

Cardio & Vascular Coalition Green Paper

A Consultation for a Cardio & Vascular Health Strategy 2010 - 2020

A consultation from 36 cardio and vascular voluntary and professional organisations



November 2008

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Consultation for a Cardio & Vascular Health Strategy 2010 – 2020

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About the Cardio & Vascular Coalition

The Cardio & Vascular Coalition (CVC) is a national coalition of 36 voluntary and professional organisations with an interest in promoting and protecting cardio and vascular health in England. The CVC is committed to working with and influencing central and local government, health and social care commissioners, service planners and policy makers to ensure that cardio and vascular health is high on the agenda. In 2008-09 the CVC aims to highlight the need for a comprehensive Cardio & Vascular Health Strategy for 2010 – 2020.

The CVC seeks:

- A Cardio & Vascular Health Strategy for 2010 – 2020 that joins up prevention, diagnosis and care from pre-birth to end of life
- Patients who are living with cardio and vascular disease placed at the centre of policy and services to improve standards of treatment
- Clinical and policy leadership on best practice at the national and local levels
- A model to predict the future burden of cardio and vascular disease both in terms of economic costs and quality of life
- Action that addresses the inequalities that exist in cardio and vascular disease, prevention, diagnosis and care
- A renewed commitment to basic bio-medical and applied research that will improve the provision of cardio and vascular services
- Central government and local commissioners working closely with the voluntary sector in the planning and development of cardio and vascular policy and services.

CVC activities are developed and agreed by a Steering Group of representatives from member organisations who make decisions on behalf of the wider membership. The CVC is an independent alliance funded by its members.

Responsibility for healthcare is devolved to national governments and assemblies in Scotland, Wales and Northern Ireland, and each nation is responsible for its own cardio and vascular disease related strategies. Although CVC activities focus on England only, members are committed to securing progress across all four nations of the UK, and hope the Green and White Paper for England will help support further progress in other areas of the UK.

Major projects

In addition to this Consultation, the CVC's major activities include:

- Independent research review – Cardiovascular Disease in England: Opportunities and Challenges over the Next Ten Years (April 2008)
- Research Project - Modelling the UK burden of cardiovascular disease to 2020, (September 2008)
- Inequalities in Cardiac Care Project, due for completion December 2008
- Cardio & Vascular Health Strategy for 2010 – 2020 (White Paper), due for completion March 2009.

More information

For more information, please see the website www.cardiovascularcoalition.org.uk or contact Slade Carter, Project Manager, on 020 7487 8608, cvc@bhf.org.uk

The Purpose of the Green Paper Consultation

This Green Paper outlines the Cardio & Vascular Coalition's (CVC) consultation for a new Cardio & Vascular Health Strategy for 2010 – 2020.

The current National Service Frameworks (NSFs) for Coronary Heart Disease, Renal Services and Diabetes have, together with the Stroke Strategy, led to marked improvements in cardio and vascular health. However, there is more work to be done, with cardiovascular disease (CVD) still Britain's number one killer.

The programme for the Coronary Heart Disease NSF is due to conclude in 2009-2010, while other relevant NSFs have variable times remaining. The CVC believes that we require a new plan for the next decade as a blueprint to help ensure appropriate planning and resources for cardio and vascular disease.

Heart disease, stroke, diabetes and kidney disease are interlinked, with common risk factors and frequent co-morbidity of two or more conditions. For this reason, the CVC believes that a new Cardio & Vascular Health Strategy should take account of the relationship between these conditions in planning for better prevention, treatment and care in the future.

Responses to this Green Paper consultation will be used to help inform the CVC's proposals for a Cardio & Vascular Health Strategy 2010 – 2020 (also called the *White Paper*), to be published in Spring 2009. The recommendations of the White Paper will be used to influence and inform the actions of Government.

This consultation (and the subsequent White Paper) applies to England only. However, respondents are welcome to provide comparative information and data about the UK and other parts of the world. It is hoped that the White Paper's recommendations might also apply to other countries of the UK.

Responding to this consultation: Organisations

There are 68 questions – covering everything from broad areas of principle to consideration of significant detail or minority interest. We have also included questions on major issues such as measurement, evaluation, and integration between the cardio and vascular disease groups. The questions feature corresponding narrative to provide some background information on each of the topics.

The questions can be seen in context on the following pages, or in a complete list on pages 51-54 of this consultation.

Please do not feel that you need to answer every question. One carefully considered evidence-based contribution in a single area could do much to inform the final strategy.

A note on classification

In this Consultation, 'cardio and vascular disease' is used to denote cardiovascular disease (including heart disease and stroke) *and related conditions*, principally kidney disease and diabetes. Where 'cardiovascular disease' or 'CVD' is used, this refers to cardiovascular disease alone.

When you submit your response please follow the registration process, providing your name, organisation, role and contact details.

Please complete your response online by **5 January 2009**.

Or, to request a Word version of the consultation, please contact:
Slade Carter
Project Manager, Cardio & Vascular Coalition (c/o British Heart Foundation)
cvc@bhf.org.uk Tel. 020 7487 8608

Responding to this consultation: Individuals

Members of the public are invited to respond to the concise online survey at
www.consultationfinder.com/cvc

A printed version of the shorter online consultation is available on request.
The public survey closes on **15 January 2009**.

The Coalition looks forward to hearing your views.

Foreword

Cardio and vascular disease accounts for the largest number of premature deaths in Britain. The need for a Cardio & Vascular Health Strategy is clear. The CVC recommends that a future Government Cardio & Vascular Health Strategy in England¹ should be developed in partnership with the Department of Health and NHS, the voluntary and commercial sectors. By working in co-operation towards clear goals, we can all influence the health and wellbeing of the nation.

Cardio and vascular disease is associated with a massive burden of people living with disability, avoidable ill health and premature death. CVD accounts for over 40% of all UK deaths, with one third occurring below the age of 75 years, and 80-90% of premature CVD is preventable. Cardio and vascular disease-related National Service Frameworks have facilitated progress. For example, the Coronary Heart Disease NSF target of a 40% reduction in CHD-related deaths was met five years early. The number of procedures and health professionals has increased, facilities have improved, and waiting times have decreased.

However, over recent years a great deal has changed in population health, and not always for the better. Obesity has reached epidemic proportions,² with rates expected to rise dramatically over coming decades. The incidence of diabetes and renal complications of that disease is also increasing. Since these conditions predispose to vascular disease, the demand for cardio vascular resources will inevitably increase. While smaller percentages of people are dying prematurely of heart disease, more people are living longer. The stark reality is that the number of people *living* with disease is actually *increasing*.

Failure to plan a strategic response for cardio and vascular services will result in expensive fire fighting to keep up with the demand. So much more can be achieved by the enhanced targeting of resources towards preventing CVD *before* it occurs.

With increasing powers given to commissioners to achieve progress against outcomes, local decision makers need clear guidance, assistance and resources to cope with the complexities of delivering high quality services. A new Cardio & Vascular Health Strategy will help commissioners plan prevention and treatment programmes for dealing with the future burden of cardio and vascular illness. The alternative is to risk losing the gains of the past 10 years.

The CVC's full proposals will be published in early 2009.

We look forward to receiving your organisation's response to the consultation.



Betty McBride
Chair, Cardio & Vascular Coalition

The Cardio & Vascular Coalition

Arrhythmia Alliance
Action on Smoking and Health (ASH)
Blood Pressure Association
British Association for Nursing in Cardiovascular Care
British Association of Cardiac Rehabilitation
British Cardiac Patients Association
British Cardiovascular Society
British Heart Foundation
British Hypertension Society
British Nuclear Cardiology Society
British Society of Cardiovascular Imaging
British Society of Echocardiography
British Society for Heart Failure
Cardiac Risk in the Young
Cardiomyopathy Association
Children's Heart Federation
Coronary Prevention Group
Diabetes UK
Genetics Interest Group
Grown Up Congenital Heart Patients Association
Heart Care Partnership (UK)
Heart of Mersey
HEART UK
The Kidney Alliance
Kidney Research UK
Little Hearts Matter
Marfan Association UK
Mental Health Foundation
National Council for Palliative Care
National Heart Forum
National Obesity Forum
Primary Care Cardiovascular Society
South Asian Health Foundation
The Stroke Association
Tiny Tickers
To Transplant and Beyond

Executive Summary

The Cardio & Vascular Coalition (CVC) is a national coalition of 36 voluntary and professional organisations with an interest in promoting and protecting cardio and vascular health in England. Given common risk factors and links between conditions, this consultation covers heart disease, stroke, kidney disease and diabetes.

Cardiovascular disease is the largest single cause of long-term ill health and disability in the UK, impairing the quality of life for many people. Heart disease and stroke are the first and third biggest killers in England respectively. Chronic kidney disease affects 10% of the UK adult population at different stages, while people in England with diabetes account for 4% and 3% of men and women respectively.

Failure to plan a strategic response for cardio and vascular services will result in expensive fire fighting to keep up with the demand. In 2008-09 the CVC is highlighting the need for a comprehensive Cardio & Vascular Health Strategy for 2010-2020. This Green Paper consultation is the principal mechanism by which the CVC will gather evidence-based recommendations to inform the Coalition's proposals for a new Cardio & Vascular Health Strategy for the next 10 years.

The CVC invites organisations with an interest in cardio and vascular health to respond to the Green Paper questions. Organisations should respond to the consultation by **5 January 2009**.

This consultation comprises six chapters, with key points outlined below.

1. Developing a future strategy for cardio and vascular health

- National Service Frameworks (NSFs) can be a useful mechanism for defining needs and the means to address them. However, the existing cardio and vascular NSFs have shortcomings, which a new Strategy should address
- Projections of the future burden of cardio and vascular disease indicate that the disease burden will be very high, with an increased number of people dying from and living with cardio and vascular disease
- With a move towards more local power to commission services, it is important that high quality standards are maintained
- A new Strategy should include a commitment to patient participation.

2. Prevention

- Many cardio and vascular disease risk factors are modifiable, but continue to negatively impact on the community's health. A new Strategy should develop the best evidence-based means to better tackle risk factors
- Early diagnosis of those with, or at risk of cardio and vascular disease, is important to help plan for optimum treatment and care
- A new Strategy should seek to improve the health of the entire population by incorporating population-based preventative approaches
- The risk of developing cardio and vascular disease varies widely between groups. A new Strategy must incorporate measures to tackle these differences
- Public health policies can be more effective if they take into account the role of the wider environment and other legislative and policy initiatives.

3. Treatment

- Changing care needs due to shifts in demographics make it important for a new Strategy to consider how best to improve cardio and vascular care planning

- With new advances in technology for emergency care, treatment and medication, a new Strategy should ensure wide and equitable access to high quality, evidence based treatments, which have demonstrable cost effectiveness
- The treatment of cardio and vascular conditions requires a multi-disciplinary approach – this will be particularly important for managing co-morbidities
- Raising treatment standards may result in increased costs in some instances, yet other advances may actually reduce costs – a new Strategy should consider appropriate investments in cardio and vascular care
- Inequalities exist in the level of treatment received by groups of patients and between geographic areas. A new Strategy should reduce this gap.

4. Care and rehabilitation

- The concept of holistic treatment has resulted in an increased emphasis on primary, community and social care. A seamless pathway between all services is vital, but current referral structures do not always support this
- A new Strategy should ensure the implementation of rigorous measures for care planning that incorporate opportunities for patient involvement in decision making
- PCTs have been identified as important agents for reducing health inequalities through commissioning. The methods PCTS will use to achieve this is an important strategic consideration
- In many cases, the needs of carers are not being adequately addressed
- The current Coronary Heart Disease NSF has failed to deliver on cardiac rehabilitation, despite proven efficacy. Rehabilitation standards need to be improved upon for many cardio and vascular conditions.

5. Research

- Research provides opportunities to scrutinise evidence-based policies, medical interventions, scientific investigations and prevention programmes
- There are many areas in which additional research could be used to develop and enhance the care of those with cardio and vascular disease. It is important to identify where these gaps lie, and which areas should be afforded priority
- Some research will be observational (eg, epidemiological) and some will take place in a clinical environment. For clinical studies, positive interaction between NICE and relevant stakeholders will be important.

6. Congenital heart disease

- A congenital heart defect is one that develops in the womb and is present at birth, although it is not always detected at that time. With more people living with CoHD than ever, it is critical that quality services are available to match demand.
- The majority of babies born with congenital heart disease have no identifiable risk factors, making a case for whole population screening
- Antenatal diagnosis improves medical outcomes for babies and allows planned deliveries
- Care planning needs to ensure patients have access to treatment in age appropriate, well staffed, specialist centres throughout the life-course – however, there is currently no national strategy or framework for CoHD.

1.0 Developing a future strategy for cardio and vascular health

Chapter summary

- Heart disease is the biggest killer in England, with stroke the third biggest killer
- Cardiovascular disease (CVD) is closely related to kidney disease and diabetes, since these conditions share common risk factors and result in a significantly heightened risk of developing CVD
- National Service Frameworks (NSFs) can be a useful mechanism for defining needs and means to address these with specific goals. However, the existing NSFs for cardio and vascular conditions have shortcomings, which a new Strategy should address, otherwise there is a risk that health and wellbeing will decline
- Projections of the future burden of cardio and vascular disease indicate that the disease burden will be very high, with an increased number of people dying from and living with cardio and vascular disease
- The non-medical sector, including the voluntary sector, plays an important role in delivering prevention and treatment programmes
- With a move towards more local power to commission services, it is important that high quality standards are maintained. A new Strategy can play a role in achieving this
- Patients and carers should be involved in making decisions and the management of their own healthcare. A new Strategy should include a commitment to patient participation.

Introduction to cardio and vascular disease

Cardiovascular disease (CVD) is disease of the heart and blood vessels. The most common manifestation of CVD is **coronary heart disease** (CHD), also known as coronary artery disease and ischaemic heart disease. CHD is caused by the narrowing of the arteries that supply the heart and is due to a gradual build-up of fatty material called atheroma. The narrowing can cause myocardial infarction (heart attack), angina (pain or discomfort in the chest or neighbouring parts of the body due to insufficient oxygen reaching the heart) and other forms of chronic heart disease. Other forms of CVD include stroke (the third biggest killer in the UK) and peripheral arterial disease (PAD).³

Stroke is a serious medical condition that occurs when the blood supply to the brain is disturbed. This can lead to brain damage and possibly death. There are two main causes of strokes. An ischaemic stroke occurs when the blood supply to part of the brain is obstructed – this accounts for around 80% of all cases. A haemorrhagic stroke occurs when the blood vessels supplying the brain burst and cause brain damage. Transient ischaemic attack (TIA) arises when the supply of blood to the brain is temporarily interrupted, causing a sort of 'mini-stroke'.

CVD is closely related to both kidney disease and diabetes, since these conditions greatly increase the likelihood of developing CVD. For this reason, both kidney disease and diabetes are considered in this consultation for a future Cardio & Vascular Health Strategy.

Chronic kidney disease describes any irreversible damage to the kidney. Damage can be caused by common diseases such as diabetes mellitus, or by diseases affecting the kidneys directly. At risk groups include those with diabetes and CVD and people from ethnic minorities. Young and middle aged patients with progressive CKD have an eight fold increased mortality compared to age and gender matched

controls and over 50% of these deaths are caused by CVD.⁴

Diabetes is associated with chronically elevated blood sugar levels. Patients experience an increased risk of developing vascular complications, including CHD and stroke. They also are at risk of developing retinal diseases leading to blindness and kidney failure. People with diabetes have an up to five-fold risk of CVD compared with those without diabetes. Diabetes significantly increases the risk of a person dying from CVD, but diabetes is often not recorded as the reason for death on death certificates.

CVD is the largest single cause of long-term ill health and disability in the UK, impairing the quality of life for many people. Diseases of the circulation cause about 200,000 deaths in England, Wales and Scotland each year. Around 30% of these deaths are premature, occurring before the age of 75.⁵ The burden of CVD conditions falls disproportionately on people living in disadvantaged circumstances and on particular ethnic groups, such as South Asians.⁶

Heart disease is the biggest killer in England, with stroke the third biggest killer. Chronic kidney disease affects 10% of the UK adult population at different stages, while people in England with diabetes currently account for 4% and 3% of men and women respectively. Several risk factors impact on the development of all these conditions, including smoking (active and passive), hypertension, high cholesterol, poor diet and physical inactivity.

1.1 Current National Service Frameworks and other Strategies

The last decade has seen a number of National Service Frameworks (NSFs)⁷ that directly support the development of services for cardio and vascular conditions, namely Coronary Heart Disease (2000), Diabetes (2001), and Renal Services (2004). In addition, in 2007 the Government launched its Stroke Strategy in recognition of the need to transform stroke services along the whole care pathway. The strategy sets quality markers which should be implemented by local health and social care services. It is intended to provide a quality framework to improve stroke services, to provide guidance and support to commissioners and strategic health authorities and social care.

As mechanisms for planning and development, the NSFs have been positive for overall cardio and vascular health. For example, the NSF for Coronary Heart Disease (CHD) features 12 standards for improving prevention, diagnosis, treatment and rehabilitation. Successes have included decreased waiting times for surgery, decreased mortality rates (lives saved), reduced smoking prevalence, and greater numbers of cardiologists and heart surgeons.⁸

The NSF for Renal Services has meant more people with Chronic Kidney Disease (CKD) are being identified and accessing treatment than ever before. Diagnosis and management of CKD has improved, in part because CKD has been included in the Quality and Outcomes Framework (QOF) for GPs and because of the introduction of a standard kidney function measurement. With GPs identifying more cases earlier on, new patients are accessing treatment sooner.⁹ The National Institute for Health and Clinical Excellence (NICE) has recently released new guidance on the early identification and management of CKD in adults in primary and secondary care.¹⁰

The Diabetes NSF has helped improve diagnosis of and facilitate treatment programmes for those with diabetes. As with kidney disease, this is partly due to the inclusion of diabetes diagnostic testing in the QOF. In 2007 alone over 100,000 more

people were diagnosed, with subsequent information, care and advice to help individuals manage their condition and reduce the risks of the complications that accompany diabetes.¹¹

The *End of Life Care Strategy* (EoLCS 2008) sets out a framework for all people at the end of their life, regardless of their diagnosis. A future Cardio & Vascular Health Strategy should ensure that people with cardio and vascular conditions receive the high-quality, well-planned and coordinated care and support promised by the EoLCS.¹²

In addition to the NSFs, several Government initiatives are also underway to tackle risk factors associated with cardio and vascular conditions, including:

- NHS 'Stop Smoking' services
- Food and Health Action Plans, eg *Choosing Health?* and *Choosing a better diet*
- The national fruit in schools scheme
- Local Exercise Action Pilots (LEAPs)
- *Healthy Weight Healthy Lives*, and *Change4Life*, cross-departmental strategies to support people in maintaining a healthy weight.

Government has supported such initiatives with legislation in key areas – for example, smoke free legislation in the 2006 Health Act. The Cardio & Vascular Health Strategy would aim to support these activities.

Question 1: What are the key elements of the present cardio and vascular NSFs and strategies (coronary heart disease, renal, diabetes, stroke) which have delivered improvements in population health?

1.2 The need for a framework

While NSFs have resulted in improvements to population health, it is unclear whether a new strategic plan is being conceived for England for the next 10 years.

The NSFs and other national strategies are valuable because they provide principles and goals for those working in health and social care. Given the outlook for the future burden of cardio and vascular disease, a future strategy is necessary to improve health prospects for future generations. Furthermore, the current NSF for CHD has been criticised for shortcomings, including little investment in evidence-based prevention initiatives. There is also scope for improvement in the treatment and care for those with CHD, including the use of primary angioplasty for acute myocardial infarction, still under-resourced compared with other parts of Europe. Other issues include poor access to cardiac rehabilitation, which suffers from chronic understaffing, as well as remaining inequalities in the provision of cardiac services.¹³ Far from being 'finished business', the prevention and treatment of cardio and vascular disease require continued action.

The CHD NSF was the forerunner to the other cardio and vascular-related strategies for diabetes, kidney disease and stroke. However, the interrelationship between these conditions suggests the need for an overarching plan to comprehensively tackle cardio and vascular disease as *the* major public health issue.

Around 80-90% of premature CVD is preventable.¹⁴ Given the opportunities for improved population health and reduced expenditure on treatment services, prevention issues must be better addressed. With partners in the voluntary sector,

health and social care, a new Cardio & Vascular Health Strategy can help tackle this.

With the localisation of decision-making through commissioning and restructuring of the Primary Care Trusts (PCTs), a new framework will work to ensure that national standards are met at the local level, working to *decrease* (rather than increase) health inequalities.

Question 2: What are the key areas of ‘unfinished business’ in the existing NSFs, and how should we tackle these in the future?

Question 3: How can existing strategies and frameworks (coronary heart disease, renal, diabetes, stroke) be included in an overarching Cardio & Vascular Health Strategy 2010 – 2020?

Question 4: What should be the key objectives and drivers of a new Cardio & Vascular Health Strategy?

1.3 Measurement and audit

There is frequent debate around how to measure progress against strategic aims in the way that will most effectively raise standards. For example, is it better to measure targets or outcomes? The measurement and audit of strategic goals and outputs is important, since this helps to ensure that a strategy is being adequately implemented, and to understand how improvements could be made in the future.

Question 5: What is the most effective way of measuring the implementation and success of a healthcare strategy, and how can this measurement be used to strengthen future policies and delivery?

1.4 Burden of cardio and vascular disease for the next 10 years

Current prevalence of the burden of cardio and vascular disease is high, with almost four million people in the UK presently suffering from cardiovascular disease (CVD). Chronic kidney disease affects 10% of the UK adult population at different stages, while people in England with diabetes currently account for 4% and 3% of men and women respectively. The CVD burden generates huge economic consequences in the UK, both indirectly and directly. The overall cost for CVD alone is about £30 billion per year.

World Health Organisation (WHO) statistics¹⁵ report that, in 2002, ischaemic heart disease was the leading cause of death in the United Kingdom, causing 20% of all deaths, with a further 10% of deaths attributable to cerebrovascular disease. Death rates from CVD have halved in the UK since the early 1970s.

However, a *Modelling the Burden of CVD* project commissioned by the CVC found that trends in CVD will impact on rates in the future. In particular:

- CHD death rates continue to fall in those aged over 55, but have recently been falling more slowly in younger individuals
- Between 2006 and 2020 the UK population is expected to increase by 10% to almost 65 million, an additional 3.2 million men and 2.7 million women

- The older age groups will experience much larger increases in numbers
- CVD death rates are much higher in the oldest groups. Because of population ageing, the total *numbers* of CVD deaths are therefore likely to increase substantially
- CVD will remain the dominant cause of death and disability in the next few decades.¹⁶

In other words, while the death rates of CVD have decreased, the absolute numbers of people dying from CVD will actually increase. The growing population of older people has consequences for the ongoing treatment and care of people living with CVD.

While major risk factors such as smoking, high blood lipid values and high blood pressure are increasingly better prevented, detected or treated, risk factor trends in obesity and associated Type 2 diabetes are both likely to at least decelerate the historically observed decreasing trends.¹⁷ Indeed, the rate of increase in diabetes indicates that more than 4 million people in the UK will have the condition by 2025.¹⁸ Obesity is another major public health concern as a risk factor for developing CVD, with current trends predicting that 60% of males and 50% of females will be obese by 2050.¹⁹

Furthermore, the prevalence of diagnosed severe renal disease is increasing rapidly. Chronic kidney disease (CKD) stages 3-5 affects 8.5% of the UK adult population.²⁰ Consequently, the numbers requiring kidney dialysis treatment is set to double by 2014 to over 45,000.^{21 22}

A new Cardio & Vascular Health Strategy should carefully consider means to model the future burden of disease to understand its impact on local services and measures to tackle the problem, both at the prevention and the treatment stages.

Question 6: What steps are needed to accurately model the future burden of cardio and vascular disease?

1.5 Current provision of service

The majority of cardio and vascular disease is preventable through healthier lifestyles and preventative medication, including statins for high cholesterol and drugs for controlling high blood pressure.²³

Recent improvements in the treatment of CVD include faster access to thrombolysis and revascularisation, increased coronary artery bypass surgery (CABG) and percutaneous coronary interventions (PCI), and more prescriptions for the treatment and prevention of CVD.²⁴ However, problems remain. For example, rates of CABG and PCI vary substantially from place to place, suggesting an inequality of access to treatment. Rates of cardiac rehabilitation following primary diagnosis of heart attack or following coronary revascularisation are well below the standard set in the NSF for CHD. Indeed, in a 2005 review, the Healthcare Commission identified three areas needing particular attention for improvement – preventing heart disease, the treatment and care of people with heart failure and cardiac rehabilitation.²⁵

This need for further improvements in treating CVD is recognised by Professor Roger Boyle, National Director for Heart Disease and Stroke in England, who notes that, “to keep up with England’s ageing population – by 2025 the number of people over 85

will have grown by two-thirds – we have to redouble our efforts.”²⁶ It is important that these changes are sustainable and retain continuity.

Question 7: What cardio and vascular services need to be maintained, strengthened or developed in the next 10 years?

1.6 The role of policies and guidance

Government policies and guidelines for treatment and prevention have greatly impacted on the morbidity and mortality of those living with CVD and in the identification of those at risk. Simple things can work well at regional, national or international levels. In Finland, policy changes such as legislation and subsidies for berry farmers led to increased fruit consumption. Population total cholesterol (TC) levels fell by more than 1.0mmol/l in fifteen years.²⁷ Dramatic falls in TC were seen in Mauritius following legislation to promote healthier vegetable cooking oils.²⁸

Conversely, in Europe, it may be argued that the EU Common Agricultural Policies (CAPs) can have a negative impact on health inequalities. By heavily subsidising milk and beef, these CAPs ensure that foods with high saturated fat content are more affordable for people on low incomes. In contrast, fruit and vegetables, which receive little support from CAP, are relatively expensive. It has been estimated that since CAP's creation hundreds of thousands of premature deaths could be linked to the adverse effects of CAP subsidies.²⁹

A comprehensive policy and strategic approach can be effective in tackling cardio and vascular disease and harm caused by risk factors. It will be important to ensure that policies for prevention, and those for the treatment pathway are co-ordinated where appropriate, and that interaction between these two policy areas is considered. For tobacco control, this is achievable through a strong and wide-ranging tobacco control strategy, including high tobacco prices, mass media campaigns, and support for smoking cessation, funded in part through tobacco taxation revenue.³⁰

Implementation guidance for cardio and vascular disease must be timely, effective and properly managed. But this is not always the case. The 2002 Wanless Report, *Securing Our Future Health: Taking a Long-Term View*,³¹ called for enhanced commitment to public health. However, it took two and a half years to publish the responsive White Paper *Choosing Health, Making Healthy Choices Easier* (2004) and implementation has been slow. Although the White Paper was a signal that the Government was tackling the issue, the target to halt the rise in childhood obesity by 2010 now looks unlikely to be achieved.³² A separate report revealed that just 15% of PCTs were spending money allocated from the White Paper as the Government intended, and over a quarter had absorbed the entire allocation to shore up deficits.³³

At the time of writing, the Government is developing a high-profile social marketing campaign on obesity. It is also planning a Stroke Awareness campaign, currently due in 2009. However, the full implications of these campaigns may not be felt for years.

Clinical guidance is another mechanism for change. The National Institute for Health and Clinical Excellence (NICE) is responsible for developing guidelines for the prevention and treatment of a host of cardio and vascular conditions. NICE guidelines on the prevention of cardiovascular disease are expected to be published around March 2010. The CVC is determined to avoid slippage in implementation.

Question 8: How can the latest clinical and public health guidance be translated into national policy to affect patient care to an effective timeline?

1.7 The role of the non-medical sector (eg, the voluntary sector, social care)

The voluntary sector has played an important role in improving prevention strategies for cardio and vascular disease through successful campaigning, funding of research, and risk assessment initiatives. Using evidence-based research, often funded by voluntary organisations, government health policies have been adapted to deliver best practice initiatives. A new Cardio & Vascular Health Strategy should include partnerships with the voluntary sector to help create a community-wide endeavour and ensure charities' involvement in public health debate.

The engagement and impact of the third sector is illustrated, for example, in the National Defibrillator Programme for England. Since the initiative was announced in 1999 the Government has invested £1 million in installing automatic external defibrillators (AEDs) in busy public places and £1 million in training people at the site in basic life saving skills. This programme has involved the British Heart Foundation, and has resulted in nearly 700 AEDs being placed at 110 locations across England and more than 6,000 volunteers being trained in Basic Life Support skills.³⁴ 74 lives have been saved as a direct result of the programme.³⁵

Given the relationship between people's wellbeing, their lifestyle choices and their environment, all relevant constituents of the public sector should be engaged in the development of a Cardio & Vascular Health Strategy for 2010-2020. Relevant non-medical fields include housing, planning and transportation.

Question 9: What initiatives should a new Cardio & Vascular Health Strategy include to involve the non-medical sector in the development and implementation of prevention and treatment programmes?

1.8 Commissioning

Commissioning in the NHS is the process by which health and care services are provided most effectively to meet the needs of the population. It is a complex process, with responsibilities including assessing population needs and prioritising health outcomes, procuring products and services, and managing service providers. Primary Care Trusts (PCTs) are mainly responsible for delivering health care services to their local communities. While commissioning in England has perhaps been under-resourced, with the development of World Class Commissioning commissioners will be expected to become key drivers of innovation, improvement and change in the NHS. As the main health care commissioners, PCTs will be expected to lead the work to ensure the needs and priorities of the local population are met.³⁶ This development has implications for any future Cardio & Vascular Health Strategy. If the nature of commissioning services is to be changed, then robust, objective evidence will be required to demonstrate efficiency gains within current levels of capacity and expertise.

Other developments also relate to the implementation of a future Cardio & Vascular Health Strategy. Integration of health and social care commissioning and the development of Local Strategic Partnerships involving local authorities are creating new opportunities to address health issues. Commissioning should also be considered as a mechanism for delivering effective prevention services. The recent NHS Review, which sets out a 10 year vision for the NHS in England, indicates that practice-based commissioning will be re-invigorated, and give greater freedoms and support to high performing GP practices to develop new services for their patients,

working with other primary and community clinicians.³⁷ With practice-based commissioning, GPs will be responsible for their own budgets and will seek to purchase services from traditional or new healthcare providers. Furthermore, the NHS Review includes plans to pilot personal health budgets, giving patients more control over their own care.³⁸ These developments have implications for the provision of services and the involvement of the third sector.

The CVC endorses the implication from the NHS Review that there will be more emphasis on rewarding quality as well as *volume* of patient treatment. A Commissioning for Quality and Innovation (CQUIN) scheme will encourage NHS organisations to pay more regard to quality. From no later than 2010, payments will reward outcomes under the scheme.³⁹

The NHS Review also notes that, “in future, new and essential national challenges will be met through robust minimum standards and by ensuring that national priorities are reflected in local commissioning. There will be no additional top-down targets beyond the minimum standards.”⁴⁰ This suggests that future national strategies may have *minimum* standard targets only. However, this may open the possibility of inconsistent quality of local services, with only minimum standards as guidance.

A collaborative approach to commissioning would avoid exacerbating inequalities in cardio and vascular health. For example, two neighbouring PCTs in a deprived area where one funds an effective primary prevention programme and another does not, risks increasing inequalities between the areas. Commissioners should be encouraged to work together to develop adequate commissioning of both therapeutic interventions *and* prevention strategies. These strategies may need a wider inter-agency approach – for example, encompassing town planning, education, workplace, affordable housing, and transport issues.

Question 10: How can a new Cardio & Vascular Health Strategy help ensure both high quality national standards *and* best practice in its local implementation?

Question 11: What mechanisms and resources will commissioners need to enable them to develop innovative services with optimum patient outcomes?

Question 12: How should PCTs and Local Authorities commission services for cardio and vascular disease, and what will these look like? How will specific conditions (eg diabetes, renal, hyperlipidaemia) be incorporated into this?

1.9 The patient/carer experience

People at risk of and living with the consequences of cardio and vascular conditions should be seen as partners in the process of prevention, diagnosis, treatment and care. Patients and their families develop a range of skills and expertise through their own experiences, which should be recognised and utilised for the benefit of others. Patient engagement in treatment decisions and in managing their own healthcare can lead to a more appropriate and cost-effective utilisation of services, higher rates of patient satisfaction and better outcomes. Kidney Research UK, under its ABLE initiative (A Better Life through Education and Empowerment), has validated and implemented a ‘Peer Educator’ Programme which has proven that, within high risk communities, there are more culturally sensitive ways to educate people at risk.

Healthcare professionals also need training and support in order to understand the benefits of patient participation programmes and to learn how to communicate and engage with patients, their families and carers more effectively. Importantly, health professionals should also be aware that the patient/carer experience differs not just between individuals, but between groups. For example, there is evidence that, among ethnic groups, prevention initiatives for CHD need to identify and respond to deep-rooted influences on health-behaviour.⁴¹

A new Cardio & Vascular Health Strategy must build on the ideas set out in the Government's White Paper *Our health, our care, our say*, and develop a systematic approach to collecting regular feedback from patients at institutional, departmental, team and individual levels.⁴²

We need a clear commitment to undertake and publish regular national surveys of the patient experience of treatment, care, information and support so that changes can be tracked and comparisons made. A Cardio & Vascular Health Strategy should include clear national and local guidance about the types of survey information to be collated so that appropriate comparisons can be made. This guidance must be developed in consultation with people at risk of and affected by cardio and vascular conditions in order to reflect what they want and need. This is especially important for groups with poor health literacy and low levels of involvement in health services in order to avoid reinforcing current inequalities and creating new ones.

Question 13: How can cardio and vascular patients and carers become more involved in service development and the care planning process?

1.10 Clinical governance

Clinical governance refers to the pursuit of excellence and highest possible standards in health care settings. Clinical governance is here to ensure safe, high quality care from all those involved in the patient's journey and to ensure patients are the main focus and priority.⁴³ Safety and clinical effectiveness underpin the provision of health care. This requires services that are evidence-based, monitored and audited and transparent. Most of the functions of clinical governance are now the responsibility of Strategic Health Authorities at regional levels.

Information governance (the way in which the NHS handles data - in particular, patients' personal information) is an increasingly important area of clinical governance, since information technology and health data underpin much of what takes place in the medical environment. For appropriate information governance, a balance must be struck between the need for data protection and the importance of data sharing to maximise health outcomes where information is shared between providers. For example, it will be of crucial importance that data on the penetration of risk assessment approaches to at-risk patients under the future vascular risk checks programme (VRC) is properly recorded, and best practice disseminated.

Given its relevance to patient safety and quality of care, clinical governance is at the heart of the patient experience and must be maintained as a critical component of a new Cardio & Vascular Health Strategy.

Question 14: What measures can a new Cardio & Vascular Health Strategy recommend that will contribute to gold standards of clinical governance?

2.0 Prevention

Introduction and summary

'Prevention' refers to any activity which reduces the prospect of future medical problems occurring. 'Primary prevention' means reducing risk in "healthy" people, 'secondary prevention' means targeting patients with recognised cardio and vascular conditions. Measures to prevent cardio and vascular conditions can be adopted through, for example, improvements to lifestyle habits.

In responding to the consultation questions on prevention, organisations may wish to consider that the most appropriate prevention measures may vary for different groups, broadly:

- Those already diagnosed with cardio and vascular disease
- Identification of undiagnosed cases
- Those in high risk groups (e.g. smokers)
- The rest of the population.

Key points:

- Many cardio and vascular disease risk factors are modifiable, but continue to negatively impact on the community's health. A new Strategy should develop the best evidence-based means to better tackle risk factors for all cardio and vascular conditions
- Early diagnosis of those with, or at risk of cardio and vascular disease, is important to help plan for optimum treatment and care
- A new Strategy should seek to improve the health of the entire population by incorporating population-based preventative approaches
- Individuals with single gene disorders should be supported by robust clinical procedures and polygenic influences on cardio and vascular disease for service provision should be considered
- The risk of developing cardio and vascular disease varies widely between groups – for example, ethnic groups. A new Strategy must incorporate measures to tackle these differences
- Public health policies can be more effective if they take into account the role of the wider environment and other legislative and policy initiatives.

2.1 Targeting lifestyle and risk factors

Since 80-90% of premature CVD is preventable, risk factors play a major role in the incidence, morbidity and mortality of CVD. Ensuring that the population understands how risk factors impact on their own health and how they can make changes to prevent the onset of disease will impact on the pattern of cardio and vascular conditions in the future. This is set against the background of industry advertising and media influence which may contain negative influences – for example, marketing of unhealthy foods.

Major risk factors which increase the chances of people developing coronary heart disease or having a stroke can be categorised as non-modifiable or modifiable. Non-modifiable risk factors for CVD include age (older than 50 years), gender,⁴⁴ ethnicity, and genetic factors/family history.

However, most risk factors are modifiable and depend on lifestyle and environmental issues, including: smoking or exposure to environmental tobacco smoke, obesity, sedentary lifestyle (not enough physical activity), diabetes, high cholesterol or abnormal blood lipids (fats), and hypertension (high blood pressure). Excess alcohol

intake is an important additional risk factor for stroke. Many of these risk factors are unevenly spread across society, with poorer people often exposed to the highest risks.

Importantly, there is a complex relationship between CVD, diabetes and chronic kidney disease (CKD), with many shared risk factors, such as obesity and high blood pressure. CKD is also an independent risk factor for the development of CVD.

Attempts to reduce the incidence of CVD tend to focus on encouraging the modifications to risk factors through promoting lifestyle changes, for example smoking cessation programmes, campaigns to promote healthy eating, and promotion of increased physical activity. Stop smoking services provide an excellent example of a cost effective prevention strategy.⁴⁵ Enhancing and targeting these services to those sections of society most at risk could enhance their impact. In high risk individuals, therapeutic approaches can have a major impact, for example, prescribing cholesterol lowering drugs (statins); aspirin; and anti-hypertensive medications.

Despite educational and social marketing programmes, lifestyle and environmental factors (such as passive smoking) continue to have a negative impact on cardio and vascular health and economic costs for the NHS and society as a whole. For example, the Government recommends an intake of at least five portions of fruit and vegetables per person per day,⁴⁶ but in 2006 only 30% of UK adults were consuming this level of fruit and vegetables.⁴⁷

Despite the best intentions of central or local governments that introduce diet and lifestyle measures designed to reduce health risk, it can be difficult to demonstrate that behaviour change has actually been delivered.

A new Cardio & Vascular Health Strategy should seek to develop and promote the best evidence-based means to better tackle risk factors in a holistic way, and to ensure that health inequalities do not inadvertently widen. Strategies for tackling cardio and vascular conditions would also likely have benefits in tackling cancers as they share some common risk factors.

Question 15: What priority measures should be included in a new Cardio & Vascular Health Strategy to effectively address risk factors in primary and secondary prevention?

Question 16: How can we develop integrated cardio and vascular prevention programmes which include both individual approaches and environmental modifications to encourage healthier lifestyles?

2.2 Raising awareness (includes social marketing)

The main aim of social marketing is to achieve a defined social good rather than commercial benefit. Social marketing is a systematic process that uses a range of marketing concepts and techniques to address issues with clearly identified and targeted behaviour goals.⁴⁸ Despite its potential, social marketing faces a number of challenges, including competing for attention with commercial interests. However, social marketing can be used successfully by clinicians, for example, by reinforcing media messages on antismoking through brief counselling. Practitioners also add

another communication channel to reach the target audience, and they are usually a trusted source of information.⁴⁹

Successful social marketing campaigns include Kidney Research UK's ABLE initiative (A Better Life through Education and Empowerment). This has proved an effective approach to delivering core health messages and engaging with hard to reach communities and reducing inequalities. The project employs peer educators to deliver health awareness in a context that has traditionally offered mostly ineffective approaches to health education in CKD and CVD for BME communities.

A new Cardio & Vascular Health Strategy should include initiatives to increase general awareness of CVD risk factors, which often go unnoticed by those affected. These need to be tailored to the target population, necessitating a variation of language and delivery modes. There are some 2.3 million people in the UK who have been diagnosed with diabetes. However, Diabetes UK estimates that up to 500,000 people in the UK with Type 2 diabetes are unaware and undiagnosed.⁵⁰ Similarly, there is a need for greater public awareness of the symptoms of heart attacks.

Different risk factors for CVD together contribute to the cardio and vascular risk of an individual. For example, high cholesterol is the single greatest correctable risk factor for coronary heart disease, contributing to almost half of all coronary heart disease-related deaths in the UK. Cholesterol is a major risk factor in stroke and contributes to the increased risk of CVD associated with diabetes and obesity.⁵¹ It is estimated that two-thirds of the population has cholesterol levels above the Government target of 5mmol/l. An awareness of cholesterol levels, and support with lifestyle changes and medication where appropriate, would be useful in addressing this risk factor. Likewise there is a lack of awareness that hypertension is the single biggest risk factor for stroke. A new Cardio & Vascular Health Strategy should incorporate campaigning for change to support healthy behaviour and increase health literacy of the population.

Question 17: What sustained measures should a Cardio & Vascular Health Strategy recommend to best ensure and tailor positive awareness-raising and social marketing?

2.3 Health promotion

Health promotion is more than simply providing advice and information, but extends to counselling and other interventions, as well as the involvement and empowerment of patients to take control of their health. Effective health promotion engages with the population and raises awareness of the risk factors associated with cardio and vascular disease. Addressing lifestyle issues that affect all risk factors, in targeted community settings, schools and on an individual basis will encourage and enable a healthier approach to daily living. Prevalence of risk factors for and incidence of cardio and vascular disease are greater in particular populations, where perception of risk is poor and intervention is inadequate or limited. Often there are obstacles such as language and cultural barriers that impact on the ability and willingness to change.

Despite the opportunities for health promotion, these are not always practised in clinical settings. A study of GPs and practice nurses found that practice nurses were seen as having the main responsibility for cardio and vascular health promotion. While attitudes to health promotion were generally positive, lack of training in lifestyle counselling was perceived to be a problem.⁵²

Regional legislation offers a more direct approach to health promotion. New York City was the first large US city to strictly limit trans fats in restaurant food. By July 2007, restaurants were barred from using frying and spreading fats containing artificial trans fats above 0.5 g per serving.

Research indicates that adults with the best mental health profile have the lowest rates of cardio and vascular disease, and those with the worst mental health profile have the highest.⁵³ Psychosocial factors including levels of mood, social support, and isolation have been proposed to be on a par with levels of smoking, blood pressure, and cholesterol in determining risk of developing CHD.^{54, 55} The benefits of mental health promotion in reducing cardio and vascular conditions must be recognised.

Question 18: What initiatives should be recommended to ensure that patients have access to quality health promotion advice – for example, the training of relevant staff to be confident and skilled to deliver this?

Question 19: How can we encourage primary care trusts and local authorities to commit to implementing key national health promotion policies at the local level?

Question 20: How can a new Cardio & Vascular Health Strategy involve community agencies, third sector, and other organisations (such as schools, workplaces) to impact on positive health promotion outcomes?

2.4 Population health

Population health seeks to step beyond the individual-level focus of mainstream medicine and public health by addressing a broad range of factors that impact health on a community-wide level, such as environment, social structure, and resource distribution. A major step in achieving this aim is to reduce health inequalities among population groups. Population health is challenged by a number of factors, including commercial interests, such as the marketing of junk food to children.

To create an environment in which individual behavioural initiatives can succeed, major shifts in population behaviour through public health policy are necessary. Population-level health promotion through government or non-governmental organisations (such as disease-specific charities) aim to increase awareness of good health and improve access to it. The North Karelia project in Finland began in 1972 at a time when the country had one of the highest rates of CVD in the world. The project targeted dietary behaviour to reduce cholesterol levels and led to a decrease in cardiovascular incidence in the region. The project influenced dietary behaviour throughout the country with time, and also led to changes in the food industry with increased production of healthier cooking oils and salt reduction in food products.⁵⁶

A new Cardio & Vascular Health Strategy should incorporate a population-based preventative approach to CVD. The Wanless Report suggested that the population based approach to health is potentially cost-saving. It found that a “fully engaged scenario” *emphasising prevention* (of CVD and major causes of ill health) would reduce future health care costs by some £36 billion annually. Wanless further suggested that investment in prevention is often cost saving.⁵⁷ For instance, he acknowledges diet-based reductions in population cholesterol would decrease the numbers of people requiring long-term costly statins, and would reduce the numbers

of CVD patients needing surgery or angioplasty. However, adequate timescales are crucial for a programme to be effective, which requires a long-term strategic plan, political will and resource sustainability.

Question 21: What measures will help ensure that cardio and vascular health factors are effectively tackled on a community-wide scale – and who should deliver them?

Question 22: How can we better evaluate the effectiveness of upstream prevention policy initiatives?

2.5 Screening and diagnosis

Screening for CVD conditions is a valuable means of identifying health problems before they worsen and facilitating early referral to support lifestyle changes or therapeutic interventions. While screening is an established part of DH policy, current programmes have not yet achieved optimal outcomes. There is, however, good evidence of the value of broad screening programmes. For example, a 10-year longitudinal study of a screening programme in Stockport found significant decreases in all CVD risk factors (including blood pressure, body mass index (BMI), cholesterol, smoking, and alcohol intake) for those who had been identified as being at increased risk.⁵⁸

Early detection of chronic kidney disease (CKD) allows introduction to measures to slow disease progress. For example, blood pressure control can help delay the progression of kidney disease. Indeed, most CKD can be found by targeted screening of 'at risk' groups to identify raised blood pressure, diabetes and vascular disease.⁵⁹ Kidney Research UK is currently undertaking a study in PCTs and GP surgeries QI-CKD (Quality Improvement in Chronic Kidney Disease) which will provide evidence of effective measures of change in the detection and management of kidney disease.

Registers of individuals at risk - or cases being treated - help co-ordinate lifestyle interventions to improve early prevention and treatment of cardio and vascular conditions. The CHD NSF and the General Medical Services contract instructs GPs and primary care teams to develop a register of CHD patients, through which they can review medication, offer advice on diet and lifestyle, and maintain necessary contact with patients most at risk of suffering renewed heart problems.⁶⁰

However, in isolation, health professionals' advice to individuals generally achieves frustratingly limited effects,⁶¹ undermined by an unhealthy environment. Evidence from Finland and elsewhere suggests that such individual advice is more effective when supported by a social environment which promotes health. This requires coherent and co-ordinated initiatives at local, regional, and national levels.⁶²

The Government recently announced its support for a broad programme to help prevent deaths from vascular conditions. The vascular risk checks programme (VRC) will provide checks for everyone aged 40-74.⁶³ These will be introduced in 2009, and rolled out through GPs, pharmacies and community clinics. By 2012, it is expected that three million people every year will be offered a check. The CVC has participated in the development of the VRC, and should also be involved in raising awareness of this new service, including the recommendation of more creative ways to engage with at risk populations in easy to access settings. Implicit in the success of this

programme is the reduction of inequalities such as socioeconomic, ethnic and gender inequalities. The VRC will thus require tailoring to meet local needs to be effective across the population. Furthermore, the identification of additional at risk patients will require planning and resources for their appropriate management.

A screening programme must also include conditions that affect only parts of the population – for example, those with a genetic basis. Familial Hypercholesterolaemia (FH) is a genetic condition affecting 1 in 500 people. In a family where someone has FH, each new family member has an even chance of inheriting the condition. When someone is diagnosed with FH, it is essential that all close relatives are screened so they too can start lifestyle modifications and preventative treatments if necessary.

Despite a robust and consistent evidence base for prevention of Type 2 diabetes utilising both lifestyle and pharmacological interventions, there is currently no systematic or structured screening policy to identify those at risk of Impaired Glucose Tolerance or Type 2 diabetes in the UK. An estimated 500,000 people with diabetes are currently undiagnosed. By the time they are diagnosed, some 25% have already developed complications.⁶⁴

Most people present initially with health problems or have their health risks/problems identified in primary care. Usually this takes place in a GP surgery. A new Cardio & Vascular Health Strategy should therefore strongly involve primary care professionals and organisations and their role in screening for health risks.

A new Cardio & Vascular Health Strategy must include innovative, practical, and cost-effective approaches to screening and early identification to enable treatment that meet the challenges of cardio and vascular conditions and related risk factors.

Question 23: What strategies and communication methods would ensure better screening for cardio and vascular problems while *reducing* inequalities?

2.6 Genetic issues

The incidence of all cardio and vascular disease is influenced to some extent by the genetic make up of an individual. In some cases genetics have an extremely strong influence, with a condition arising due to a mutation in a single gene - known as single gene disorders. Examples include hypertrophic cardiomyopathy, familial hyperlipidaemia (FH), Marfan syndrome and adult polycystic kidney disease (which accounts for up to 10% of all adult patients on renal replacement programmes).

The influence of genetics on an individual developing other conditions, such as CHD, is probably caused by minor differences in a whole range of genes, none of which on its own is able to cause the disease. These are known as polygenic disorders, and the influence of environmental risk factors (eg, smoking) will also have an influence on whether an individual goes on to develop a polygenic condition.⁶⁵ Moreover, the inheritability of behavioural traits such as smoking is now recognised to be high. As more genetic tests become available, clinicians will need clear guidance on how to use this new knowledge to improve patient care.⁶⁶

It is important that robust clinical services are in place to help patients with single gene disorders. Owing to the relative rarity of these conditions, there is a knowledge gap among the majority of health professionals in primary and secondary care, as well as a lack of specialists. This results in many people remaining undiagnosed, and

to diagnosed patients receiving inadequate management of their condition. Patient service delivery models appear variable, especially joint services provided by regional genetics centres and their local cardiology centres.

For single gene conditions, screening and subsequent early treatment can help to increase lifespan. For example, a disorder like Marfan syndrome requires multidisciplinary treatment - a patient needs to be referred by the GP to a cardiologist, an ophthalmologist and an orthopaedic specialist *prior* to a lifesaving diagnosis. Genetic susceptibility also requires referral to a genetic centre. For people with Marfan syndrome, delays in the referral system could cause loss of life. A new Cardio & Vascular Health Strategy should include a commitment to early screening for such conditions. Immediate family members should also be assessed in a setting supported by healthcare professionals with an expert knowledge of the condition in question, and with the facilities to provide holistic care to families.

As knowledge develops on polygenetic conditions, thought will need to be given to the development of services that can interpret and advise on polygenic influences. Looking further to the future there is the possibility of understanding how genetic variation in drug response influences population health, and the identification of novel drug targets which may be specific for patients with a particular genetic profile.

Question 24: What should be done to improve access and quality of services for people with inherited cardio and vascular conditions?

Question 25: How can advances in genetic testing and technology be best used to deliver improved patient care?

2.7 Addressing health inequalities

Some groups face worse health inequalities than others, and this is related to differences in the prevalence of modifiable risk factors. For example, patients with higher education have lower coronary risk than those with lower education. This has important implications for clinical practice, including particular strategies for risk communication and counselling for those with lower education status.⁶⁷ Similarly, for people living with diabetes, complications of diabetes such as heart disease, stroke and kidney damage are three and a half times higher in lower socio economic groups.⁶⁸ Among men in England the prevalence of heart disease increases markedly with deprivation. The rate of CHD among men in the most deprived group is one third higher than in the least deprived group. This pattern is even more marked among women where those in the most deprived group have a rate of CHD at least 50% greater than those in the least deprived group. Similar patterns are seen in the prevalence of stroke.

Smoking is the biggest single cause of inequalities in death rates between rich and poor. Smoking kills more than 114,000 people in the UK every year.⁶⁹ But smoking rates amongst the poorest in society are higher, with smoking rates two to three times higher in disadvantaged groups.⁷⁰

Ethnic origin also impacts on CVD risk for certain conditions. Compared with the general population, South Asians are at increased risk of coronary heart disease.⁷¹ The 2004 Health Survey for England⁷² also found that, compared with the general population, South Asians were at increased risk, and had higher prevalence, of

coronary artery disease. Compared to the general population, people of African-Caribbean origin are at an increased risk of stroke,⁷³ with advances in risk factor reduction for stroke observed in the white population failing to transfer to the black population.⁷⁴

South Asian and African-Caribbean people are at a 3-5 times greater risk of developing chronic kidney disease than other ethnic groups. Complications of Type 2 diabetes and hypertension are largely responsible for increased prevalence of kidney disease in these communities, demonstrating again the links between conditions.⁷⁵

The World Class Commissioning programme aims to reduce inequalities between the areas of worst health and the overall population.⁷⁶ A new Cardio & Vascular Health Strategy must strive to further decrease health inequalities. Importantly, knowledge of higher occurrence of CVD in certain groups may help with risk prediction, which can lead to greater identification and treatment, thereby reducing inequalities.

Sections of the NHS (such as PCTs) that are responsible for public health, health improvement and health promotion have a key role to play in supporting wider efforts to reduce inequalities through advocacy and forming effective partnerships with other key partners, including local authorities and the third sector organisations. For example, the Heart of Mersey is a charity established in response to health inequalities resulting in disproportionate levels of CVD in the Merseyside region. Heart of Mersey is working in partnership with other local organisations.

Reducing income inequalities and addressing relative deprivation is likely to be effective in reducing inequalities in cardio and vascular disease. Social, economic, health and environmental policies need to be fully integrated, and economic policies must take account of health implications.

Engagement with all relevant constituents of the public sector to provide education on the impact on health and wellbeing is essential - e.g. housing and planning. Health impact assessments should be applied to major planning applications and infrastructure changes such as road improvements. As recent smokefree action showed, appropriate legislation and a population based approach can be a cost-effective mechanism for tackling inequalities. Social marketing may also prove to be an effective tool for reducing inequalities by targeting high risk groups.

Question 26: What initiatives should a Cardio & Vascular Health Strategy include to improve prevention among groups who suffer from cardio and vascular inequalities?

2.8 Wider determinants of health (includes the built environment)

Public health policies can be most useful if they take into account the role that agriculture, trade, education, the physical environment, town planning and transport have on cardio and vascular disease aetiology. Individual lifestyle choices are influenced by the environment that people live in. Issues such as poverty, poor housing, lack of safe green space and access to good quality fresh food all play a role in enabling or preventing people from being better able to make healthy choices. Engaging with individual organisations to promote health and wellbeing within the workplace helps to raise awareness of CVD and its risks. Supporting and encouraging these initiatives will help reduce the number of working hours lost through ill health and relieve some of the economic burden on health service resources.

Question 27: What are the key wider determinants of cardio and vascular health, and how can they be incorporated into a new Cardio & Vascular Health Strategy for 2010-2020?

3.0 Treatment

Introduction and summary

'Treatment' refers to procedures and applications to address health problems. Cardio and vascular medicine benefits from a very strong evidence base. We can identify factors that contribute to cardio and vascular disease, as well as utilise effective methods to treat the problems. However, the "inverse care law" continues to hamper population health. The inverse care law means that those who most need health care are the least likely to receive it. In other words, while there is a wide range of effective treatments, many patients do not currently receive optimum therapy. Part of the solution lies in systematic identification of cases and application of evidence based guidelines. Ongoing management of conditions is important, since it can improve quality of life and wellbeing. For example, delaying the progression of chronic kidney disease improves CVD outcomes too.

Key points:

- Changing care needs due to shifts in demographics make it particularly important for a new Strategy to consider how best to improve cardio and vascular care planning
- With new advances in technology for emergency care, treatment and medication, a new Strategy should ensure wide and equitable access to high quality, evidence based treatments, which have demonstrable cost effectiveness
- The best care for cardio and vascular conditions will be delivered by health professionals with up to date knowledge and a good understanding of the holistic treatment required for cardio and vascular disease
- The treatment of cardio and vascular conditions requires a multi-disciplinary approach – this will be particularly important for managing co-morbidities
- Raising treatment standards may result in increased costs in some instances, yet other advances may actually reduce costs – a new Strategy should consider appropriate investments in cardio and vascular care
- Inequalities exist in the level of treatment received by groups of patients and between geographic areas. A new Strategy should reduce this gap.

3.1 Primary care

Provision of high quality primary care is critical in the treatment of people with cardio and vascular conditions. The majority of people with coronary artery disease, stroke, peripheral arterial disease and chronic kidney disease (stage 3-5) are managed within primary care.^{77 78}

Primary care also has a pivotal role in ensuring that people with diabetes and kidney disease receive effective care. This is recognised by the inclusion of clinical indicators for diabetes and chronic kidney disease in the QOF. Many patients with diabetes and early stage kidney disease are now managed solely or mainly in primary care. Primary care is similarly important for ongoing management of people who have had strokes, including a secondary prevention role.

Most people present with a health problem or concern to primary care clinicians –

typically at their GP surgery. The role of general practitioners (GPs) and their teams, including nurses, is therefore fundamental to the ongoing treatment of people who either suffer from CVD or related disease, are at risk of another health problem (for example, management of vascular risk after stroke). Primary care clinicians also work with the wider primary health care team (eg, health visitors, community nurses) and are crucial for the appropriate referral and joint management of patients. Primary care also includes the important roles played by dentists, opticians and pharmacists. It is therefore fundamental that any future Cardio & Vascular Health Strategy reflects the role of primary care in treatment issues.

Question 28: What initiatives can help ensure that primary care is best equipped to treat and manage cardio and vascular conditions?

3.2 Emergency treatment

Emergency treatments for key CVD conditions, including heart attack and stroke, are critical aspects of a new Cardio & Vascular Health Strategy, since prompt treatment is often the difference between life and death and improved prognosis following an acute episode. People with chronic kidney disease stage 4 are also a crucial 'at risk' group who should be targeted to avoid emergency dialysis, which still occurs in almost a third of admissions for kidney replacement therapy.

The treatment of sudden, unexpected and often premature cardiac death should not be regarded as a matter solely for ambulances. It is the responsibility of the community, which pays a heavy price for not recognising this.

A new Cardio & Vascular Health Strategy should include measures to increase public awareness and provide more community 'first aid' programmes similar to the British Heart Foundation's (BHF) Heartstart UK initiative, which helps people recognise and deal with emergencies. Such measures save both lives and public funds.⁷⁹ The short term gains of the BHF's National Defibrillator Programme include 20 lives saved, which builds on the 151 survivors from previous supportive funding of automatic external defibrillators (AEDs) from previous BHF and DH initiatives in this area. Response times have been reduced by up to 30 minutes in some areas and 25,000 people trained in Basic Life Support and the use of AEDs.⁸⁰

Recent developments in emergency care include the establishment of Heart Attack Centres, which allow patients to undergo an emergency angioplasty – a more successful procedure than the clot-busting drugs alternative. The National Infarct Angioplasty Project (NIAP) is studying how far primary angioplasty can be rolled out as the main treatment for heart attack. The interim report is promising, since it shows that the development of primary angioplasty is feasible in a variety of geographical settings. This is an important development as it is likely to underpin strategic development in future rollout of access to angioplasty.⁸¹

The swift institution of therapies can be critical influencers of clinical outcomes in cardiac emergencies. Prompt reperfusion therapy in ST-segment elevation myocardial infarction (STEMI) is the most important component of treatment, as it strongly influences short and long-term patient outcome. Establishing networks of reperfusion is an important strategic consideration, since all forms of reperfusion should be available where possible.⁸² Similar considerations apply to stroke – in particular, the need to arrange prompt CT scanning. Furthermore, action needs to be taken to overcome geographical inequality in the provision of acute stroke units and

access to thrombolytic therapy.

Question 29: What collaborative initiatives (involving NHS, public and commercial sector, voluntary sector, and the community) should be included in a new Cardio & Vascular Health Strategy that can improve survival chances for people suffering a CVD-related emergency?

Question 30: How can we improve access to key emergency treatments such as reperfusion therapy for ST segment elevation myocardial infarction and acute stroke units?

3.3 Service planning

Effective service planning for cardio and vascular conditions is critical, with the aims of:

- Safe and effective care
- Seamless care
- Complementary services in any given geographical area
- Equality in access to services
- A cost-effective service
- Gold standards of prevention and care
- A multidisciplinary approach to treatment and care.

Service planning is important for developing effective collaborative responses to community need. By Spring 2009, each PCT will publish a strategic plan that sets out a five year plan for improving the health of people locally. The plans will put into practice the evidence-based care pathways for each region. These are expected to show a strong emphasis on partnership between PCTs, local authorities and other partners (public, private and third sector) to ensure that local health and wellbeing needs are better understood and addressed.⁸³

The programme to reform the NHS presents opportunities to improve service planning and delivery. This does not necessarily require huge investment, but a *rethinking* of how services might be delivered. For example, despite acknowledged quality care indicators, stroke mortality remains high, with up to 30% of patients dying within three months. The top three process indicators for quality stroke care are early swallow screening, computerized tomography (CT) brain scans, the administration of aspirin if appropriate and assessment of swallowing. Aspirin saves lives and should commence within 48 hours of ischaemic stroke. However, many hospitals find it difficult to meet this target. One study found that a reorganisation of services that enhanced the role of senior nursing staff to admit patients, request CT brain scans, and screen for swallowing abnormalities, also improved aspirin delivery following acute ischaemic stroke. The results of this process showed significant improvements across all three process indicators. This example demonstrates the power of innovation and multidisciplinary clinical governance initiatives to improve treatment.⁸⁴

With an increased burden of cardio and vascular disease expected in the future, there should also be consideration of whether we are meeting requirements for surgery and other treatments. For example, the NSF for CHD recommends increasing operations from 500 to 750 per million of population for both percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG). This still lags behind the 1000 - 1,500 per million performed in Europe and the USA respectively.⁸⁵

The increased ageing population means that more people are living longer, with increased risk of health problems, including heart disease. This presents a need to develop strategies to manage the increasing burden of degenerative pathology, including valve disease, heart failure and arrhythmias.

Service planning must also take account of changing demography and shifting population needs. An ageing population, more immigration and changes in ethnic composition, as well as increased obesity and diabetes, will impact on the prevalence of CVD and chronic kidney disease (CKD). For example, many of the immigrants from the south Indian sub continent over the past two decades were young people who now approach middle age with a 3-5 fold excess incidence of CKD and Type 2 diabetes. This will have a dramatic impact on the prevalence of renal replacement treatment and this impact will fall disproportionately on a small number of inner city Local Authorities and PCTs.

A new Cardio & Vascular Health Strategy should explore opportunities for revising current service models in order to help local commissioners and providers better meet local needs.

Question 31: How should services be better planned and co-ordinated to reduce variations in access and acquisition and deliver seamless services for cardio and vascular conditions?

Question 32: What service models would help improve treatment of cardio and vascular disease?

3.4 Medication/prescribing

Medications can reduce the risk of CVD and improve quality of life for many patients. For example, statin therapy is recommended as part of the management strategy for the primary prevention of CVD for adults who have a 20% or greater 10-year risk of developing CVD.⁸⁶ ACE inhibitor and Beta Blockers are recommended in cases of heart failure and should be initiated at the appropriate dose and titrated upwards at short intervals until the optimal tolerated or target dose is reached. There has been an increase in the introduction, appropriate and careful monitoring and uptake of these drugs by heart failure teams in primary and secondary care.⁸⁷ Beta blockers are also used as a preventative measure for the widening aorta in Marfan syndrome.

Some CVD-related conditions provide compelling indications for the prescription of medicines. For example, ACE inhibitors can delay the onset of diabetic nephropathy in people with diabetes who are found to have microalbuminuria.⁸⁸ Controlling high blood pressure is very important in people with diabetes in order to reduce the risk of developing complications.⁸⁹ All people with Type 2 diabetes should be considered for statin treatment, particularly those over the age of 40. For patients with CKD (with or without diabetes), preventing progression and minimising cardio and vascular risk requires rigorous blood pressure control. Even a small rise in blood pressure can be a significant increase in risk in chronic kidney disease.

Medication adherence is another challenge for clinicians and patients. Cardio and vascular risk factors, including hypertension and hypercholesterolemia, and other chronic disorders are largely without symptoms, leaving many patients unconvinced of the need to take medication. Studies have suggested that only 50% of patients who receive a prescription for a lipid-lowering drug continue to take the medication 6

months later. This proportion falls to 40% after 12 months and 15%-30% after 5 years.⁹⁰

The CVC will strive to improve the uptake on and compliance with evidence-based cardiovascular protective therapy.

Question 33: How can a new Cardio & Vascular Health Strategy help ensure gold standards of prescribing among clinicians and improved treatment adherence?

3.5 Medical equipment, technology and procedures

Improvements in medical equipment and technology provide opportunities for better treatment regimes, with implications for the delivery of services. Advances in diagnostic technologies can increase service demand through the earlier identification of those at risk. A more precise diagnosis also allows the extended use of interventional treatments (for example, stents, ICDs) which can further reduce the risk of premature death. Furthermore, developments in genetic testing present future possibilities for quantifying risk and predicting responses to therapies. However, the best technology is not always available, with poor access to equipment sometimes leading to obstacles for investigation and treatment.⁹¹

Recent years have seen improvements in rates of surgical interventions for the treatment of coronary heart disease including coronary artery bypass graft (CABG) and percutaneous coronary interventions (PCI). However, problems remain in the treatment of CVD. For example, rates of CABG and PCI vary substantially from place to place, suggesting an inequality of access to treatment.⁹²

We are also under-performing in the use of some medical technologies. Many heart arrhythmias can be completely cured by keyhole techniques (catheter ablation). Ventricular arrhythmias are often much harder to treat, and often require powerful drugs and implantable defibrillators to prevent premature death. At present, the UK has low rates of ablation and defibrillator implantation.⁹³

A new Cardio & Vascular Health Strategy should ensure the widespread availability of high quality medical technology and equipment based on its evidence base and demonstrable cost effectiveness.

Developments and treatments to improve prognosis continue to be introduced. Recent developments in the treatment of coronary artery disease include rapid access chest pain clinics and the utilisation of imaging modalities such as magnetic resonance imaging for heart failure patients. There is also a pressing need for the utilisation of implantable cardioverter/defibrillator devices, like that of permanent pacemakers for heart rhythm management.⁹⁴

Developments in medical technologies (for example, echo technology) often happen so rapidly that it is important for clinicians to keep up to date. To ensure that patients can be offered the latest diagnostic technology a sufficient number of staff need to be appropriately accredited and trained.

NICE has found that myocardial perfusion scintigraphy should be used as the first diagnostic test for coronary heart disease in women, patients with certain electrocardiogram (ECG) patterns, patients with diabetes and those for whom exercise would be difficult. This finding was based on an extensive evidence base.⁹⁵

Despite this, inadequate resources have led to prolonged waiting times. Investment in equipment and training would resolve this issue. Indeed, adequate funding for all NICE technology appraisals is urgently required.

Importantly, the demand for organ transplants continues to outstrip supply, with 7,655 people currently listed as waiting for a transplant.⁹⁶ For example, kidney disease is the largest cause of organ failure in the UK, so the vast majority of people waiting for a transplant need replacement kidneys. Unfortunately, there is a significant shortage of organ donors, with fewer than 2,000 kidney transplants each year.⁹⁷ The availability of more organ transplants remains critical for people with life-threatening conditions that require a transplant. More studies are required on the attitudes to organ donation to assess the additional barriers from signing up to the organ donation register and particularly highlight the 'at risk' groups who are poorly represented on the register.

Question 34: Which equipment, health technologies, and procedures for the treatment of cardio and vascular disease require additional resources and investment in the next 10 years?

Question 35: What measures should we undertake to improve the numbers of and access to organ transplants?

3.6 Treatment facilities and settings

Wherever patients require NHS care, it should be safe, accessible and effective. The organisation of the NHS into primary, community, secondary and tertiary care requires an organisational response across these settings. However, the coordination of these settings and access to care are not always optimal. A general practice study into the management of heart failure compared progress against the standards set in the NSF for CHD. The study found that there was good recording of cardio and vascular risk factors, but only 17% of men and 11% of women with heart failure had a record of undergoing echocardiography. Echocardiography is considered the gold standard diagnostic test. Importantly, ensuring that a diagnosis of heart failure is validated by an echocardiogram is a key component of both the NSF and the new general practice contract.⁹⁸

Question 36: What are the key priorities for the development of NHS facilities over the next ten years?

Question 37: How can treatment be better integrated across primary, community, secondary and tertiary care?

3.7 Access and waiting times

Access to treatment and waiting times have improved in the past 8 years in the NHS, but long waits for some treatments remain (e.g. inter-hospital transfers for cardiac treatment) and access to others is variable (e.g. cardiac rehabilitation). With the 18-week patient pathway initiatives led by the Government in 2004 the NHS has made improvements in waiting times. A new Cardio & Vascular Health Strategy should build on this in the hope of taking waiting times off the agenda for good.

Question 38: For which treatments do we need improved access?

3.8 Workforce, education and training

The delivery of cardio and vascular services requires a host of specialists including specialist nurses, technicians, cardiologists and stroke physicians, depending on the condition. Generalists are also needed, including allied health professionals, general practice teams, and pharmacists.

Despite increases in specialist staff in some fields (e.g. numbers of cardiologists) others lack specialists. Stroke care units (SCU) are considered the most beneficial intervention that can be provided after stroke.⁹⁹ An Italian study found that, compared with conventional-ward care, stroke unit care was associated with reduced probability of death or being disabled at the end of follow-up.¹⁰⁰ However, the success of these units has served to highlight the global shortage of health professionals with appropriate expertise.¹⁰¹ A Cardio & Vascular Health Strategy should consider the best means of ensuring an appropriately staffed and accredited workforce for the next decade and beyond.

The need for ongoing training is recognised across a host of cardio and vascular health professionals. Given that CVD is the most common cause of death in the UK, cardiac health professionals will frequently manage people with end of life care needs.¹⁰² These professions were identified in the End of Life Care Strategy (EoLCS) as having the greatest potential training need in end of life care.¹⁰³

Health professionals also need to be trained to identifying the mental and emotional needs of CVD patients, both during its acute stages and the rehabilitation process. Addressing these needs effectively can lead to improved coping and recovery.¹⁰⁴ Clinicians who are predominantly focused on the physical illness must also be supported in recognising psychological needs.¹⁰⁵

With the rapid increase in technology and need for 24-hour cardio and vascular services, health professionals need to increase their knowledge and skills to complement the rise in service demand. A new Cardio & Vascular Health strategy should recommend measures to ensure ongoing professional development and skills to enhance professionals' use of prevention strategies and their confidence in patient communication. The development of enhanced educational opportunities should involve relevant professional and accreditation/regulation bodies.

The means of delivering education is also important. Some qualitative research has shown that clinicians and GPs preferred local based seminars and web-based information over national study days, which they find difficult to attend. When GPs were asked how they preferred to receive education (on CKD), unpublished data from the British Renal Society (n=1500) has shown that GPs preferred locally based seminars (68%) and online education (29%) over national study days (3%).

Question 39: What are the workforce and training needs among cardio and vascular health professionals working in the primary, secondary and tertiary settings, in the NHS and social care, and how should they be addressed?

3.9 Links between professionals – team and multi-disciplinary working

Improved links between professionals, incorporating team and multi-disciplinary working can be beneficial to patient outcomes as a means to ensure a seamless service; enable consistent messaging to patients; ensure services are complementary; and use the team's multi-disciplinary skills to the best advantage,

particularly points of handover and referral, such as primary to secondary care.

Modern medical management requires considerable multi-disciplinary working – consider, for example, the multi-skilled workforce in catheter laboratories. Similarly, cardiac rehabilitation requires the input of a range of professionals including physiotherapy, medical specialists and psychology. Inter-professional care may provide some answers to the challenge of scarce healthcare resources, through utilisation of the expertise of a number of professionals to improve care. This may require greater teamwork across disciplines and new ways of working.

Question 40: In which areas of cardio and vascular disease is multi-disciplinary/professional working important and how can this be developed in a Cardio & Vascular Health Strategy?

3.10 Cost

Healthcare costs attributable to CVD in the UK are estimated at £14.4 billion per year.¹⁰⁶ This figure does not, however, include informal care costs, estimated at £8 billion.¹⁰⁷ Costs of related conditions are also high, with an estimated 10% of the NHS budget spent on diabetes, amounting to around £9 billion for 2007/08.¹⁰⁸ Over 2% of the Department of Health budget is spent on Renal Replacement Therapy. With over 38,000 adult kidney patients currently receiving renal replacement therapy in the UK, this is set to increase dramatically in the next few decades.

New technologies and treatments impact on costs. As demand for services and interventions is a major determinant of healthcare costs, the advent of new and more expensive healthcare technology (including new drugs, devices and procedures) may negate the potential for any savings from improved health outcomes. Primary percutaneous coronary interventions (PCI) for ST elevation, myocardial infarction (MI), biventricular pacing for heart failure, and implantable cardiac defibrillators to prevent sudden cardiac death, are all good examples of the potential for cost escalation. Furthermore, the lowering of risk thresholds for prescriptions of medical therapies may impact on the finances of NHS organisations.¹⁰⁹

However, opportunities also exist to *reduce* the cost of treatment. The timeliness of treatment can have real benefit for the patient and save resources. For example, an American review found that timely nephrological involvement with patients at-risk of chronic kidney disease (CKD) leads to superior quality of care and outcomes. Early nephrologist referral helps ensure CKD patients receive appropriate treatment for co-morbidities and are adequately prepared for renal replacement. This avoids the cost of hospitalisation associated with emergency dialysis, one third of admissions, and can avoid the expense of advanced disease states by slowing disease progression.¹¹⁰ Similarly, proper investment in cardiac rehabilitation can secure cost savings for the health service, as it reduces a patient's risk of rehospitalisation.

A new Cardio & Vascular Health Strategy should consider appropriate future investments for cardio and vascular disease. These would not necessarily increase costs, but consider rethinking *how* money is spent and the creation of opportunity costing.

Question 41: What are the priority areas for investment for a new Cardio & Vascular Health Strategy, and how can these be addressed while keeping costs under control?

3.11 Targets and standards

National targets set under NSFs may have been a mixed blessing. For example, under the Coronary Heart Disease NSF, some targets have driven important service improvements such as shortening waiting times for thrombolysis and revascularisation, while others have had apparently perverse effects such as causing four hour waiting times in accident and emergency. Meanwhile, public health targets have also helped to keep CVD risk prevention on the health service agenda – eg, smoking reduction targets.

While standards and targets have been important, we also need to build capacity and support service delivery. This will need investment and a genuine empowerment of front line staff to deliver innovative local services.¹¹¹

Question 42: Which targets, if any, should be promoted in the next ten years?

3.12 Addressing inequalities

A number of inequalities persist in the treatment of CVD, including access to services, geographic variations, inequalities in outcomes, and differences due to socio-economic status and ethnicity. For example, it has been found that social deprivation is linked to a reduction in quality of primary care received.¹¹²

Both African Caribbeans and South Asians have not enjoyed the decline in CVD to the same extent as that observed among others in the UK, indicating the need for enhanced efforts for prevention at both primary and secondary levels. There are also access and treatment issues, with some groups less likely to receive an intended intervention, suggesting difficulties in understanding and navigating the health system.¹¹³

The provision of cardiac services in the UK has major regional differences in service provision. Differences included a lack of availability of cardiologists in some areas, insufficient staffing of sonographers, and wide variations in the delivery of some services such as the provision/implantation of implantable cardioverter-defibrillators (ICDs) therapy. Most of the anomalies in cardiac service provision relate to the use of emerging technologies such as drug-eluting stents, ICDs and CRT (cardiac resynchronisation therapy, a form of pacemaker therapy for patients with heart failure).¹¹⁴ Furthermore, there is still much variation between ethnic groups in implementing evidence based guidelines.

The Renal NSF states that “All children, young people and adults with established renal failure are to have timely and appropriate surgery for permanent haemodialysis (HD) or peritoneal dialysis (PD) access, which is monitored and maintained to achieve its maximum longevity.”¹¹⁵ However, the National Vascular Access Survey demonstrated that the provision of definitive access (both PD and HD) was *variable* and often poor throughout the country and demonstrated the under utilisation of PD in people presenting late to renal services.¹¹⁶ Although transplantation is the preferred option, in reality most patients are not suitable or do not have a suitable donor and therefore haemodialysis becomes the default treatment.

A new Cardio & Vascular Health Strategy should aim for measures that reduce the ongoing inequalities in the provision of treatment for CVD.

Question 43: What measures are needed to help reduce inequalities in the provision of appropriate treatment for cardio and vascular conditions?

3.13 Addressing co-morbidities

Many cardio and vascular conditions are interlinked. It is not uncommon for risk factors and CVD to be inter-related. For example, obesity is linked to cardio and vascular disease (coronary artery disease and stroke) and Type 2 diabetes. CKD is associated with hypertension and increased CVD. Furthermore, risk factors amplify *other* risk factors for CVD. For example, the risk of hypertension (high blood pressure) is up to five times higher among obese people than among those of normal weight.¹¹⁷ Similarly, depression and stress are contributing factors to CVD that can develop or worsen as a result. Addressing co-morbidities will have implications for medications and prescribing, particularly when weighing up the risk/benefits of certain drugs for older people and those with palliative care needs.

Increases in risk factors such as diabetes and obesity, and an ageing population, mean that cardio and vascular co-morbidities are becoming more common. This is leading to a clustering of long-term conditions such as diabetes, CVD and CKD. Indeed, the main cause of death (>50%) in patients with CKD is some form of vascular disease.¹¹⁸ The ageing population will also result in a growing number of people with cardio and vascular conditions and dementia. This in turn will have a significant impact on care planning, particularly social and long-term care and in the palliative and end of life stages. A new Cardio & Vascular Health Strategy is needed to plan for these changing circumstances.

Networks between the different specialist teams involved in the delivery of cardio and vascular services across co-morbidities should be strengthened to enhance communication between service specialities. For example, cardiology teams should be supported to work with diabetes, renal and neurology specialist services to support enhanced service delivery between and across the relevant disciplines, thereby improving the quality of patient care. Furthermore, the role of general practice and primary care has a particularly important contribution to make in the management of co-morbidities.

Question 44: What measures should a new Cardio & Vascular Health Strategy include to better tackle co-morbidity in people with cardio and vascular conditions?

4.0 Care and rehabilitation

Introduction and summary

'Care' refers to the ongoing management of conditions. 'Rehabilitation' refers to measures to ensure sustained recovery and improvements in health and wellbeing.

Key points:

- The concept of holistic treatment has resulted in an increased emphasis on primary, community and social care. A seamless pathway between all services is vital, but current referral structures do not always support this
- A new Strategy should ensure the implementation of rigorous measures for care planning that incorporate opportunities for patient involvement in the decision making process

- PCTs have been identified as important agents for reducing health inequalities through commissioning – how they can achieve this should be considered
- In many cases, the needs of carers are not being adequately addressed
- The current Coronary Heart Disease NSF has failed to deliver on rehabilitation – despite proven efficacy. Rehabilitation standards need to be improved upon for many cardio and vascular conditions
- There are specific areas of the cardio and vascular care process that need to be considered within the Strategy – for example end of life care and mental wellbeing.

4.1 Care pathways (between services)

There is increasing recognition of the need to ensure a seamless delivery of services to help ensure patients are given consistent messages regarding prevention and management of CVD. Such an approach can enable the health service to maximise the benefits of a multidisciplinary approach to care, with its delivery of a range of specialist care. Communications between the primary, secondary, and tertiary interfaces will be vital to achieve this, and should also ensure that care is delivered at the most appropriate service point.

Care pathways require appropriate referral structures to support treatment. But these structures are not always operating to optimum level – an issue that should be addressed in a new Cardio & Vascular Health Strategy. For example, chronic heart failure patients who have frequent contact with a healthcare professional experienced in managing heart failure have an improvement in quality of life and a reduction in the need for urgent hospitalisation.¹¹⁹ However, a recent NHS heart failure survey reported only 20% of patients with heart failure are currently referred for specialist follow up.¹²⁰

Question 45: How should a new Cardio & Vascular Health Strategy help ensure that NHS staff have a clear understanding of other relevant local services?

Question 46: Who should be responsible for joining up care pathways between services and across regions in England, and what are the key mechanisms to achieve this?

4.2 Care planning (includes patient/carer involvement)

Published in 2000, the NHS Plan – *A plan for investment, a plan for reform*¹²¹ - outlined the Government’s vision of a health service designed around the patient, and highlighted the needs for patients to be involved at all levels of decision making within the NHS. These and other changes in the NHS have meant that healthcare decision making requires quality communication between patients and health professionals. Devolved decision making has meant that spending decisions on healthcare related issues are increasingly taken at the PCT or, in social care, local authority level. This has led to an increasing importance for local commissioners of services, who have responsibility to allocate budgets according to local patient need.

Third sector organisations have helped facilitate this interface between local NHS decision makers and the patient voice. Initiatives such as the BHF’s *Hearty Voices* project, which trains patients in effectively engaging with the NHS, have helped improved information sharing and local decision making.

The need for partnership working between healthcare professionals and patients through the care planning process is especially important for people who must also self-manage their condition. This group of people should be supported to do this through education and regular reviews, such as those with diabetes and kidney disease and for people preparing for end of life phase. Yet many patients are not well informed or involved in making decisions regarding their treatment and ongoing care. Initiatives such as the Renal Patient View, a web-based system that allows patients to access and interact with data pertaining to their treatment, is a key example of engaging patients in their care plan and promoting an ethos of partnership and self-management.

A new Cardio & Vascular Health Strategy should ensure the implementation of rigorous measures for care planning that incorporate opportunities for patient involvement in the decision making process.

Question 47: What initiatives should a new Cardio & Vascular Health Strategy include to help ensure quality care planning?

4.3 Social care

Most government health service reforms since 1997 have focused on hospitals; seeking improvements in services and in access times, together with investment in new premises. More recently, however, there has been an increasing recognition of the need to move on from hospitals and make primary and community services more consumer-friendly and accessible.

A key aim of the Government's 2006 White Paper *Our Health, Our Care, Our Say*¹²² was to give people a greater say in the services they receive, through better information and publicity and the introduction of individual budgets. The White Paper's key points were:

- Patients to be offered personalised care with better access, and with funding increasingly following the patient
- Greater investment in community hospitals and, where possible, care shifted away from hospitals
- Better co-ordination between local authorities and the NHS.

A key White Paper initiative was extending direct payments, which give individuals a sum of money to purchase the social care services they feel they need. The Government has pledged to look at extending these to groups which are currently excluded. Individual budgets are due to be piloted soon which will involve not just social services, but also other aspects of social care such as community equipment services. This may present an opportunity for people living with cardio and vascular disease to gain better access to direct payments for their care.

Some of the literature indicates that patients being treated for CVD do not receive social service assistance when it may also be useful to them.¹²³ New measures to improve knowledge of and access to social services would be welcomed in a new Cardio & Vascular Health Strategy.

Question 48: How can we ensure enhanced knowledge of and access to appropriate social care for patients living with cardio and vascular disease?

4.4 Inequalities

Just as there are inequalities in prevalence and services for CVD, so too are there inequalities in the provision of long-term care and rehabilitation. Department of Health figures show that CVD accounts for 30-35% of the gap in life expectancy between spearhead local authorities (targeted due to high levels of CVD) and the population as a whole.¹²⁴ Targeted commissioning (and resources) therefore presents an opportunity for local PCTs to address the inequalities gap in the provision of care and rehabilitation services.

Indeed, the Government has produced a Health Inequalities Update strategy, which identifies PCTs as perhaps the most powerful agent to reduce inequalities through commissioning. This includes PCTs assessing evidence of need, working with GPs to ensure PCTs reflect the needs of disadvantaged communities, and developing and commissioning community health services.

Question 49: What measures should a new Cardio & Vascular Health Strategy include to address inequalities in care and rehabilitation over the next ten years?

4.5 Carers

Patients living with CVD often require close support from informal caregivers. Predominantly partners, carers play a crucial role in the rehabilitation and recovery of patients. The Government has demonstrated its support for carers, with its *New Deal for Carers*, and its follow-up, *Carers at the heart of 21st century families and communities*.¹²⁵ These set out the UK Government's short-term actions to support carers and the longer-term strategic vision that includes a £225m funding commitment to support developments to relieve the burden on carers if they are sick or have other family responsibilities. While welcomed by carers' charities, many said that what was vitally needed was better investment in planned respite care and support for carers, rather than only helping people once they get to breaking point.

Indeed, it is apparent that carers continue to shoulder much of the burden of ongoing care and rehabilitation. To inform its knowledge about the concerns and problems faced by informal caregivers, the BHF commissioned four focus groups with informal caregivers of people living with heart disease.¹²⁶ Concerns cited by caregivers who support heart patients on an ongoing basis included anxiety about the patients' condition, the need for respite care, and financial pressures.

Furthermore, the Cardio & Vascular Coalition (CVC) commissioned a survey of CVD carers,¹²⁷ with similar findings of frequently difficult times, including:

- 25% of those receiving care had multiple conditions and 25% were graded as having moderate to severe impairment
- Only 13% of carers had reduced paid work as a result of caring, but 34% had experienced deteriorating health
- Only 5% of carers had had a formal assessment of their needs for support
- Carers need more information about the after-care of MI and stroke patients, as well as advice on the psychological aspects of CVD.

Question 50: What measures should a new Cardio & Vascular Health Strategy recommend to ensure that the varied needs of carers are adequately supported?

4.6 Rehabilitation

Cardiac rehabilitation (CR) is a vital part of the care pathway for patients with heart disease. It is an evidenced-based intervention which reduces future mortality and morbidity, is cost effective and is recommended by many national and international guidelines. The NSF for Coronary Heart Disease clearly states that, prior to leaving hospital, all heart patients should be invited to participate in a multidisciplinary programme of secondary prevention and CR, including psychological support before, during, and after discharge from hospital. However, the findings of the National Audit of Cardiac Rehabilitation (NACR) confirm the impression of many patients and staff that the majority of patients in England with heart disease do not get CR.¹²⁸ It is also reported that in England, some CR schemes are under the threat of closure due to financial pressures - a problem also being experienced elsewhere in the UK.

Furthermore, rehabilitation support is required for vascular related complications such as foot problems where people with diabetes who develop vascular complications are at increased risk of amputations.¹²⁹

In most cases, CR is delivered after a heart attack or following bypass surgery or angioplasty. Patients with angina, heart failure, implanted cardiac devices and some arrhythmias can also benefit greatly. CR helps people with a heart condition make any necessary changes to their life and improve their wellbeing.

CR is delivered in three main venues: in hospital as an outpatient, in a community setting such as a GP practice or sports centre, and in the patient's home.¹³⁰ There is evidence that offering a home-based self-management programme as an option can substantially improve uptake and that outcomes from these programmes are the same as those from traditional group-based programmes.¹³¹

The BHF's 2007 National Audit of Cardiac Rehabilitation¹³² suggests that the Government's targets have been missed. The Audit reported that:

- The great majority of people with heart problems *do not* attend CR. It is estimated that on average only 43% of patients are receiving CR
- There is a geographical 'lottery' for access to CR
- The multi-disciplinary staff mix and staffing level per patient is poor when compared to the BACR minimum clinical standards.

A major reason for the lack of progress in hitting NSF targets is that there are few incentives built into the funding system to support CR. Health Trusts are now paid a fixed tariff for every episode of care, but rehabilitation does not yet receive a separate tariff. This is in stark contrast to other treatments recommended by the NSF for CHD. In a few parts of the country, local healthcare commissioners have ensured that a proportion of the 'cardiac' tariffs are used for rehabilitation but, generally speaking, this has not been the case. Furthermore, CR is not included as a target in the QOF.

The efficacy of CR is clear, achieving reductions in cardiac mortality.¹³³ CR is also cost-effective. Data from a Canadian randomised trial of CR, recalculated to reflect UK circumstances, yielded a cost of £6,900 per quality adjusted life year and £15,700 per year gained at three years (in 1997).¹³⁴ The costs of CR are comparatively less than other procedures. Costs per quality adjusted life year for coronary artery bypass surgery are £22,000; £47,000 for percutaneous coronary intervention (angioplasty); and £15,700 for CR.¹³⁵

Around a third of people who suffer a stroke are left with mental and/or physical disabilities. The national Stroke Strategy, published in December 2007, included High Quality Specialist rehabilitation as a marker of a quality service. The Department of Health define this as “People who have had strokes access high-quality rehabilitation and, with their carer, receive support from stroke-skilled services as soon as possible after they have a stroke, available in hospital, immediately after transfer from hospital and for as long as they need it.”¹³⁶ This document also highlighted that only around half of individuals who have experienced a stroke receive the rehabilitation to meet their needs in the first six months following discharge from hospital, falling to around a fifth in the following six months.

Question 51: What initiatives should a new Cardio & Vascular Health Strategy include to ensure more people can access cardio and vascular rehabilitation in an equitable fashion?

Question 52: What key elements should cardio and vascular rehabilitation contain?

Question 53: How can funding and incentive systems be improved to enhance motivation to develop improved rehabilitation at the local level?

4.7 Palliative and end of life care

The *End of Life Care Strategy* (EoLCS) for England (2008) describes end of life care as that which: “Helps all those with advanced, progressive, incurable illness to live as well as possible until they die. It enables the supportive and palliative care needs of both patients and family to be identified and met throughout the last phase of life and into bereavement. It includes management of pain and other symptoms and provision of psychological, social, spiritual and other practical support.”¹³⁷

Unfortunately, cardio and vascular patients do not always receive high levels of end of life care. In comparison to other conditions, most notably cancer, cardiac patients receive less specialist palliative and supportive care services. This is despite some people who suffer from chronic heart failure experiencing similar difficulties and a higher death rate than many cancer patients. There is no cure for kidney disease, and the only treatment options are dialysis and transplantation, both of which only extend life by a limited period of time, with a high proportion of patients dying prematurely from CVD. The current provision of palliative and supportive care is inequitable. The Department of Health’s End of Life Care Strategy makes clear that appropriate care should be based on a patient’s need for support, *not* on medical diagnosis.

A new £0.5m, 3-year study on end of life care is being undertaken by Kidney Research UK, which will develop the evidence base for a culturally sensitive end of life care programme for South Asians and provide the required evidence to promote best practice and a practical toolkit to assist carers and patients.

Heart failure survivors represent an example of the need for palliative care. Whilst not all heart failure patients will require specialist end of life care, many require general palliative and supportive care. There are about 66,000 new cases of heart failure every year in the UK. Despite advances which enable many people to live full lives for years, heart failure is a progressive clinical syndrome that can lead to death.

The EoLCS pledges a £286m investment to improve end of life care for all.¹³⁸ This strategy aims to help more people to die in the setting they choose (usually at home) and will include a focus on improved community services, workforce training, the development of specialist palliative care outreach services, and the creation of quality standards. Cardio and vascular patients needing palliative and end of life care should be entitled to benefit from the resources and enhanced investment of the EoLCS. A new Cardio & Vascular Health Strategy must emphasise the importance of end of life care to staff working with people with cardio and vascular conditions.

For the EoLCS care pathway to become embedded in cardio and vascular care, staff will need to work with their palliative care colleagues to build integrated services and improved understanding of this specialist care. This will help to provide seamless care for the person, and increase cardio and vascular staff's understanding of the role of palliative care in their work.

The variable prognosis of people with many cardio and vascular conditions means that it is particularly important for there to be palliative care needs assessments at all key points of major change in their condition. This will include the point of diagnosis, completion of initial treatment, recurrence of the condition, recognition of incurability, the beginning of the end of life phase, when dying is diagnosed, and at any stage when the person's carers become unable to cope. Carers should also receive regular needs assessments to ensure changes to their needs are supported.

Question 54: What are the priorities for cardio and vascular care emerging from the end of life care pathway?

4.8 Mental and Emotional Needs

Cardio and vascular disease can profoundly affect mental health and emotional wellbeing. People with cardio and vascular conditions can experience significant worries about their future welfare and that of their families. Depression in the dialysis population and their disease perception are key factors on how well individuals cope and manage their condition, which impacts on outcomes. Research indicates that up to half of patients with acute cardiac conditions report moderate or severe levels of anxiety whilst in hospital, and one fifth continue to do so one year later.¹³⁹ Furthermore, two thirds of heart attack survivors report symptoms of depression and they are three times as likely as the rest of the population to experience major depression.^{140,141}

There is a clear need to support the mental and emotional health of people with cardio and vascular disease. The experience of concomitant cardio and vascular conditions and poor mental and emotional health is associated with increased use of health resources, reduced functional ability, and increased risk of mortality.¹⁴² In contrast, good mental and emotional health promotes coping and recovery and is associated with making lifestyle choices to minimise mortality, including reducing smoking.¹⁴³

Health and social care professionals should be provided with the appropriate levels of training and support to recognise and respond to the mental and emotional needs of their patients. Patients and their families should be provided with a supportive environment, and services should make use of a range of interventions to help them do so including peer support, counselling, or psychological therapy.

Question 55: What recommendations should we make to promote good mental and emotional health amongst people with cardio and vascular conditions?

5.0 Research

Introduction and summary

Research provides opportunities to scrutinise evidence-based policies, medical interventions, scientific investigations and prevention programmes. Research findings can then be utilised to support initiatives to improve patient outcomes.

Key points:

- Cardio and vascular disease have variable progression rates across the patient population and additional research is needed to assist in understanding these variances and why they occur
- The discovery of additional biomarkers (eg, for proteinuria) will be a key factors in providing evidence of disease risk and possibilities for prevention of disease
- There are many areas in which additional research could be used to develop and enhance the care of those with cardio and vascular disease. It is important to identify where these gaps lie, and what areas should be afforded priority
- Some research will be observational (eg, epidemiological) and some will take place in a clinical environment. For clinical studies, positive interaction between NICE and relevant stakeholders will be important.

5.1 Prevention and diagnosis

Cardio and vascular events can be prevented by a number of pharmacological and behavioural interventions. However, most *preventive* strategies are not implemented optimally. For example, not everyone is receiving appropriate treatments, and people are failing to follow public health advice. This is demonstrated by the rising tide of obesity and diabetes, and risky lifestyle behaviours for CVD, including smoking, poor diet and low levels of exercise.

Research into prevention programmes should include special attention to the next generation of potential cardio and vascular disease sufferers, with obesity emerging as a major concern - almost one in 10 children starting primary school in England is now obese.¹⁴⁴ Further research is required in pre-school settings to help establish appropriate prevention programmes before risk factors become a major issue. For example, healthier young women will help to ensure healthier pregnancies and reduce the lifestyle risk factors of the next generation.

Additional research is required in primary and secondary schools to examine the impact of the new nutrient-based standards for school lunches which will be in force for primary schools and secondary schools in September 2008 and 2009 respectively.¹⁴⁵ In cases such as these, it is important to study the impact of wider factors, such as food policies and advertising.

The cost-effectiveness of prevention programmes also requires further exploration. Currently, the evidence base for the cost-effectiveness of primary preventive strategies and policies is poor, in part because of the methodological complexities of such studies. While many studies focus on the cost of treatment, there is a need to commission studies that also consider the *cost of prevention*,¹⁴⁶ since these studies can impact on future decision-making and public health responses.

There is a need to develop a consensus strategy for the early detection of some cardio and vascular risk factors, such as Impaired Glucose Tolerance (IGT) and diabetes.

Question 56: Which key priority research investigations into prevention and diagnosis programmes should be included in a new Cardio & Vascular Health Strategy?

5.2 Medical technology, equipment and procedures

The rapid advent of new medical technologies is not always matched with guidelines that detail how to harness them for optimum health benefit. Examples for treating cardio and vascular disease include 3D echocardiography, CT coronary calcium scoring, telemedicine for home monitoring, and cardiac assist devices. The NHS often waits for another party to demonstrate their worth before adoption into routine clinical practice.

In the past, the NHS has been slower than Europe and the US to adopt new technologies. The UK tends to lag behind other parts of the world when it comes to technological interventions such as AICD implantation and percutaneous valve replacement. However, the NHS is an ideal environment in which to undertake clinical trials of new technologies in order to establish their place in routine clinical management.

Question 57: How should a Cardio & Vascular Health Strategy support stakeholder involvement in NICE's evaluation of new technologies to accelerate their introduction into clinical practice, if appropriate?

5.3 Pharmaceuticals

The rate of introduction of new classes of drugs in cardio and vascular therapy has slowed in recent years. New drugs will only be licensed and adopted after appropriate clinical trials have been undertaken. Yet more research is needed on a host of therapies – for example, to investigate possible benefits or side effects of technologies such as drug eluting stent in specific conditions such as diabetes and the drug-drug interactions that can result in nephrotoxicity.

The NHS ought to be an ideal place to undertake clinical trials of new drugs, thereby ensuring early experience in the UK. However, it appears that UK governance procedures and costs are driving drug companies away from undertaking clinical trials in the UK.

Question 58: How should a new Cardio & Vascular Health Strategy help re-establish the NHS as a world leader in cardio and vascular clinical trials?

5.4 Health inequalities

Evidence-based measures to best address CVD health inequalities present another research challenge. Part of the challenge is understanding poorer health behaviours in more deprived communities: for example, further research is required to examine the availability of and access to healthy food. This could include food mapping and assessment of the number of fast food outlets in particular areas of deprivation.

In general, for ethnic groups and specific population groups, NICE guidance is

extrapolated (often quite appropriately) from studies on the general population. However, where there are conditions more prevalent in certain groups – for example, hypertension in African-Caribbeans, or diabetes in South Asians - industry and research funders should be encouraged to ensure studies are powered to enable sufficient subgroup representation to draw conclusions in these groups, or specifically fund studies in these population subgroups. Addressing inequalities requires not only studies identifying inequalities which exist, but also studies in effective interventions to reduce these inequalities.

Question 59: What are the key research priorities for addressing health inequalities in a new Cardio & Vascular Health Strategy?

5.5 Epidemiology

Robust population-based studies are important to helping us understand and examine recent trends in the prevalence of CVD and related risk factors. This can then impact on public health policy initiatives. These trends include health behaviour and lifestyle, and differences between population sub-groups and geographic areas. These population studies can positively influence the planning of clinical services, since planning requires sound data on current and likely future disease prevalence.

Some members of the Cardio & Vascular Coalition have significantly supported the funding of epidemiological studies, including genetic epidemiology. In 2008, the CVC also commissioned a project, Modelling the Burden of CVD to 2020, which goes some way towards investigating how the future burden of CVD will unfold. However, looking at existing modelling, this study also showed the need for more comprehensive policy modelling work that is capable of making more reliable future projections.¹⁴⁷ It is possible that clinical registry data could be used more widely as an epidemiological research tool.

Question 60: What key elements should be included in research studies to address epidemiological trends in cardio and vascular disease – and how should they be prioritised?

5.6 Patient and carer needs

The effects of any severe illness are not confined to patients alone, but also carry consequences for their carers. The economic consequences of someone having to leave or reduce working hours are rarely factored into the burden of disease as it rests on the State. Figures for the costs of CVD do not include informal care costs, which have been estimated at £5.06 billion.¹⁴⁸ Despite a number of attempts to help improve the quality of life for patients and carers, work is still needed to help develop the best packages of care. The work commissioned by the CVC (presented earlier in this paper) demonstrates there is still a long way to go to provide this, in terms of options available to patients and carers, informed decision making, and knowledge of available services, including palliative care. Further research is needed to deliver better services that fulfil the needs of patients and carers, both in terms of choice, services and outcome measures.

Question 61: What key areas of research should a future Cardio & Vascular Health Strategy include to investigate the needs of patients and carers – and how should they be prioritised?

5.7 Scientific medical research

Medical research enables us to better understand cardio and vascular disease as an illness. There are a number of gaps in this understanding in which there is a direct relationship between disease and service provision. For example, a key area for kidney disease is the further development of paediatric nephrology. Although established renal failure in children is rare and is often different from those that affect adults, a higher proportion of childhood kidney diseases are inherited abnormalities, inborn errors of metabolism, and syndromes of abnormal development and function that affect systems other than the kidney alone. More research and development is therefore required in clinical research activity in paediatric nephrology to sustain the speciality (leading to improved patient outcomes).

Indeed, research in some CVD-related fields has been poorly funded. For example, two recent UKCRC reports demonstrate that there is far less research funding for kidney disease as a percentage of research funds spent compared to its effects on the population.¹⁴⁹

A new Cardio & Vascular Health Strategy should encourage collaboration (via funding and sustainable networks) between academia, health services, local authorities and relevant third sector organisations to develop further medical research projects.

Question 62: What key areas for future scientific medical research should be included in a new Cardio & Vascular Health Strategy – and how should they be prioritised?

6.0 Congenital heart disease

Introduction and summary

A congenital heart defect is one that develops in the womb and is present at birth, although it is not always detected at that time. While most forms of CVD develop through lifestyle behaviours, congenital heart disease (CoHD) is here considered separately, since it is a health issue that commences at the point of detection, ideally before birth. With more people living with CoHD than ever, it is critical that quality services are available to match demand.

Key points:

- The majority of babies born with congenital heart disease have no identifiable risk factors. This makes a case for whole population screening
- Antenatal diagnosis improves medical outcomes for babies and allows planned deliveries, thereby reducing the pressure on emergency and out of hours services
- Care planning needs to ensure patients have access to treatment in age appropriate, well staffed, specialist centres throughout the life-course – however, there is currently no national strategy or framework for CoHD.

6.1 Screening

Estimates of the number of babies born with congenital heart disease vary between 6.9 and 8 per 1,000 births, depending on inclusion criteria.^{150, 151} About one baby in every 133 is born with CoHD (or 5,000 babies every year in the UK) and about half of these are major and life-threatening, requiring surgery and life-long follow-up.

Screening is very important for CoHD, since late detection of major CoHD results in increased mortality and morbidity.¹⁵² However, the present situation is currently beset by inadequate systems to support the training and professional development of the primary screeners (usually obstetric sonographers) resulting in poor detection, and a lack of accreditation for obstetric or cardiac specialists working in (or with an interest in) fetal cardiology.

85% of babies with CoHD are born to women with no identifiable risk factors, a statistic which makes a case for whole population screening. Many of the so-called “high risk” pregnancies selected for specialised scanning (diabetes, multi-fetal pregnancies or family history) have only a slightly higher risk of CHD (c. 3%), and this is not effective screening. Moreover, diabetes and multi-foetal pregnancy are increasing in the population and these groups will become too large to offer them a detailed foetal echocardiogram by a cardiologist. They are best managed by an effective population screening programme.

First trimester screening for aneuploidy will identify an additional cohort of fetuses early in pregnancy that are at risk of CoHD and will require detailed echocardiography, ideally at 14 weeks’ gestation repeated at 20 weeks. Timing and quality of screening and subsequent treatment varies and postcode inequality is common away from major cardiac centres. In 1999, only 23% (0-70% range) of babies with CoHD on average were detected by screening across the UK.¹⁵³ Today it is estimated that this has risen to 30% (0-85%) detection.

Screening is important since antenatal diagnosis improves medical outcomes for babies and can help families to cope with the stresses of having a baby with a malformation who might require early postnatal surgery. Health professionals and the NHS benefit from antenatal diagnosis because it allows for planned delivery, reducing the number of deliveries of babies with unanticipated CoHD. This reduces the need for out of hours emergency services, investigations and associated costs.

Question 63: What measures should be included in a new Cardio & Vascular Health Strategy to improve prenatal screening so that complex congenital heart disease can be diagnosed before birth?

6.2 Treatment

While the incidence of CoHD is small, it is heterogeneous and complex in nature. A revolution in diagnostic techniques and treatments available over the last three decades has led to a dramatic increase in survival rates, even for the most complicated types of CoHD. Complex cases require life-long follow up in tertiary centres staffed by a highly skilled multidisciplinary team to manage an increasing range of medical and psychosocial issues.¹⁵⁴

Tertiary centres are vital for this group as morbidity and mortality rates are significantly lower if interventions and surgery are carried out in specialised units where large volumes of cases allows practitioners to become experts.¹⁵⁵ It is important that those with adult CoHD are treated by appropriate experts in adequately resourced centres. However, there is a shortage of health professionals with adequate specialist training to constitute a multidisciplinary team. Education is an area of concern since there are neither clear training pathways, nor an accepted European standard of accreditation for practitioners in CoHD in an adult population.¹⁵⁶ Indeed, the surgical results and standards of treatment vary between paediatric cardiac units. Some units are better staffed than others and obtain better

surgical results. In some units surgeons are failing to perform the requisite number of procedures recommended to maintain skill levels.¹⁵⁷

Question 64: What can be done to improve access to expert treatment (including transplant options) and long-term follow up for people with CoHD?

Techniques for operating on patients of all ages with CoHD continue to evolve, with improvements seen in survival rates and quality of life. What remains unknown as yet are the long term outcomes of new treatments carried out in childhood. Both children and adults with CoHD will also require management of non-cardiac diseases, either as a result of a syndrome associated with their condition or as a side effect of treatment. These problems will require the input of experts in the endocrine, renal, rheumatology, neurology, ophthalmology and orthopaedic disciplines.¹⁵⁸ Adolescents and adults with complex CoHD require lifelong follow up in a tertiary centre that can cater for adults rather than being solely aimed at children. While effective systems for transition of care are in place in some areas, there are still adolescents and adults being managed by their paediatrician in an inappropriate environment.

Adults with CoHD now outnumber children with the condition, but specialist services have not been planned or adequately provided. Grown up CoHD (GUCH) services have evolved by chance rather than design. The result is that services are unequal, dependent on the area where the patient lives; a classic 'postcode lottery'. The lack of GUCH specialists means that GUCHs are being treated by people who are not 'expert' clinicians specifically charged with treating GUCH patients.

At present, there is no national plan or strategy for CoHD. As a consequence, the future survival of the limited services which do exist are at the mercy of the NHS trusts that provide them. The insufficiency of specialist services in some parts of the country is similarly problematic.

Many believe that a new Cardio & Vascular Health Strategy should include a national structure for GUCH services to ensure properly resourced, geographically-appropriate specialist and local centres. These centres and their locations would take into account demand and critical mass, implementing the centre structure defined in the NHS GUCH Guide (2006).

Question 65: What should be done to improve the long term care of patients with complex congenital heart disease as they age, including management of cardiac and non-cardiac disease?

6.4 End of life care

CoHD carries a high risk of premature death. Whilst quality treatment and care services are essential, the offer of counselling services are important for dying patients, their families and carers. Ensuring dignity in death is as important as ensuring high quality treatment is available to all. A new Cardio & Vascular Health Strategy should ensure that dying patients, their families, and their treatment and care team, have access to supportive, up-to-date care and counselling services.

It is essential that good end of life care, as set out in the End of Life Care Strategy, is available for people with cardio and vascular conditions wherever appropriate, with a

seamless transition between children's and adults' services to include palliative and end of life care services.

Question 66: What can be done to provide better end of life care services for children, young people and adults dying from congenital heart disease?

6.5 Service planning

Service planning is critical for people with CoHD. Since 80-85% of patients born with CoHD now survive to adulthood, an annual increase of 2,500 young adults can be anticipated according to birth rate.¹⁵⁹ The number of cases of CoHD is increasing dramatically, including an estimated 50% rise in complex conditions over 10 years.

To date, services have developed via specialist tertiary cardiac and paediatric centres. However, numbers of GUCH patients are increasing approx 10% each year and now outnumber paediatric patients with CoHD. Better survival rates now mean that the demand for care is also increasing. This includes the increasing demand for GUCH nurses. Their role in education and family support is important since lifestyle advice/adherence can greatly influence clinical outcomes. Growing demands mean there is still a need to develop education and training packages for nurses.

Some adults are still being treated by paediatricians due to the lack of specialist adult services, while others are seen in local adult cardiology centres without adequate expertise. Ideally, all those patients with complex disease would be seen in a tertiary centre which is fully staffed by a multi-disciplinary team. Those patients with relatively simple CoHD could be followed up under a shared care system.

It is inevitable that patients with complex CoHD will require emergency critical care, often due to arrhythmias. This will often happen when the patient is far away from the tertiary centre and will instead be admitted to their local accident and emergency unit where there is likely to be a lack of knowledge of how to manage a cardiac event in this patient group. A nationwide system should be established that allows for geographical planning of the hierarchy of critical care to ensure that patients with CoHD requiring emergency admission to a tertiary centre receive rapid expert help.

Question 67: What measures should be included in a new Cardio & Vascular Health Strategy to ensure appropriate service planning for people with congenital heart disease?

6.6 Patient/carer involvement

As with other CVD conditions, CoHD patients and their carers should be involved in the development of their own treatment and care plan. This should include:

- Ensuring patients and carers have greater knowledge and information concerning their condition
- Opportunities for decision-making about their care
- A proper understanding of transition clinics from child to GUCH services
- Ensuring that the local provision of non-medical support and social care allows people to self-manage their conditions, stay in their homes and address mental health and emotional issues.

Question 68: How can a new Cardio & Vascular Health Strategy help ensure that congenital heart disease services incorporate opportunities for patient/carer involvement in their own treatment and care?

Summary of consultation questions

Developing a future strategy for cardio and vascular health

1. What are the key elements of the present cardio and vascular NSF's and strategies (coronary heart disease, renal, diabetes and stroke) which have delivered improvements in population health?
2. What are the key areas of 'unfinished business' in the existing NSF's, and how should we tackle these in the future?
3. How can existing strategies and frameworks (coronary heart disease, renal, diabetes, stroke) be included in an overarching Cardio & Vascular Health Strategy 2010 - 2020?
4. What should be the key objectives and drivers of a new Cardio & Vascular Health Strategy?
5. What is the most effective way of measuring the implementation and success of a healthcare strategy, and how can this measurement be used to strengthen future policies and delivery?
6. What steps are needed to accurately model the future burden of cardio and vascular disease?
7. What cardio and vascular services need to be maintained, strengthened or developed in the next 10 years?
8. How can the latest clinical and public health guidance be translated into national policy to affect patient care to an effective timeline?
9. What initiatives should a new Cardio & Vascular Health Strategy include to involve the non-medical sector in the development and implementation of prevention and treatment programmes?
10. How can a new Cardio & Vascular Health Strategy help ensure both high quality national standards *and* best practice in its local implementation?
11. What mechanisms and resources will commissioners need to enable them to develop innovative services with optimum patient outcomes?
12. How should PCTs and Local Authorities commission services for cardio and vascular disease, and what will these look like? How will specific conditions (eg diabetes, renal, hyperlipidaemia) be incorporated into this?
13. How can cardio and vascular patients and carers become more involved in service development and the care planning process?
14. What measures can a new Cardio & Vascular Health Strategy recommend that will contribute to gold standards of clinical governance?

Prevention

15. What priority measures should be included in a new Cardio & Vascular Health Strategy to effectively address risk factors in primary and secondary prevention?
16. How can we develop integrated cardio and vascular prevention programmes which include both individual approaches and environmental modifications to encourage healthier lifestyles?
17. What sustained measures should a Cardio & Vascular Health Strategy recommend to best ensure and tailor positive awareness-raising and social marketing?
18. What initiatives should be recommended to ensure that patients have access to quality health promotion advice – for example, the training of relevant staff to be confident and skilled to deliver this?
19. How can we encourage primary care trusts and local authorities to commit to implementing key national health promotion policies at the local level?

20. How can a new Cardio & Vascular Health Strategy involve community agencies, third sector and other organisations (such as schools, workplaces) to impact on positive health promotion outcomes?
21. What measures will help ensure that cardio and vascular health factors are effectively tackled on a community-wide scale - and who should deliver them?
22. How can we better evaluate the effectiveness of upstream prevention policy initiatives?
23. What strategies and communication methods would ensure better screening for cardio and vascular problems while *reducing* inequalities?
24. What should be done to improve access and quality of services for people with inherited cardio and vascular conditions?
25. How can advances in genetic testing and technology be better used to deliver improved patient care?
26. What initiatives should a Cardio & Vascular Health Strategy include to improve prevention among groups who suffer from cardio and vascular inequalities?
27. What are the key wider determinants of cardio and vascular health, and how can they be incorporated into a new Cardio & Vascular Health Strategy for 2010-2020?

Treatment

28. What initiatives can help ensure that primary care is best equipped to treat and manage cardio and vascular conditions?
29. What collaborative initiatives (involving NHS, public and commercial sector, voluntary sector, and the community) should be included in a new Cardio & Vascular Health Strategy that can improve survival chances for people suffering a CVD-related emergency?
30. How can we improve access to key emergency treatments such as reperfusion therapy for ST segment elevation myocardial infarction and acute stroke units?
31. How should services be better planned and co-ordinated to reduce variations in access and acquisition and deliver seamless services for cardio and vascular conditions?
32. What service models would help improve treatment of cardio and vascular disease?
33. How can a new Cardio & Vascular Health Strategy help ensure gold standards of prescribing among clinicians and improved treatment adherence?
34. Which equipment, health technologies, and procedures for the treatment of cardio and vascular disease require additional resources and investment in the next 10 years?
35. What measures should we undertake to improve the numbers of and access to organ transplants?
36. What are the key priorities for the development of NHS facilities over the next ten years?
37. How can treatment be better integrated across primary, community, secondary and tertiary care?
38. For which treatments do we need improved access?
39. What are the workforce and training needs among cardio and vascular health professionals working in the primary, secondary and tertiary settings, in the NHS and social care, and how should they be addressed?
40. In which areas of cardio and vascular disease is multi-disciplinary and professional working important and how can this be developed in a Cardio &

Vascular Health Strategy?

41. What are the priority areas for investment for a new Cardio & Vascular Health Strategy, and how can these be addressed while keeping costs under control?
42. Which targets, if any, should be promoted in the next ten years?
43. What measures are needed to help reduce inequalities in the provision of appropriate treatment for cardio and vascular conditions?
44. What measures should a new Cardio & Vascular Health Strategy include to better tackle co-morbidity in people with cardio and vascular conditions?

Care and rehabilitation

45. How should a new Cardio & Vascular Health Strategy help ensure that NHS staff have a clear understanding of other relevant local services?
46. Who should be responsible for joining up care pathways between services and across regions in England, and what are the key mechanisms to achieve this?
47. What initiatives should a new Cardio & Vascular Health Strategy include to help ensure quality care planning?
48. How can we ensure enhanced knowledge of and access to appropriate social care for patients living with cardio and vascular disease?
49. What measures should a new Cardio & Vascular Health Strategy include to address inequalities in care and rehabilitation over the next ten years?
50. What measures should a new Cardio & Vascular Health Strategy recommend to ensure that the varied needs of carers are adequately supported?
51. What initiatives should a new Cardio & Vascular Health Strategy include to ensure more people can access cardio and vascular rehabilitation in an equitable fashion?
52. What key elements should cardio and vascular rehabilitation contain?
53. How can funding and incentives systems be improved to enhance motivation to develop improved rehabilitation at the local level?
54. What are the priorities for cardio and vascular care emerging from the end of life care pathway?
55. What recommendations should we make to promote good mental and emotional health amongst people with cardio and vascular conditions?

Research

56. Which key priority research investigations into prevention and diagnosis programmes should be included in a new Cardio & Vascular Health Strategy?
57. How can a Cardio & Vascular Health Strategy support stakeholder involvement in NICE's evaluation of new technologies to accelerate their introduction into clinical practice?
58. How should a new Cardio & Vascular Health Strategy help re-establish the NHS as a world leader in cardio and vascular clinical trials?
59. What are the key research priorities for addressing health inequalities in a new Cardio & Vascular Health Strategy?
60. What key elements should be included in research studies to address epidemiological trends in cardio and vascular disease – and how should they be prioritised?
61. What key areas of research should a future Cardio & Vascular Health Strategy include to investigate the needs of patients and carers – and how should they be prioritised?
62. What key areas for future scientific medical research should be included in a

new Cardio & Vascular Health Strategy – and how should they be prioritised?

Congenital heart disease

63. What measures should be included in a new Cardio & Vascular Health Strategy to improve prenatal screening so that complex congenital heart disease can be diagnosed before birth?
64. What can be done to improve access to expert treatment (including transplant options) and long-term follow up for people with CoHD?
65. What should be done to improve the long term care of patients with complex congenital heart disease as they age, including management of cardiac and non-cardiac disease?
66. What can be done to provide better end of life care services for children, young people and adults dying from congenital heart disease?
67. What measures should be included in a new Cardio & Vascular Health Strategy to ensure appropriate service planning for people with congenital heart disease?
68. How can a new Cardio & Vascular Health Strategy help ensure that congenital heart disease services incorporate opportunities for patient/carer involvement in their own treatment and care?

Abbreviations

AED

Automatic external defibrillator

BHF

British Heart Foundation

BME

Black and ethnic minority

BMI

Body mass index

CABS

Coronary Artery Bypass Surgery

CAP

Common Agricultural Policy

CHD

Coronary heart disease

CKD

Chronic kidney disease

CoHD

Congenital Heart Disease

CQUIN

Commissioning for Quality and Innovation

CR

Cardiac rehabilitation

CRT

Cardiac resynchronisation therapy

CT

Computerised Tomography

CVC

Cardio & Vascular Coalition

CVD

Cardiovascular disease

DH

Department of Health

EoLCS

End of Life Care Strategy

FH

Familial Hypercholesterolaemia

GUCH

Grown Up Congenital Heart Disease

HD

Haemodialysis

HFSS

High in fats, sugar and salt

ICD

Implantable cardioverter-defibrillator

IHC

Inherited high cholesterol

LHO

London Health Observatory

MI

Myocardial infarction

NICE

National Institute for Health and Clinical Excellence

NSF

National Service Framework

PCI

Percutaneous Coronary Intervention

PCT

Primary Care Trust

PD

Peritoneal dialysis

QOF

Quality and Outcomes Framework

RCT

Randomised controlled trial

SCU

Stroke care unit

VRC

Vascular risk checks

End Notes

¹ This Green Paper is focused on England only, although the CVC hopes this document will inspire further progress in other areas of the UK. All references in this document to National Service Frameworks, national strategies or government policy documents refer to England only, unless otherwise specified.

² *Tackling Obesities: Future Choices – Summary of Key Messages*. Website:

<http://www.foresight.gov.uk/Obesity/20.pdf>

³ National Institute for Health and Clinical Excellence (NICE) (2006) *Statins for the prevention of cardiovascular events*. London, NICE.

⁴ Go, AS et al. (2004) Chronic kidney disease and the risks of cardiovascular events and hospitalisation. *N. Engl. J. Med.*, 351: 1296-1305.

⁵ BHF CVD statistics. <http://www.heartstats.org/homepage.asp> (accessed April 2007)

⁶ Department of Health (2008) *Health Inequalities: Progress and Next Steps*. London, Department of Health.

⁷ NSFs set national healthcare standards designed to improve the quality of health services and ensure that everyone gets a similar level of care. NSFs set clear quality requirements for care and offer strategies and support to help health organisations achieve these standards. NSFs have helped achieve improvements in population health and service provision including saving lives, reduced waiting times, improved care pathways, and an enlarged workforce.

⁸ Department of Health (2008) *The Coronary Heart Disease National Service Framework: Building for the Future, Progress Report*. Available at:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083060 (accessed March 2008).

⁹ Department of Health (2007) *The National Service Framework for Renal Services: Second progress report*. Department of Health.

¹⁰ See National Institute for Health and Clinical Excellence (NICE) (2008) *Chronic Kidney Disease: Early identification and management of CKD in adults in primary and secondary care* (NICE clinical guideline 73). London, NICE.

¹¹ Roberts, S. (2007) *The Way Ahead: The Local Challenge. Improving Diabetes Services: The NSF Four Years On*. London, Department of Health.

¹² Department of Health (2008) *End of Life Care Strategy: Promoting High Quality Care for all adults at the end of life*. Department of Health.

¹³ Swanton, R.H. (2005) The National Service Framework: six years on. *Heart*, 92: 291-292.

¹⁴ See Capewell, S. et al. (2008) *Modelling the UK burden of cardiovascular disease to 2020*. London, British Heart Foundation.

¹⁵ See <http://www.who.int/countries/gbr/en/> (accessed April 2008).

¹⁶ Capewell, S. et al. (2008) *Modelling the UK burden of cardiovascular disease to 2020*. London, British Heart Foundation.

¹⁷ Lyratzopoulos, G. (2006) The cost of cardiovascular disease: rising, declining or staying still? *Heart*, 92: 1361-1362.

¹⁸ Figures based on Yorkshire and Humber Public Health Observatory (2008) *PBS Diabetes Prevalence Model Phase 3: key findings*. The PBS model estimates that by 2025 there will be 3.6 million people with diabetes in England only and that the diabetes prevalence will be 6.48% of the population in England.

¹⁹ Foresight (2007) *Tackling Obesities: Future Choices – Modelling Future Trends in Obesity and Their Impact on Health* (2nd ed). Department of Innovation, Universities and Skills.

²⁰ Sheerin, N. (2005) Epidemiology and prognosis in advanced chronic kidney disease: Implications for palliative care. National Library for Palliative and Supportive Care.

<http://www.library.nhs.uk/palliative/ViewResource.aspx?resID=271071&tabID=289> (accessed September 2008).

²¹ Department of Health (2004) *National Service Framework for Renal Services*. London, Department of Health.

²² Evidence that this projected growth in renal replacement therapy is continuing is available from the Renal Association UK Renal Registry. Between 1982 and the end of 2006, the numbers of adults receiving renal replacement therapy had grown from 8,500 in 1982 to 43,901 by the end of 2006, a prevalence of 725/million of the population. These trends are set to continue at least until 2015 and probably until 2020. See *UK Renal Registry Tenth Annual Report*, December 2007, Chapter 4.

-
- ²³ Boyle, R. (2006) *Mending hearts and brains. Clinical case for change: Report by Professor Roger Boyle, National Director for Heart Disease and Stroke*. Department of Health.
- ²⁴ Allender, S. et al. (2008) *Coronary heart disease statistics 2008 edition*. London, British Heart Foundation.
- ²⁵ Ibid.
- ²⁶ Boyle, R. (2006) *Mending hearts and brains. Clinical case for change: Report by Professor Roger Boyle, National Director for Heart Disease and Stroke*. Department of Health.
- ²⁷ Laatikainen, T.J. et al. (2005) Explaining the Decline in Coronary Heart Disease Mortality in Finland between 1982 and 1997. *Am. J. Epidemiol.* 162: 764-773.
- ²⁸ Dowse, G.K. et al. (1995) Changes in population cholesterol concentrations and other cardiovascular risk factor levels after five years of the non-communicable disease intervention programme in Mauritius. Mauritius Non-communicable Disease Study Group. *BMJ*, 311:1255–1259.
- ²⁹ Birt, C. et al. (2007) *A CAP on Health? The Impact of Common Agricultural Policy on public health*. London, Faculty of Public Health.
- ³⁰ Wilson, N. et al. (2003) How much downside? Quantifying the relative harm from tobacco taxation. *Journal of Epidemiology and Community Health*, 58: 451-454.
- ³¹ Wanless, D. (2002) *Securing our Future Health: Taking a Long Term View*. London, HM Treasury.
- ³² Department of Health (2006) *Analysis of the National Childhood Obesity Database 2005-6*.
- ³³ GUM clinic spending report, Independent Advisory Group on Sexual Health & HIV, 27 July 2006.
- ³⁴ http://www.bhf.org.uk/annualreport/2006v2/emergency_life_saving/local_lifelines.htm (accessed April 2008).
- ³⁵ <http://www.dh.gov.uk/en/Healthcare/NationalServiceFrameworks/Coronaryheartdisease/Coronarypromotionproject/index.htm> (accessed April 2008).
- ³⁶ Department of Health (2007) *World Class Commissioning: Vision Summary*. London, Department of Health.
- ³⁷ Lord Darzi (2008) *High quality care for all: NHS Next Stage Review Final Report*. London, Department of Health.
- ³⁸ Ibid.
- ³⁹ Ibid.
- ⁴⁰ Ibid.
- ⁴¹ Netto, G., McCloughan, L., and Bhatnagar, A. (2007) Effective heart disease prevention: Lessons from a qualitative study of user perspectives in Bangladeshi, Indian and Pakistani communities. *Public Health*, 121 (3): 177-186.
- ⁴² Department of Health (2006) *Our health, our care, our say: a new direction for community services*. Department of Health.
- ⁴³ NHS Clinical Governance Support Team, *About CG: what is clinical governance?* http://www.cgsupport.nhs.uk/About_CG/default.asp (accessed August 2008)
- ⁴⁴ For example, men under the age 64 are much more likely to die of coronary heart disease than women. See Jousilahti, P. et al. (1999) Diabetes mellitus Sex, age, cardiovascular risk factors, and coronary heart disease: a prospective follow-up study of 14,786 middle-aged men and women in Finland. *CIRCULATION*, 99 (9): 1165-1172.
- ⁴⁵ Godfrey, C. et al. (2005) The cost-effectiveness of the English smoking treatment services: evidence from practice. *Addiction*, 100 (suppl. 2): 70-83.
- ⁴⁶ See <http://www.dh.gov.uk/en/PublicHealth/Healthimprovement/FiveADay/index.htm> (accessed April 2008).
- ⁴⁷ *Health Survey for England 2006 Latest Trends*. Available at: <http://www.ic.nhs.uk/pubs/hse06trends> (accessed March 2008).
- ⁴⁸ Department of Health (2008) *Ambitions for health: A strategic framework for maximising the potential of social marketing and health-related behaviour*. London, Department of Health.
- ⁴⁹ Evans, W.D. (2006) How social marketing works in health care. *BMJ*, 332 (7551): 1207-1210.
- ⁵⁰ Powell, J. et al. (2007) Primary care professionals and social marketing of health in neighbourhoods: a case study approach to identify, target and communicate with 'at risk' populations. *Primary Health Care Research and Development*, 8 (1): 22-35.

-
- ⁵¹ Department of Health (2003) *Health Survey for England 2003, Volume 2: Risk factors for cardiovascular disease*. Department of Health.
- ⁵² Steptoe, A. et al. (1999) Attitudes to cardiovascular health promotion among GPs and practice nurses. *Family Practice*, 16 (2): 158-163.
- ⁵³ Keyes, .C.L.M. (2004). The nexus of cardiovascular disease and depression revisited: the complete mental health perspective and the moderating role of age and gender. *Aging and Mental Health*, 8 (3), 266-274.
- ⁵⁴ Bunker, S. J. et al. (2003) 'Stress' and coronary heart disease: psychosocial risk factors National Heart Foundation of Australia Position Statement Update. *Medical Journal of Australia*, 178: 272-276.
- ⁵⁵ Kubzansky, L. D and Kawachi, I. (2000) Going to the heart of the matter: Do negative emotions cause coronary heart disease? *Journal of Psychosomatic Research*, 48: 323-337.
- ⁵⁶ Puska, P. (2000) Nutrition and mortality: the Finnish experience, *Acta Cardiol.*, 55 (4): 213-220.
- ⁵⁷ Wanless, D. (2002) *Securing our Future Health: Taking a Long Term View*. London, HM Treasury.
- ⁵⁸ McCluskey, S. et al. (2007) Reductions in cardiovascular risk in association with population screening: a 10-year longitudinal study. *Journal of Public Health*, 29 (4): 379-387.
- ⁵⁹ Urine testing and proteinuria are generally good approaches to detecting CKD in 'at risk' groups, which is mandated in diabetes and recommended in high BP and is recommended by NICE for 'at risk' groups. See National Institute for Health and Clinical Excellence (NICE) (2008) *Chronic Kidney Disease: Early identification and management of CKD in adults in primary and secondary care* (NICE clinical guideline 73). London, NICE.
- ⁶⁰ http://www.dh.gov.uk/en/Healthcare/NationalServiceFrameworks/Coronaryheartdisease/DH_4097422 (accessed April 2008).
- ⁶¹ Hooper, L. et al. (2001) Dietary fat intake and prevention of cardiovascular disease: systematic review. *BMJ*, 322: 757-763.
- ⁶² Ebrahim, S. and Smith, G.D. (2001) Editors' Response—exporting failure. *International Journal of Epidemiology*; 30: 1496-1497.
- ⁶³ Department of Health (2008) *Putting prevention first - vascular checks: risk assessment and management*. London, Department of Health.
- ⁶⁴ Waugh N. et al. (2007) Screening for type 2 diabetes: literature review and economic modelling. *Health Technol Assess*, 11 (17).
- ⁶⁵ Yusuf, S. et al (2004), Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study, *Lancet*, 364 (9438): 937-952.
- ⁶⁶ Day, I.N.M. and Wilson, D.I. (2001) Science, medicine, and the future: Genetics and cardiovascular risk. *BMJ*, 323: 1409-1412.
- ⁶⁷ Mayer Jr, O. et al. (2004) Educational level and risk profile of cardiac patients in the EUROSPIRE II substudy. *Journal of Epidemiology and Community Health*, 58: 47-52.
- ⁶⁸ All Parliamentary Group for Diabetes and Diabetes UK (2006) *Diabetes and the disadvantaged: reducing health inequalities in the UK*; Palmer, G., Carr, J., and Kenway, P. (2005) *Monitoring poverty and social exclusion 2005*. York, Joseph Rowntree Foundation.
- ⁶⁹ Peto R et al. (2004) *Mortality from smoking in developed countries 1950-2000*. (2004 update) www.ctsu.ox.ac.uk/~tobacco
- ⁷⁰ Jarvis, M. (1997) Patterns and predictors of smoking cessation in the general population. In Bolliger, C.T., and Fagerstrom, K.O. (Eds), (1997) *The Tobacco Epidemic. Progress In Respiratory Research*, 28: 151-164.
- ⁷¹ Bhopal R. (2000) What is the risk of coronary heart disease in South Asians? A review of UK research. *Journal of Public Health Medicine*, 22 (3): 375-385.
- ⁷² Sproston, K. and Mindell, J. (Eds). *Health Survey for England 2004: The health of minority ethnic groups: Volume 1*. <http://www.ic.nhs.uk> (accessed March 2008).
- ⁷³ Hajat, C. et al. (2004) Ethnic differences in risk factors for ischemic stroke: a European case-control study. *Stroke*, 35: 1562-1567.
- ⁷⁴ Gunarathne, A. et al (2008) Secular trends in the cardiovascular risk profile and mortality of stroke admissions in an inner city, multiethnic population in the United Kingdom (1997-2005). *Journal of human hypertension*, 22 (1): 18-23.
- ⁷⁵ Kidney Research UK website: <http://www.kidneyresearchuk.org/content/view/423/574> (accessed September 2008).

-
- ⁷⁶ Department of Health (2007) *World Class Commissioning: Vision Summary*. London, Department of Health.
- ⁷⁷ Richards, N. et al. (2008) Primary care-based disease management of chronic kidney disease (CKD), based on estimated glomerular filtration rate (eGFR) reporting, improves patient outcomes. *Nephrology Dialysis Transplantation*, 23: 549-555.
- ⁷⁸ See Burns, P., Gough, S. and Bradbury, A.W. (2003) Management of peripheral arterial disease in primary care. *BMJ*, 326: 584-588.
- ⁷⁹ See Report on the National Defibrillator Programme (England) (2007) British Heart Foundation.
- ⁸⁰ Ibid.
- ⁸¹ DH Vascular Programme Team (2008) *National Infarct Angioplasty Project (NIAP) Interim report*. Department of Health.
- ⁸² Bassand, J. et al. (2005) Implementation of reperfusion therapy in acute myocardial infarction. A policy statement from the European Society of Cardiology. *European Heart Journal*, 26: 2733-2741.
- ⁸³ Lord Darzi (2008) *High quality care for all: NHS Next Stage Review Final Report*. London, Department of Health.
- ⁸⁴ Power, M.L. et al. (2007) Evaluation of a service development to implement the top three process indicators for quality stroke care. *Journal of Evaluation in Clinical Practice*, 13 (1): 90-94.
- ⁸⁵ Gunn, J. and Taggart, D.P. (2003) Revascularisation for acute coronary syndromes: PCI or CABG? *Heart*, 89: 967-971.
- ⁸⁶ National Institute for Health and Clinical Excellence (NICE) (2006) *Statins for the prevention of cardiovascular events*. London, NICE.
- ⁸⁷ National Collaborative Centre for Chronic Conditions (2003) *Chronic Heart Failure. National Clinical guideline for diagnosis and management in primary and secondary care*. NICE Clinical Guideline. London, Royal College of Physicians.
- ⁸⁸ Department of Health (2002) *National Service Framework for Diabetes*. London, Department of Health.
- ⁸⁹ British Cardiac Society et al. (2005) JBS 2: Joint British Societies' guidelines on prevention of cardiovascular disease in clinical practice. *Heart*, 91 (Suppl V), v1-v52.
- ⁹⁰ Medscape (2004) The Forgotten Cardiac Risk Factor: Noncompliance With Lipid-Lowering Therapy. *Medscape Cardiology*, 8 (2).
- ⁹¹ Cf. Bowling, A. et al. (2006) Variations in cardiac interventions: doctors' practices and views. *Family Practice*, 23 (4): 427-436.
- ⁹² Allender, S. et al. (2008) *Coronary heart disease statistics 2008 edition*. London, British Heart Foundation.
- ⁹³ Arrhythmia Alliance website (<http://www.heartrhythmcharity.org.uk>)
- ⁹⁴ Norrell, M.S. (2007) Cardiac service provision in the United Kingdom. *Clinical Medicine*, 7 (5): 461-466.
- ⁹⁵ NICE (2003) *Myocardial perfusion scintigraphy for the diagnosis and management of angina and myocardial infarction*. Technology appraisal 73. London, NICE.
- ⁹⁶ See Transplant UK Statistics at: <http://www.uktransplant.org.uk/ukt/statistics/statistics.jsp>
- ⁹⁷ See UK transplant statistics at: http://www.uktransplant.org.uk/ukt/statistics/transplant_activity_report/current_activity_reports/ukt/transplant_activity_uk_2006-2007.pdf
- ⁹⁸ Majeed, A. et al. (2005) Management of heart failure in primary care after implementation of the National Service Framework for Coronary Heart Disease: a cross-sectional study. *Public Health*, 119 (2): 105-111.
- ⁹⁹ Hoffman, A. et al. (2008) *National Sentinel Audit of Stroke 2008*. Clinical Standards Department, Royal College of Physicians of London.
- ¹⁰⁰ Candelise, L. et al. (2007) Stroke-unit care for acute stroke patients: an observational follow-up study. *The Lancet*, 369: 299-305.
- ¹⁰¹ Donnan, G.A. et al. (2008) Stroke. *The Lancet*, 371 (9624): 1612-1623.
- ¹⁰² Department of Health (2008) *End of Life Care Strategy*.
- ¹⁰³ Ibid.
- ¹⁰⁴ Bennett, P. (1994) Psychological Care of the Coronary Patient. *Journal of Mental Health*, 3: 477-484.
- ¹⁰⁵ Haworth, J. E., et al. (2007) An evaluation of two self-report screening measures for mood

in an out-patient chronic heart failure population. *International Journal of Geriatric Psychiatry*, 22: 1147-1153.

¹⁰⁶ Allender, S. et al. (2008) *Coronary heart disease statistics 2008*. London, British Heart Foundation.

¹⁰⁷ Ibid.

¹⁰⁸ The NHS Confederation. Website:

<http://www.nhsconfed.org/issues/about-1865.cfm#NHS-42877-1> (accessed June 2008)

¹⁰⁹ Lyratzopoulos, G. (2006) The cost of cardiovascular disease: rising, declining or staying still? *Heart*, 92: 1361-1362.

¹¹⁰ Khan, S. and Amedia, C.A. (2008) Economic burden of chronic kidney disease. *Journal of Evaluation in Clinical Practice*, 14 (3): 422-434.

¹¹¹ Davis, M. (2003) Current targets: where are we going? *Heart*, 89 (Suppl II): ii6-ii9.

¹¹² Ashworth M et al. (2007) The relationship between social deprivation and the quality of primary care: a national survey using indicators from the UK Quality and Outcomes Framework. *British Journal of General Practice*, 57: 441-448.

¹¹³ Chaturverdi, N. (2003) Ethnic differences in cardiovascular disease. *Heart*, 89: 681-686.

¹¹⁴ Boon, N. et al. (2006) National variations in the provision of cardiac services in the United Kingdom: second report of the British Cardiac Society Working Group, 2005. *Heart*, 92: 873-878.

¹¹⁵ Department of Health (2004) *National Service Framework for Renal Services*. London, Department of Health.

¹¹⁶ See <http://www.renal.org/ServiceProvision/servicefiles/VascAccessJWP0906.pdf>

¹¹⁷ Wolf et al. (1997), cited in Haslam and James (2005) Op cit.

¹¹⁸ Chertow, A.S. et al. (2004) Chronic kidney disease and the risks of death, cardiovascular events and hospitalisation. *N Eng J Med*, 351: 1296-305.

¹¹⁹ National Collaborative Centre for Chronic Conditions (2003) *Chronic Heart Failure. National clinical guideline for diagnosis and management in primary and secondary care. NICE Clinical Guideline*. London, Royal College of Physicians.

¹²⁰ Nicol et al. (2008) *NHS Heart Failure survey: a survey of acute heart failure admission in England, Wales and Northern Ireland*. *Heart*, 94: 172-177.

¹²¹ Department of Health (2000) *The NHS Plan: A Plan for investment, a Plan for Reform*. London, Department of Health.

¹²² Department of Health (2006) *Our health, our care, our say: a new direction for community services*. London, Department of Health.

¹²³ C.f. study of levels of social service provision among older people with heart failure in the UK. Access problems were a key issue, often based on lack of knowledge. See Gott, M. et al. (2007) Patient views of social service provision for older people with advanced heart failure. *Health and Social Care in the Community*, 15 (4): 333-342.

¹²⁴ Department of Health (2007) *Tackling health inequalities: 2004-06 data and policy update for the 2010 national target*. Department of Health.

¹²⁵ Department of Health (2008) *Carers at the heart of 21st-century families and communities*. HM Government.

¹²⁶ Shaffelburg, S. et al. (2008) (Unpublished report) *Caring for People Living with Heart Disease - Experiences of Informal Caregivers*. London, British Heart Foundation.

¹²⁷ See Hutton, J. et al. (2008) *Cardiovascular disease in England: Opportunities and challenges over the next ten years*. London, British Heart Foundation.

¹²⁸ The National Audit of Cardiac Rehabilitation: Annual Statistical Report 2007. Available at http://www.cardiacrehabilitation.org.uk/docs/NACR_2007.pdf (accessed April 2008).

¹²⁹ Up to 5,000 people with diabetes are reported to have had an amputation. See National Diabetes Support Team (2006) *Diabetic Foot Guide*.

¹³⁰ Wingham J. et al. (2006) Listening to patients: choice in cardiac rehabilitation. *Eur J Cardiovasc Nurs*, 5 (4): 289-94.

¹³¹ Jolly K. et al. (2005) Home-based cardiac rehabilitation compared with centre-based rehabilitation and usual care: a systematic review and meta-analysis. *Int J Cardiol*, 111(3): 343-51.

¹³² Lewin, B. et al. (2007) *The National Audit of Cardiac Rehabilitation Annual Statistical Report 2007*. British Heart Foundation. See:

http://www.cardiacrehabilitation.org.uk/docs/NACR_2007.pdf

¹³³ Taylor, R.S. et al. (2004) Exercise-based rehabilitation for patients with coronary heart

disease: systematic review and meta-analysis of randomized controlled trials. *Am J Med*, 116: 682–92.

¹³⁴ Gray, A.M., Bowman, G.S. and Thompson, D.R. (1997) The cost of cardiac rehabilitation services in England and Wales. *J R Coll Physicians Lond*, 31: 57–61.

¹³⁵ Ibid.

¹³⁶ Department of Health (2007) *The National Stroke Strategy*. Department of Health.

¹³⁷ The National Council for Palliative Care (2006) cited in Department of Health (2008) p47.

¹³⁸ Department of Health (2008) *End of Life Care Strategy: Promoting High Quality Care for all adults at the end of life*. Department of Health.

¹³⁹ Trelawney-Ross, C. & Russell, O. (1987). Social and psychological responses to myocardial infarction: multiple determinants of outcome at six months. *Journal of Psychosomatic Research*, 31: 125-130.

¹⁴⁰ Carney, R. M., et al. (1997) Depression and coronary heart disease: A review for cardiologists. *Clinical Cardiology*, 20: 196-200.

¹⁴¹ Lesperance, F. (1996) Major depression before and after myocardial infarction: its nature and consequences. *Psychosomatic Medicine*, 58: 99-110.

¹⁴² Haworth, J. E., et al. (2007) Op cit.

¹⁴³ Bennett, P. (1994) Op cit.

¹⁴⁴ Department of Health Press Release 24.06.08

<http://nds.coi.gov.uk/environment/fullDetail.asp?ReleaseID=371632&NewsAreaID=2&NavigatedFromDepartment=False> (accessed June 2008)

¹⁴⁵ Department for Children, Schools and Families (2005) *Nutritional Standards for school lunches and other school food: Final decisions on the report of the school meals review panel on school lunches and the advice of the school food trust on other school food*. London <http://www.dfes.gov.uk/consultations/conresults.cfm?consultationId=1319>

¹⁴⁶ Lyratzopoulos, G. (2006) The cost of cardiovascular disease: rising, declining or staying still? *Heart*, 92: 1361-1362.

¹⁴⁷ Capewell, S. et al. (2008) Op cit.

¹⁴⁸ Luengo-Fernandez, L.J. et al. (2006) Cost of cardiovascular diseases in the United Kingdom. *Heart*, 92: 1384-1389.

¹⁴⁹ UKCRC reports *UK Health Research Analysis* and *From Donation to Innovation*. See http://www.ukcrc.org/pdf/From_Donation_to_Innovation_Report_07.pdf

¹⁵⁰ Peterson, S., Peto, V. and Rayner, M. (2003) *Congenital heart disease statistics 2003*. British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford.

¹⁵¹ Grown Up Congenital Heart Disease (GUCH): <http://www.guch.org.uk/chd> (accessed June 2008).

¹⁵² Brown, K.L. et al. (2006) Delayed diagnosis of congenital heart disease worsens preoperative condition and outcome of surgery in neonates. *Heart*, 92: 1298-1302.

¹⁵³ Bull, C. (1999) Current and potential impact of foetal diagnosis on prevalence and spectrum of serious congenital heart disease at term in the UK. *Lancet*, 354 (9186): 1242-1247.

¹⁵⁴ Sommerville, J. (2002) Grown-up congenital heart disease: current needs and provision of service for adolescents and adults with congenital heart disease in the UK, *Heart*, 88 (Suppl I): i1-i14.

¹⁵⁵ Warnes, C.A. et al. (2001) Task Force 1: The changing profile of congenital heart disease in adult life. *Journal of the American College of Cardiology*, 37 (5).

¹⁵⁶ Deanfield, J. et al. (2003) Management of grown up congenital heart disease, The task force on the management of grown up congenital heart disease of the European Society of Cardiology. *European Heart Journal*, 24: 1035-1084.

¹⁵⁷ Department of Health (2003) *Report of the Paediatric and Congenital Cardiac Services Review Group*. Department of Health.

¹⁵⁸ Sommerville, J. (2002) Grown-up congenital heart disease: current needs and provision of service for adolescents and adults with congenital heart disease in the UK. *Heart*, 88(Suppl I): i1-i14.

¹⁵⁹ British Cardiac Society (2002) Grown-up congenital heart (GUCH) disease: current needs and provision of service for adolescents and adults with congenital heart disease in the UK, *Heart*, 88 (Suppl I): i1-i14.