reversible or preventable in their early stages, but may require more medical treatment:

- hypertension/raised blood pressure;
- raised cholesterol/disordered lipids;
- impaired glucose tolerance/diabetes; and
- chronic kidney disease (CKD).

1.7 Individuals will often have a number of these risk factors, and may also have more than one clinical manifestation of CVD. For instance, someone who has had a heart attack may also have had a stroke, and may suffer claudication (pain in the legs on walking due to PAD), and people with diabetes or CKD or who are smokers or suffer from hypertension are more likely to have strokes, heart attacks, or develop heart failure. It is estimated that each additional risk factor present doubles the previous overall risk for that individual³.

1.8 This multiplicative association of risk factors underpins the need for an integrated approach to reducing risk both at population and individual level and makes it more

³ Yusuf S et al; INTERHEART Study Investigators. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004;364:937-952

appropriate to think of CVD in terms of a family of diseases rather than single clinical conditions. A more comprehensive approach to risk reduction and disease management across CVD – considering a patient's broader CVD needs alongside their individual condition – could offer greater potential for improving outcomes than addressing any, or all, of them in isolation.

Burden of CVD

- 1.9 Mortality from cardiovascular diseases has fallen over recent years. In England between 2001 and 2010, all age mortality rates from all cardiovascular diseases decreased by 36%, with decreases of 43% for coronary heart disease and 37% for stroke. Over the same period, under 75 mortality rates from all cardiovascular diseases decreased by 40%, with decreases of 46% for coronary heart disease and 42% for stroke⁴. Government policy on smoking (where prevalence has fallen from 27% to 20%⁵), the relevant National Service Frameworks, the Stroke Strategy and the work of the national improvement organisations and clinical networks and service providers in the NHS have all contributed to these important improvements.
- 1.10 Deaths from cardiovascular disease in 2004 and 2011 and changes in mortality rates between 2001 and 2010 are set out below:

Table 1: Deaths from cardiovascular diseases in England – all ages

	2004	2011
Coronary heart disease		
• Chronic	70,000	55,000
• Acute	37,000	23,000
Cerebrovascular disease	50,000	34,000
Abdominal aortic aneurysm	8,000	6,000
Vascular dementia	100	7,000
Arrhythmias	3,000	4,000
Congenital heart disease	440	340
Other	10,500	8,300

(Source: ONS and National End of Life Care Intelligence Network)

Notes:

- (1) All figures have been rounded
- (2) The coding of vascular dementia changed in 2011, accounting for much of the apparent increase. Many of these deaths would previously have been coded as cerebrovascular disease. Despite this, there has been a major decrease in deaths from cerebrovascular disease (eg a fall of almost 10,000 pa before the coding changed).

⁴ Compendium of population health indicators, NHS Information Centre Indicator Portal. Figures are based on directly age standardised rates.

⁵ General Lifestyle Survey, ONS

Table 2: Mortality from cardiovascular diseases (deaths per 100,000 population)

	2001	2010	Decrease
All age			
All CVD	251	160	36%
CHD	130	74	43%
Stroke	65	41	37%
Under 75			
All CVD	108	65	40%
CHD	65	35	46%
Stroke	21	12	42%

(Source: Compendium of population health indicators, NHS Information Centre Indicator Portal, based on ONS data)

Notes:

- (1) Rates are directly age-standardised to the European Standard Population
- (2) Rates for 2010 are based on population estimates prior to revisions following the 2011 Census

- 1.11 Despite these improvements, CVD remains responsible for about a third of deaths each year. Future demographic shifts – particularly the current level of obesity and an ageing population – could lead to the loss of the gains that have been made. Higher levels of obesity have also led to increase in the prevalence of diabetes (with a further 15% increase by 2020 due to obesity). This will further increasing the risk of CVD. Despite increases in levels of physical activity since 2000, only 39% of men and 29% of women are reaching recommended levels. By 2022 the number of people at more than 20% risk of CVD could rise from 3.5 million in 2010 to 4.2 million⁶.
- 1.12 Cardiovascular diseases can also have a serious impact on quality of life and cause considerable disability. Stroke survivors may lose their speech, and have impaired mobility, those with peripheral arterial disease may lose a limb. The breathlessness and exhaustion of severe heart failure may preclude even minimal activities of daily living and all of these may prevent people returning to employment. And those with CKD can progress to the need for life long dialysis when opportunities to address CVD risk are missed.
- 1.13 Much can be done to prevent such distressing outcomes – through the optimal management of cardiovascular conditions when they occur. And more needs to be done to support people living with CVD, helping them come to terms with the illness and make the behavioural changes needed so they can continue to lead as healthy and productive lives as possible for as long as possible.

⁶ Predicting cardiovascular risk in England and Wales: prospective derivation and validation of QRISK2, Julia Hippisley-Cox, *BMJ* 2008;336:1475

Current challenges

Lifestyle factors

1.14 Lifestyle factors such as smoking, poor diet and physical inactivity are leading causes of CVD death. Smoking prevalence in England is higher than in other countries such as Australia and Luxembourg, salt intake is above recommended levels, and too few people are reaching the minimum levels of recommended physical activity and fruit and vegetable consumption. Levels of obesity remain too high – the latest data from the Health Survey for England show that a quarter of adults were obese in 2011 (24.8%), a slight fall from 26% in 2010 – and the prevalence of diabetes is rising. The table below shows how we compare with other countries:

Table 3: Lifestyle risk factors in England with international comparisons

Risk Factors	England	Best performing EU countries	EU average	UK/WHO recommended
Obesity (prevalence)	25%	Romania (8%)	17%	NA
Saturated fat consumed (% of food energy)	13%	Portugal (9%)	–	11%
Fruit & vegetable intake (g/day)	223g	Spain (766g) Italy (424g)	–	400g
Salt intake (g/day, urinary sodium)	8.1g	England amongst the best in EU ⁷	–	6g ⁸
Smoking (prevalence)	19% ⁹	Eg Luxembourg (17%) ¹⁰	23% ¹¹	NA
Physical inactivity (population below WHO guidelines) ¹²	63%	Greece (16%)	37%	150 minutes/ week

7 Due to differences in methodology used to assess salt intake it is not possible to be more definitive on England's position in comparison to other countries of the EU.

8 Based on advice from the Scientific Advisory Committee on Nutrition (SACN).

9 ONS General Lifestyle Survey 2010 daily smokers

10 OECD Health Data 2012:

<http://www.oecd.org/els/health-systems/oecdhealthdata2012-frequentlyrequesteddata.htm>

11 OECD (2012), Health at a Glance: Europe 2012, OECD Publishing.

<http://dx.doi.org/10.1787/9789264183896-en>

12 http://ec.europa.eu/sport/news/eurobarometer-survey-on-sport-and-physical-activity_en.htm; Department of Health (2011) *Start Active, Stay Active: A report on physical activity for health from the four home countries'* Chief Medical Officers

Large number of patients with undiagnosed risk factors or conditions

1.15 There are millions of people with undiagnosed risk factors or conditions who are not being managed to prevent the development of CVD. For instance, PAD is widely recognised as being under-diagnosed, with many people therefore not being offered appropriate treatment. This leads to an increased risk of claudication, skin ulceration and need for limb amputation, as well as a higher risk of developing other cardiovascular conditions, with their consequent morbidity and risk of death. Furthermore, it is predicted that 31% of cases of CKD, 18% of atrial fibrillation (AF), and 25% of Type 2 diabetes remain undiagnosed, sometimes until an acute and often life threatening event occurs as a consequence, finally drawing attention to the presence of the underlying condition¹³. These people need to be identified earlier and given the support and treatment they need. In addition to reducing mortality and morbidity (for example, it is estimated that 7000 strokes could be avoided each year if everyone with AF was appropriately managed – see Annex A), if these conditions are treated appropriately at an early stage, additional health and social care costs could be avoided. The table below sets out some survey results about levels of undiagnosed risk factors.

Table 4: Survey data on undiagnosed risk factors for CVD

	Expected	Diagnosed	Undiagnosed	% Undiagnosed
Hypertension ¹⁴	14.4m	7.6m	6.8m	47%
Diabetes ¹⁵	3.4m	2.6m	0.85m	25%
Chronic Kidney Disease ¹⁶	2.7m	1.9m	0.84m	31%

Services could still deliver better outcomes (primary and secondary)

1.16 There is also considerable variation in the quality of services and outcomes across the country. Significant numbers of patients are not receiving optimal initial management and appropriate ongoing support in primary care. In 2010, less than 55% of people with diabetes received all 9 care processes for monitoring and managing the disease; and only 20% achieved all three treatment standards set by the National Institute for Health and Clinical Excellence (NICE), with 15% or 350,000 people not being tested for the treatment standards at all. In 2010, 15% of males and 10% of females had untreated hypertension and 7% and 8% had uncontrolled hypertension¹⁷. Poorer

13 Comparison of QOF 2011/12 disease registers with Health survey for England 2010 data on estimated CKD prevalence. Estimates of diabetes under diagnosis from Diabetes State of the Nation 2012. Estimated AF prevalence from RCPE UK Consensus Conference on 'Approaching the comprehensive management of atrial fibrillation: evolution or revolution?' 2012

14 Health Survey for England (HSE) 2010

15 Diabetes State of the Nation 2012

16 Chronic Kidney Disease in England: The Human and Financial Cost (based on HSE 2010 data)

17 Health Survey for England – Adult Trend Tables 2010

performing primary and secondary care services need to bring themselves up to the standards of the best. By tackling the variation of services, there is potential to improve the scope to prevent CVD and minimise mortality and morbidity.

The challenge of living with CVD

- 1.17 In many areas across the country, too little attention is paid to how people with CVD and their carers cope with the condition from a practical, psychological and emotional perspective. This impacts on mortality, the general wellbeing of the individual, patient and carer experience and their ability to remain in or take up employment, participate in their local community and stay socially connected.
- 1.18 Health and care services need to be much better integrated, so that the entirety of cardiovascular conditions are addressed together and people are treated as individuals rather than a series of diseases. The interface between hospital, primary care and social care needs to be much better aligned towards improving recovery from acute cardiovascular conditions (such as stroke and heart attack), delivering appropriate longer term care for those with CVD multi-morbidities and enabling people to maintain their independence and wellbeing.

Inequalities

- 1.19 There is a social gradient in CVD mortality, with more deprived areas experiencing higher mortality rates than less deprived areas. There has been some reduction in inequalities over recent years. The absolute gap (or difference) in CVD death rates at ages under 75 between the most and least deprived fifth of neighbourhoods in England narrowed between 2001 and 2010 (from 103 to 75 deaths per 100,000 population). However, the relative gap (as measured by the ratio of death rates in the most and least deprived fifths) for CVD mortality widened over the same period¹⁸. *Living well for longer* (see paragraph 1.23) sets out clearly the impact of social deprivation on mortality rates, including for cardiovascular disease.
- 1.20 There are also significant issues for different equality groups in the population. For example people with mental health problems have a much higher incidence of CVD, and poorer outcomes. Depression has been associated with a four-fold increase in the risk of cardiovascular disease, even when other factors are controlled. Depressed people are three times more likely not to follow medical regimens than non-depressed people, and people with CVD who are depressed have an increased risk of death following a heart attack. There is considerable research into the effects of depression and stroke, with the prevalence of post-stroke depression estimated to be as high as 60%. Depression is twice as common in people with diabetes than in the general population and is known to affect ability to self manage conditions.

¹⁸ DH analysis based on ONS death registrations and population estimates

For example, depression can exacerbate the symptoms of diabetes by affecting a person's ability to control their diet or manage their medication¹⁹.

- 1.21 Inequalities need tackling across the full range of outcomes, not just in terms of mortality and quality of life. For example, there are increased patient safety needs for certain disadvantaged groups, such as those with low literacy.
- 1.22 While this strategy looks at ways to tackle inequalities in access to and experience of services, it does not address the underlying social and economic causes of the behaviours that increase risk of cardiovascular disease and may impact on outcomes.

Actions and mechanisms to deliver optimal outcomes

- 1.23 Action will be needed from a range of organisations. The Government, Public Health England (PHE), the NHS Commissioning Board (CB), clinical commissioning groups (CCGs) and local authorities (LAs) will all need to take action and work closely together to achieve the improvements in health outcomes this outcomes strategy is striving to deliver. Health and wellbeing boards, charities, professional organisations such as Royal Colleges and specialist societies and care providers will all be important in delivering and supporting this change. The action will build on the Government's national ambitions for tackling risk factors (including smoking, obesity and physical activity) and published strategies for achieving healthier lifestyles and improved health outcomes and for reducing health inequalities.

Living well for longer: a call to action on premature mortality

- 1.24 This strategy is being published in parallel with the Secretary of State for Health's call to action for England to be one of the leading European countries in tackling premature mortality across a range of diseases. The strategy outlines the contribution that improved prevention, identification, diagnosis, acute treatment and ongoing management of CVD can make to achieve the Secretary of State's goal. It also identifies opportunities for improving outcomes by working across the spectrum of CVD conditions and addressing outcomes other than mortality.

Improving outcomes for children and young people

- 1.25 In February 2013 the Department of Health (DH) launched the *Better health outcomes for children and young people pledge* and *Improving Children and Young People's Health Outcomes: a system wide response*. The Pledge recognises that international comparisons and worrying long-term trends demonstrate there is room for improvement, with poor health outcomes for too many children and young people compared with other countries. The signatories to the Pledge commit to

¹⁹ Twice as likely, putting long term conditions and depression on the agenda
<http://www.bhf.org.uk/pdf/Twice%20as%20likely%2023.04.12.pdf>

improve the health outcomes of our children and young people so that they become amongst the best in the world. Taking action in relation to children and young people will help prevent CVD in adults and, as a result, have a positive impact on reducing premature CVD mortality.

Changes to the health system from April 2013

- 1.26 The changes in the NHS under the Health and Social Care Act 2012 present new opportunities to improve CVD outcomes. From April 2013, LAs will be responsible for improving public health under the Public Health Outcomes Framework, the NHS CB and CCGs will take on responsibility for commissioning all healthcare services, and the NHS CB will be given more autonomy to deliver improvements, in line with the Government's Mandate for the NHS.
- 1.27 The DH will continue to work closely with industry and other stakeholders to promote healthier lifestyle choices. PHE will work closely with the DH to raise awareness in the population of the benefits of healthy living and of how to identify the symptoms of CVD and will provide support to LAs in their delivery of the prevention and early diagnosis agenda.
- 1.28 LAs will work closely with primary care providers and other NHS services to promote prevention and to ensure that the NHS Health Check can deliver the maximum possible benefits. Health and wellbeing boards will be the main forum for this cooperation and joint planning. LAs will use their knowledge of their local populations and work closely with services such as schools and care homes to deliver health improvements and action on the wider determinants of health.
- 1.29 The NHS CB will ensure that effective monitoring of cardiovascular services in the community and in hospitals is in place and that incentives are aligned to deliver optimal health outcomes. Commissioners (CCGs and the NHS CB) will be expected to commission services which are in line with NICE guidelines and quality standards and which will help to deliver better outcomes across all five domains of the NHS Outcomes Framework. The NHS CB will work with CCGs to ensure that the strategy for improving outcomes is based on CCGs' insights, needs and priorities.

Outline of this strategy

- 1.30 In developing the strategy, an extensive consultation exercise has been undertaken with stakeholders (patients, carers, the public, charities, healthcare professionals and industry). They have been asked what the priorities should be, the evidence supporting the benefit of proposed interventions, and the best way to achieve the necessary changes²⁰. This document sets out for commissioners and providers the

²⁰ For further details on the engagement, see <http://www.improvement.nhs.uk/CVDStrategy.aspx>

main areas where there is scope to deliver improvements. These have been divided into three main categories along the patient pathway:

- prevention and risk management;
- acute care; and
- living with CVD and end of life care.

1.31 Before looking at these three areas, Chapter 2 looks at the scope to improve services and outcomes through more integrated care and our plans to test this approach. Throughout the document, actions that can be taken to improve outcomes have been identified. Chapter 6 focuses on the range of levers that can help to deliver these improvements.

Chapter 2: Integrated care

Introduction

- 2.1 Although significant progress has been made on individual cardiovascular diseases (CVD) over the past decade, these have tended to be considered in isolation from each other. This means that:
- opportunities to identify and manage risk factors or early signs of other cardiovascular conditions are missed, leading to avoidable deaths and morbidity
 - patients receive care from multiple different teams in a disjointed way, leading to uncoordinated care and, in some cases, confusing or contradictory messages being given.
- 2.2 Over the last decade, the development of care pathways for individual diseases has improved outcomes. It has ensured that all patients benefit from consistent assessment and treatment, in line with what is known to represent high quality care. This has enabled services to be benchmarked for quality and so has generally resulted in the quality of services and outcomes being improved.
- 2.3 This chapter considers:
- ways in which the identification and management of CVD could be improved to reflect the interdependencies between the various cardiovascular diseases;
 - how services could be redesigned to treat and manage CVD patients in a more holistic/integrated way; and
 - plans to test a more integrated approach.

Integrated CVD assessment

- 2.4 Many patients who are identified with one cardiovascular condition are often not fully assessed for the presence of others. For example, awareness of peripheral arterial disease (PAD) is low and yet a couple of simple questions or observations could make the difference in a patient receiving an earlier intervention that could, for example, save a limb.
- 2.5 To consolidate and build on the improvements of the last decade, there is a need to consider how better to identify and care for patients that have CVD co-morbidities that will minimise duplication or overlap in care pathways and provide more integrated and holistic management that focuses on the individual.

- 2.6 A standardised CVD assessment undertaken on any patient in primary or secondary care presenting with CVD would mean that if one of the CV conditions was diagnosed, clinicians would proactively look for others. This would enable patients found to have one CVD to be assessed at the outset for the existence of and/or risk of:
- hypertension;
 - hypercholesterolemia;
 - coronary heart disease;
 - stroke;
 - Type 2 diabetes;
 - kidney disease; and
 - PAD.
- 2.7 Such an assessment would reduce the risk of patients being treated for individual diseases or in 'disease silos' and would encourage health care professionals to treat patients more holistically for their co morbidities. It would also improve the safety of services. More work needs to be done to assess the cost and benefits of this proposal and test out its feasibility. However, intuitively, if a patient's CVD needs can be identified and treated earlier, this is likely to improve outcomes. NHS Improving Quality (NHS IQ), the new improvement body in the NHS Commissioning Board (CB), will work with stakeholders to develop and test a standardised template that can be used in hospital and community settings to assess patients with cardiovascular problems.

Providing more integrated CVD care

- 2.8 Patients want to be treated as individuals and not in silos for their different illnesses. This silo approach most often manifests itself when patients have multiple appointments (see Box 1) and are repeatedly asked for the same information or given the same tests time and again. By concentrating on single diseases, health care professionals may also miss opportunities to identify other cardiovascular diseases.

Box 1: The case of Julia: over 80 appointments in one year

Julia had a catalogue of pre-existing conditions including heart disease hypertension, heart failure and AF, before having a stroke in 2010. While in hospital she was also identified as having CKD. Her experience of care was far from integrated and within the space of one year, she had to attend over 80 appointments with various consultants, clinics, specialist nurses and other health care workers. Despite numerous appointments with healthcare professionals, Julia felt progressively unwell and her overall health was deteriorating.

Due to a lack of coordination, or single clear responsibility for her overall care, it was not picked up until Julia eventually visited her GP that she now also had late stage lung cancer. If Julia had received integrated care with her at the centre, rather than care in disease silos, it is much more likely that her diagnosis would have been made earlier and might not have been fatal. Her experience of care would also have been much better.

- 2.9 More integration is needed in the delivery of services along the CVD pathway. Service models need to be designed, tested and evaluated which allow patients to be properly assessed and managed for all their conditions as an individual.
- 2.10 One suggestion during consultation was the development of a CVD service that would provide both specialist and generic treatment and management for all patients with CVD with the exception of acute interventions that would continue to be provided in secondary or tertiary care. Such a service would coordinate care for all new CVD patients as well as those discharged from secondary care. Their needs would be assessed by a named health care professional who would be responsible for co-ordinating their treatment and developing a care plan. The co-ordinator would be able to access both specialist and generic advice about their patients' needs and access services across the CVD pathway to meet those needs. They would also be responsible for the long term management and care of their patients ensuring their patients received regular follow up and reviews as appropriate.
- 2.11 More work needs to be done to explore whether integrating CVD care would be feasible clinically and cost effective. NHS IQ will be best placed to consider these issues and develop models of integrated services with patients, carers and health care professionals and to test out how they would work in practice.

Information sharing

- 2.12 One of the major factors preventing a more holistic approach to treating patients with co-morbidities is the lack of integrated information about the patient across primary and secondary care and across social care. Work is underway to make normal the secure sharing and flow of information between health and care organisations

will help support and drive a more integrated pattern of service provision for CVD patients.

- 2.13 The NHS CB's planning guidance to the NHS for 2013/14 *Everybody Counts: planning for patients 2013/14*²¹ makes clear the NHS CB's commitment to consult, by June 2013, on plans for the provision of patient access to interoperable records across the pathway of care and to guarantee every patient the opportunity of online access to their own primary care medical record by the spring of 2015.
- 2.14 The Department of Health, NHS CB and Public Health England will work with stakeholders to lead and coordinate plans to facilitate and enable establishment of the infrastructure for patients and service users to have secure online access to all their health and care records. This will include developing ways of sharing electronic copies of their records within the NHS and social care system with their consent.

Rehabilitation

- 2.15 One area where there is evidence to support the use of a service designed for one specific CVD client group for the benefit of another is cardiac rehabilitation. A recent Canadian study²² has found that patients who suffered a transient ischemic attack or minor disabling stroke benefitted from a cardiac rehabilitation programme. While cardiac rehabilitation services in this country are still rather patchy, there are some cutting edge cardiac rehabilitation programmes which have diversified to provide physical activity programmes not only to help patients recover from an acute episode but also to help others with risk reduction such as improving physical activity levels to reduce cholesterol and blood pressure levels and help patients manage their weight better (see Box 7 in Chapter 5). Some have also incorporated smoking cessation. Using a standardised assessment for all referrals, this has created a critical mass of patients that supports the provision of a viable service that is both flexible (in terms of the need for and provision of specialist or generic support) and convenient for patients (it is available outside normal working hours).

End of life care

- 2.16 There is a number of examples of good practice in coordinating care for people at the end of life and the implementation of the Electronic Palliative Care Coordination Systems (EPaCCS) provides important support for them – see Box 2 below for information about *Coordinate My Care (CMC)*:

²¹ December 2012 – <http://www.commissioningboard.nhs.uk/files/2012/12/everyonecounts-planning.pdf>

²² Comprehensive Cardiac Rehabilitation for Secondary Prevention after TIA or mild stroke', published in *Stroke: Journal of the American Heart Association*, September 2011, Dr Prior, et al.

Box 2: Coordinate My Care: a clinical service that coordinates care, giving patients choice and improving quality of life

Coordinate My Care (CMC) is a service dedicated to preserving dignity and autonomy at the end of life. It is London's EPaCCS, being rolled out across the capital and lined up with NHS 111.

CMC's care pathways enable health professionals from primary, secondary and community care to put the patient at the centre of health care delivery at this most sensitive time. The service is underpinned by IT which enables all healthcare professionals that the patient is likely to come into contact with access to real time clinical information, in order to guide decision-making according to the patient's wishes.

Outcomes data are very encouraging. To date (February 2013) 3,936 patients have a CMC record and 1,196 have died. Of those who have died 79% have died in their preferred place and only 20% have died in hospital (compared to 59% of patients who die in London without a CMC record).

- 2.17 Coordination of end of life care is not dissimilar to coordination of care for many long-term conditions (LTC). LTCs also require a record that can be accessed by many clinical and social care staff across the acute and community sectors. CMC thus provides the ideal platform for LTCs. Dementia and COPD will be the first of the LTCs to be piloted using CMC.

Actions

Action 1: The new improvement body in the NHS CB, NHS Improving Quality (NHS IQ), will work with all relevant interests to develop and evaluate service models to manage CVD as a family of diseases, in the community and in hospital. As part of this, NHS IQ will develop and test a standardised template that can be used in hospitals and in the community, and incorporated into service specifications, to assess fully patients with cardiovascular problems.

Chapter 3: Prevention and risk management

Introduction

- 3.1 Reductions in smoking prevalence and improvements in the detection and management of risk factors for CVD have undoubtedly made a major contribution to the observed reductions in cardiovascular mortality. Against this, obesity levels have risen along with an increase in the number of patients diagnosed with diabetes.
- 3.2 Despite the observed improvements, many more cases of CVD could be prevented through healthier lifestyles and through better risk factor detection and management. Surveys have shown that large numbers of patients have undiagnosed risk factors (see Table 4 in Chapter 1). If these were found and treated, many more deaths could be avoided and cases of disability prevented.
- 3.3 This chapter considers actions that can and/or are being taken at different levels to prevent CVD and to identify and manage those at risk:
- action at a national level;
 - action to improve the effectiveness of NHS Health Checks;
 - other action to improve risk identification and management in primary care; and
 - action to improve identification of people at very high risk.

Action at a national level

- 3.4 At a national level, the Government has a number of programmes in place which will help to prevent CVD. These include:
- setting out national ambitions in areas such as reducing premature mortality²³, tobacco control²⁴, obesity²⁵, physical activity²⁶ and alcohol consumption²⁷;
 - working with industry through the Responsibility Deal to improve public health and tackle inequalities;

23 *Living well for longer: A call to action to reduce avoidable premature mortality*

24 *Healthy Lives, Healthy People: A Tobacco Control Plan for England 2011*

25 *Healthy Lives, Healthy People: A call to action on obesity in England*

26 In January 2012, the Government launched a new national ambition for a year on year increase in the number of adults doing 150 minutes of exercise per week and a similar reduction in those who are 'inactive'. Adults physically active at recommended levels reduce their risk of type 2 diabetes by up to 50%.

27 The Home Office published the Government's Alcohol Strategy on 23 March 2012

- the Change4Life and other social marketing campaigns which are encouraging individuals to make simple changes to their lifestyles to improve their health; and
- collecting surveillance data such as through the National Child Measurement Programme (NCMP) on the extent of child obesity in the population to inform both local and national action to tackle obesity and its wider determinants.

- 3.5 Most significant though is that local authorities (LAs) have been given new powers and responsibility for public health and the Public Health Outcomes Framework provides a clear remit for LAs, working through their health and wellbeing boards, to reduce CVD mortality within their population. By doing this, Government has signalled to LAs the importance of local government's role in this area.
- 3.6 Prevention is everybody's business. More should be done to promote successful prevention, taking into account evidence of effective actions. Stakeholders were keen to ensure that a variety of approaches were taken to improve awareness of CVD risk factors and how to enable and encourage risk to be reduced. These ranged from population approaches to reducing salt and trans fats in people's diet to more local measures on active travel, leisure opportunities and education. Stakeholders were also keen to see secondary prevention promoted, for those who already had CVD. These different approaches are key to delivering further improvements in CVD mortality.
- 3.7 The new public health and NHS systems will facilitate more effective action to be taken on the major risk factors for CVD. For example, as set out above, local authorities will lead on action to prevent obesity and improve physical activity levels, where these have been identified as local priorities, and the ring-fenced grant will enable them to commission services to help people who are overweight or obese to lose weight. Public Health England (PHE) will support local areas in leading improvements in health and well being, for example by developing and sharing the evidence base of effective interventions and other approaches. Health and wellbeing board partners will work together to ensure that care pathways and appropriate services are in place, drawing on National Institute for Health and Clinical Excellence (NICE) guidance. Specialist morbid obesity services – including bariatric surgery – will be commissioned nationally by the NHS Commissioning Board (CB).
- 3.8 Progress is being made through the Responsibility Deal with voluntary pledges made by businesses in a range of areas including physical activity, health at work, and food. The latter includes action to reduce calories and salt, eliminate trans fats, and introduce out of home calorie labelling. Ministers have set out their ambition for greater progress and impact with more companies making pledges and more ambitious commitments. PHE will lead on developing communications on nutrition and a balanced diet to the general population and sub-groups as appropriate. The Government believes that the voluntary approach is the right way forward but will

consider other options if the Responsibility Deal does not continue to deliver the changes required.

- 3.9 To help LAs and their health and well being boards understand the scale of their challenge and to prioritise action to improve awareness of CVD risk factors, and subsequently the impact of supporting their populations to make the changes they need to reduce their risk of CVD, building on previous work by the Public Health Observatories, PHE will make available relevant, comparable and bench marked data in this area. This is in line with the Department of Health (DH) information strategy, *The power of information*, making anonymised population data transparently and routinely publicly available in order to drive improvement in services. In addition, it will continue to run campaigns such as Change4Life and will trial new approaches focussed specifically on CVD risks and symptoms.

NHS Health Check programme

- 3.10 The NHS Health Check programme is a systematic risk assessment and risk management programme for everyone between the ages of 40 and 74 who are eligible. It identifies an individual's level of risk and provides tailored advice on how that person can reduce their CVD risk, through lifestyle changes and/or medication, and supports them to achieve change. It allows all risk factors relevant to an individual to be addressed as a whole, which is particularly important given the way that factors interact to raise the overall level of risk in a multiplicative way. People are recalled for an NHS Health Check every five years so long as they remain eligible.
- 3.11 Conservative estimates suggest that the programme has the potential to, for example, prevent over 4,000 people a year from developing Type 2 diabetes and detect at least 20,000 cases of diabetes or kidney disease each year²⁸.
- 3.12 It is estimated that the programme will pay for itself after 20 years as well as having delivered substantial health benefits. In the early years of the programme, most of the savings and improvements to quality of life are from the early detection of Type 2 diabetes, a major risk factor for CVD as well as a major cause of chronic ill health and other complications.
- 3.13 The NHS Health Check programme began phased implementation in 2009 with the aim of reaching full roll out from April 2012. This means that from April 2012 one fifth of the eligible population – some 3 million people – should be offered a NHS Health Check every year and given the tailored management they require to reduce their CVD risk. Last year, 2.2 million NHS Health Checks were offered and 1.1 million were received.

²⁸ Putting Prevention First Vascular Checks: risk assessment and management 'Next Steps' Guidance for Primary Care Trusts November 2008

- 3.14 Responsibility for the NHS Health Check programme will pass to LAs from April 2013 as a mandatory part of their new public health duties.
- 3.15 Some areas have a full and extensive programme in place whilst others are currently offering a very small number of NHS Health Checks, or are very far behind the rest of the country in terms of rolling out their programme. Take up of the NHS Health Check varies considerably across the country with some PCT clusters reaching over 75% and others less than 50%. Alongside this, not everyone was receiving the appropriate interventions they needed to help reduce risk factors identified as part of their NHS Health Check. This ranged from poor follow up in primary care to lack of access to programmes to help people change their lifestyle such as physical activity and weight management programmes.
- 3.16 Whilst the programme is still in its early days, there is considerable scope for making it work better. PHE will consider ways of improving take up of the programme, for example through trialling campaign activity. NHS Improving Quality (NHS IQ) and PHE will disseminate nationally lessons learned about what works in terms of commissioning a fully functioning programme (both risk assessment and risk management) which encourages take up and participation across all communities – and will support implementation. A nationally collected dataset has been designed to support the evaluation of the programme and its collection is being piloted. PHE will work with the Health and Social Care Information Centre (HSCIC) to develop its collection and how the data can best be used to support the programme.

Identifying those at very high risk of CVD

- 3.17 There is also a need to improve the identification of individuals and families that might be at very high risk of CVD, in particular those with inherited cardiac conditions such as Familial Hypercholesterolemia (FH) and sudden cardiac death in younger people.
- 3.18 Uptake of the cascade testing for FH recommended by NICE in 2008 has been disappointing. Currently, only 15% of the estimated 100,000 cases of FH in England have been diagnosed. Potentially 50 lives per year in England could be saved if the NICE guideline on cascade screening was implemented²⁹.
- 3.19 On sudden cardiac death, a variety of inherited cardiac conditions (ICC) put some people at higher risk of cardiac arrest. Improved rates of resuscitation, and appropriate subsequent specialist cardiac assessment, will help ensure that those who survive have their risk of any future events substantially reduced.

²⁹ <http://publications.nice.org.uk/identification-and-management-of-familial-hypercholesterolaemia-cg71>

- 3.20 When people are identified with an ICC, their first-degree family relatives should receive counselling and be offered testing for similar conditions. However, often this does not happen.
- 3.21 Sudden cardiac deaths are usually referred to the local Coroner's service to determine that the death was by 'natural causes'. This represents another opportunity for potentially affected family members to be identified, counselled and tested, and thereby additional lives to be saved.
- 3.22 The DH and British Heart Foundation have undertaken work to encourage the identification of families at risk of sudden cardiac death and have had preliminary discussions with the Chief Coroner for England to determine how this might be pursued. The National Clinical Director for Heart Disease will continue to work with all relevant stakeholders to develop and spread good practice in relation to FH and sudden cardiac death.

Risk identification and management in primary care

- 3.23 While there have been significant improvements in the detection and recording of risk factors in primary care (see table 5 below), more could be done to identify and manage risk in primary care. The management of hypertension and conditions which contribute to cardiovascular problems (especially atrial fibrillation and diabetes) is often inadequate. And the higher risk of CVD associated with conditions such as mental health problems and a previous history of cancer is not being recognised.
- 3.24 For 2013/14, the DH is proposing to raise the thresholds for the 20 Quality and Outcomes Framework (QOF) indicators where there is the best evidence for impact on reducing mortality. This means that GP practices will have to provide or offer the relevant interventions for a greater proportion of patients to get maximum QOF points.

Table 5: Improvements in detection/recording of biological markers for CVD since the introduction of QOF

	2004/5	2011/12
Number (%) of patients aged 45 and over with a blood pressure (BP) measurement in the preceding 5 years	17.3m (83%)	20.6m (89%)
Number (%) of patients with elevated BP	5.97m (11%)	7.57m (14%)
Number (%) of patients recorded with chronic kidney disease	Not reported	1.87m (4%)
Number (%) of patients recorded with diabetes	1.77m (3%)	2.57m (9%)
Prescription of statins – total prescription items	29.5m	58.3m

- 3.25 Many GPs, especially those serving more deprived areas, have case finding programmes in place to help identify those at high risk of CVD. This is typically undertaken using software packages which identify those suspected of undiagnosed disease using a number of different risk factors (such as age, sex, family history, blood pressure, smoking status and body mass index) and then inviting them for further investigation. But use of these approaches is uneven.
- 3.26 To improve and enhance current case finding programmes in primary care, the NHS CB will develop new tools so that practices better understand the difference between their expected prevalence of CVD for their practice and the reported prevalence. NHS IQ and the Strategic Clinical Networks will then provide support to the practices that need it to improve the identification of their missing patients and for the management of patients once identified as at risk of or having CVD. This will include supporting developing relationships with local authorities.
- 3.27 In relation to better management of those at risk of or identified as having CVD, the NHS CB will assess what more needs to be done to monitor risk factor management in primary care and to consider how best to incentivise good practice. The DH will ask NICE to review the relevant QOF indicators.

Actions

Action 2: Building on previous work from the Public Health Observatories, Public Health England (PHE) – working with the NHS CB and Health and Social Care Information Centre (HSCIC) – will make available benchmarked data about CVD risk factors and progress in tackling them, including data on NHS Health Check uptake, the problems identified, interventions offered, and outcomes.

Action 3: NHS IQ will work with PHE, LAs and the NHS to support the successful implementation of the NHS Health Check programme.

Action 4: The NHS CB will work with interested parties to develop new tools to support case finding in primary care. NHS IQ and the Strategic Clinical Networks will provide support to GP practices that have low detection rates for CVD.

Action 5: The NHS CB will take the lead, working with the Chief Coroner as appropriate, to improve the processes for identifying inherited cardiac conditions. The National Clinical Director for Heart Disease will work with all relevant stakeholders to develop and spread good practice in relation to FH and sudden cardiac death.

Action 6: The NHS CB will work with stakeholders to identify how to incentivise and support primary care consistently to provide good management of people with or at risk of CVD. This will include the DH asking NICE to review the relevant QOF indicators and promotion of primary care liaison with local authorities, the third sector and PHE to ensure optimal provision of prevention services, including secondary prevention.

Chapter 4: Management of acute cardiovascular conditions

Introduction

- 4.1 Improvements in acute care have played a significant role in reducing premature mortality for cardiovascular disease (CVD) over the last decade. For example, 30-day mortality following a heart attack was over 20% in 1980 but in 2011 was 7-8%³⁰. Acute care pathways for heart attack and stroke are clearly defined and there is a robust evidence base about what good looks like. However, variation across the country persists in some areas of acute care and so more could be done to improve CVD outcomes if everywhere was operating at the standards of the best. This chapter sets out the evidence of gaps between what could be achieved and what is being achieved, so that commissioners and providers can take steps to ensure that they deliver care at the level of the best.
- 4.2 In this chapter acute services for different CVD conditions are considered separately as they involve different personnel and acute care pathways, and the evidence base for quality services is generally in terms of the individual conditions. However, the benefits of integration within the hospital sector are increasingly being recognised and the need to do further work on this is discussed in Chapter 2.
- 4.3 Fast responses to emergencies save lives and, in some cases, reduce disability. Everyone can be a life saver, whether it is a member of the public recognising the signs and symptoms and calling 999, or a paramedic or ambulance crew ensuring the person gets treatment as fast as possible. This chapter also highlights two ways in which everyone could do more to save a life.

Improving management of out of hospital cardiac arrest (OHCA)

- 4.4 It is estimated that about 50,000 out of hospital cardiac arrests (OHCA) occur each year in England³¹. Resuscitation may be inappropriate (due to a variety of reasons such as co-morbidity) and so attempted resuscitation by ambulance services occurs in less than 50% of cases. However, there is significant variability between ambulance services in rates of successful initial resuscitation (13-27%) and survival to hospital discharge (2-12%)³² following an OHCA. If survival rates were increased from the overall average (around 7%) to that of the best reported (12%), it is estimated that

30 See MINAP 2012 Report

31 BHF website – based on Ambulance Service Association National Cardiac Arrest audit report 2006

32 Perkins GD, Cooke MW. Variability in cardiac arrest survival: the NHS Ambulance Service Quality Indicators.

an additional 1,000 lives could be saved each year. See examples of good practice in Boxes 3 and 4.

Box 3: OHCA: London Ambulance Service (LAS) improving survival rates

London Ambulance Service has improved overall OHCA survival to hospital discharge from a rate of 4% in 2004/5 to 11% in 2011/2012 through:

- quicker response times;
- taking heart attack and cardiac arrest patient direct to heart attack centres; and
- improving bystander resuscitation.

Rates of bystander resuscitation increased from 38% in 2010/11 to 41% in 2011/12.

Ref: London Ambulance Service NHS Trust Cardiac Arrest Annual Report: 2011/12 August 2012

Box 4: OHCA: Seattle chain of survival

Seattle is widely regarded as an exemplar for managing the whole 'Chain of Survival' process for people suffering from an OHCA. They have:

- emergency response times averaging 3.5 minutes (compared with an average of 6 minutes in England) with considerably increased survival rates; and
- adopted a number of strategies including training fire fighters and the public in emergency life support skills.

- 4.5 Many more lives could be saved with improved and earlier cardiopulmonary resuscitation (CPR), and the public could be better informed and trained about what to do when they witness a cardiac arrest or someone with symptoms suggesting a heart attack. Bystander CPR doubles survival rates and yet is attempted in only 20-30% of cases. There is scope for all emergency service personnel to be trained in CPR, and for basic life support skills to be more widely taught, perhaps as part of volunteering programmes in schools and in the workplace. Wider availability of automatic external defibrillators (AEDs) could also save additional lives.
- 4.6 The NHS Commissioning Board (CB) will work with the Resuscitation Council, the British Heart Foundation and others to promote AED site mapping/registration and first responder programmes by ambulance services, and consider ways of increasing the numbers trained in CPR and using AEDs.

Acute coronary syndromes

- 4.7 Acute coronary syndromes include heart attacks and unstable angina. There are two types of heart attack: ST-elevation myocardial infarction (STEMI) and NonST-elevation myocardial infarction (nSTEMI). Both require access to angioplasty services to mechanically open the artery causing the heart attack, with STEMI patients needing more immediate treatment than nSTEMI patients and those with unstable angina.
- 4.8 Significant achievements in recent years have resulted in more STEMI patients being treated quicker than ever before. In England in 2011/12, 92% of patients eligible for primary angioplasty were treated within 90 minutes of arrival at a heart attack centre³³ with an average length of stay of about three days.
- 4.9 This is in contrast with nSTEMI and unstable angina patients even though their outcomes have improved in recent years. These patients often have a poor experience of care. Not all are seen or cared for by a cardiologist, or a member of the cardiology team, despite this being recognised best practice³⁴. In some hospitals only 40-60% of nSTEMI patients are managed by cardiologists³⁵. About a third wait longer than they should to access angioplasty services because of delays, particularly in inter-hospital transfers. And reduced services at weekends result in unnecessarily long hospital stays³⁶.
- 4.10 There is scope for further improvement here by reducing variations across the country, particularly in accessing timely treatment and services being available 24/7. The National Institute for Health and Clinical Excellence (NICE) has published guidance on the management of nSTEMI³⁷ and will publish quality standards for the management of all acute coronary syndromes in late 2013. Clinical commissioning groups (CCGs) should use these to help inform their commissioning discussions and decisions with providers to help iron out the variations in access times and ensure that patients are treated by the most appropriate health care professional.
- 4.11 Tackling geographical variation could potentially save more lives for heart attack patients. By optimising and accelerating treatment pathways (assuming a similar case mix) it may be possible to further reduce 30-day mortality rates. If these fell by 1% it would mean an additional 800 lives saved. However, the feasibility of achieving this needs to be explored further³⁸.

33 MINAP 2012

34 NICE Clinical Guidance 94 for NSTEMI/UA

35 MINAP 2012 Report <https://www.ucl.ac.uk/nicor/audits/minap/minap-news/minapreport2011>

36 MINAP 2012

37 NICE CG94 (2010)

38 Based on 80,000 cases of STEMI and nSTEMI reported to MINAP in 2011/12, with a 30-day mortality for both groups of patients being around 8%.

Heart failure

- 4.12 Chronic heart failure is common, affecting at least 530,000 people in England³⁹. Patients with heart failure often have a poor quality of life (over a third experience severe and prolonged depressive illness), and over a third of people diagnosed with chronic heart failure will die within a year. People with diabetes admitted to hospital with heart failure have a 3.6 times greater risk of death in the next year than people with diabetes not admitted with heart failure⁴⁰. Heart failure accounts for 5% of all emergency hospital admissions and utilises 2% of all NHS hospital bed days. While it is largely a disease of older age, with good clinical management, patient outcomes can be substantially improved.
- 4.13 Evidence suggests that in-patient mortality can be significantly reduced for acute heart failure patients if they are treated on cardiology wards. In 2011/12, 8% of heart failure patients admitted to a cardiology ward died compared with 13% admitted to general medical wards and 17% on other wards. Outcomes for heart failure patients are also better for those who are seen by a cardiologist or have access to specialist care. In 2011/12, only 20% of patients referred to a heart failure nurse and cardiology follow up services after discharge from hospital died, compared with 32% who were not⁴¹.
- 4.14 Heart failure is poorly identified in primary care and its symptoms are often mistaken for respiratory conditions, such as chronic obstructive pulmonary disease. Management in primary care is not optimal and many patients do not have access to specialist multidisciplinary heart failure teams even though evidence demonstrates that this improves outcomes.
- 4.15 Better early identification and specialist care could not only improve people's quality of life, it could save lives and save money. Evidence suggests that effective multidisciplinary specialist services have a positive effect on life expectancy and can help to reduce recurrent hospital stays by 30-50%⁴².

Stroke

Raising awareness

- 4.16 The Act FAST (face, arm, speech, time to call 999) campaign has been one of the Government's most successful awareness campaigns, improving recognition of the signs and symptoms of a stroke significantly since the campaign first began in 2009. In the last tranche of the Act FAST campaign, 94% of adults over 55 were able to

39 based on prevalence of 'at least 1%' in the national heart failure audit report 2011/12

40 mortality analysis from the most recent National Diabetes Audit

41 National Heart Failure Audit 2011/12

42 NICE quality standard: Chronic Heart Failure 2011

identify at least one of the FAST stroke symptoms and 74% knew that 999 should be called if they saw someone displaying any stroke symptom.

- 4.17 Quick recognition of the symptoms followed by calling 999 means that stroke survivors can be assessed and treated faster, which is an imperative as that results in less damage to the brain. This means that stroke survivors are less disabled and more likely to return to their normal day-to-day activities.
- 4.18 Public Health England (PHE) will continue to raise awareness of the signs and symptoms of CVD by running campaigns such as Act FAST and trialling new campaigns.

Management of acute stroke

- 4.19 Significant improvements have been made in the delivery of stroke services since the publication of the Stroke Strategy in 2007 and the NICE quality standard in 2010. These highlighted the importance of time and specialist care as the critical factors in the management of acute stroke and identified a number of quality markers and standards to help commissioners better understand what a good quality stroke service, that improves outcomes, looks like.

Table 6: Progress in stroke care

Key indicators	200/8 ⁴³	2012 ⁴⁴
% of patients admitted to a stroke unit within 4 hours	17%	66%
% of patients receiving brain imaging within an hour of admission	17%	40%
Within 24 hours of admission	69%	93%
Thrombolysis rates – England	1.8% ⁴⁵	11%
% patients newly institutionalised at discharge	11%	10%

- 4.20 However, there is still variation across the country in the quality of services that stroke survivors receive. There is more to do to ensure timely access to stroke units where patients' outcomes are so much better. Currently, around 53% of stroke patients are admitted directly to stroke units within 4 hours⁴⁶. If timely access was increased to 95% of stroke patients, this would prevent over 440 deaths a year and allow more than 160 individuals to stay independent following a stroke⁴⁷. More parts

43 National Sentinel Stroke Audit patients admitted April – June 2008

44 SINAP patients admitted Oct-Dec 2012

45 includes England and Wales

46 SINAP data covering 2012

47 NAO 2005 Reducing Brain Damage: faster access to better stroke care

of the country need to complete the work on ensuring immediate access to specialist stroke units for people with acute stroke and, where eligible, to thrombolysis.

- 4.21 Thrombolysis rates are improving but there are patients that would benefit from this that are not receiving it. In some places it is because 24/7 scanning is not available to help establish whether patients are eligible.
- 4.22 Admission to a stroke unit reduces death and increases the number of independent and non-institutionalised stroke survivors⁴⁸. Patients with acute stroke who are attended by a stroke consultant or associate specialist in stroke within 24 hours of admission are 12% more likely to be alive at 30 days after their stroke than those that did not see such a specialist⁴⁹. Stroke patients therefore should be admitted directly to a stroke unit with appropriately skilled staff and should not have long waits in medical assessment units. They should also spend the majority of their hospital stay on a stroke unit.

Service reconfiguration

- 4.23 Time being a critical factor, the delivery of comprehensive acute stroke care may require a mixed model service eg 24 hour 7 day a week service including scanning/imaging alongside the use of tele-medicine (technology allowing a specialist to both see and hear the patient in real-time from a remote location). Any hospital receiving stroke patients as an emergency should have the ability to scan the patient within one hour of arrival, at all hours of the day and every day of the week. This should be the norm not the exception. It will allow an assessment to be made and thrombolysis administered if appropriate.
- 4.24 However, no single model of providing acute care for stroke patients is likely to be suitable in all parts of the country. In seeking to deliver good quality stroke care, London has adopted a hyper acute model of care. This is where specialist hyper acute stroke units (HASU) diagnose the type of stroke and provide the very specialised management and care needed in the first few hours following a stroke. Once the patient is stable, stroke units are available closer to the patient's home where they can be transferred for ongoing treatment and rehabilitation.
- 4.25 The evaluation of the London model of stroke care has demonstrated that it improves outcomes for patients. It has resulted in an increase in thrombolysis rates where 14% of stroke survivors are now thrombolysed compared with an average of 11% of patients across the country. If the rest of the country was to achieve the similar rates

⁴⁸ Stroke Unit Trialists Collaboration 1997.

⁴⁹ adjusted odds ratio 0.88: 95% CI 0.80-0.97. SINAP 2012

as London, this would result in 280 fewer incidents of death or dependency per year⁵⁰. (See Box 5 below.)

Box 5: Redesign of London Stroke services

In London, the impact has been:

- 88% of patients rate the care as excellent or good;
- significant reduction in length of stay – 35% of HASU patients discharged within 3 days; and
- 4 fold increase in thrombolysis rates – from 3.5% in 2007/8 to 14% in 2011.

At 90 days after the stroke has occurred, it is estimated that the new reconfiguration:

- reduces the likelihood of dying by 28% compared with national averages with conventional stroke care; and
- reduces costs by £3.5 million per year.

- 4.26 Other parts of the country, such as Greater Manchester, have also undertaken major service re-design to ensure that stroke patients get rapid assessment and treatment in specialist units and are then transferred to local stroke units where their rehabilitation and long terms needs are cared for.
- 4.27 The models used in London and Greater Manchester could be used as a basis for replicating this type of approach more widely. Local health communities may wish to review the delivery of hyper acute stroke care to ensure the optimal balance is found between volume of activity, travel times, and clinical and financial sustainability of services. Building on the experience of London and Greater Manchester, Midlands and East are currently undertaking a review of the whole stroke pathway to ensure that stroke survivors receive the best care possible at all stages of their stroke journey; giving them the best chances of survival and the fullest recovery possible.
- 4.28 CCGs will wish to ensure that all stroke patients have access to timely specialist care. This will require collaboration between CCGs. Strategic Clinical Networks can help to support this process.

Transient Ischaemic Attack (TIA)

- 4.29 Patients with a serious TIA or minor stroke (as measured by an ABCD score at or above 4) should be treated as urgent medical conditions with assessment services being available 7 days a week (though not necessarily 24/7). Access to such services

⁵⁰ DH Analysis – see Annex A

within 24 hours can reduce the number of people going on to have a full stroke by 80%⁵¹.

- 4.30 Even though this has been an NHS priority since 2008, there is still regional variation across the country. If the percentage of high risk TIA patients treated within 24 hours by all trusts increased to the level currently achieved by the top 25%, 540 strokes a year could be prevented. There is also scope for improvement if services were provided 7 days a week, which currently only occurs in about 60%⁵² of sites. Given the number of strokes that treating high risk TIAs can prevent, CCGs will wish to work together to ensure that their patients have urgent access to TIA services.

Box 6: University Hospitals of Leicester NHS Trust – Seven Day Service for the Assessment and Treatment of Transient Ischaemic Attack (TIA)

This is a consultant led seven day rapid access one-stop TIA outpatient service for both higher and lower risk TIA patients.

Patients are assessed and receive appropriate investigations, diagnosis (including MRI and carotid doppler ultrasound) and treatment, including referral for carotid intervention, in a single visit to the hospital seven days a week.

Higher risk patients are seen within 24 hours of first contact with a healthcare professional and lower risk within seven days.

Nurses, healthcare assistants, clinic aides and vascular technicians are all integral to the delivery of the seven day specialist service.

The percentage of TIA cases with a higher risk of stroke who were treated within 24 hours increased from 13% in 2008/9 to over 70% in 2010/11.

- 4.31 Implementation of the Stroke Strategy and NICE quality standard should continue in full. The new Stroke Sentinel National Audit Project (SSNAP) should provide an excellent source of information that will enable improvements in the provision of stroke care to be monitored right across the pathway. More work needs to be done looking at the various components of the tariff for acute care of stroke to ensure that resources are freed up to fund early supported discharge programmes, which is discussed in the next chapter.

⁵¹ Rothwell, PM et al, 2007, EXPRESS study

⁵² SSNAP Acute Organisational Audit 2012

Carotid endarterectomy

4.32 Carotid endarterectomy is highly effective in reducing the risk of stroke in people with a significant narrowing of the carotid artery detected after transient ischaemic attack and minor stroke: the procedure is most effective when performed as soon as possible after the symptoms. The median time from symptom of TIA to carotid endarterectomy for people with TIA has fallen from 28 days in 2010 to 15 days in 2012. The current NICE guidelines recommend two weeks and the Stroke Strategy states a target of 48 hours from symptoms to operation in high-risk patients. More work is required to ensure all people with significant stenosis have access to the operation in a timely fashion, 7 days each week.

Peripheral arterial disease

4.33 Peripheral arterial disease (PAD) is atherosclerosis of the arteries outside the brain and heart. PAD commonly affects the leg arteries and it is estimated that 20% of people over 60 have PAD. The majority have no symptoms but 4% of the population suffer pain on walking due to the PAD (intermittent claudication) and of these 20% will progress to critical limb ischaemia that can lead to limb loss^{53,54}. Atherosclerotic disease of the carotid arteries is a cause of stroke and dilation of the main blood vessel in the abdomen, the aorta, is termed an aneurysm. PAD is responsible for reduced mobility, pain, ulceration, gangrene, amputation, stroke and death in a large number of people in England. The development of PAD is strongly associated with CVD risk factors such as smoking, diabetes hypertension and raised cholesterol.

PAD and cardiovascular risk

- 4.34 The presence of PAD is a very powerful marker of cardiovascular risk and preventable cardiovascular events⁵⁵. People with PAD have a four-fold increased risk of dying from cardiovascular disease that can be significantly reduced by modifying their risk factors. Failure to diagnose PAD is a missed opportunity to address cardiovascular risk factors and reduce cardiovascular death and morbidity.
- 4.35 Patient experience of PAD care tends to be poor. PAD is not well recognised and is under diagnosed in both primary and secondary care. The significance of PAD in terms of cardiovascular risk is not widely appreciated and, even in those patients diagnosed with PAD, their risk factors tend to be less well managed than for other

53 Fowkes FG, Housley E, Cawood EH, Macintyre CC, Ruckley CV, Prescott RJ. Edinburgh Artery Study: prevalence of asymptomatic and symptomatic peripheral arterial disease in the general population. *International Journal of Epidemiology*. 1991; 20(2):384-392

54 Leng GC, Lee A, Fowkes FG, Whiteman M, Dunbar J, Housley E et al. Incidence, natural history and cardiovascular events in symptomatic and asymptomatic peripheral arterial disease in the general population. *International Journal of Epidemiology*. 1996; 25(6):1172-1181

55 Ankle Brachial Index Collaboration. Ankle brachial index combined with Framingham Risk Score to predict cardiovascular events and mortality. A meta-analysis. *JAMA* 2008;300:197-208

cardiovascular conditions⁵⁶. Appropriate referral of PAD patients to specialist teams is variable, often leading to late diagnosis and treatment. This can result in unnecessary morbidity and mortality.

- 4.36 NICE published guidance and a care pathway in August 2012 on the diagnosis and management of lower limb peripheral arterial disease (CG147)^{57,58}. A key priority to improve the diagnosis, treatment and management of people with PAD is to ensure that it is implemented, that specialist services are available and patients are referred appropriately.

PAD and diabetes

- 4.37 There is a strong relationship between diabetes and PAD. Diabetes is a major risk factor for the development of PAD and patients with diabetes are 4 times more likely to develop PAD⁵⁹. It is estimated that even at the time of diagnosis, 8% of people with Type 2 diabetes already have PAD and one third of patients with diabetes over the age of 40 years will have the condition⁶⁰.
- 4.38 Patients with diabetes and PAD have a 70-80% increased risk of dying from cardiovascular disease compared to a person with diabetes and no PAD. The risk of lower limb amputation is 10-16 times greater in people with diabetes and those with PAD have the greatest risk⁶¹.
- 4.39 Amputation has a major adverse impact on the patient and is associated with poor patient outcomes. Apart from the trauma of losing a limb, less than half of patients will be able to walk using a prosthetic limb and 50% will die within 2 years from cardiovascular disease. Access to vascular services is, therefore, a vital component of diabetes care especially in terms of avoiding amputation.
- 4.40 Of the 34,000 major (above the ankle) and minor (below the ankle) amputations carried out between 2007 and 2010, almost 50% were in people with diabetes. The risk of amputation in people with diabetes is over 20 times that of people

56 Bhatt DL, Steg PG, Ohman E, et al. International prevalence, recognition, and treatment of cardiovascular risk factors in outpatients with atherothrombosis. *JAMA* 2005;295:180–9.

57 Lower Limb peripheral arterial disease; diagnosis and management. NICE Clinical guideline 147

58 <http://pathways.nice.org.uk/pathways/lower-limb-peripheral-arterial-disease>

59 Newman ABV, Siscovick DS, Manolio TA, et al. Ankle-arm index as a marker of atherosclerosis in the Cardiovascular Health Study. Cardiovascular Health Study (CHS) Collaborative Research Group. *Circulation* 1993;88:837-845.

60 Gregg EW, Sorlie P, Paulrose-Ram R, Gu Q, Eberhardt MS, Wolz M, et al. Prevalence of lower extremity disease in the US adult population \geq 40 years of age with and without diabetes:1999-2000 national health and nutrition examination survey. *Diabetes Care* 2004;27:1591-1597

61 Al-Delaimy WK, Merchant AT, Rimm EB et al. Effect of type 2 diabetes and its duration on the risk of peripheral arterial disease among men. *Am J Med* 2004;116:236-40.

without diabetes⁶². Amputation was usually preceded by foot ulceration, 61,000 people with diabetes are estimated to have foot ulceration at any one time; of these about 50% will have PAD. The presence of PAD is the strongest indicator not only that the ulcer will not heal but also of the risk of amputation and death⁶³. Despite this, less than 50% of people have any treatment to improve the blood supply of their leg before amputation. Amputation not only costs lives and leaves patients disabled, it costs money. The total cost of foot care and amputation is calculated as £640-660 million per year⁶⁴.

- 4.41 Estimates suggest that 85% of amputations could be avoided in people with diabetes by urgent referral to specialist teams. Studies have shown that the introduction of a multidisciplinary foot care team with rapid access to specialist services can reduce amputation rates by 60-70%. This was reflected in the NICE guidelines on diabetic foot complications⁶⁵ but in 2011 40% of hospitals did not have this service⁶⁶. In addition to the benefit to the patient, it is estimated that the hospital costs of amputation alone are £25 million per year in England so even a modest 10% reduction in amputation rates could make a significant saving to the health economy⁶⁷.
- 4.42 The Quality and Outcomes Framework (QOF) has incentivised GPs to perform an annual foot examination in people with diabetes and to classify the person's feet as low, moderate or high risk. This is underpinned by the NICE quality standard for adults with diabetes. It also recommends that people with diabetes admitted to hospital for any reason undergo a foot examination on admission. At present, more than one in fifty people with diabetes admitted to hospital develop an inpatient foot complication that may have been avoided by risk assessment and preventative care.

Service configuration

- 4.43 Treatment of PAD includes both surgical (eg bypass) and endovascular technologies (eg angioplasty and stenting) requiring close co-operation between vascular surgery and interventional radiology. Many patients with PAD will have other cardiovascular conditions and may require support from a range of cardiovascular specialists.

62 Holman N, Young RJ, Jeffcoate WJ. Variation in the recorded incidence of amputation of the lower limb in England. *Diabetologia*. 2012 Jul;55(7):1919-25. doi: 10.1007/s00125-012-2468-6. Epub 2012 Mar 8.

63 Prompers L, Schaper N, Apelqvist J et al. Prediction of outcome in individuals with diabetic foot ulcers: focus on the differences between individuals with and without peripheral arterial disease. The EURODIALE Study. *Diabetologia* 2008;51:747-755.

64 Kerr M. Foot care for people with diabetes. The economic case for change NHS Diabetes 2012

65 NICE. Diabetic Foot complications. In patient management of diabetic foot problems. NICE Clinical Guidelines 119. 2011

66 National Diabetes Inpatient Audit 2011. <https://catalogue.ic.nhs.uk/publications/clinical/diabetes/nati-diab-inp-audi-11/nati-diab-inp-audi-11-nat-rep.pdf>

67 Kerr M. Foot care for people with diabetes. The economic case for change NHS Diabetes 2012

Specialist vascular units should be able to offer patients all appropriate options for treatment and, as many patients with PAD will require emergency or urgent treatment, these services must be available at all times.

- 4.44 Outcomes for patients needing vascular surgery have improved since the Vascular Society of Great Britain and Ireland produced guidelines and a quality improvement framework on the provision of vascular services^{68,69}. Progress has been made to reconfigure vascular surgical services to reflect these through a combination of small units coalescing with larger high volume units, and the formation of networks with a single centre or hub for the more specialist arterial interventions and emergency work. There are currently 80 hospitals in England offering vascular services with 48 vascular centres. This has contributed to major improvements in outcomes for elective aneurysm surgery, with 30-day mortality falling from 7.5% in 2008 to 2.4% in 2012.
- 4.45 The benefits of concentrating vascular specialist expertise in high volume centres also apply to other vascular treatments such as carotid endarterectomy and lower limb bypass surgery. Despite improvement there still remains considerable geographical variation in outcomes. Amputation rates vary from 4 to 7 per 100,000 population⁷⁰ and the national time to treatment for carotid endarterectomy has an interquartile range of 12-68 days⁷¹. In 2010 around 20% of NHS Trusts were not part of a vascular network or had 24 hour vascular surgical cover and only 23% had 24 hour 7 day a week vascular interventional radiology cover⁷². Work needs to continue, therefore, to establish high quality vascular services across the country.
- 4.46 Careful planning is needed to ensure that all patients have access to the appropriate specialist input in those hospitals that are not vascular centres. Many patients with PAD can be appropriately managed in their local hospital supported by specialist teams visiting. Only those patients who require interventional and emergency treatment need to travel to the arterial centre. Once they have recovered from the intervention, they too can be treated nearer to home. This relies on close cooperation between vascular surgeons, diabetologists, interventional radiologists and other

68 The Vascular Society of Great Britain and Ireland. The provision of vascular services for patients with vascular disease. <http://www.vascularsociety.org.uk/vascular/wp-content/uploads/2012/11/Provision-of-Services-for-Patients-with-Vascular-Disease.pdf>. 2012

69 The Vascular Society of Great Britain and Ireland. AAA Quality improvement programme. <http://www.aaaqip.com/aaaqip/evidence-base.html>

70 Moxey PW, Hofman D, Hinchliffe RJ, Jones K, Thompson MM, Holt PJE. Epidemiological study of lower limb amputation in England between 2003 and 2008

71 Carotid Intervention Audit Steering Group. Royal College of Physicians Clinical Study Department. UK Carotid Endarterectomy Audit. Round 4 2012. <http://www.vascularsociety.org.uk/vascular/wp-content/uploads/2012/11/UK-Carotid-Endarterectomy-Audit-Round-4-Public-Report.pdf>

72 Stroke Programme Clinical Standards Department. Royal College of Physicians. UK Audit of Vascular Surgical Services and Carotid Endarterectomy July 2010

cardiovascular services. Strategic Clinical Networks will be well placed to help ensure that appropriate arrangements are put in place.

Chronic Kidney Disease (CKD)

- 4.47 CKD affects 35% of the over 65 year olds in the population and is one of the commonest comorbidities seen in hospitals, particularly in those admitted with acute vascular conditions. Average length of stay for people with CKD is 35% longer at 6.78 days than that for similar patients without CKD.
- 4.48 People with multiple conditions, especially the elderly who are at highest risk of CKD, often have worse care than those with a single long-term condition and this care has not improved significantly despite NICE CG 50 that provides guidance on how to treat acutely ill patients in hospital.
- 4.49 People with CKD who are admitted to hospital with a STEMI or nSTEMI are less likely to receive evidence based CVD interventions than those without CKD. On discharge from hospital, they are also less likely to receive a complete care bundle that will help prevent the progress of their heart disease⁷³.
- 4.50 Acute Kidney Injury (AKI) is common affecting about 20% of those admitted to hospital with acute conditions. The major risk groups are those with pre existing CKD, diabetes or receiving contrast examinations such as coronary or cerebral angiography. In one third of cases, the AKI is predictable and avoidable.
- 4.51 Only 52 acute trusts have onsite renal teams. Systems need to be in place for 24/7 advice and, where necessary, review for people with stage 4 and 5 CKD who are admitted with acute intercurrent problems and whose kidney function deteriorates and also to advise on and respond to AKI emergencies.

Hospital services for patients with diabetes

- 4.52 It is estimated that 24,000 people with diabetes each year in England are dying from diabetes-related causes that could be avoided⁷⁴. Among hospital inpatients, those with diabetes are 10% more likely to die in hospital than matched patients not recorded as having diabetes⁷⁵. Patients with diabetes also have an excess risk of many other conditions – some specific to diabetes such as diabetic kidney damage – see Table 7.

⁷³ Use of evidence- based therapies in Short term Outcomes of ST-segment elevation myocardial infarction and non-ST-Segment Elevation Myocardial Infarction in Patients with Chronic Kidney Disease A report from the National Cardiovascular Data Acute Coronary Treatment and Intervention Outcomes Network Registry
Fox C, Muntner P et al. *Circulation* 2010, 121:357-365

⁷⁴ NAO The management of adult diabetes services in the NHS May 2012

⁷⁵ NDIS

Table 7: Patients with diabetes excess risk of other conditions

	Excess rate
Heart failure	65%
Myocardial infarct	48%
Stroke	25%
End stage renal failure	114%
Minor amputation	331%
Major amputation	210%

4.53 At least one in six of all inpatient beds are occupied by people recorded as having diabetes, accounting for 20% of all occupied bed days (nearly 6 million bed days a year). On average, people with diabetes stay 3 days longer in hospital than those who do not have diabetes. People with diabetes admitted with complications have an increased mortality in the 21 months after discharge as in Table 8 below:

Table 8: People with diabetes increased risk of mortality following hospital admission

Reason for hospital admission	Mortality (1.0 is the mortality of people with diabetes not admitted for this complication)
End stage kidney disease (stage 5)	3.4
Kidney replacement treatment	1.9
Angina	1.4
Heart attack	1.5
Heart failure	3.6
Stroke	2.4
Minor amputation	1.8
Major amputation	2.8
Diabetic ketoacidosis	2.8
Diabetic retinopathy (eye disease)	1.1

4.54 Often when patients are treated in hospital for a specific condition, their diabetes is either ignored or patients are not allowed to self manage in the way they would at home. This often leads to complications which otherwise would not have arisen – for example, foot wounds not being properly monitored resulting in an amputation of a limb.

- 4.55 Given the large number of patients who are admitted to hospital with diabetes, investment in specialist diabetes teams and general staff education could improve patient outcomes and cut the excess spend resulting from poor care by over £500 million. Just over half⁷⁶ of all hospitals have no diabetes inpatient specialist nurse time and 8% have no consultant diabetologist time for inpatients⁷⁷. Diabetes ulceration should be considered as part of the wider agenda of zero tolerance of pressure ulcers and preventable safety issues.
- 4.56 All CVD patients should have access to what is recognised as the right treatment. This includes specialist teams and 24/7 services where appropriate. NICE guidelines (and quality standards) provide evidence for what is the right treatment and CCGs will wish to use these to help inform their commissioning intentions in this area. NHS Improving Quality (NHS IQ), working with the Strategic Clinical Networks, will build on NHS Improvement's work to support commissioners and providers to deliver the right services.

Conclusion

- 4.57 If improvements were made in responding faster to acute events such as heart attack and stroke, and NICE guidelines and quality standards were followed in providing treatment, lives could be saved and people's quality of life could be improved. Providing specialist treatment by appropriately trained health care professionals could have a major impact on improving outcomes. Also, appropriate management of patients' co-morbidities, particularly PAD and diabetes, could save millions of pounds in reducing amputation rates alone. Furthermore, the 5-year mortality in people with diabetes foot ulceration could be significantly reduced from 50% to 27% with antiplatelet therapy, statin and blood pressure management⁷⁸.
- 4.58 CCG commissioners should understand the implications of commissioning services that do not meet NICE guidelines as very often they result in poorer care and poor value for money whereas investment in services that prevent complications, such as specialist diabetes teams, can often result in improved quality of experience for the patient and savings.

76 The National Diabetes Inpatient Audit (NaDIA) 2011

77 <https://catalogue.ic.nhs.uk/publications/clinical/diabetes/nati-diab-inp-audi-11/nati-diab-inp-audi-11-nat-rep.pdf>

78 Improved survival of diabetic foot ulcer patients 1995-2008. MJ Young et al. Diabetes Care 2008 vol 31 No.11 p2143-2147. <http://care.diabetesjournals.org/content/31/11/2143.full.pdf+html>

Actions

Action 7: To improve acute care:

- the NHS CB will work with the Resuscitation Council, the British Heart Foundation and other to promote AED site mapping/registration and first responder programmes by ambulance services and consider ways of increasing the numbers trained in CPR and using AEDs;
- PHE will continue to raise awareness of the signs and symptoms of CVD by running campaigns such as Act FAST and trialling new campaigns; and
- all CVD patients should have access to what is recognised as the right treatment. This includes specialist teams and 24/7 services where appropriate. NICE guidelines (and quality standards) provide evidence for what is the right treatment and CCGs will wish to use these to help inform their commissioning intentions in this area. NHS IQ, working with the Strategic Clinical Networks, will build on NHS Improvement's work to support commissioners and providers to deliver the right services.

Chapter 5: Living with cardiovascular disease and end of life care

Introduction

- 5.1 The broad aim of care for patients with cardiovascular disease (CVD) should be to minimise the risk of death and to optimise quality of life. To achieve this, all patients with cardiovascular conditions, whether immediately life threatening or not, need and deserve:
- information about their specific condition and about other cardiovascular diseases which they may develop;
 - a full assessment and care plan, as should be offered to anyone with a long term condition;
 - advice on how they can reduce their risk of developing further cardiovascular (or other) problems;
 - psychological and practical support, where necessary;
 - access to rehabilitation programmes where these have been shown to be of benefit;
 - integrated care, so that they do not receive contradictory advice and so that unnecessary hospital visits are kept to a minimum; and
 - appropriate drug treatment and other interventions.
- 5.2 This chapter looks at what more should be done to improve rehabilitation and long term care. It also considers what should be done to improve patient and carer experience of end of life care (paragraphs 5.28-5.33).

Current position

- 5.3 Many patients are currently not receiving all of the aspects of care listed above. For example, patients and carers have said:
- they felt abandoned after acute sector treatment;
 - they felt that they needed emotional and practical support that was not forthcoming;

- they did not receive the information they needed to live as well as possible with their condition, including to self manage; and
- some services were inappropriately targeted, eg exercise classes need to meet individuals' needs and abilities.

5.4 There was also evidence of:

- failure to assess and meet patients' needs, eg in terms of treating conditions other than the particular one that had required the initial acute sector treatment, resulting in further pressure on health and social care services, which could have been avoided;
- only patients who had had an acute event could access rehabilitation services, when a much wider range, eg those with angina and claudication, would benefit; and
- failure to 'risk stratify' patients after an event, meaning that all patients were put on the same follow up regime, whether it met their needs or not.

Better assessment and care planning – and meeting identified needs

- 5.5 Whether a patient has chronic CVD or has had an acute event, care providers need to carry out a holistic assessment of the patient's need for rehabilitation and long-term support. This assessment should consider the physical, psychological and social care needs and it is likely that the results of the assessment might involve referral to a number of agencies. On completion of this assessment, a written care plan should be produced – in conjunction with the patient – that meets those needs. Involving families and carers in care planning is more likely to result in good outcomes and help to avoid emergency or unnecessary re-admission to hospital which can be distressing for all concerned.
- 5.6 In recognition of the importance of care planning, the draft Care and Support Bill includes provisions to ensure that everyone eligible for adult social care is provided with a care and support plan that clearly sets out the needs and outcomes to be met and involves the adult and/or their carer in the development of the plan. It also contains provisions to simplify the assessment of carers' needs for support and, for the first time, to place a duty on councils to meet carers' eligible needs for support.
- 5.7 Providing patient-owned care plans in either GP or community settings or on discharge from hospital gives healthcare professionals the opportunity to engage patients in self-management. Professionals may wish to consider facilitating access to more comprehensive education and training programmes such as the Expert Patient Programme or arranging follow-up contacts for education and self-management support. Care providers should not overlook the voluntary sector, in the peer support,

practical help and education services they can provide to boost patient and carer confidence and improve self-management.

Action underway

- 5.8 A range of work is underway to develop and pilot new models of care for people with long term conditions (LTCs). For example, the Year of Care programme is a three-year pilot programme run in three different PCT areas that has demonstrated how to use personalised care planning as standard practice for people with long-term conditions, using diabetes as an example. By planning care around individuals with long-term conditions, rather than around separate conditions or where treatment is provided, the model allows a more integrated and patient centred approach to care.
- 5.9 When evaluated, this approach has shown considerable benefits including:
- productivity is improved: care planning is cost neutral at practice level;
 - people with diabetes report improved experience of care and real changes in self-care behaviour;
 - professionals report improved knowledge and skills, and greater job satisfaction; and
 - practices report better organisation and team work.
- 5.10 The LTC Year of Care Funding Model aims to support a more patient centred care model for people with long-term conditions by facilitating the delivery of integrated health and social care for people with LTCs based on need rather than disease. The financial model will be an annual risk adjusted capitation budget which is based on these levels of need. The model aims to improve outcomes and deliver a more effective use of resources by moving away from episodic, activity driven funding flows towards person centred care irrespective of organisational boundaries. This model is currently being tested for further development in seven health and social care systems.
- 5.11 Personal health budgets⁷⁹ build on personalised care planning by giving individuals more choice and control over how their health and wellbeing needs are met. They enable people to meet their needs in ways that work for them, focussing care on the individual. This provides an opportunity to ensure that CVD conditions are treated as a closely connected group of conditions affecting one person, rather than as separate diseases with possibly uncoordinated care. Personal health budgets are at an early stage in development, but independent evaluation⁸⁰ has shown that they can increase quality of life, reduce hospital admissions and are cost effective when people have

79 for more information on personal health budgets see <http://www.personalhealthbudgets.dh.gov.uk/>

80 <https://www.phbe.org.uk/>

higher levels of health need. Personal budgets and direct payments are frequently used in social care to give people real choice and control over the support they receive. As personal health budgets become available in the NHS, joining these two budgets will be a powerful way to enable integration and personalise the care and support people get.

- 5.12 There is a wide range of work underway to help meet patients' and carers' information needs. As the Government's information strategy for health and care in England makes clear, people will soon be able to find the information they need through a single, trusted national information portal on the internet, to understand symptoms and what they can do to manage them or to find information or online services relating to different health or clinical teams to make an informed choice about care.
- 5.13 In terms of services that support people living with CVD, electronic systems such as Renal Patient View make it possible for patients to enter and view test results online, instantly sharing them with professionals and carers. Similar systems are possible for patients with diabetes, hypertension and a range of other cardiovascular conditions. Providers and commissioners, as part of providing a high quality, patient centred service, should consider these options. Tele-medicine can also play an important role in enabling greater communication between patients and healthcare professionals through telephone and online consultations. This is a cost-effective means for specialists to provide advice to, and monitor the condition of, a large number of patients, while minimising the burden on the patient.

Next steps

- 5.14 While there is a growing evidence base about what works in terms of assessment and care planning and of their benefits, and pockets of good practice are developing, good quality assessment and care planning for long term care need to become the norm across the country. To support this, next year NHS Improving Quality (NHS IQ), working with the Strategic Clinical Networks, will develop, evaluate and disseminate approaches to assessment and care planning for CVD patients.
- 5.15 Commissioners need to commission services in line with what the National Institute for Health and Clinical Excellence (NICE) guidance and quality standards tell us about good quality rehabilitation and long term care. Commissioners will need to work with providers to ensure they have the frameworks in place to adopt a care planning approach and can generate individual care plans for patients with CVD. Both providers and commissioners should also take full advantage of collaborative forums such as their local Health and Wellbeing Board to develop integrated approaches to care planning and service provision across care organisations. The strategic clinical

networks may also play a leading role in facilitating joint working between provider organisations.

Early supported discharge for stroke

- 5.16 Evidence suggests that there are benefits in terms of mortality and levels of disability in giving appropriate stroke patients access to early supported discharge (ESD). An assessment of ESD services has shown a reduced risk of death or dependency equivalent to six fewer adverse outcomes for every 100 patients receiving an ESD service. Length of hospital stay was on average 7 days shorter for patients assigned ESD services than for those assigned conventional care⁸¹. This also brings down costs for the hospitals running the services by around £500 per patient⁸².
- 5.17 Currently only 45% of stroke units offer ESD, so there is considerable room for improvement. Approximately 20% of stroke patients benefit from the service. However, if this was raised to the expected optimal level of around 40% of patients across the country, there could be approximately 900 fewer cases of death and disability each year in England⁸³.

Next steps

- 5.18 Commissioners will want to explore the possibility of commissioning community ESD services across their localities. Commissioners should ensure ESD services have the sufficient depth of expertise and skill to meet the holistic needs of stroke patients and are able to link in with and effectively work across boundaries with social, primary and secondary care services. Commissioners may wish to use local incentive tools such as local contracting, disaggregating the tariff or provider CQUIN schemes to improve the development of high quality ESD services. Where there are specialist community services for patients with complex cardiovascular conditions such as heart failure, ESD should be supported by these community services. Providers, professional groups and networks will want to continue on-going work to improve community based stroke rehabilitation services and continuing development of the skills and expertise of professionals involved in service delivery.

Rehabilitation

- 5.19 Rehabilitation can have a major impact on mortality, quality of life and long term costs. For example, cardiac rehabilitation reduces all cause mortality by 18% over 6-12 months and 13% over 12 months and readmissions by 31% (6-12 months).

81 Fearon P, Langhorne P, Early Supported Discharge Trialists. Services for reducing duration of hospital care for acute stroke patients. Cochrane Database of Systematic Reviews 2012, Issue 9

82 Beech R, Rudd AG, Tilling K, Wolfe CDA. Economic consequences of early inpatient discharge to community-based rehabilitation for stroke in an inner-London teaching hospital. Stroke 1999

83 DH analysis – see Annex A

Access to rehabilitation is quite varied, eg at present only about 44% of cardiac patients access rehabilitation and Department of Health (DH) analysis of the National Audit for Cardiac Rehabilitation (NACR) shows that if this was extended to 65% of those estimated to benefit from rehabilitation, this could result in 380 fewer deaths and 1800 fewer readmissions per year. One of the areas with the greatest scope for improvement is in the provision of cardiac rehabilitation services to heart failure patients, which currently make up only 2% of the primary diagnoses⁸⁴.

- 5.20 There is also a strong evidence base for the benefits of rehabilitation for stroke patients, in terms of both mortality and morbidity. But there is evidence that stroke patients are not receiving the optimum level and type of rehabilitation. For example, the NICE quality standard on stroke states that patients should have access to 45 minutes of active therapy at least 5 days a week, for as long as there is a clinical benefit and the patient remains well enough to tolerate such levels. Data from the 2011 Sentinel Stroke Audit suggests, however, that access is much lower for the majority of patients, eg only 32% had 45 minutes and above.
- 5.21 There is plenty of guidance available about what good rehabilitation services look like, eg the NICE Commissioning Guidance for Cardiac Rehabilitation and the DH commissioning pack for cardiac rehabilitation; guidance for the provision of effective stroke rehabilitation is set out in Royal College of Physicians guidelines on stroke management and in the NICE quality standard on stroke. And yet anecdotal evidence during engagement on this strategy was that the quality of rehabilitation services was mixed.
- 5.22 Most of the evidence on the benefits of rehabilitation relates to people with particular conditions, but there is a case for a more generic approach to rehabilitation. Patients want to be seen as people, with their full range of different health issues, rather than as a range of health issues which are treated separately. The National Audit of Cardiac Rehabilitation 2012 report shows that those who participate in cardiac rehabilitation programmes have a range of different co-morbidities, particularly hypertension, angina and diabetes; people who have TIAs can benefit from rehabilitation packages; the first course of action for people with peripheral arterial disease is physical activity.
- 5.23 While there are some examples of broader rehabilitation programmes, and of them being coordinated to meet a wide range of different needs (see Box 7 below), in most areas rehabilitation services remain quite restricted and siloed. Of course, there will always be a need for some specialist services, eg for stroke patients, but there is scope to coordinate and extend the range of rehabilitation services to the benefit of patients and the NHS.

84 2012 NACR audit

Box 7: Action Heart Cardiac Rehabilitation and Prevention Programme, Russells Hall Hospital, Dudley

This established programme has always adopted an open policy with respect to eligibility, accepting patients from across the cardiac diagnostic range resulting in the team accommodating many patients with pre-existing conditions/co-morbidities such as stroke, diabetes, TIA, CKD, PAD and rheumatoid arthritis. This exposure to other CVD conditions has led to the programme naturally developing into a CVD programme and working closely with other teams in the CVD pathway. For example, the programme has recently formed a formal pathway with the TIA service, providing a 12 week exercise and lifestyle programme for this group of patients who had previously received little structured support.

The programme also has strong links with primary care, managing a borough wide exercise referral scheme for patients at high risk of developing CVD, receiving referrals from any GP or hospital consultant within the programme's catchment area. This initiative has resulted in a more 'seamless' service, providing access to support for both patients with existing CVD and those who are considered to be at risk of developing CVD.

This initiative is very much in 'formative step' with the thinking of the 'British Association of Cardiovascular Prevention and Rehabilitation' recognising the fact that many cardiac rehabilitation programmes may be well placed to collaborate with colleagues in the CVD pathway to provide more generic rehabilitation and preventative services.

Next steps

- 5.24 The DH is working in partnership with key organisations such as the NHS Commissioning Board (CB), Monitor and the Local Government Association to explore and advance how more innovative, integrated and locally designed solutions can be put in place. There are plans for these partners to publish further work on this shortly.
- 5.25 Looking at the evidence base for rehabilitation, including its cost effectiveness, commissioners will want to work with providers to ensure that the right services are in place. Developing indicators in the CCG Outcomes Indicator Set for future years will help with assessment of progress in this area.

Psychological support

- 5.26 There is a range of evidence to demonstrate the importance of emotional and psychological support throughout the care pathway, but particularly for those with long term care needs, for example:

- health care costs for patients with long term conditions who also have depression are typically 45% higher than for non-depressed patients;
- depressive symptoms are associated with significantly higher cardiac and non-cardiac NHS service utilisation following heart attacks; and
- NHS Improvement work on stroke has shown the cost-effectiveness of psychological care – see Box 8 below.

5.27 Given the importance of emotional and psychological support in improving patient experience and outcomes, commissioners will want to pay particular attention to this area in developing their future arrangements for long term support of those with CVD and their carers.

Box 8: Economic model for impact of psychological care for people who have had a stroke

Stroke services which incorporate psychological care according to national clinical standards and NICE guidance deliver best outcomes for people who have had a stroke. A stroke service where psychological care is led by a clinical psychologist using a stepped approach is cost effective, with savings to the NHS recovered in around two years. Equally, there are anticipated economic benefits to social care which are more difficult to establish with the current available evidence but which are expected to be of a similar magnitude.

This modelling demonstrates that an investment of around £64,000 in a clinical psychologist led service for psychological care, which includes multidisciplinary team training and clinical psychology assistant support could reap financial benefits of around £108,300 to the NHS and social care in around two years and around £126,000 in two to three years.

The outcomes of such service for patients should also be positive and well beyond those expected in terms of the criteria set by the National Institute for Health and Clinical Excellence (NICE) – yielding a ten-fold benefit measured in terms of ‘Quality Adjusted Life Years’.

To deliver these benefits the stroke service needs to operate within the National Stroke Strategy recommendations and the evidence based national guidance; that patients are routinely screened for mood and cognition several times after their stroke, that acute and community and social care services are well integrated, with access to six week and six month reviews, and a stepped approach to psychological care is used.

End of life care

5.28 Many CVD patients are receiving suboptimal care at the end of life and are not dying in the place of their choice. For example:

- the Views of Informal Carers for the Evaluation of Services (VOICES) Survey (2012) of bereaved relatives has shown that quality of care for CVD patients in the last 3 months of life varies across the country and is in general less good than that for patients dying from cancer. Experience of care for patients dying in hospital is particularly poor; and
- 62% of patients dying from CVD die in hospital, though the large majority would prefer to die in their usual place of residence (home or care home). The proportion of patients dying in their usual place of residence has, however, shown an increase in the past few years (37% in 2004; 43% in 2011). Less than 1% of CVD deaths occur in a hospice.

Action underway

5.29 The End of Life Care Strategy (2008) and the fourth annual report (2012) set out what needs to be done to improve care for all those approaching the end of life. This work has been taken forward by the National End of Life Care Programme, which is now being incorporated into NHS IQ. Key programmes of work include:

- Electronic Palliative Care Coordination Systems (EPaCCS).
- *Transform* programme (in hospitals) – this brings together a range of activity to ensure best quality care in hospitals for people at the end of life, and includes:
 - the AMBER care bundle⁸⁵;
 - advance care planning;
 - EPaCCS;
 - Rapid Discharge Home Pathway; and
 - the Liverpool Care Pathway for dying patients.
- better measurement and feedback (eg VOICES survey and use of Death in Usual Place of Residence (DIUPR) as an indicator).

5.30 Details of all of the above can be found on the National End of Life Care Programme's website. It includes examples of good practice and a wide range of tools and resources to support commissioners and providers in designing, commissioning and delivering excellent end of life care in all settings. Disease specific information is available on the NHS Improvement/Heart and NHS Kidney Care

⁸⁵ AMBER stands for: **A**ssessment, **M**anagement, **B**est practice, **E**ngagement, **R**ecovery uncertain

websites. The National End of Life Care Intelligence Network's website includes reports on end of life care for different conditions, including CVD, as well as locality profiles and a wealth of other intelligence.

Next steps

5.31 More people should be able to spend the closing stages of their lives in their preferred place of care and to die there. There should be fewer patients dying in hospital, and when they do, they should experience better care.

5.32 This will need to involve:

- timely identification of people who are likely to be in their last year of life and planning their care with them, including Advance Care Planning, using local preferred priorities of care (PPC) documentation;
- key staff trained in assessment of supportive care needs and advance care planning;
- care needs documented on registers (eg cause for concern register in kidney patients) and GP supportive care registers (Gold standards register or equivalent);
- supporting the end of life care community by the spread of electronic palliative care coordination systems (EPaCCS);
- implementing the *Transform* programme in hospitals currently being led by the National End of Life Care Programme continuing under NHS IQ. This incorporates models such as the AMBER care bundle;
- using the data on quality provided by the VOICES survey;
- improvement in coordination of care across secondary and primary care interface; and
- patient and carer information and support for end of life care developed.

5.33 NHS IQ will support commissioners in line with the above.

Actions

Action 8: Building on good practice in CVD and more generally, NHS IQ, working with the Strategic Clinical Networks, will develop, evaluate and disseminate approaches to assessment and care planning for CVD patients. These will include a full cardiovascular assessment (see Action 1 above) and assessment of needs generally and access to: education to support self-management; psychological support; and, where appropriate, physical activity, rehabilitation or reablement programmes, advance care planning and planning for end of life care.

Action 9: The NHS CB will, through NHS IQ, continue to develop and evaluate the *Transform* programme in hospitals; improve end of life care in the community including through spreading the electronic palliative care coordination systems (EPaCCS); and continue to run and use the VOICES survey as a means of monitoring quality of care at end of life.

Chapter 6: Making it happen

Introduction

- 6.1 The preceding chapters set out what needs to be done in order to improve cardiovascular disease (CVD) outcomes, in line with the Public Health, NHS and Adult Social Care Outcomes Frameworks. Each chapter:
- sets out how certain actions would improve outcomes and/or save money and so, on the basis of that evidence, the expectation that commissioners and providers would wish to implement them; and
 - identifies key actions for certain organisations.
- 6.2 In this chapter, consideration is given to the underlying system levers which will incentivise implementation and the range of support needed for delivery.

Responsibilities for improvements

- 6.3 The Government has set out its ambitions for improvements in outcomes. This strategy shows how the new health and care system can be used to drive improved outcomes in line with the NHS, Public Health and Adult and Social Care outcomes frameworks. It identifies action that will and/or could be taken by:
- Department of Health (DH);
 - Public Health England (PHE);
 - NHS Commissioning Board (CB) including NHS Improving Quality (NHS IQ);
 - clinical commissioning groups (CCGs); and
 - local authorities (LAs).

6.4 Future roles and responsibilities are set out below:

Future roles and responsibilities	Relationship to Outcome Frameworks
<p>The DH will:</p> <ul style="list-style-type: none"> • work closely with industry and other stakeholders to promote healthier lifestyle choices; • keep evidence under review and consider the need for further legislation as appropriate; and • monitor performance against the Outcomes Frameworks, using them to set direction and drive improvement in outcomes and holding the NHS to account for improvements required. 	
<p>PHE will:</p> <ul style="list-style-type: none"> • raise awareness of the benefits of healthy lifestyles; • raise awareness of the symptoms of cardiovascular diseases and the benefits of early diagnosis; • work with local authorities to maximise the impact of NHS Health Checks; • monitor progress on cardiovascular diseases at population level; and • work with partners across all sectors to develop lifestyle support that will prevent and modify CVD, and maximise health and wellbeing at all stages of disease. 	<p>Public Health Outcomes Framework</p> <p>2 Health improvement – People are helped to live healthy lifestyles, make healthy choices, and reduce health inequalities</p> <p>2.11 Diet; 2.12 Excess weight in adults; 2.13 Proportion of physically active and inactive adults; 2.14 Smoking prevalence in adults; 2.17 Recorded diabetes; 2.22 Take up of NHS Health Check programme</p> <p>4.4 Healthcare public health and preventing mortality – under 75 mortality rate from all cardiovascular diseases</p>
<p>LAs will:</p> <ul style="list-style-type: none"> • be responsible for full roll out of NHS Health Check; • engage with their local populations to deliver health improvements; • take action on the wider determinants of health; and • engage with the NHS on cardiovascular outcomes through health and wellbeing boards. 	<p>As per PHE with:</p> <p>Adult Social Care Outcomes Framework</p>

Future roles and responsibilities	Relationship to Outcome Frameworks
<p>The NHS CB will:</p> <ul style="list-style-type: none"> • be responsible for commissioning primary care services; • be responsible for delivering the outcomes set out in the Government’s Mandate and measured by the NHS Outcomes Framework; • directly commission specialised cardiovascular services; • support Clinical Commissioning Groups in their development; • support the work to develop health outcomes measures at national and CCG levels; • monitor progress on cardiovascular diseases within the NHS; and • through NHS IQ and Strategic Clinical Networks, support the NHS and social care to deliver improved health outcomes. 	<p>NHS Outcomes Framework</p> <p>1.a. Potential Years of Life Lost (PYLL) from causes considered amenable to healthcare</p> <p>1.1 Reducing under 75 mortality rate from cardiovascular disease</p> <p>2.1 Ensuring people feel supported to manage their long-term condition</p> <p>2.2 Improving functional ability of people with long-terms conditions</p> <p>3a Emergency admissions for acute conditions that should not usually require hospital admissions</p> <p>3.4 Improving recovery from stroke</p> <p>4a.i Patient experience of GP services</p> <p>4b Patient experience of hospital care</p> <p>4.1 Improving people’s experience of outpatient care</p> <p>4.2 Improving hospitals’ responsiveness to in-patients’ personal needs</p> <p>4.3 Improving people’s experience of accident and emergency services</p> <p>4.4 Improving access to primary care services</p> <p>4.6 Improving the experience of care for people at the end of their lives</p> <p>4.9 Improving people’s experience of integrated care</p>
<p>CCGs will:</p> <ul style="list-style-type: none"> • commission all health services other than primary care and specialised services, in line with National Institute for Health and Clinical Excellence (NICE) guidance; • work with the NHS CB to support improvements in primary care services; and • engage with LAs on cardiovascular outcomes through health and wellbeing boards. 	

Future roles and responsibilities	Relationship to Outcome Frameworks
<p>Commissioning Support Units will support CCGs by:</p> <ul style="list-style-type: none"> • providing practical support to redesign and implement pathways to improve outcomes; • supporting them in using the NHS Standard Contract as an effective lever to drive service improvement; and • assisting in engaging patients and the public. 	

6.5 Where the actions at the end of each chapter set out future work for the NHS CB – particularly NHS IQ – or PHE, these have been agreed as future priorities for action. All the Domain Directors in the NHS CB, working with the relevant new national clinical directors, will be including relevant actions from this strategy in their work plans.

Improve intelligence, monitoring and research

- 6.6 It is now generally agreed that providing benchmarked data is a very effective way of leveraging improvements in services and outcomes. It can help commissioners, providers and individual clinicians identify where to prioritise action in the areas where they are weakest. It can also help the public and patients better understand the quality of their local services and so demand improvements in areas where services and outcomes compare unfavourably with others in different parts of the country. The provision of benchmarked data also allows for monitoring progress against the Outcomes Frameworks.
- 6.7 Several excellent audits and registries have been established over the past decade providing information on individual aspects of CVD (eg heart attack, diabetes, vascular, stroke, renal). These should now be brought together and linked to routinely available datasets (such as Hospital Episode Statistics (HES) and Office of National Statistics (ONS) and, in due course, the General Practice Extraction Service (GPES)).
- 6.8 *Everyone Counts: planning for patients 2013/14* commits to improved data collection to drive evidence-based medicine along with greater transparency on outcomes. In the future, information on the quality and outcomes of hospital based teams or services will be routinely published.
- 6.9 Building on the experience of the National Cancer Intelligence Network, stakeholders agree that there would be a benefit in developing a cardiovascular intelligence network (CVIN). This would bring together epidemiologists, analysts, clinicians and patient representatives to make best use of available data. It will be important to include patient safety experts to help use information to drive safety improvements. In addition, the CVIN would consider what other data developments are needed,

eg improvements in data relating to costs and data about patient experience and quality of life. The NHS CB and PHE will look to take this forward, working with the Health and Social Care Information Centre (HSCIC) and others, ensuring that it is fully integrated with the care.data initiative, which will deliver safe high quality data sharing in health and care.

- 6.10 Chapter 3 makes clear that comparative data on risk factors, uptake of NHS Health Checks and CVD outcomes should be published at local authority level. Public Health Observatories have already published much of this data and PHE will be developing these analyses to make them widely available and easy to use.
- 6.11 There are other areas where further work is needed to improve intelligence and evidence to promote improved outcomes. For example, the NHS CB will consider the scope to carry out a CVD patient experience/PROMs survey, along the lines of similar surveys run for cancer patients. Work will be undertaken to examine how incident reporting information (for example to the National Reporting and Learning System) can be further used to drive improvement in the safety of CVD services. Further consideration also needs to be given to research needs and, in light of this strategy, the NHS CB and PHE will work with DH and the NIHR to review current research into CVD and possible future directions.
- 6.12 Reducing premature mortality is a shared indicator in the NHS and Public Health Outcomes Frameworks and so progress against these will be monitored through those mechanisms. It is featured in the Mandate, through which the Government will hold the NHS CB to account, along with other areas relevant to this outcomes strategy such as earlier diagnosis of illness and ensuring that patients can access the right treatment at the right time as recommended by NICE. The CCG Outcomes Indicator Set will provide transparent and comparative information to help local priorities to be agreed, through health and wellbeing boards. In this way it will be a resource for CCGs in planning for improving quality and outcomes for their patients.
- 6.13 As the new commissioning arrangements for health services develop, there will be an ever increasing range of information, available in more accessible ways, to support local authorities, CCGs and the NHS CB in providing accountability to local communities.

Finance

- 6.14 Programme budgeting data for the NHS for 2010/11 shows that expenditure on problems of circulation remains the second highest (after expenditure on mental health disorders) at £7.72 billion – out of a total NHS budget of £107 billion. Although it is not possible to compare satisfactorily between years, because of

changes in methodology, the expenditure on problems of circulation has increased from £5.72 billion in 2003/04.

- 6.15 This outcomes strategy has been developed on the basis that overall there will be no new funding available. The current financial situation has been seen by most stakeholders as both a challenge and opportunity. Those working and being cared for in the NHS are actively looking for ways to use the resources more efficiently without comprising quality.
- 6.16 The table at Annex A provides an assessment of the cost and benefits of some of the actions in this outcomes strategy to help stakeholders, most particularly CCGs, identify where they would get the most from their investment. Some of these will require some up front investment but, where this is so, the economic case should demonstrate longer term savings in future.

Commissioning development

- 6.17 While it is clear what services need to be commissioned, there is still the gap to fill between the service model and the use of commissioning to deliver this. Much support will be provided through commissioning support units (CSUs) – eg to support commissioners to redesign and implement pathways to improve outcomes and use the NHS Standard Contract as an effective lever for improvement – and NHS IQ will have a significant contribution to make. The NHS CB will also be considering what further guidance and support could usefully be provided.

Actions

Action 10: In order to improve the use of information to drive improvement:

- the NHS CB and PHE will look to establish a cardiovascular intelligence network (CVIN) bringing together epidemiologists, analysts, clinicians and patient representatives. The CVIN, working with the HSCIC, will bring together existing CVD data and identify how to use it best;
- the NHS CB will routinely make available information on the quality and outcomes of hospital based cardiovascular teams or services;
- the NHS CB and HSCIC will make available comparative data on the quality of care provided for patients with CVD by general practices;
- PHE will make available at local authority level comparative data on risk factors and CVD outcomes (see Action 2); and
- the NHS CB and PHE will work with Department of Health and the National Institute for Health Research (NIHR) to consider possible future research priorities.

Annex A: Cardiovascular Outcomes Strategy: Summary of Potential Costs and Benefits

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Prevention and Risk Management					
NHS Health Checks	<p><u>Problem</u> – Broader population health outcomes are sub-optimal through variation in identification of risk of: heart disease; stroke; kidney disease; and diabetes.</p> <p><u>Scale</u>¹ – 30% of cases of CKD, 18% AF; 25% of diabetes; and 45% of hypertension remain undiagnosed often only until acute event occurs. Compared to the 75% take-up in the Department's economic modelling, in 2011-12 the number of actual offers were 79% of plan and actual checks were 52% of plan (2.2m offers; 1.1m checks)². Across the country variation in offers made and actual checks carried out differs markedly, with the top 10% of PCTs performing 8.9 times and 2.9 times better than bottom 10% of PCTs for offers and actual checks, respectively.</p> <p><u>Type of outcomes expected</u> – reductions in: CVD events; morbidity and improvements in quality of life.</p>	Everyone between the ages of 40 and 74, who is eligible will be invited (once every five years) to have a check to assess their risk of heart disease, stroke, kidney disease and diabetes, and will be given support and advice to help them reduce or manage that risk.	<p>Average annual cost of £332m or £4,506m over 20 years</p> <p>Average annual net benefit of £2,765m or £55,304m over 20 years</p> <p>No modelled cost savings</p>	<p>Potential to prevent 1,600 non-fatal heart attacks and strokes and 4,000 people from developing Type 2 diabetes each year as well as detect 20,000 cases of diabetes or kidney disease earlier³</p> <p>1.3m QALYs gained</p> <p>Average annual benefit of £3,678m or £64,315m over 20 years</p>	<p>NICE PH25: Prevention of cardiovascular disease; NICE CG73: CKD; NICE CG15 Type 1 diabetes; NICE CG 66/87: Type 2 diabetes; NICE CG48: Secondary prevention of AMI; NICE CG127: Hypertension</p> <p>Price base is 2008</p> <p>QALYs estimated at £50k</p> <p>All figures are expressed as present values.</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Identification of Familial Hypercholesterolemia (FH)	<p><u>Problem</u> – Broader population health outcomes are sub-optimal as risks are inadequately managed due to high rates of undiagnosed cases.</p> <p><u>Scale</u>⁴ – There are an estimated 100,000 people in England with FH, but only around 15% of these have been diagnosed.</p> <p><u>Types of outcomes expected</u> – Reductions in: CVD events, morbidity and mortality</p>	Implement cascade testing from those currently identified index cases, resulting in an additional 35,000 diagnoses, bringing the total to approximately 50%. Treat new cases appropriately with high intensity statins.	<p>Additional costs of approximately £11m per annum, with fluctuations during roll-out</p> <p>Cost savings of £2.3m per annum due to reduced cardiovascular events</p>	230 AMI, 100 revascularisations, 50 cardiovascular deaths avoided per annum (at full roll-out)	<p>NICE CG71: Familial hypercholesterolaemia DH analysis based on NICE CG71 Costing Template.</p> <p>Potentially underestimates long term cost savings and health benefits.</p> <p>2008/09 price base</p>
Management of Atrial Fibrillation (AF)	<p><u>Problem</u> – Broader population health outcomes are sub-optimal as a result of relatively high rates of undiagnosed cases. Patient outcomes are sub-optimal as treatment not always optimal that varies across the country.</p> <p><u>Scale</u>⁵ – AF is common with prevalence of 1.2% (600,000 patients in England) though rate of 18% undiagnosed cases; five to sixfold increase in risk of stroke than people without AF; estimated to be directly responsible for 14% (12,500) strokes per annum; audit data suggests that 46% of patients that should be on anti-thrombotic therapy are not.</p> <p><u>Types of outcomes expected</u> – better identification and greater uptake of drug therapy leads to fewer strokes and avoidable mortality from strokes.</p>	Implementation of NICE CG36: Atrial fibrillation, recommendations of more appropriate risk stratification and uptake of anti-thrombotic therapy (specialist initiation and management in primary care)	Total net cost of implementing NICE CG36 of £21.9m of which £76.2m of costs and £54.3m of cost savings from avoided strokes from baseline of 2006	<p>2,100 lives saved per year</p> <p>Reduced morbidity; notably 7,100 fewer strokes per year</p> <p>ICER at cost per QALY available in NICE CG36 differentiated by stroke risk and comparisons of treatment types</p>	<p>NICE CG36: Atrial Fibrillation</p> <p>2006/07 price base</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Modifiable risk factor reduction	<p><u>Problem</u> – Broader population health outcomes are sub-optimal as a result of relative weaknesses in public health and healthcare to lower levels of modifiable risk factors.</p> <p><u>Scale</u> – 79,100 deaths per year in England can be attributed to smoking⁶. It has also been estimated that poor diet is a factor in 70,000⁷ deaths per year. 40,000 deaths per year are attributable to being overweight or obese.</p> <p><u>Types of outcomes expected</u> – reductions in incidence of CVD, diabetes and kidney disease leading to reductions in CVD events and mortality</p>	<p>Achieve national ambitions for risk factor reduction including:</p> <ul style="list-style-type: none"> • Reduce the smoking prevalence rate by 0.5% per year over 3 years, to 18.5% • To achieve by 2020: a sustained downward trend in the level of excess weight in children, and a downward trend in the level of excess weight averaged across all adults • A year on year increase in the proportion of adults achieving at least 150 minutes of exercise per week (with the aim of being active every day) and a year on year decrease in the proportion of those classed as 'inactive' 	<p>Cost impact not modelled, but risk factors currently responsible for overall costs to the healthcare system of several £billions. For example, obesity is estimated to cost the NHS £5.1bn in direct costs, and £16bn to the wider economy (2007 figures)⁸. Reductions in these risk factors should reduce costs.</p>	<p>Benefits to patients and the wider population in terms of reduced morbidity, mortality and disability, for example:</p> <ul style="list-style-type: none"> • Reductions in smoking prevalence could result in approximately 6,700 cumulative fewer deaths by 2015 • For each 1g reduction in salt consumption, it is estimated that in due course around 4,000 deaths could be avoided per annum. 	<p>DH Public Health Analysis NICE PH25: Prevention of cardiovascular disease See also NICE guidance on individual risk factor interventions, and on behavioural change. In terms of the proportion of deaths that would be CVD ones from the figures for smoking and salt consumption reduction, the estimate would be that approximately one quarter of the smoking deaths would be CVD, and the vast majority of salt deaths would be CVD.</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Management of obesity with bariatric surgery	<p><u>Problem</u> – Patient outcomes are sub-optimal as treatment offered not always the most clinically effective as well as capability and capacity constraints in hospitals for bariatric surgery.</p> <p><u>Scale</u>⁹ – Prevalence of overweight adults and adult obesity has trebled over past 25 years; in 2004 24% obese, with further 46%/35% men/women obese and 0.9%/2.6% of men/women are morbidly obese; prevalence greater among lower socioeconomic and lower-income groups as well as certain ethnic groups.</p> <p><u>Types of outcomes expected</u> – reductions in risks factors for CVD thereby reducing risk of CVD events and improving quality of life.</p>	<p>From NICE CG43: Obesity, bariatric surgery is recommended:</p> <ul style="list-style-type: none"> • as a first-line option for adults with a BMI of more than 50kg/m² in whom surgical intervention is considered appropriate • as a treatment option for adults with obesity if certain criteria fulfilled regarding BMI; presence of other significant diseases; failure of non-surgical options; person commits to the need for long-term follow-up 	<p>Cost per QALY of £6,289 and £8,527 of gastric bypass and silicone gastric band respectively¹⁰</p>	<p>QALY gain of 1.17 for gastric bypass and adjustable silicone gastric band¹¹</p>	<p>NICE CG43: Obesity All figures and estimates from NICE CG43</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Management of Chronic Heart failure	<p><u>Problem</u> – Patient outcomes are sub-optimal due to inadequate levels of prescription of ACE inhibitors, ARB drugs and beta-blockers for patients on Heart Failure registers, with significant regional variation</p> <p><u>Scale</u> – 10% of patients are not on ACEi/ARB – this is 0% at the top quartile of practices but 14% at the bottom quartile. 18% of patients who are on ACEi/ARB are not on beta-blockers – ranging from 75% at the bottom quartile of practices to 100% at the top.</p> <p><u>Types of outcomes expected</u> – Reductions in hypertension, leading to reduced strain on the heart and subsequent cardiovascular events, including death</p>	Increase ACEi/ARB prescription rates in all trusts to at least 91%, and 85% for beta-blockers, the level currently achieved by the top 25%	Additional prescribing costs of <£240,000 Cost savings from reduced hospitalisation of <£300,000	Up to 190 deaths avoided per year ¹² , 13 within QOF payment scope An additional 6,000 patients would be better managed. Only 450 of these have a direct financial incentive within QOF payments.	NICE CG108: Chronic heart failure DH Analysis of QOF 2010/11 data

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
<p>Management of Peripheral Arterial Disease (PAD)</p>	<p><u>Problem</u> – Broader population health outcomes are sub-optimal through late identification and diagnosis. Patient outcomes are sub-optimal and unequal as variation in optimal diagnosis and treatments exists across the country due to differences in provision of specialist services.</p> <p><u>Scale</u>¹³ – 2.3m or 20% of people aged over 60 years have some form of PAD; of those with PAD 577,000 or 25% will have Intermittent Claudication and of those 115,000 or 20% may go on to have Critical Limb Ischaemia (CLI) a condition which within the first three months of presentation 12%¹⁴ require amputation (five to ten times higher for those with diabetes) and 20-25%¹⁵ die within a year with 40-50%¹⁶ dying within five years (Peach)</p> <p><u>Types of outcomes expected</u> – prompt diagnosis and management of PAD prevents secondary cardio-vascular events, improves quality of life and may prevent amputation.</p>	<p>NICE CG147 recommends:</p> <ul style="list-style-type: none"> • To provide the same information and treatment options as with common CVD risk factors (see above) for secondary prevention of cardio-vascular disease • Supervised exercise programme followed by angioplasty with selective stent placement where appropriate for people with worsening claudication as most cost-effective pathway • Do not offer major amputation to people with critical limb ischaemia unless all options for revascularisation have been considered by a vascular multidisciplinary team 	<p>No national costings available¹⁷</p> <p>Avoidance of leg amputation could lead to cost savings of around £32k per person in the first year of care¹⁸</p> <p>£16,000 per QALY for most cost-effective treatment pathway</p>	<p>4.576 QALYs; of which 0.16 is additional over baseline pathway of unsupervised exercise followed by supervised exercise</p> <p>Additional benefit of £8k compared to baseline strategy</p>	<p>NICE CG147: Lower Limb Peripheral Arterial Disease QALY valued at £50k</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Management of Diabetic Foot	<p><u>Problem</u> – Patient outcomes are sub-optimal due inadequate management of ulcers and foot problems in secondary care.</p> <p><u>Scale</u> – It is estimated that 25% of hospitals do not have an MDT; only 23% of inpatients with diabetes included in audit had documented evidence of foot examination in 24 hours and only 4.9% had a further examination later in stay.</p> <p><u>Types of outcomes expected</u> – earlier diagnosis and management reduces morbidity, mortality and leg amputation. Multi-disciplinary foot care for inpatients with diabetes lead to faster healing, fewer amputation and improved survival.</p>	<p>NICE CG119 recommends:</p> <ul style="list-style-type: none"> • Each hospital should have a care pathway for patients with diabetic foot problems who require inpatient care • The multidisciplinary foot care team should consist of healthcare professionals with the specialist skills and competencies necessary to deliver inpatient care for patients with diabetic foot problems. 	<p>Management of diabetic foot complications for inpatients not estimated to have significant resource impact nationally (NICE CG119)</p> <p>From a case study of a trust cost of MDT was £33k with associated cost saving of £250k per annum.</p>	<p>16 deaths per 10,000 diabetes population. Assuming national prevalence of diabetes is 2.5m¹⁹ then annual deaths avoided could be 4,000.</p> <p>QALY benefit of £150k of one year cohort over a five year period of patients who averted major amputation</p>	<p>NICE CG119: Diabetic foot problems – inpatient management</p> <p>NICE CG10: Type 2 diabetes: prevention and management of foot problems</p> <p>NICE CG15 Type 1 diabetes</p> <p>Figures and estimates from Kerr, M, <i>Footcare for people with diabetes: The economic case for change</i> (2012)</p> <p>QALY valued at £25k 2010/11 price base</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Management of acute cardiovascular conditions					
Cardio-pulmonary resuscitation (CPR)	<p><u>Problem</u> – Sub-optimal outcomes of patients due to variation in ambulance services – response times could be faster and service configuration around heart attack centres; willingness and ability of bystanders to initiate CPR is below what is achievable.</p> <p><u>Scale</u> – significant variation between ambulance services in rates of successful initial resuscitation (13–27%) and survival to hospital discharge (2–12%)²⁰ following an OHCA. Difference between bystander witnessed cardiac arrests in which CPR is initiated and those that are not is 21 percentage points (32% initiated; 53% witnessed)²¹</p> <p><u>Types of outcomes expected</u> – improved rates of survival to hospital with resultant increases in rates of survival to discharge.</p>	Improvements in healthcare performance. Increase bystander initiated CPR	No costs or cost savings modelled.	1,000 lives saved per annum from better healthcare performance. If bystander initiated CPR increased from 32% to 42% then 300 lives could be saved per annum ²² .	
ST-elevated Myocardial Infarction (STEMI)	<p><u>Problem</u> – Patient outcomes are sub-optimal due to regional variation in provision of timely reperfusion.</p> <p><u>Scale</u> – In 2011/12, 30% of people did not receive any reperfusion. The percentage of patients receiving angioplasty by PCT ranges from 3% to 100%²³.</p> <p>Of those that did receive pPCI, 17% did not receive it within 150 minutes of calling for help, and 38% did not receive it within 120 minutes.</p> <p><u>Types of outcomes expected</u> – Reductions in mortality.</p>	Have all (pre-reorganisation) cardiac networks provide the same percentage of patients with reperfusion as currently achieved by the top performing 25%. Reduce call-to-balloon time for all patients not currently seen within 120 minutes by 30 minutes. Potentially difficult for more rural areas, but target is relatively conservative.	Additional cost of £8.6m per annum Direct additional resource requirements offset by fewer adverse events	120 fewer deaths per annum for increasing reperfusion rates 35 fewer deaths per annum for reducing call-to-balloon time	NICE CG in development for STEMI, expected July 2013; NICE CG48: Secondary prevention of AMI DH Analysis of MINAP 2011 and 2012 reports. Risk reductions for reperfusion ²⁴ and reduced call-to-balloon time ²⁵ . Costs based on 12/13 tariff for PCI.

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Non-ST elevated Myocardial Infarction (non-STEMI)	<p><u>Problem</u> – Patient outcomes are sub-optimal due to regional variation in the percentage of patients seen by a cardiologist.</p> <p><u>Scale</u> – 7% of nStemi patients were not seen by a cardiologist or member of a cardiology team in 2011/12.</p> <p><u>Types of outcomes expected</u> – Reductions in mortality</p>	Have all nStemi patients in whom it is appropriate to be seen by a cardiologist or member of a cardiology team. This is currently achieved in a number of hospitals across the country.	Cost impact not modelled Direct additional resource requirements offset by fewer adverse events	60 fewer deaths per annum	NICE CG94: Unstable angina and nSTEMI; NICE CG48: Secondary prevention of AMI DH analysis of MINAP 2012 data, with cardiologist risk reduction ²⁶ .
Non-Elective Cardiac Care	<p><u>Problem</u> – Patient experience of hospital care is sub-optimal due to unnecessarily long hospital stays, with delays related to hospital transfers and day of patient admission.</p> <p><u>Scale</u> – There is currently significant variation in length of stay across similar pathways.</p> <p><u>Types of outcomes expected</u> – Improved patient experience and financial savings.</p>	Reduce variation in length of stay for angiography and CABG patients.	Annual savings of £5m if length of stay is reduced by 1 day for all pathways currently over the median LoS for their pathway sub-type. Total annual savings of £27m if all lengths of stay are reduced to the median LoS for their pathway sub-type ²⁷ .	Improved patient experience	NHS Improvement/ NATCANSAT analysis of 2010/11 HES data.
Thrombolysis for ischaemic stroke	<p><u>Problem</u> – Stroke patients require rapid access to a variety of life saving treatments. Patient outcomes are sub-optimal due to variation in the provision of 24/7 thrombolytic services or in delays that preclude treatment.</p> <p><u>Scale</u> – Only 11% of patients currently receive thrombolysis. Rates are significantly higher in London²⁸ than elsewhere.</p> <p><u>Types of outcomes expected</u> – Reductions in mortality and dependency.</p>	Increase thrombolysis rates from 11% to 14% nationally. It is conservatively estimated that 14% of patients can benefit from thrombolysis. This currently excludes older patients and those with longer delays to treatment, although evidence is increasingly suggesting that some in these groups may also benefit.	£2.1m per annum in additional costs. Savings arise from fewer cases of death and dependency, but magnitude not modelled.	280 fewer incidents of death/dependency (joint outcome) per year.	NICE CG68: Stroke; NICE TA122/TA264 DH analysis based on NICE TA 122/TA 264 Costs based on 12/13 Best Practice Tariff for provision of Alteplase.

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Stroke Early Supported Discharge (ESD)	<p><u>Problem</u> – Patient outcomes are sub-optimal due to variation in the provision of ESD schemes.</p> <p><u>Scale</u> – Only around 20% of patients currently receive ESD.</p> <p><u>Types of outcomes expected</u> – Reductions in mortality and dependency.</p>	<p>Extend provision of ESD services from current levels of around 20% to 40%.</p> <p>It is estimated that 43% of stroke patients could benefit from ESD schemes²⁹.</p>	<p>Past assessments of ESD implementation have found savings of up to £500 per person³⁰. However, as average length of stay has reduced over time, the scope for savings may have fallen.</p> <p>Savings are in the form of reduced bed days, and as such are not necessarily cash releasing.</p>	900 fewer incidents of death/dependency (joint outcome) per year	NICE CG68: Stroke DH analysis based on the latest Cochrane meta-analysis of Early Supported Discharge schemes ³¹
24/7 TIA services	<p><u>Problem</u> – Patient outcomes are sub-optimal due to variation in the provision of 24/7 TIA services that would otherwise permit high risk patients to be seen in timely manner.</p> <p><u>Scale</u> – In Q1 of 12/13, 26% of high risk TIA patients were not treated within 24 hours. Amongst the lowest quartile of trusts, this figure was 53%.</p> <p><u>Types of outcomes expected</u> – Fewer strokes with resultant reduction in mortality and dependency</p>	<p>Increase the percentage of high risk TIA patients treated (including carotid surgery) within 24 hours to the level achieved by the top 25% of trusts</p>	<p>In Q1 12/13, 71% of high risk TIA patients were treated within 24 hours.</p> <p>Increasing the provision of rapid treatment would cost an additional £440,000 per annum.</p> <p>Savings of £4.4m per annum would be achieved through strokes avoided.</p>	540 strokes avoided per annum	<p>NICE CG68: Stroke DH analysis of TIA IPMR Q1 12/13 data³².</p> <p>Clinical evidence from EXPRESS study³³.</p> <p>Additional costs based on 12/13 Best Practice Tariff for treatment within 24 hours.</p> <p>Cost savings based on average 1 year cost of stroke of £8,046³⁴.</p>

Intervention	What is the problem and its scale? What is the expected type(s) of outcome?	Ambition	What are the costs and cost savings?	What are the benefits to patients and the broader population?	NICE Guidance, references and notes
Living with cardiovascular disease and end of life care					
Cardiac Rehabilitation (CR)	<p><u>Problem</u> – Patient outcomes are sub-optimal due to variation in the percentage of AMI, CABG and PCI patients that receive cardiac rehabilitation</p> <p><u>Scale</u> – 44% of patients receive CR, which is below what might be reasonably expected of 65%.</p> <p>It is estimated that the vast majority (~96%) of heart failure patients do not receive CR³⁵.</p> <p><u>Types of outcomes expected</u> – Reductions in mortality and CVD events as a result of better control of risk factors</p>	<p>Increase provision of cardiac rehabilitation to 65% of AMI, CABG and PCI patients</p> <p>Increase provision of cardiac rehabilitation from ~4% to 33% of heart failure patients</p>	<p>AMI, PCI, CABG</p> <p>Additional costs of £11m per annum under 65% provision</p> <p>Cost savings of £6-7m per annum through reduced readmissions³⁶</p> <p>Heart Failure</p> <p>Additional costs of £9m per annum under 33% provision</p> <p>Cost savings not modelled, but expected to be similar to those identified above</p>	<p>AMI, PCI, CABG</p> <p>380 lives saved per annum³⁷</p> <p>Heart Failure</p> <p>1400 fewer cases of mortality or hospitalisation per annum for heart failure patients³⁸</p>	<p>NICE CG48: Secondary prevention of AMI</p> <p>Figures and estimates are from DH analysis of National Cardiac Rehabilitation Audit 2012 data.</p> <p>Costs based on 12/13 tariff for cardiac rehabilitation.</p>

Endnotes

- 1 All estimates except for hypertension are from comparison between prevalence rates in QOF 2011-12 to published rates. Estimate for hypertension comes from Atlas of Variation 2.0 (2011)
- 2 Integrated Performance Measures Monitoring (IPMR) *Number of eligible people that have been offered and received NHS Health Checks* April 2011 – March 2012 http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperformancemeasuresmonitoring/DH_129481
- 3 Impact Assessment to *Putting prevention first. Vascular checks: risk assessment and management* Department of Health
- 4 Costing template for NICE CG71: Familial hypercholesterolaemia
- 5 All estimates from: Commissioning for Stroke Prevention in Primary Care: The Role of Atrial Fibrillation (2009) NHS Improvement
- 6 The Health and Social Care Information Centre, Statistics on Smoking – England 2012 <http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/smoking/statistics-on-smoking--england-2012>
- 7 O’Flaherty et al, *Potential cardiovascular mortality reductions with stricter food policies in the UK*, Bulletin of the WHO, July 2012 <http://www.who.int/bulletin/volumes/90/7/11-092643.pdf>
- 8 Scarborough et al, The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: an update to 2006–07 NHS costs, *Journal of Public Health*, 2011
- 9 NICE CG43: Obesity, page 141
- 10 NICE CG43: Obesity, page 769
- 11 *ibid.*
- 12 DH estimate using evidence from Brophy et al, Beta-Blockers in congestive heart failure: A Bayesian meta-analysis, *Annals of internal medicine*, 2001, and Pfeffer et al, Effect of captopril on mortality and morbidity in patients with left ventricular dysfunction after myocardial infarction. Results of the survival and ventricular enlargement trial. The SAVE Investigators, *The New England Journal of medicine*, 1992
- 13 NICE CG147 *Lower limb peripheral arterial disease: diagnosis and management* (2012), section 1.1
- 14 Peach et al (2012) Diagnosis and management of peripheral arterial disease *BMJ* 2012;345:e5208
- 15 *ibid*
- 16 *ibid*
- 17 NICE CG147 Costing Report states in paragraph 5.1.2 that “It is not possible to provide a calculation of national resource impact of the recommendations with a reasonable degree of certainty. It is likely that implementing the guideline would result in some savings overall, although these may take some time to be realised.”
- 18 NICE CG147 Costing Report
- 19 NHS Atlas of Variation in Healthcare for people with Diabetes (2012)
- 20 Perkins GD, Cooke MW. Variability in cardiac arrest survival: the NHS Ambulance Service Quality Indicators
- 21 Sasson et al (2009) *Predictors of survival from out-of-hospital-cardiac-arrests: A systematic review and meta-analysis* *Journal of American Heart Association, Circulation Cardiovascular Quality and Outcomes* 2010;3;63-81
- 22 DH estimate using evidence from Sasson et al (2009), *ibid.*
- 23 NHS Atlas of Variation 2.0 (2011), p. 123
- 24 Eagle et al, *A Validated Prediction Model for All Forms of Acute Coronary Syndrome: Estimating the Risk of 6-Month Post-discharge Death in an International Registry*, 2004
- 25 De Luca et al, *Time delay to Treatment and mortality in primary angioplasty for acute myocardial infarction*, *Circulation* 2004.
- 26 Birkhead et al, Impact of specialty of admitting physician and type of hospital on care and outcome for myocardial infarction in England and Wales during 2004-5: observational study, *BMJ* 2006

- 27 Cost savings based on a bed day cost of £300.
- 28 South West London Acute Stroke Services Report: Q2 Performance Improvements (2012/13)
- 29 Progress in Improving Stroke Care: A Good Practice Guide, NAO 2010
- 30 Beech R, Rudd AG, Tilling K, Wolfe CDA. *Economic consequences of early inpatient discharge to community-based rehabilitation for stroke in an inner-London teaching hospital*. Stroke 1999
- 31 Fearon P, Langhorne P, Early Supported Discharge Trialists. *Services for reducing duration of hospital care for acute stroke patients*. Cochrane Database of Systematic Reviews 2012, Issue 9
- 32 IPMR data available to download from here: <http://transparency.dh.gov.uk/?p=20233>
- 33 Rothwell et al, Effect of urgent treatment of transient ischaemic attack and minor stroke on early recurrent stroke (EXPRESS study): a prospective population-based sequential comparison, Lancet 2007
- 34 Ward et al (2007) Health A systematic review and economic evaluation of statins for the prevention of coronary events Technology Assessment NHS R&D HTA Programme
- 35 NACR 2012 reports that 2% of patients receiving Cardiac Rehabilitation are referred because of heart failure. This corresponds to approximately 4% of HF patients.
- 36 Cost saving based on 2010/11 national tariff for cardiac readmissions cited in Cardiac Rehabilitation Costing Tool (DH)
- 37 DH estimate using evidence from 'Exercise-based cardiac rehabilitation for coronary heart disease' (Review) *The Cochrane Library 2011*, Issue 8
- 38 DH estimate using evidence from O'Connor et al, Efficacy and safety of exercise training in patients with chronic heart failure: HF-ACTION randomised controlled trial, JAMA 2009

Annex B: Glossary

ABCD – Validated scoring system for risk assessment of stroke in TIA patients which uses a scale that takes into account age, blood pressure, clinical features and duration.

ABPI – ankle brachial pressure index – ABPI is derived from the ratio of the ankle systolic blood pressure to the systolic blood pressure in the arm. The resulting ABPI provides some indication of the level of arterial blood supply to the leg.

Acute care – Care for a disease or illness with rapid onset, severe symptoms, of short duration and usually requiring hospital admission. Usually distinct from the longer term care of chronic conditions.

Acute coronary syndrome (ACS) – this term covers all cardiac episodes that result from sudden and spontaneous shortage of blood supply to the heart, usually due to blockage or near blockage of a coronary artery. It will often result in some degree of heart muscle damage. The usual underlying cause is rupture of the inner lining of a heart artery, which allows blood to come in contact with the tissues within the wall of the artery, promoting the development of a blood clot (thrombus). The degree of damage, and the type of ACS that results from the blockage, depends on the size of the artery, where in the course of the artery the blockage occurs, the amount of obstruction to blood flow that develops and how long it persists. Not all acute coronary syndromes are treated with primary angioplasty or thrombolytic drugs, and clinical management is mainly guided by appearances of the electrocardiogram (ECG) when such treatments are being considered.

Acute kidney injury (AKI) – The rapid loss of kidney function.

Act FAST – The Face – Arms – Speech – Time to call 999 awareness campaign which helps people to recognise the symptoms of stroke or TIA in others.

AED – automated external defibrillator – A portable defibrillator device. A defibrillator is a life-saving machine that gives the heart an electric shock in some cases of cardiac arrest.

AF – atrial fibrillation – An irregular heartbeat due to disordered conduction of the electrical impulses that initiate contraction of the heart muscle. This results in the heart being less efficient at pumping the blood round the body, and may cause stroke.

Angina – Symptoms of chest discomfort that occur when narrowing of the coronary arteries prevent enough oxygen-containing blood reaching the heart muscle, especially when its demands are high, such as during exercise.

Angioplasty – The mechanical re-opening or dilatation of an artery using a balloon catheter and often involving insertion of a metallic stent.

Anticoagulants -These are medications that slow the process by which the blood forms clots. This is particularly important in AF as the passage of clots from the heart to the circulation of the brain is how AF is linked to stroke.

AMBER – This is a simple tool which supports hospital teams in identifying and responding to a person's end of life care needs when their recovery is uncertain. It is designed to enable treatment to occur alongside palliative care.

The AMBER acronym stands for:

- Assessment;
- Management;
- Best practice;
- Engagement of individuals and carers;
- For people whose Recovery is uncertain.

AMI – acute myocardial infarction – The medical term for a heart attack. This is when an affected coronary artery is suddenly blocked or narrows, either partially or completely, by a blood clot, causing and the heart muscle suffers death or damage. Early treatment or intervention can save a significant proportion of heart muscle. Symptoms are central chest pain, even at rest, lasting a longer period of time and often of greater severity than stable angina. Often accompanied by sweating, greyness, pallor, nausea and vomiting and a feeling of apprehension.

Arrhythmias – Irregularities in the heart rate or rhythm. The most common type is atrial fibrillation.

Atherosclerosis – Fatty (cholesterol) deposits in the artery wall that cause inflammation and scarring. This results in narrowing or blockage of the artery.

BME – black and minority ethnic – People from black and minority ethnic groups.

CABG – coronary artery bypass graft – A surgical procedure used to treat coronary heart disease which diverts blood around narrowed or clogged parts of the major arteries (blood vessels), to improve blood flow and oxygen supply to the heart.

Cardiac arrest – When the heart stops pumping blood around the body. The most common cause of cardiac arrest is ventricular fibrillation – when the electrical activity of the heart becomes so chaotic that the heart stops pumping and quivers or 'fibrillates' instead.

CCG – clinical commissioning group – from April 2013 clinical commissioning groups will be responsible for planning and commissioning local health and care services in England. All GP practices will have to be members of a CCG. CCGs will be members of health and wellbeing boards and will play a key role in assessing local needs and strategic priorities.

Cerebrovascular disease – Damage to the intracranial blood vessels due to atherosclerosis affecting the blood supply to the brain, resulting in strokes, transient ischaemic attacks ('mini-strokes') or vascular dementia.

CHD – coronary heart disease – The walls of the coronary arteries become narrowed by a gradual build up of fatty material (atheroma), so the heart does not receive enough blood. This can cause angina, heart attack, and progressive heart muscle damage.

Cholesterol – A fatty substance that plays a vital role in the functioning of every cell wall throughout the body and in the production of various hormones. However, too much cholesterol in the blood increases the risk of cardiovascular disease.

CKD – chronic kidney disease – Chronic kidney disease is a long-term condition where the kidneys do not work effectively. CKD does not usually cause symptoms until it reaches an advanced stage. It is usually detected at earlier stages by blood and urine tests.

Claudication – Intermittent claudication is a cramp-like pain felt in the calf, thigh or buttock during walking and relieved by rest. It is caused by peripheral arterial disease restricting blood supply to the exercising muscles. It is relieved by rest.

Co-morbidities – One or more coexisting diseases or disorders.

Congenital heart disease – Congenital heart disease is a general term for a range of birth defects that affect the normal workings of the heart. Congenital means that a condition is present at birth.

CVD – cardiovascular disease – An overarching term that describes a family of diseases sharing a common set of risk factors. This outcomes strategy largely focuses on conditions causing, or resulting from, atherosclerosis (furring or stiffening of the walls of arteries), particularly:

- coronary heart disease;
- stroke; and
- peripheral arterial disease (PAD).

CVIN – Cardiovascular Intelligence Network – A cardiovascular network which could be formed in the future. A network like this for cancer already exists, called NCIN. NCIN (National Cancer Intelligence Network) is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research.

Depression – Depression is a mood state that is characterised by a persistent significantly lowered mood and a loss of interest or pleasure in activities that are normally enjoyable. Clinical depression can range from mild (with some impact on daily life) to severe (where daily life may be almost impossible).

Diabetes – Diabetes is a long-term condition caused by too much glucose in the blood. There are two main types of diabetes, Type 1 diabetes and Type 2 diabetes.

Type 1 diabetes develops if the body cannot produce enough insulin. It usually appears before the age of 40 years, and often in childhood. It is the less common of the two types of diabetes. It cannot be prevented and it is not known why exactly it develops. Type 1 diabetes is treated by daily insulin doses by injections or via an insulin pump.

Type 2 diabetes develops when the body can still make some insulin, but not enough, or when the insulin that is produced does not work properly (known as insulin resistance). It is usually seen in adults and commonly associated with obesity. Type 2 diabetes is treated with a healthy diet and increased physical activity. In addition, tablets and/or insulin can be required.

Complications of diabetes include heart disease, stroke, amputation, blindness, kidney failure, and dementia.

DIUPR – death in usual place of residence – Proportion of deaths in 'usual' place of residence is a Key Performance Indicator for end of life care. It focuses on place of death, namely 'usual place of residence', as a proxy marker for quality. It is based on death registration information collected by the Office for National Statistics (ONS).

EPaCCS – Electronic Palliative Care Coordinating System – EPaCCS is a shared electronic summary of up-to-date patient information to inform end-of-life decision-making and care delivery at the point of care, across service boundaries, for patients in the last months/year of life who have consented to inclusion.

ESD – Early Supported Discharge – Early Supported Discharge describes pathways of care for people transferred from an inpatient environment to a community setting to continue a period of rehabilitation, reablement and recuperation at a similar level of intensity and delivered by staff with the same level of expertise as they would have received in the inpatient setting.

FH – familial hypercholesterolaemia – In some people, a particularly high cholesterol concentration in the blood is caused by an inherited genetic defect known as familial hypercholesterolaemia (FH). A raised cholesterol concentration in the blood is present from birth and may lead to early development of atherosclerosis and coronary heart disease.

GP – General Practitioner

GPES – General Practice Extraction Service – GPES is a centrally managed primary care data extraction service that will be capable of obtaining information from GP practices across England for specific and approved purposes whilst ensuring patient confidentiality and privacy.

Heart attack – A term applied to the symptoms, usually including chest pain, which develop when the blood supply to an area of heart muscle is suddenly reduced or occluded. This is commonly due to a blood clot (thrombus) developing within a coronary artery as a result of spontaneous damage to the inner lining of the artery (plaque rupture). The heart muscle supplied by the blocked artery suffers permanent damage if the blood supply is not restored quickly, and in survivors may lead to degrees of heart failure. The sudden shortage of blood supply may cause life-threatening heart rhythm disturbance and cardiac arrest.

HES – Hospital Episode Statistics – Hospital Episode Statistics are the national statistical data for England of the care provided by NHS hospitals and for NHS hospital patients treated elsewhere. HES are the data source for a wide range of healthcare analysis for the NHS, Government and many other organisations and individuals.

HF – heart failure – Heart failure is when the heart is less efficient at pumping blood around the body and may result from structural heart abnormalities, longstanding high blood pressure (hypertension) or damage to the heart muscle caused by a heart attack – either at the time of the attack or many months or even years afterwards. There are typically symptoms of reduced exercise capacity, breathlessness during exertion and, later, swelling (oedema) of ankles.

HSCIC – Health and Social Care Information Centre <http://www.ic.nhs.uk/>

HSE – Health Survey for England

Hypercholesterolaemia – Raised blood cholesterol levels.

Hypertension – Raised arterial blood pressure.

ICC – Inherited cardiac conditions.

ICER – Incremental Cost Effectiveness Ratio – Used to compare one treatment option to another. The ICER shows the ratio of additional cost to additional benefits of one treatment option compared to the other.

LA – local authority

LAS – London Ambulance Service

LTC – long-term condition

MINAP – The Myocardial Ischaemia National Audit Project, established in 1999, in response to the national service framework (NSF) for coronary heart disease, to examine the quality of management of heart attacks (myocardial infarction) in hospitals in England and Wales.

NACR – National Audit of Cardiac Rehabilitation

<http://www.cardiacrehabilitation.org.uk/nacr/index.htm>

NAO – National Audit Office www.nao.org.uk

NCMP – National Child Measurement Programme <http://www.ic.nhs.uk/ncmp>

NHS – National Health Service www.nhs.uk

NHS CB – NHS Commissioning Board <http://www.commissioningboard.nhs.uk/>

NHS Health Check – An NHS Health Check aims to help people lower their risk of four common but often preventable diseases: heart disease, stroke, diabetes and kidney disease. It is for adults in England aged between 40 and 74 who have not already been diagnosed with any of those four diseases.

NHS IQ – NHS Improving Quality – new improvement body in the NHS Commissioning Board.

NICE – National Institute for Health and Clinical Excellence

www.nice.org.uk

NIHR – National Institute for Health Research www.nihr.ac.uk

nSTEMI – Non ST elevation myocardial infarction – A heart attack that occurs in the absence of ST segment elevation on the ECG. In these patients urgent admission to hospital is mandated but immediate reperfusion therapy is usually not required.

OHCA – out of hospital cardiac arrest

ONS – Office for National Statistics www.ons.gov.uk

PAD – peripheral arterial disease – A common condition in which a build-up of fatty deposits in the arteries restricts blood supply to leg muscles. It is associated with an increased risk of other cardiovascular events such as stroke and heart attack.

PCI – percutaneous coronary intervention (sometimes called PTCA, angioplasty or stenting) – Describes a range of procedures that treat narrowing or blockages in coronary arteries supplying blood to the heart using balloon catheters and stents.

PCT – Primary Care Trust

PHE – Public Health England – The new public health agency, Public Health England has been established to protect and improve the nation's health and wellbeing, and to reduce inequalities. Public Health England will bring together the wide range of public health specialists and bodies into one integrated public health service.

PPC – preferred priorities for care – A tool for discussing and recording end of life care wishes.

PPCI – primary percutaneous coronary intervention – Is a PCI (see above) procedure specifically used to treat ST-elevation myocardial infarction (STEMI) heart attacks.

PROMS – Patient Reported Outcomes Measures – Patient Reported Outcome Measures assess the quality of care delivered to NHS patients from the patient perspective. Currently covering four clinical procedures, PROMs calculate the health gains after surgical treatment using pre- and post-operative surveys. PROMs have been collected since 2009.

PV – Present Value – The value today of a stream of future costs or benefits, discounted at an appropriate rate.

QALY – Quality Adjusted Life Year – A measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One QALY is equal to one year of life in perfect health.

QOF – Quality and Outcomes Framework – Introduced in 2004 as part of the General Medical Services Contract, the QOF is a voluntary incentive scheme for GP practices in the UK, rewarding them for how well they care for patients. The QOF contains groups of indicators, against which practices score points according to their level of achievement.

Resuscitation Council – A group of medical practitioners from a variety of specialities who share an interest in, and concern to improve, resuscitation from cardiac arrest.

SHA – Strategic Health Authority

<http://www.nhs.uk/servicedirectories/pages/strategichealthauthoritylisting.aspx>

SCN – Strategic Clinical Networks – Hosted and funded by the NHS Commissioning Board (NHS CB), they will cover conditions or patient groups where improvements can be made through an integrated, whole system approach. These networks will help local commissioners of NHS care to reduce unwarranted variation in services and encourage innovation.

SINAP – Stroke Improvement National Audit Programme

<http://www.rcplondon.ac.uk/projects/stroke-improvement-national-audit-programme-sinap>

SSNAP – Stroke Sentinel National Audit Programme

<https://audit.rcplondon.ac.uk/sentinelstroke/page/page.aspx?pc=welcome>

Skin ulceration – an ulcer is a break in the skin which does not heal.

Statins – drugs which lower the level of cholesterol in the blood.

Stents – A metallic meshwork tube inserted into an artery to hold it open and improve blood flow.

STEMI – ST elevation myocardial infarction – A heart attack characterised by a specific abnormal appearance on the ECG (ST segment elevation) usually indicative of complete occlusion of a coronary artery. Reperfusion therapy with primary angioplasty (see above) or thrombolysis has been shown to save lives and reduce disability.

Stroke – A ‘brain attack’ caused by a disturbance of the blood supply to the brain.

Sudden cardiac death – Sudden cardiac death describes the unexpected and sudden death from a cardiac cause in a person without any prior known life threatening heart condition.

TIA – transient ischaemic attack – Sometimes also known as a minor stroke in which symptoms of a stroke subside within 24 hours.

Vascular dementia – The term ‘dementia’ describes a set of symptoms that include loss of memory, mood changes, and problems with communication and reasoning. Vascular dementia is the second most common form of dementia after Alzheimer’s Disease. Vascular dementia is caused when the brain’s blood supply is compromised but not sufficiently blocked to cause a stroke.

VOICES – Views of Informal Carers on Evaluation of Services – Is a questionnaire of the experiences of care provided at the end of life.



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