This is the full version of the Cardiac Disease NSF for Wales and will supercede the Interim Version which is currently on the Cardiac Networks website.

It differs from the Interim Version by:

- The inclusion of Standard 7 on Adult Congenital Heart Disease
- An amended paragraph which clarifies the provision of Cardiac Rehabilitation.
- Updated NICE References
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Foreword

I am pleased to issue the Wales National Service Framework (NSF) for Cardiac Disease. This has been developed with extensive involvement of interested groups and individuals and contains seven Standards relating to the prevention and treatment of cardiac disease.

The ultimate purpose of a National Service Framework is to improve health outcomes. This NSF takes account of the latest scientific and clinical evidence and so provides an up to date basis for planning and developing services for the prevention and treatment of cardiac disease.

We have the opportunity and duty to improve services for the prevention and treatment of cardiac disease in Wales. By rising to this challenge together – communities, individuals, patients, carers and the NHS in Wales - we will save lives, now and in the future, and improve the quality of life for people in Wales by preventing and treating cardiac disease.

Edwina Hart
Minister for Health and Social Services
Introduction

Updating the National Service Framework: The Process

I The Wales National Service Framework (NSF) for Coronary Heart Disease (CHD) *Tackling Coronary Heart Disease in Wales: implementing through evidence* was first published by the Welsh Assembly Government in 2001\(^1\). Since then *Designed for Life*\(^2\), the *Review of Health and Social Care in Wales*\(^3\), the *Health Evidence Bulletin Wales: Coronary Heart Disease*\(^4\) and other scientific evidence on the prevention and treatment of cardiac disease have been published. Also, Wales has learnt from its experience of implementing the National Service Framework. As a result, it is now timely for the Coronary Heart Disease National Service Framework to be updated and published as the NSF for Cardiac Disease.

II The updating process has been achieved in a variety of ways. For Standard 1, the Public Health Improvement Division within the Department of Public Health and Health Professionals at the Welsh Assembly Government has revised and updated the Standard relating to the primary prevention of coronary heart disease. Development Groups of users, providers and commissioners of services were brought together to update Standards 2, 3, 4, 5 and 7. Standard 6 on cardiac rehabilitation has built on the work of the All Wales Cardiac Rehabilitation Working Group. The draft updated NSF was circulated for comment to a range of clinical, managerial and patient groups at both regional and all-Wales levels, using existing network and professional groups.

III The title of the NSF has also been updated to reflect the inclusion of more detail on arrhythmias – many of which do not result from coronary heart disease but from disease of the heart’s electrical systems, and the care of adults with congenital heart disease. The updated NSF, like the original version, covers only adults. The needs of children with heart disease are covered by the All Wales Standards for Paediatric and Congenital Cardiac Services\(^5\).

IV Many of the reference documents used to develop this updated NSF are relevant to several sections of the standards. The reference is included in a

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1 National Assembly for Wales, 2001, *Tackling Coronary Heart Disease in Wales: implementing through evidence*. Cardiff, NAW (This document is commonly referred to as the Wales National Service Framework for CHD)
4 National Public Health Service for Wales, 2004.*Health Evidence Bulletin Wales: Coronary Heart Disease*, Cardiff, NPHS
5 Welsh Assembly Government, 2006, *All Wales Standards for Paediatric and Congenital Cardiac Services, Children and Young people’s Specialised Healthcare Services Consultation Document*, Cardiff, WAG
footnote where a specific source is referenced. References are given at the end of each Standard to sources which have been used to underpin the general direction. These references are not related to individual sections of the text as this proved cumbersome and repetitive.

The Updated National Service Framework: The Structure

V In updating the original NSF, the policy statements on what people in Wales should expect from NHS services for cardiac disease remain largely the same, with the exception of Standards 5 and 7.

VI Standard 1 focuses on six factors for which there is the best evidence of effective interventions – tobacco use, physical activity, nutrition, the school and workplace environment, and socio-economic disadvantage. Standards 2 and 3 have been updated to reflect the most recent clinical guidelines. Detail has been added to the original Standard 4 on providing diagnosis, treatment and care for people with chronic heart failure. The creation of a separate Standard for cardiac rehabilitation, Standard 6, has also allowed the inclusion of more detail than appeared in the original document. Standard 5 in this document includes all aspects of the treatment of arrhythmias and sudden cardiac death – based on chapter 8 of the English NSF\(^6\). Standard 7 addresses the treatment of adults with congenital heart disease. All the Standards have been made consistent with Designed for Life.

VII Each Standard describes the key interventions required in order to achieve the policy statements. Each intervention is set in context in order to make it meaningful for those without detailed clinical knowledge of cardiac disease.

VIII Aspects of treatment and care which relate to all Standards have been brought together in a section entitled ‘Cross-Cutting Interventions’.

IX In order to support implementation of this updated NSF, Quality Requirements for each Standard have been developed. The Quality Requirements are a tool for clinicians and managers to use in improving their services; they outline the staffing, facilities, policies and procedures which should be in place when the NSF has been fully implemented. The Quality Requirements are written in a format suitable for use in self-assessment or peer review. They also allow for the updating of Cardiac Network and local policies as new clinical evidence is produced – thereby ensuring that the most up to date treatment and care is available.

X The aim is that, subject to the availability of resources, this updated National Service Framework will be implemented by 2015. By that time, new evidence of effective interventions will have been produced. It is

\(^6\) Department of Health, 2005, National Service Framework for Coronary Heart Disease, Chapter Eight: Arrhythmias and Sudden Cardiac Death. London, Department of Health
therefore recommended that this updated NSF is itself reviewed, at the latest, by 2015.

The Updated National Service Framework: Supporting the vision for 2015

XI  *Designed for Life* outlines the kind of health and social care services that the people of Wales can expect by 2015. The aim is to:

- Improve health and reduce, and where possible eliminate, inequalities in health.
- Support the role of citizens in promoting their health, individually and collectively.
- Develop the role of local communities in creating and sustaining health.
- Promote independence, service user involvement and clinical and professional leadership.
- Re-cast the role of all elements of health and social care so that the citizen will be seen and treated by high quality staff at home or locally – or passed quickly to excellent specialist care, where this is needed.
- Provide quality assured clinical treatment and care appropriate to need, and based on evidence.
- Strengthen accountability, developing a more corporate approach in NHS Wales so that organisations work together rather than separately.
- Ensure full public health engagement at both local and national levels.

The delivery of the Standards set out in this document will result in services for the prevention and treatment of cardiac disease which meet these aims of *Designed for Life*.

Links with Healthcare Standards

XII  *Healthcare Standards for Wales*\(^7\) set out the Welsh Assembly Government’s common framework of healthcare standards to support the NHS and partner organisations in providing effective, timely and quality services across all healthcare settings. It confirmed that the Healthcare Standards would be used by Healthcare Inspectorate Wales (HIW) as part of their processes for assessing the quality, safety and effectiveness of healthcare providers and commissioners across Wales.

XIII  There are 32 healthcare standards covering four domains – *First Domain: The Patient Experience, Second Domain: Clinical Outcomes, Third Domain: Healthcare Governance and the Fourth Domain: Public Health*. These are

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designed to deliver the improved levels of care and treatment the people of Wales have a right to expect. These standards will be taken into account by those providing healthcare, regardless of the setting. The statements in each Standard of this updated NSF have been mapped to the relevant Healthcare Standards and are denoted in brackets (for example: HcS 1)

XIV National Service Frameworks (NSFs) are viewed as a key component of the Welsh Assembly Government drive to raise the quality and safety of patient care; they are vital in supporting local improvements in service quality. Healthcare organisations will need to demonstrate that they are making progress against the quality requirements described.

Acknowledgements

XV Many people have contributed to the updating of the NSF and their contributions are gratefully acknowledged. Details are included in Appendix 1.
Background

XVI This section summarises the burden of premature death and ill health which cardiac disease places on the Welsh nation, and the distribution of risk factors – which predict the level of disease in the future. A more detailed analysis of the epidemiology of coronary heart disease, arrhythmias, and congenital heart disease including reference sources, is given in Appendix 2.

XVII Coronary heart disease (CHD) is common. In Wales in 2004 coronary heart disease was responsible for over 6,000 deaths – just under 19% of all deaths. Death rates from coronary heart disease in Wales have been falling over the past three decades; they are higher than those in England and many other developed countries, but lower than Northern Ireland and Scotland. Within Wales, the death rate from coronary heart disease varies considerably, with the highest rates in the south Wales valleys and north east Wales. The death rate in the most deprived fifth of wards is almost a third higher than in the least deprived fifth.

XVIII Heart Failure is the only major cardiovascular disease with increasing incidence and prevalence mainly due to the greater number of survivors of myocardial infarction, and the increasingly elderly population. Based on UK estimates, approximately 45,000 people aged 45 years and over have heart failure in Wales today.

XVIX Arrhythmias account for more than 3,000 sudden deaths each year in Wales. Many out of hospital cardiac arrests are due to arrhythmias and have a 94% fatality rate. Arrhythmias also place a considerable burden of disease on Welsh communities. Approximately 3 to 5% of attendances at emergency departments and 1 to 3% of hospital admissions are due to transient loss of consciousness. Many of these patients will have arrhythmias. The prevalence of atrial fibrillation increases with each advancing decade of age, from 0.5% at age 50 to 59 years to almost 9% at age 80 to 89 years. Atrial fibrillation is associated with a five fold increased stroke risk compared to people without atrial fibrillation and the incidence of strokes attributable to atrial fibrillation increases from 1.5% at age 50 to 59 years to 23.5% at age 80 to 89 years.

XX In Wales, around 425 children are born with congenital heart disease each year, that is, about 1.3% of live births per year. Survival rates have improved significantly over the last fifty years. About 90% of children with congenital heart disease now survive their first year of life and about 80 to 85% survive into adulthood. As a result, there are more adults than children with congenital heart disease in Wales. The total number of adults with congenital heart disease is, however, difficult to estimate as, in the past, many were seen by non-specialists and are no longer followed up by these services. In 2001, the number of Welsh adults with congenital heart
disease was estimated at about 7,800 and is expected to grow by 10% per year for the foreseeable future. As survival rates improve, a higher proportion will have more complex conditions. Although most congenital heart disease is diagnosed in childhood, a small number of people will present with their condition in adult life.

XXI Coronary heart disease is a largely preventable cause of ill health and premature death with smoking being the major cause. Every year around 6,000 smokers in Wales die as a result of their habit, with smoking estimated to cause 17% of all deaths from coronary heart disease. Around a quarter of adults report that they currently smoke. Smoking amongst adolescent boys has been falling in recent years but has not similarly reduced among girls. Smoking in the most deprived fifth of wards in Wales is more than one and a half times more common than in the least deprived wards.

XXII Only 41% of adults in Wales report eating five or more portions of fruit and vegetables per day and over 54% of the adult population of Wales are overweight or obese. It has been estimated that eating the recommended amount of fruit and vegetables could lead to a reduction of up to 20% in overall deaths from coronary heart disease. Only 29% of adults report that they met the guidelines for physical activity in the previous week. People living in the most deprived fifth of wards in Wales are less likely to have a healthy diet, more likely to be physically inactive and more likely to be obese.

XXIII Access to services does not yet match the relatively high rates of coronary heart disease and arrhythmias in Wales. Rates of percutaneous coronary interventions (PCIs) are lower in Wales than the rest of the UK and than in other developed countries. The rate of pacemaker implantation in 2003 and 2004 for Wales was 290.7 per million population compared with 411.3 per million population for England. Access to revascularisation and pacemaker implantation rates varies across Wales with the most deprived areas generally having the lowest access to these services.

**Cardiovascular disease and coronary heart disease**

XXIV Cardiovascular disease (CVD) is defined as 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

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8,9 Welsh Assembly Government (2008), *Welsh Health Survey 2007*, Cardiff, WAG
reaching the heart) and other forms of chronic heart disease. Angina is usually classified as stable or unstable disease. Other forms of CVD include stroke, transient ischaemic attack and peripheral arterial disease. People with acute coronary syndromes include patients with acute myocardial infarction, unstable angina and sudden cardiac death.

XXV Most of the risk factors for CHD are also risk factors for other forms of CVD. This NSF therefore refers to CVD when discussing risk reduction and to CHD when referring to specific treatments.
Standard 1

Promoting healthy hearts

Individuals and communities have the support they need to increase protective factors and reduce risk factors for cardiovascular disease.

INTRODUCTION

1.1 A range of factors, including genetic, environmental and lifestyle issues, can either protect individuals and communities from cardiovascular diseases or lead to a higher risk of developing these diseases. This Standard focuses on six factors for which there is the best evidence of effective interventions – tobacco use, physical activity, nutrition, the school and workplace environment, and socio-economic disadvantage. Appendix 2 gives more detail on the distribution within Wales of both protective and risk factors.

1.2 This Standard describes the actions that the NHS, in partnership with Local Authorities, the voluntary sector and others, should be taking to develop, implement and monitor evidence-based programmes that support the people and communities of Wales, especially those in the most disadvantaged areas, to increase protective factors and reduce risk factors for cardiovascular disease. The Standard builds on the Review of Health and Social Care in Wales\(^\text{10}\) and Designed for Life\(^\text{11}\) - both of which have called for more emphasis on preventing problems rather than waiting for them to occur. It also builds on other initiatives, such as the Inequalities in Health Fund, and provides the NHS and its partners with action which can contribute to Health Challenge Wales\(^\text{12}\) and the requirements of A Healthy Sustainable Wales - The NHS Contribution\(^\text{13}\). (Healthcare Standard (HcS ) 1,2,6,10,12,28,29,30,31)\)

1.3 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: user involvement; care pathways; workforce; facilities; equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and funding aspects of this Standard. The Wales Quality

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\(^{10}\) Welsh Assembly Government, 2003, Review of Health and Social Care in Wales (advised by Derek Wanless), Cardiff, WAG

\(^{11}\) Welsh Assembly Government, 2005, Designed for Life: Creating world class health and Social Care for Wales in the 21st Century, Cardiff, WAG

\(^{12}\) http://new.wales.gov.uk/topics/health/improvement/hcw

Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

1.4 Based on the description of actions described in Standard 1, the relevant healthcare standards that map across are: planning and funding of services (HcS 2); individual requirements are met (HcS 9); clinical care based on evidence based practice (HcS 11); information provision to patients (HcS 6); patients provided with care based on best practice (HcS 12); the continuing professional development of staff (HcS 22); disease prevention and health promotion (HcS 29, 30 and 31), and the corporate health standard (HcS 32).

Health Challenge Wales

1.5 The *Review of Health and Social Care in Wales*\(^\text{14}\) recommended that citizens and communities should take greater responsibility for their own health, in particular:

- individuals must take more responsibility for their own health
- parents are responsible for their children’s health
- everybody must be responsible for using services properly
- capacity-building is critical for some groups of citizens and communities
- there must be an emphasis on the risk factors of major diseases, such as heart disease, lung cancer and diabetes
- there must be a focus on young people and children and older people
- more effective management of conditions of diseases can minimise their impact
- actions should be based on evidence from enhanced research.

1.6 *Health Challenge Wales*\(^\text{15}\) is the national focus for efforts to improve health and prevent ill-health (Box 1). It calls on individuals to do as much as they can to look after their own health and the health of their families and communities, with the key message - ‘small steps to a healthier you’. It also calls on all organisations to create the conditions that encourage and support good health. This is particularly important for people from disadvantaged communities who are most likely to experience barriers to adopting a healthier lifestyle. Through local partnerships, NHS organisations, Local Authorities, Primary Care services and partner organisations should continue to support *Health Challenge Wales*. Those

\(^{14}\) Welsh Assembly Government, (2003), *Review of Health and Social Care in Wales (advised by Derek Wanless)*, Cardiff, WAG  
\(^{15}\) [www.wales.gov.uk/healthchallenge](http://www.wales.gov.uk/healthchallenge)
working in disadvantaged communities should give particular emphasis to this work. Cardiac Networks, the National Public Health Service and the National Leadership and Innovation Agency for Healthcare should support and, where appropriate, lead this work and ensure that good practice is disseminated.

**Box 1: Health Challenge Wales – Main themes relevant to cardiovascular health**

- Do not smoke
- Eat at least five portions of fruit or vegetables each day
- Eat the right amount to be a healthy weight
- On at least five days of each week take 30 minutes or more of moderate intensity physical exercise

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**EVIDENCE BASE**

1.7 A range of evidence base was used in developing the recommendations in this Standard. Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

**KEY INTERVENTIONS**

**Tobacco use**

1.8 Smoking is the major preventable cause of illness and death in Wales. Smoking is harmful to the smoker and also to those who breathe second-hand smoke. Every year around 6000 smokers in Wales die as a result of their habit, with smoking estimated to cause 17% of all deaths from coronary heart disease. The Welsh Assembly Government implemented a ban on smoking in all enclosed public places from April 2007.\(^{16}\) NHS organisations and Primary Care services must implement ‘smoke-free’ policies for their premises.\(^{17}\) Through local partnerships they should actively support other local organisations and employers in implementing ‘smoke-free’ policies. (HcS 29, 30, 31)

1.9 Smokers who access smoking cessation support are more likely to be successful in their attempts to stop smoking. Two forms of smoking cessation support have been shown to be the most effective – brief

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\(^{16}\) [www.smokingbanwales.co.uk](http://www.smokingbanwales.co.uk)

opportunistic advice by health professionals and specialist smoking cessation services.

1.10 In Primary Care, brief opportunistic advice\(^\text{18}\) is encouraged through the ‘Quality and Outcomes Framework’ for general practice and the ‘Promotion of healthy lifestyles (Public Health)’ element of the new pharmacy contract. General practices should ensure that all patients who smoke are advised at least once a year to give up smoking. If appropriate, patients who smoke should be offered referral to the Stop Smoking Wales service and / or a prescription for nicotine replacement therapy. Pharmacists, dentists and other Primary Care workers should take all opportunities to encourage smokers to quit, advise on ‘quit strategies’ and give information on cessation support services and nicotine replacement therapy. This work should be supported through the provision of information and training. (HcS 6, 11, 22)

1.11 The new LHBs in Wales should adopt the good practice in smoking cessation outlined in the Welsh Health Circular Guidance on Smoking Cessation for NHS Trusts\(^\text{19}\) which covers both brief opportunistic advice and referral to specialist smoking cessation services. (HcS 12) This includes supporting the new pre-operative smoking cessation service from Stop Smoking Wales.

1.12 The Stop Smoking Wales Service (SSW) is run by the National Public Health Service\(^\text{20}\). The SSW offers a standardised approach to smoking cessation across Wales. The service is expected to pay particular attention to pregnant smokers, smokers from manual social groups and smoking cessation for young people. All clients are offered an initial consultation or a group information service. The majority then receive weekly support for six weeks. In rural areas, telephone and email support are also offered. SSW also provides a national monitoring system for smoking cessation.

1.13 Those responsible for healthcare planning and funding should consider whether SSW is able to meet the needs of their area and, if necessary, plan and fund additional capacity. Co-ordination between Primary Care and hospital-based smoking cessation work and SSW should continue to be encouraged. (HcS 2)

1.14 The uptake of smoking is a complex process and no single intervention will be successful with all young people. The Welsh Assembly Government has developed a co-ordinated range of initiatives targeted at young people of different ages, including Smoke Signals and the Smokebugs! Club for primary school children and the Smokefree Class Competition and Burning


WHC(2006)17, Cardiff, Welsh Assembly Government,

\(^{20}\) This is accessible through a free telephone number 0800 085 2219
Issues for secondary schools. From Summer 2007, ASSIST, a peer-led intervention, has been offered to an increasing number of Year 7 and 8 children. Those organisations responsible for the planning and funding of services, Local Authorities and the National Public Health Service should work together to ensure that all children are offered all elements of the national smoking prevention programme and that, where necessary, these are complemented by local evidence-based initiatives.

Nutrition and physical activity

1.15 Diet plays an important role in the development of cardiovascular disease. The type and amount of fat consumed is linked to the risk of developing coronary heart disease, and salt intake is linked to the risk of high blood pressure. In both cases, high levels are related to an increased risk. Increased fruit and vegetable consumption reduces the risk of developing coronary heart disease and eating at least five portions of fruit and vegetables a day could reduce deaths from coronary heart disease by 20%. Obesity has both a direct and indirect impact on rates of CHD. It is an independent risk factor for the development of CHD and is associated with higher rates of hypertension, hyperlipidaemia and insulin resistance. 57% of the population of Wales are overweight or obese.

(HcS 29, 30, 31)

1.16 There is also a clear link between physical activity and health, with low physical inactivity levels being a major independent risk factor for coronary heart disease. A wide variety of approaches can be taken to increasing healthy eating and activity levels - from environmental measures to targeted behavioural change programmes. These can involve a wide range of health and other professionals and public and private bodies. Brief opportunistic advice from health professionals has been shown to be effective in improving diet and activity levels. More robust evidence is generally considered necessary in relation to other approaches.

1.17 NHS organisations, Local Authorities and partner organisations should develop and implement linked local nutrition and physical activity action plans. These should link to the local ‘Health, Social Care and Well-Being Strategy’ and take account of the Welsh Assembly Government’s Climbing Higher – Creating an Active Wales, Food and Fitness: Promoting Healthy Eating and Physical Activity for Children and Young People in Wales and

Food and Well-being (and subsequently Quality of Food for All Action Plan) strategic documents\textsuperscript{25}. Because of the need for more robust evidence, local partnerships should ensure that evaluation and monitoring are built into their planned activity. The Welsh Assembly Government will continue to work with NPHS and others on aligning nutrition and physical activity plans.\textsuperscript{26} (HcS 2)

1.18 Health professionals can play a significant role in encouraging, advising and supporting people to eat healthily and become more active - particularly if verbal advice is backed up with written materials and reinforced regularly\textsuperscript{27}. General practices and other health professionals should ask their patients about their diets and levels of physical activity and, if appropriate, advise, encourage and support them to eat more healthily and increase their activity levels. This work should be supported by NHS organisations through the provision of information, training and tools. (HcS 22)

1.19 Exercise referral schemes are being enhanced across Wales as part of the response to Health Challenge Wales. This national programme of work is being rolled out across all NHS Wales organisations and areas over a three year period from 2007. Local Authorities and their partners should support the national exercise referral initiative,\textsuperscript{28} ensure that all exercise referral schemes in their area conform to the national standard protocol and take account of the results of the exercise referral trial (when available). (HcS 29,30,31)

Schools

1.20 Local ‘healthy school’ schemes have been set up in all areas of Wales and have been accredited through the Welsh Assembly Government’s Welsh Network of Healthy Schools Scheme\textsuperscript{29}. The scheme covers all aspects of health for pupils and staff, with a recommendation that all schools include food and fitness actions during their involvement. Local partnerships should encourage and support participation in the Welsh Network of Healthy School Scheme and ensure that all maintained schools are involved by March 2010. (HcS 29)

\textsuperscript{25} The Food Standards Agency and the Welsh Assembly Government, (2003) Food and Wellbeing: reducing inequalities through a nutrition strategy, Cardiff, FSA and WAG
\textsuperscript{27} NICE (2006) Public Health Intervention Guidance 2: Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community based exercise programmes for walking and cycling.
Workplace

1.21 In Wales, the NHS, Local Authorities and the Welsh Assembly Government have been encouraged to participate in the Corporate Health Standard initiative, the national mark of quality for health and well-being activity in the workplace. The Welsh Assembly Government has also developed a Small Workplace Award to support these businesses in promoting health and well-being at work. All new LHBs should work towards achieving Gold or Platinum level of the Corporate Health Standard\textsuperscript{30} by 2011. NHS organisations and the NPHS should also ensure that there is local support for organisations wishing to engage with the Corporate Health Standard and the forthcoming small workplace award. (HcS 32)

Socio-economic disadvantage

1.22 Several of the risk factors for cardiovascular disease vary with social class, with deprived communities usually having the least protective factors and the highest risk factors. Rates of coronary heart disease and arrhythmias are highest in the most deprived communities and access to treatment is generally lower in these areas (see Appendix 2 for more detail). The Welsh Assembly Government is committed to reducing health inequalities, including those relating to cardiovascular disease, and a target to improve mortality from coronary heart disease in all groups with more rapid improvement in the most deprived groups has been set. Indications show that Wales is on track to meet this target, although if a reduction in the gap between the best and the worst is to be achieved, then there will need to be a continued focus on targeting the most deprived parts of the community. A wide range of Welsh Assembly Government policies contribute to the achievement of this target including the Communities First initiative, Wales: A Vibrant Economy\textsuperscript{31} and Food Cooperative Initiative. Local partnerships should be actively involved with programmes to tackle economic and social deprivation and should ensure that their work on smoking cessation and promoting healthy lifestyles is targeted at the most disadvantaged communities. (HcS 31 and 31)

REFERENCES


\textsuperscript{31} Welsh Assembly Government (2003) Communities First Initiative, Wales: A Vibrant Economy, Cardiff, WAG
overweight, obesity and chronic diseases. Brussels, Commission of the European Communities,


National Assembly for Wales (2005) Committee on smoking in public places report. National Assembly for Wales, Cardiff


National Institute for Health and Clinical Excellence (2006) Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling. London, NICE.


The National Health Service (Pharmaceutical Services) Regulation 2005 Number 641, ISBN 0110725581
Available from: http://www.psnc.org.uk

Standard 2

Managing risk factors for cardiovascular disease: Preventing further heart damage in those with high risk factors or established disease

Each person who may be at high risk of developing cardiovascular disease is offered multi-factorial risk assessment. All those found to be at high risk, and people with established coronary heart disease, occlusive arterial disease, diabetes or familial hypercholesterolaemia, are offered lifestyle advice and appropriate treatment to reduce their risks.

INTRODUCTION

2.1 Standard 1 of this National Service Framework describes the actions to be taken at a population level, and at an individual level, to reduce risk factors for cardiovascular disease. Standard 2 deals with prevention of cardiovascular disease in people at high risk of developing the disease and secondary prevention in those people who already have cardiovascular disease.

2.2 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathways; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and funding aspects of this Standard. The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

2.3 Based on the description of actions described in Standard 2, the relevant healthcare standards that map across are based on: the planning and development of services reflecting the needs of the population served and equity and access to services (HC5 1 and HC5 2); information provision to patients (HC5 6); patients developing competence in self-care (HC5 7); patients provided with care based on best practice (HC5 12); risk assessment of patients needs (HC5 2, HC5 14 and HC5 27); the continuous professional development of staff and occupational development (HC5 22), and health-related targets (HC5 28).
EVIDENCE BASE

2.4 The evidence base for the recommendations in this Standard is guidance issued by the National Institute for Health and Clinical Excellence (NICE). NICE has produced guidance on the management of hypertension in adults in primary care\textsuperscript{32}, management of blood pressure and blood lipids in type 2 diabetes\textsuperscript{33}; on diagnosis and management of type 1 diabetes\textsuperscript{34}; for lipid modification in the primary and secondary prevention of cardiovascular disease,\textsuperscript{35} and for the identification and management of familial hypercholesterolaemia.\textsuperscript{36} Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

KEY INTERVENTIONS

2.5 People who may be at high risk of developing cardiovascular disease should be identified and offered lifestyle advice and appropriate treatment to reduce their risks (Box 2). (HcS 6)

\textsuperscript{34} National Institute for Health and Clinical Excellence, (2004), \textit{Type 1 diabetes: Diagnosis and management of type 1 diabetes in children, young people and adults}, Clinical Guideline 15, NICE, July 2004.
**Box 2: Priorities for CVD prevention in clinical practice**

CVD prevention in clinical practice should focus on all those people who are at **high risk**, and the following groups of people have **equal priority** for CVD prevention in clinical practice:

- People with any form of established athero-sclerotic cardiovascular disease (CVD).
- Asymptomatic people without established CVD but who have a combination of risk factors which puts them at high total risk (estimated multifactorial CVD risk ≥ 20% over 10 years) of developing atherosclerotic CVD for the first time.
- These groups require professional lifestyle and multifactorial risk factor management to defined lifestyle and risk factor targets.

- Other people with particularly elevated single risk factors also require CVD prevention because they too are at high cardiovascular risk, regardless of the presence of other risk factors, including people with familial dyslipidaemia, such as familial hypercholesterolaemia or familial combined hyperlipidaemia. [37]
- People with a family history of premature cardiovascular disease should also be assessed for their cardiovascular risk and then managed appropriately according to the latest national guidance.

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**Identification of people at high risk**

2.6 Most people at high risk or with established cardiovascular disease will be identified through their General Medical Practice. They will either present with related symptoms or be identified by the practice when they attend for other reasons. General Practices should implement systematic arrangements for identifying people potentially at high risk of cardiovascular disease, and those with established disease. Many practices already have these arrangements in place and monitor these through the Quality and Outcomes Framework of their contract for General Medical Services. Some people will be found to have cardiovascular disease only when admitted to hospital for acute coronary syndrome, diabetes, stroke or other conditions.

2.7 Those responsible for the planning and funding of community NHS services should consider the need for risk assessment programmes for population

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[37] The Joint British Societies’ Guidelines specifically recommend that professional lifestyle and multifactorial risk factor management should be offered to the following groups with the aim of achieving defined lifestyle and risk factor targets:

- People with elevated blood pressure ≥160mm Hg systolic or ≥100 mm Hg diastolic, or lesser degrees of blood pressure elevation with target organ damage.
- People with elevated total cholesterol to high density lipoprotein (HDL) ratio ≥6.0.
- People with diabetes mellitus (type 1 or 2).
groups who may be unwilling or unable to access services in general practice, including people who are house-bound. NHS organisations within a Cardiac Network may wish to work together on risk assessment programmes for particular vulnerable and ‘hard to reach’ groups. The primary care resource centres outlined in Designed for Life could provide the focus for such programmes. Programmes run by community pharmacies could be another approach, using the flexibility within the 2005 Pharmacy Contract.\(^{38}\) Wherever risk assessment programmes are run, they should be provided to the same standard and by staff with the appropriate skills and competencies. (HcS 2, 14, 16)

2.8 Familial hypercholesterolaemia (FH) and some other inherited dyslipidaemias carry a higher risk of coronary heart disease than predicted from published risk charts. Services should be developed for detection of patients with familial hypercholesterolaemia, including “cascade testing” within families.\(^{39}\) (HcS 1 and 2)

2.9 People of all ages who may be at high risk of developing cardiovascular disease should be considered for risk assessment and treatment of risk factors. (HcS 2, 14, 27)

2.10 For people who are not known to have pre-existing cardiovascular disease, risk assessment should include ethnicity, smoking history, family history of diabetes, hypertension and other cardiovascular diseases, and measurements of body mass index (BMI), blood pressure, non-fasting lipids (total cholesterol and HDL cholesterol) and non-fasting glucose. This information should be used for formal calculation of the risk of developing cardiovascular disease. Each General Practice (or other risk assessment programme) should ensure that the risk calculation tool they use has been shown to produce risk calculations that are consistent with the latest evidence-based guidelines.

2.11 People who are found not to be at high risk should have their risk assessment repeated, ideally within five years.

\(^{38}\) The National Health Service (Pharmaceutical Services) Regulation 2005 Number 641, ISBN 0110725581

Available from: http://www.psn.org.uk

\(^{39}\) Further information on the Department of Health familial hypercholesterolaemia project can be found at www.londonideas.org/internet/FHCascade/. Diagnosis and management of familial hypercholesterolaemia (FH) is the subject of a guideline by NICE (National Institute of Clinical Excellence) issued in August 2008.

Reducing risk factors in people at high risk of cardiovascular disease

2.12 Everyone with raised risk factors for cardiovascular disease (Box 2) should have their risk factors and medication reviewed at least annually\(^{40}\) and be offered lifestyle advice and treatment to reduce their risk factors. Lifestyle advice and information should include advice on recognition of the symptoms and signs of acute myocardial infarction and the action to take should these symptoms occur\(^{41}\).

2.13 Treatment of risk factors should be offered to all those with raised risk factors including, where applicable:

- Support for smoking cessation\(^{42}\).
- Programmes on diet, physical activity and weight control\(^{43}\).
- Antiplatelet therapy – usually low dose aspirin (75mg daily).
- Lipid reduction\(^{44}\) therapy.
- Control of hypertension.

2.14 Decisions about the appropriateness of risk factor management and treatment should take into account the person’s age and general state of health, whether their life expectancy and / or quality of life will be improved by the treatment offered and whether there are any contraindications to the proposed treatment.

2.15 People with familial hypercholesterolaemia have a high risk of developing cardiovascular disease due to raised low density lipoprotein (LDL) cholesterol and should be offered specific LDL cholesterol lowering treatment in addition to lifestyle advice and treatment of other risk factors.

2.16 People with diabetes and occlusive arterial disease (or other cardiovascular disease of non-CHD aetiology) should be offered treatment for their condition as indicated by the relevant national guidance. (HcS 12)

2.17 Patients with established CHD should be offered cardiac rehabilitation (Standard 6) although there is not yet sufficient evidence to recommend

\(^{40}\) Practices should be aiming for annual review. The Quality and Outcomes Framework allows 15 months – which is a minimum frequency for review.

\(^{41}\) See standard 3 for further detail.

\(^{42}\) These programmes are described in detail in Standard 1 of this National Service Framework.

\(^{43}\) Some of these programmes are described in detail in Standard 1 of this National Service Framework.

\(^{44}\) The term ‘lipid reduction’ is used throughout this updated NSF in order to give a simple message. ‘Lipid modification’, aimed at achieving the targets shown in box 3, is the strictly correct terminology.
this for patients with stable angina unless they have ‘limiting symptoms’. Basic life support training should also be offered to all patients at high risk of developing coronary heart disease and to their carers. (HcS 7)

2.18 Box 3 shows the current lifestyle and risk factor targets towards which all those at high risk should be aiming.

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**Box 3: Lifestyle and risk factor targets**

**Lifestyle targets:**
- Discontinue smoking.
- Achieve optimal weight and weight distribution through healthier food choices and increased aerobic physical activity:
  - Eat at least five portions of fruit or vegetables each day
  - On at least five days of each week take 30 minutes or more of moderate intensity physical exercise

**Risk factor targets as referenced in NICE Guidelines:**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Target level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood pressure</strong></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>Systolic</td>
</tr>
<tr>
<td>&lt; or = 140 mm Hg</td>
<td>Diastolic</td>
</tr>
<tr>
<td>If type 2 diabetes:</td>
<td>&lt; or = 90 mm Hg</td>
</tr>
<tr>
<td>If type 2 diabetes and microalbuminuria or proteinuria:</td>
<td>&lt; 140 mm Hg</td>
</tr>
<tr>
<td>If type 1 diabetes:</td>
<td>&lt; 135 mm Hg</td>
</tr>
<tr>
<td>If type 1 diabetes and nephropathy or abnormal albumin excretion or two or more features of metabolic syndrome</td>
<td>&lt; 130 mm Hg</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td></td>
</tr>
<tr>
<td>Secondary prevention</td>
<td>Total</td>
</tr>
<tr>
<td>&lt;4.0 mmol/l</td>
<td>LDL</td>
</tr>
<tr>
<td>&lt;2.0 mmol/l</td>
<td></td>
</tr>
<tr>
<td><strong>Blood glucose</strong></td>
<td></td>
</tr>
<tr>
<td>Non-fasting</td>
<td>≤ 6.0 mmol/l</td>
</tr>
<tr>
<td>If diabetes:</td>
<td>Fasting blood glucose: 4.0 – 6.0 mmol/l</td>
</tr>
<tr>
<td></td>
<td>HbA1c: &lt; 7.4%</td>
</tr>
</tbody>
</table>

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ORGANISATION OF SERVICES

2.19 Most of the risk assessment and treatment of people at high risk of cardiovascular disease or with established disease will take place within General Practice. Some patients will also be cared for by local heart failure or cardiac rehabilitation teams (Standards 4 and 6). Occasionally, patients will need referral to secondary care or a tertiary cardiac service for further investigations, expert advice and treatment. Timely access should be available to investigations, advice and treatment based on locally agreed care pathways that are consistent with relevant national guidance. Referral and treatment guidelines should be agreed within each Cardiac Network and, for tertiary services, across Networks including:

- Indications for investigations, including exercise testing, other forms of functional assessment and non-invasive structural assessment. 
- Indications for angiography.

(HcS 2, 3, 7)

2.20 In addition, secondary and tertiary cardiac services should:

- Have mechanisms in place for communication with referring primary / secondary care teams respectively about individual patients and about service issues.
- Be contributing to and participating in training and development programmes agreed through their Cardiac Network.
- Have arrangements for referral of appropriate patients back to referring primary / secondary care teams for ongoing monitoring and care.

(HcS 22)

2.21 All advice, investigations and treatment should be sensitive and responsive to the needs and wishes of the individuals affected. Individuals and their carers should be helped to participate in decisions about risk factor management and treatment. Appropriate information should be available to support people in making these decisions, including information about sources of advice and support groups, especially if these are available locally. (HcS 25 and 28)

2.22 General Practices should maintain a practice-based register of those people with clinical evidence of coronary heart disease, stroke and transient ischaemic attacks (TIAs), heart failure, hypertension and diabetes. Risk factors, lifestyle advice given and treatments offered should be recorded for

\footnote{Other forms of functional assessment include stress echocardiography and myocardial perfusion assessment. Non-invasive structural assessment by either CT or MR angiography is currently appropriate. Further guidance may be issued on the choice of non-invasive structural assessment as further evidence of effectiveness becomes available. CT angiography may have a particular role in areas where access to angiography is relatively low.}
all patients as encouraged by the Quality and Outcomes Framework of the General Medical Services contract. Where risk calculation has been carried out, the calculated risk of cardiovascular disease should be recorded, ideally in an electronically retrievable form. In due course, all registers should also:

- Be capable of recording relevant portions of the agreed datasets (see section 8.16).
- Have the capability to add local data items of relevance to cardiovascular disease.
- Hold all data in an electronically retrievable format.

2.23 An all-Wales register of people found to have familial hypercholesterolaemia (see section 2.8) should be developed and maintained.  

REFERENCES


Joint British Societies’ Guidelines on Prevention of Cardiovascular Disease in Clinical Practice; Heart; December 2005; Volume 91; Supplement V.


National Institute for Health and Clinical Excellence (2006) Statins for the prevention of cardiovascular events in patients at increased risk of developing

47 The benefits of a register for those with FH are analogous to those of a diabetes register; this has been recognised as having a central role in the implementation of clinical governance, and in ensuring a seamless, quality service for all people with diabetes. The routine use of a register for these purposes has followed the recommendations of the St Vincent Joint Task Force for Diabetes Report (published in collaboration with the Department of Health 1995).
cardiovascular disease or those with established cardiovascular disease. NICE, January 2006.

National Institute for Health and Clinical Excellence (2006) Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling. NICE, March 2006.


National Public Health Service for Wales (2004) Health Evidence Bulletin Wales: Coronary Heart Disease, Cardiff, NPHS.

Standard 3

Managing the care of patients with coronary heart disease

Each person with coronary heart disease has rapid access to high quality, evidence-based assessment, treatment, rehabilitation and support.

INTRODUCTION

3.1 People with acute coronary syndromes include patients with acute myocardial infarction, unstable angina and sudden cardiac death. The care of patients with unstable angina and acute myocardial infarction is covered in sections 3.5 to 3.32 of this Standard and the care of patients with stable angina in sections 3.33 to 3.36. (Further detail on the care of patients with arrhythmias and sudden cardiac death is given in Standard 5.) The organisation of hospital services for the care of patients with coronary heart disease is described in sections 3.37 to 3.51.

3.2 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathway; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and funding aspects of this Standard. The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

3.3 Based on the description of actions in Standard 3, the relevant healthcare standards that map across are based on: the planning and development of services reflecting the needs of the population served and equity and access to services (HcS 1 and HcS 2); access to emergency health services (HcS 3); information provision to patients (HcS 6); patients developing competence in self-care (HcS 7); participation in regular audit and review of clinical services (HcS 11); patients provided with care based on best practice (HcS 12); the continuous professional development of staff and occupational development (HcS 22), and a cycle of continuous quality improvement (HcS 28).
EVIDENCE BASE

3.4 The evidence base for the recommendations in this Standard includes guidance issued by the European Society of Cardiology, the British Cardiovascular Society (formerly the British Cardiac Society) and Scottish Intercollegiate Guidelines. Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

KEY INTERVENTIONS

For patients with acute coronary syndromes:

3.5 Time is critical to saving the lives of people with a myocardial infarction or cardiac arrest. Minutes lost at any stage may adversely affect outcomes. “Early diagnosis is pivotal and early treatment may be life-saving.”

3.6 Accurate recognition that the symptoms being experienced may be acute myocardial infarction or other acute coronary syndromes is the first step in reducing delay in calling for help. Several factors influence the time taken to call for help including age, gender, ethnicity, whether at work or in a public place, whether a family member is present, whether living in an urban or rural area, severity of symptoms and whether an ambulance or GP is called. Having previously had a myocardial infarction has not been shown to reduce the delay in seeking help and public awareness campaigns have had little impact on reducing these delays.

3.7 Rapid and skilful assessment is crucial to the initial management of patients with possible acute coronary syndromes so that appropriate treatment can be offered. Treatment will vary depending whether the working diagnosis is:

- Acute myocardial infarction
- Other cardiac causes (for example, unstable angina)
- Non-cardiac causes (for example, dissecting aneurysm, gastrointestinal disease, chest disease)

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3.8 Public awareness of the symptoms of acute myocardial infarction, and of what to do if these symptoms occur, needs to be increased. The British Heart Foundation ‘Heartstart UK’ cardiopulmonary resuscitation card illustrates the main messages that need to be conveyed (Box 4). There are three target audiences for this work:

- People with existing cardiovascular disease and their families.
- People known to be at high risk of developing coronary heart disease and their families.
- The general public.

Information for people at high risk or with established disease has been covered in Standard 2 of this NSF. Ongoing, innovative campaigns are needed to improve the level of awareness among the general public.

### Box 4: British Heart Foundation ‘Heartstart UK’ cardiopulmonary resuscitation card

**HEART ATTACK**  
Usually a crushing pain in the chest
- Often wraps around the body like a tight band.
- May spread to, or just affect the arms, throat, neck, jaw, back or stomach.
- Does not go away with rest.

The person may also be breathless, look pale and sweaty and feel sick, weak or dizzy.

**WHAT TO DO:**
Get help immediately.  
Sit the person in a comfortable position.

**PHONE 999 FOR AN AMBULANCE AND THEN PHONE THEIR DOCTOR**  
To help an unconscious person follow instructions on the other side of this card.

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3.9 Some people will suffer a cardiac arrest before the ambulance or GP arrives. HeartStart UK\(^5\) has achieved considerable progress in developing community involvement in resuscitation. This is particularly important because of the large number of isolated communities in Wales where skilled

help may not be available quickly. Planners and funders should ensure a programme for community involvement in resuscitation is implemented in their area covering:

- Local public awareness initiatives.
- Community access to defibrillation, including making public access defibrillators more easily available in public places such as leisure centres, public transport hubs and other places where large groups of people are present.
- First responder schemes (where individuals in the community are trained to respond to emergencies and equipped with defibrillators).
- Programme of resuscitation training.

Ambulance services and relevant local voluntary groups, for example, St. John Ambulance and Red Cross, should be involved in the preparation and implementation of these programmes. All programmes should ensure compliance with European Resuscitation Council guidelines. Cardiac Networks have a role in coordinating and supporting work in this area. (HcS 1, 2, 3, 6, 22)

3.10 The telephone call for help will usually be made to 999, a local GP Practice or out of hours centre, or NHS Direct. All calls should be dealt with by appropriately trained staff using agreed protocols to:

- Assess the symptoms and signs and determine the priority.
- Despatch / call an ambulance for patients with symptoms and signs suggestive of acute coronary syndromes.
- Continue to advise the caller until the ambulance or other trained help arrives including, if necessary, advice on cardio-pulmonary resuscitation.

If a local GP is called for symptoms suggestive of acute coronary syndromes, the GP should call 999 for an ambulance prior to attending to give assistance. (HcS 22)

3.11 Some people with chest pain will be seen first by a General Practitioner or will go to a minor injuries unit or community hospital. Symptoms and signs should be assessed, priority determined and an ambulance called in accordance with agreed protocols. Initial treatment in accordance with European Society Guidelines for pre-hospital management of acute heart attacks should also be given.

\[51 \text{ www.erc.edu/}\]
Ambulance services

3.12 Ambulance services currently aim to reach the majority of people with life-threatening conditions within eight minutes\(^52\). Ambulance crews should assess and treat the patient in accordance with Joint Royal Colleges Ambulance Liaison Committee (JRCALC) guidelines\(^53\), including taking a 12 lead ECG and, if appropriate, administering thrombolysis (section 3.16). (HcS 12)

3.13 The ambulance service should transport the patient to the nearest hospital with appropriate facilities to deal with their condition, based on agreed clinical guidelines. Most patients will be taken to their nearest District General Hospital but for others, a hospital with enhanced or tertiary cardiac services may provide the care that is needed. In future, the role of hospitals providing enhanced and tertiary cardiac services (sections 3.47 to 3.51) may develop further with ambulance services having a greater role in triage of patients.

3.14 A defibrillator and someone trained to use it should accompany the patient throughout their journey to hospital. During the journey, the ambulance crew should liaise with the admitting team in the hospital so that they are ready to receive the patient and any delays in treatment are avoided. This liaison may include transmission of the patient's ECG. The patient should be taken directly to an area of the hospital where assessment and treatment can begin immediately and where thrombolysis can be given.

Reperfusion

3.15 Primary percutaneous coronary intervention (primary PCI) is the preferred option for reperfusion for patients presenting with ST-elevation myocardial infarction (STEMI). Primary PCI is more expensive than thrombolysis but is both clinically and cost-effective if it can be performed within 120 minutes of patient call for professional help.

3.16 Some patients in Wales will not be able to access a primary PCI service within the 120 minutes timeframe. For those who cannot, and unless contraindicated, thrombolysis should be given to these patients as soon as possible and within 60 minutes of the call for help, by the first appropriately trained person available. This will mean paramedic-delivered thrombolysis in the majority of cases. Some patients with a possible diagnosis of STEMI will present directly to emergency department. These patients should be immediately assessed, a 12 lead ECG taken and appropriate reperfusion therapy instituted. Where thrombolysis is given this should be within 30

\(^52\) This standard is currently not achievable in remoter parts of Wales and interim targets are agreed annually. The Annual Operating Framework for each year gives the latest target.

minutes of arrival at the hospital door.\textsuperscript{54} As STEMI numbers continue to decrease, and a primary PCI becomes the available treatment for the majority of patients, it will be all the more important to maintain skills in the delivery of thrombolysis and to meet the timeframes for such patients.

3.17 Patients given thrombolysis should be transferred to the nearest centre undertaking PCI as soon as possible so that they are on site should urgent revascularisation be required.

3.18 Primary PCI services currently have limited availability in Wales and should be further developed. Cardiac Networks and their constituent organisations should work towards this, including appropriate arrangements for transport of patients requiring primary PCI. Primary PCI should be undertaken within a maximum of 90 minutes of the patient arriving at the hospital where the PCI will be undertaken (or within 90 minutes of a decision that PCI is needed if no transfer is required). Units should be working towards reducing this delay to 60 minutes.

3.19 All hospital services should have clinical guidelines for assessing the effectiveness of thrombolysis and, if reperfusion is not achieved based on ECG and clinical criteria, patients should be considered for ‘rescue’ PCI.

**Hospital treatment**

3.20 Initial management of patients should then be undertaken according to agreed guidelines, based on European Society of Cardiology guidance, for:

- Resuscitation and stabilisation.
- Relief of pain and breathlessness.
- Reperfusion.
- Early in-hospital care.
- Management of complications of myocardial infarction.

3.21 In patients in whom the diagnosis is uncertain, 12 lead ECG, appropriate biochemical markers and, if necessary, an exercise test should be undertaken to confirm the diagnosis.

3.22 As part of the patient’s management, formal stratification of the risk of a further cardiac event should be undertaken - based on symptoms, physical findings, ECG findings, biochemical indicators and exercise test (where appropriate). Decisions about the appropriateness of risk factor management and treatment should take into account the person’s age and

general state of health, whether their life expectancy and / or quality of life will be improved by the treatment offered and whether there are any contraindications to the proposed treatment.

3.23 Patients with acute myocardial infarction or other acute coronary syndromes should be admitted to a cardiac care unit or to a dedicated unit staffed by cardiac-trained nurses, supported by the hospital's cardiac team and with appropriate ECG monitoring and other equipment. Care should be organised in accordance with agreed guidelines, including guidelines for the management of complications. (HcS 28)

3.24 All patients with a presenting diagnosis of acute coronary syndrome should be assessed by a consultant cardiologist within 24 hours of admission. (HcS 3)

3.25 All appropriate patients should have access to angiography and, if necessary, revascularisation. In patients who may benefit from an interventional approach to treatment, angiograms should be undertaken within 48 hours of completion of risk stratification. If required, urgent PCI or cardiac surgery should be undertaken within 48 hours of angiography, according to agreed guidelines.

3.26 Patients with acute coronary syndrome may sometimes be admitted to other wards within the hospital. Patients on other wards may also develop acute coronary syndromes. All care should be given in accordance with agreed care pathways wherever the patient is within the hospital. All patients should be assessed by a consultant cardiologist within 24 hours of diagnosis and have access to the support of the cardiac team. (HcS 2 and HcS 7)

3.27 The treatment of all patients should be formally discussed by a multidisciplinary team comprising, at least, a cardiologist, cardiac nurse and, where appropriate, a cardiac surgeon. For high risk patients, this discussion may take place after their angiography and surgery has been undertaken. The level of risk of a further cardiac event should be discussed with the patient, recorded in the patient’s notes and communicated to their GP. (HcS 6 and 6)

Ongoing care

3.28 All patients should be considered for cardiac rehabilitation aimed at achieving as full a quality of life as possible and to reduce the risk of a further cardiac event. Cardiac rehabilitation is an integral part of the treatment programme for patients with acute coronary syndrome and is

55 A consultant cardiologist is someone on the GMC's specialist register with a CCT or CCST in cardiovascular medicine or cardiology, who is employed as a consultant, spends the majority of their direct clinical care programmed activities caring for patients with heart disease and who undertakes regular CPD of relevance to the care of patients with heart disease.
described in more detail in Standard 6. In addition to the cardiac rehabilitation programme, all patients and their carers should be advised to undertake basic life support training and given details of locally available courses. Patients who smoke should be offered referral to smoking cessation services. (HcS 7)

3.29 Patients should be given appropriate pharmacological treatments, in accordance with European Society of Cardiology and NICE guidelines, to reduce the risk of further coronary events, including:

- Antiplatelet and anticoagulation treatment.
- Control of hypertension.
- ACE inhibitors.
- Lipid reduction\textsuperscript{56} therapy. (HcS 12)

**Discharge**

3.30 The care of patients admitted to tertiary cardiac services should be transferred back to their local District General Hospital or to a District General Hospital providing enhanced cardiac services (section 3.47) which is closer to their home as soon as possible and, normally, within 24 hours of the patient being ready for transfer.

3.31 Patients should be discharged from hospital in accordance with a policy agreed between the health community. Prior to discharge, patients should receive their patient held record which should include advice and information covering at least:

- Individualised lifestyle advice on diet, weight control, smoking, physical exercise, return to work and resuming sexual and other activities.
- Information about the possibility of depression and irritability.
- Information about their disease.
- Symptoms of acute coronary syndromes and what action to take.
- Space to record medication and test results.

The British Heart Foundation Heart Information Series includes examples of relevant information. (HcS 6)

3.32 Information about the patient’s condition, treatment and medication given should reach their general practice and referring hospital (where

\textsuperscript{56} The term ‘lipid reduction’ is used throughout this updated NSF in order to give a simple message. ‘Lipid modification’, aimed at achieving the targets shown in Box 3, is the strictly correct terminology.
(appropriate) within 48 hours of discharge. The patient should be advised to see their GP when this information is available.

In order to achieve this Standard of care for patients with stable angina:

3.33 Each General Practice should have guidelines for the diagnosis and management of angina. Referral and treatment guidelines should be agreed within each Cardiac Network and, for tertiary services, across Networks including:

- Indications for referral to a cardiologist for advice and further investigation.
- Indications for investigations (including exercise testing, other forms of functional assessment and at least one form of non-invasive structural assessment). 
- Indications for angiography.

3.34 In addition to the lifestyle advice and treatment described in Standard 2, patients with angina should be prescribed sublingual GTN and be educated in its use. Optimal medicines management is important for these patients and particular care should be taken with repeat prescribing. Guidelines for referral to a cardiologist for advice and further investigations should be in place.

3.35 A rapid access chest pain assessment service should be available with agreed referral guidelines. (HcS 3)

3.36 Patients with stable angina have not historically had access to cardiac rehabilitation services. There is not yet robust evidence of the benefit of cardiac rehabilitation for this group of patients and referral for cardiac rehabilitation is therefore not recommended at this stage except for patients who have ‘limiting symptoms’.


58 Other forms of functional assessment include stress echocardiography and myocardial perfusion assessment.

59 Non-invasive structural assessment by either CT or MR angiography is currently under development. Further guidance will be issued on the choice of non-invasive structural assessment as further evidence of effectiveness becomes available.

60 Scottish Intercollegiate Guidelines, (2002), Network Cardiac Rehabilitation: A National Clinical Guideline Edinburgh: SIGN 2002 (SIGN publication no 57) and other references listed at the end of this Standard.
ORGANISATION OF HOSPITAL SERVICES

3.37 Acute hospitals within Wales will provide one or more of the following types of care for people with acute coronary syndromes:

- Immediate treatment only.
- District General Hospital services.
- District General Hospital and enhanced cardiac services.
- Tertiary cardiac services.

(HcS 1 and 2)

3.38 A summary of the services which should be available in each type of hospital are given in sections 3.41 to 3.51 and are summarised in Box 5.

Box 5: Main characteristics of each service when fully developed

<table>
<thead>
<tr>
<th>Immediate treatment only:</th>
<th>District General Hospital</th>
<th>Enhanced District General Hospital</th>
<th>Tertiary cardiac service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency department</td>
<td>Emergency department, cardiac care unit and ‘step down’ beds</td>
<td>Emergency department, cardiac care unit and ‘step down’ beds</td>
<td>Emergency department, cardiac care unit and ‘step down’ beds</td>
</tr>
<tr>
<td>No cardiac care unit</td>
<td>Consultant cardiologist available in normal working hours</td>
<td>Consultant cardiologist available 24/7</td>
<td>Consultant cardiologist available 24/7</td>
</tr>
<tr>
<td>No on-site cardiologists</td>
<td>Cardiac physiology service available in normal working hours</td>
<td>Cardiac physiology service available 24/7</td>
<td>Cardiac physiology service available 24/7</td>
</tr>
<tr>
<td></td>
<td>Cardiac catheterisation available in normal working hours</td>
<td>Cardiac catheterisation available in normal working hours</td>
<td>Cardiac catheterisation available 24/7</td>
</tr>
<tr>
<td></td>
<td>Pacemaker implantation available in normal working hours</td>
<td>Pacemaker implantation available 24/7</td>
<td>Pacemaker implantation available 24/7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cardiac surgery available 24/7</td>
<td>Cardiac surgery available 24/7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pacemaker implantation available 24/7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other specialised cardiac services</td>
<td></td>
</tr>
</tbody>
</table>

61 Evidence base: The recommendations on the organisation of hospital services are the consensus of the Development Group. They are derived from the interventions, equipment and staffing implications of the clinical guidance on the care of patients with acute coronary syndromes (sections 3.37 to 3.51).

62 Tertiary cardiac services may also provide District General Hospital services to their local population.
3.39 This classification of hospital services is closely related to the classification of services in *Designed for Life* as shown below:

<table>
<thead>
<tr>
<th>Designed for Life</th>
<th>Updated NSF for CHD and arrhythmias</th>
</tr>
</thead>
<tbody>
<tr>
<td>4  Tertiary</td>
<td>Tertiary</td>
</tr>
<tr>
<td>3  Specialised and critical care centres</td>
<td>District General Hospital with enhanced cardiac services</td>
</tr>
<tr>
<td>2  Local acute services</td>
<td>District General Hospital or Hospital providing immediate treatment only</td>
</tr>
<tr>
<td>1  Home and community</td>
<td>Primary care</td>
</tr>
</tbody>
</table>

3.40 All secondary and tertiary hospital services, except those providing immediate care only, should:

- Have mechanisms in place for communication with referring primary / secondary care teams respectively about individual patients and about service issues.
- Be contributing to and participating in training and development programmes agreed through their Cardiac Network.
- Have arrangements for referral of appropriate patients back to referring primary / secondary care teams for ongoing monitoring and care. (HcS 22)

**Hospitals providing immediate treatment only**

3.41 Some acute hospitals have an emergency department but no cardiac care unit or on-site cardiologist. Ambulances should not take patients with possible acute coronary syndromes to these hospitals. Some patients with a possible diagnosis of acute coronary syndrome will present directly to these hospitals. These patients should be immediately assessed, a 12 lead ECG taken and appropriate treatment given, including thrombolysis, in accordance with European Society of Cardiology guidelines for the management of early in-hospital care. Patients with a probable diagnosis of acute coronary syndrome should then be transferred by ambulance to a hospital with appropriate facilities for their care (section 3.13). (HcS 2, 22)

**District General Hospital services**

3.42 All District General Hospitals with an emergency department and cardiac care unit should have the facilities and staff to care for most patients with acute coronary syndromes. They should provide the focus for local care -
although some patients will need to be referred to enhanced or tertiary services for more specialised care. These hospitals should provide much of the in-patient care for patients with acute ST segment elevation myocardial infarction and step-down care for other patients following more specialised treatment, including revascularisation. They should also provide access to investigations and out-patient care, including care of patients with stable angina who cannot be managed within Primary Care. District General Hospitals should also provide temporary pacing. (See Standard 5) (HcS 2, 22)

3.43 Within District General Hospitals there should be a multi-disciplinary approach to care involving staff from cardiology, nursing, pharmacy, dietetics, physiotherapy, psychology, cardiac physiology, biochemistry and cardiac rehabilitation. There should, however, be a flexible approach to role development and redesign across disciplines, underpinned by Skills for Health National Workforce Competencies. Other support staff, including those providing imaging, pathology, medical records and patient transport, also need to be available.

3.44 District General Hospitals should have a rapid access chest pain assessment service. There should also be rapid access to investigations, including physiological measurement (especially, ECG, echocardiography and exercise testing) and biochemical investigations. ECG and biochemical investigations should be available at all times. Other investigations, including echocardiography and exercise testing should be available during normal working hours and the new LHBs should be working towards daily availability. Appropriate capacity for treating patients from the local population should be available in the cardiac care unit and ‘step down beds’. (HcS 3)

3.45 District General Hospitals may not yet have a consultant cardiologist on call and available to see patients 24 hours a day. Where this is not yet possible, Trusts should implement collaborative arrangements to ensure that a consultant cardiologist is available 24 hours a day to review the results of relevant investigations and give specialist advice to the consultant who is taking clinical responsibility for the patient.

3.46 All District General Hospitals should be participating fully in the Myocardial Ischaemia National Audit Project (MINAP) (acute myocardial infarction and other acute coronary syndromes) and other relevant CCAD audit programmes (see also section 8.17). (HcS 11)

63 www.skillsforhealth.org.uk/chd/competencies
64 A consultant cardiologist is someone on the GMC’s specialist register with a CCT or CCST in cardiovascular medicine or cardiology, who is employed as a consultant, spends the majority of their direct clinical care programmed activities caring for patients with heart disease and who undertakes regular CPD of relevance to the care of patients with heart disease.
Enhanced District General Hospital services

3.47 In addition to the District General Hospital services described in sections 3.42 to 3.46, some District General Hospitals should provide enhanced cardiac services. These hospitals should be able to undertake full risk stratification and temporary pacing. Angiography for low risk patients and pacemaker insertion during normal working hours should also be available. They should have a consultant cardiologist on call and available to see patients 24 hours a day. This will require a rota of at least ten consultant cardiologists. These cardiologists may also be providing specialist advice to other District General Hospitals (see section 3.44). Echocardiography should be available 24 hours a day. (HcS 2)

3.48 All services providing angiography and/or PCI (if appropriate) should conform to the standards laid down by the British Cardiovascular Intervention Society (BCIS) and be participating in the BCIS inspection process.

Tertiary cardiac services

3.49 In addition to their role as District General Hospitals and the enhanced services described in sections 3.4 and 3.48, some hospitals will also provide tertiary cardiac services. These hospitals should offer specialist investigations and treatments, including 24 hour access to revascularisation. Each tertiary team will be linked to several referring District General Hospitals (DGHs), including those providing enhanced cardiac services.

3.50 A consultant cardiologist should be available 24 hours a day in each tertiary cardiac service. Cardiac surgery, angiograms and PCI should be available on site 24 hours a day. Hospitals providing a primary PCI service should have a rota of cardiac interventionists available to provide this service. Cardiac teams across each Cardiac Network may wish to work together to provide a primary PCI service for the Network.

3.51 In addition to participation in MINAP and other relevant CCAD audits, tertiary cardiac services should submit audit data as expected by the Society of Cardiothoracic Surgeons (see section 8.17). (HcS 11)

CROSS CUTTING INTERVENTIONS

3.52 Further issues relating to services for people with, or at risk of, coronary heart disease are described in the section ‘Cross-Cutting Interventions’.
REFERENCES


Standard 4

Managing the care of patients with chronic heart failure

Each person with chronic heart failure and their carers has access to high quality evidence-based assessment, treatment and care services so that their quality of life is improved as much as possible.

INTRODUCTION (HcS 3)

4.1 Heart Failure is the only major cardiovascular disease with increasing incidence and prevalence mainly due to the greater number of survivors of myocardial infarction, and the increasingly elderly population. Prognosis is often worse than for some cancers, with poor quality of life.

4.2 There have been many major advances in the treatment of chronic heart failure in the past two decades, which can considerably improve life expectancy and quality of life. Misdiagnosis is common and there is evidence that many people who have heart failure have not been recognised or appropriately treated. Objective evidence from echocardiography, and the use of natriuretic peptide hormones, can assist diagnosis.

4.3 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathway; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and funding aspects of this Standard. The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

4.4 Based on the description of actions described in Standard 4, the relevant healthcare standards that map across are based on: ensuring equity of access to services (HcS 2); access to emergency health services (HcS 3); information provision to patients (HcS 6); patients developing competence in self-care (HcS 7); participation in regular audit and review of clinical services (HcS 11), and patients provided with care based on best practice (HcS 12).

EVIDENCE BASE

4.5 The evidence base for the recommendations in this Standard is guidance issued by the National Institute for Health and Clinical Excellence (NICE) on the management of chronic heart failure in adults in primary and secondary care\(^ {66}\) and European Society of Cardiology Guidelines. The recommendations on the organisation of services (including the names ‘Local’ and ‘Tertiary Heart Failure Teams’) are the consensus of the Development Group, derived from the implications of this clinical guidance. Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

KEY INTERVENTIONS

Diagnosis, treatment and care

4.6 Diagnosis, treatment and care services for people with heart failure should be based on the following principles:

- Patients with suspected heart failure should have appropriate diagnostic tests to confirm the diagnosis of heart failure and its underlying cause.
- Patients with heart failure and their carers should receive the information and support they need to manage their condition and take part in decisions about their care.
- Appropriate services should be available locally, with referral to more specialist support from tertiary centres when this is needed.
- Agreed care pathways for patients with heart failure should be implemented, audited and reviewed across local health communities. These care pathways should include access to supportive and palliative care when this is needed.
- Services should work together so that patients receive their treatment and care as close to home as possible.
- All care should be managed according to agreed guidelines by staff with appropriate education and training.

(HcS 3, 6, 7, 11)

4.7 Local Heart Failure Teams should be established to serve a defined group of General Practices. Local Heart Failure Teams may be based in Primary Care or in hospital. They may be made up of staff employed by different organisations who may spend all or only part of their time working with

patients with heart failure. These teams will usually have a lead consultant cardiologist or a physician with a special interest in heart failure, a lead heart failure specialist nurse, a clinical physiologist, a pharmacist and secretarial support. Depending on the number of patients served, there may also be other members of the team. Each Local Heart Failure Team will be linked to a Tertiary Heart Failure Team who will provide more specialist diagnosis and care.

4.8 Most patients will present initially to their General Practitioner who should undertake or organise diagnostic tests, according to locally agreed guidelines. Patients whose diagnosis has not been confirmed by echocardiography should have their diagnosis reviewed. Patients with a confirmed diagnosis should be entered into the practice register of patients with heart failure.

4.9 The GP will have access to a weekly diagnostic heart failure clinic run by the Local Heart Failure Team. Echocardiography and 12 lead ECG will be available at this clinic.

4.10 Some patients will have their condition diagnosed during an acute hospital admission. Many patients with heart failure will have acute exacerbations of their condition which may require emergency admission to hospital.

4.11 Patients should have their diagnosis and care managed according to agreed guidelines by staff with appropriate training and awareness of heart failure. These guidelines should cover at least:

- Pharmacological management
- Non-pharmacological management
- Management of patients with resistant, unstable or reversible heart failure
- Indications for seeking advice from or referral to the Tertiary Heart Failure Team
- Indications for biventricular device therapy
- Indications for implantable cardioverter defibrillators (ICDs).

4.12 Prior to discharge, all patients should be offered information about their condition and who to contact for advice and support. (HcS 6)

4.13 Patients who have their diagnosis of heart failure confirmed should be seen by a heart failure specialist nurse in order to discuss their management plan, be offered relevant information and have the chance to ask questions. This meeting may take place in out-patients, while the patient is in hospital as an in-patient or in the community, especially if the patient is unable to travel. All patients should be given a named person who they should contact for advice and support. (HcS 6)
4.14 Patients should have information and support to help them manage their own condition as far as possible. Most patients will have ongoing monitoring and management of their care in Primary Care and their contact point will be their own General Practice. Some patients will remain under the care of the Local Heart Failure Team. A few patients will need referral to the Tertiary Heart Failure Team for investigation, advice and, for some, ongoing management of their care. (HcS 6 and 7)

4.15 All appropriate patients should be offered cardiac rehabilitation aimed at achieving as full a quality of life as possible. Cardiac rehabilitation is an integral part of the treatment programme for patients with heart failure and is described in more detail in Standard 6. (HcS 2, 6)

4.16 The All Wales Care Pathway for the Last Days of Life\textsuperscript{67} should be followed for patients with end stage heart failure, and for their carers, who should have access to supportive and palliative care. If necessary, referral should be made to specialist palliative care services. (HcS 7)

REFERENCES


National Public Health Service for Wales (2004) \textit{Health Evidence Bulletin Wales: Coronary Heart Disease}. Cardiff, NPHS


\textsuperscript{67} Welsh Assembly Government, 2006, End of Life Care - All Wales Care Pathway for the Last Days of Life, Welsh Health Circular (2006)030, Cardiff, WAG
Standard 5

Managing the care of patients with arrhythmias and families of young victims of cardiac arrest

Each person with an arrhythmia has access to high quality evidence-based assessment, treatment, rehabilitation and support. Relatives of young cardiac arrest victims are offered assessment and, if found to be at risk of sudden cardiac death, are offered high quality evidence-based treatment and support.

INTRODUCTION

5.1 This Standard of the updated Welsh National Service Framework for Cardiac Disease includes relevant sections of the English Coronary Heart Disease National Service Framework Chapter 8 on Arrhythmias and Sudden Cardiac Death, and is reproduced in a format similar to the other Welsh NSF Standards. The English NSF Chapter 8 recommends:

- People with arrhythmias receive timely and high quality support and information based on an assessment of their needs;
- People presenting with arrhythmias in both emergency and elective settings receive timely assessment by an appropriate clinician to ensure accurate diagnosis and effective treatment and rehabilitation;
- When sudden cardiac death occurs at a young age, NHS services should have systems in place to identify family members at risk and provide personally tailored, sensitive and expert support, diagnosis, treatment, information and advice to close relatives.

5.2 This Standard extends the scope of Standard 5 of the original Welsh NSF to include cardiac arrhythmias (electrical disorders of the heart) and the way in which health services respond to young cardiac arrest victims (those aged 40 years or less) and their families.

5.3 The setting for the care of people with arrhythmias varies according to the nature and severity of the condition. For many people, investigations organised by their General Practitioner and reassurance is all that is necessary. Others may need to be seen by a cardiologist or specialist nurse to ensure appropriate diagnosis and treatment. Some will require more

68 Further detail on the background and rationale to the recommendations is available in: Department of Health, 2005, NSF for CHD, Chapter Eight: Arrhythmias and Sudden Cardiac Death, www.dh.gov.uk/
specialist investigation and treatment by a heart rhythm specialist\textsuperscript{69}. Regular follow up may be required. For example, patients with pacemakers and ICDs need check ups to ensure their device is functioning normally and that their condition is stable.

5.4 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathway; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and implementation aspects of this Standard. The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

5.5 Based on the description of actions in Standard 5, the relevant healthcare standards that map across are based on: ensuring equity of access to services (HcS 2); access to emergency health services (HcS 3); information provision to patients (HcS 6); patients developing competence in self-care (HcS 7); informed consent (HcS 8); management of patients according to agreed guidelines (HcS 11), and patients provided with care based on best practice (HcS 12).

**EVIDENCE BASE**

5.6 The evidence base for the recommendations in this Standard includes guidance issued by the National Institute for Health and Clinical Excellence (NICE) and the European Society of Cardiology. Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

**KEY INTERVENTIONS**

**For people with arrhythmias**

5.7 People with arrhythmias may present to their General Practitioner or be admitted acutely to hospital. Initial investigations and management should be undertaken in accordance with network agreed clinical guidelines, which will include history-taking, examination, ECG and referral for echocardiography.

\textsuperscript{69} A heart rhythm specialist is an electrophysiologist or a consultant with sub-specialty training or a special interest in arrhythmia management.
5.8 Some patients will need referral to a cardiologist or heart rhythm specialist for assessment and treatment. Box 6 indicates which patients should be referred prior to discharge, those who should be seen urgently and those for whom a non-urgent referral is appropriate. All referrals should be based on Cardiac Network-agreed referral guidelines. Rapid access arrhythmia assessment services should be developed to support urgent assessment of patients with arrhythmias. (HcS 3)

Box 6: Indications for referral of patients with arrhythmias

**REFERRAL TO A HEART RHYTHM SPECIALIST:**

**Before discharge (hospital referrals only):**
- Patients resuscitated following an out-of-hospital cardiac arrest
- Patients with pre-excited atrial fibrillation

**Urgent referral:**
- Patients with syncope or any other symptoms suggestive of an arrhythmia and a personal history of structural heart disease or a family history of premature sudden death
- Patients with recurrent syncope associated with palpitations
- Patients with syncope and pre-excitation
- Patients with recurrent syncope in whom a life-threatening cause has not been excluded
- Patients with documented ventricular tachycardia

**Routine referral:**
- Patients with significant left ventricular dysfunction, placing them at risk of future cardiac arrest, who have a reasonable expectation of survival with a good functional status for more than one year
- Patients with a presumed diagnoses of ventricular tachycardia (but no other indications for referral)
- Patients with Wolff-Parkinson-White (WPW) syndrome or asymptomatic pre-excitation
- Patients with symptomatic regular recurrent supraventricular tachycardia which is unsuccessfully treated with one type of medication or who would prefer not to take long-term medication
- Patients with recurrent atrial flutter
- Patients with symptomatic atrial fibrillation despite optimal medical therapy
- First degree relatives of victims of cardiac arrest below the age of 40 years
- Patients with recurrent unexplained falls.

**GP REFERRAL TO A CARDIOLOGIST:**

**Urgent referral:**
- Patients with documented 3rd degree AV block (not associated with acute MI)

5.9 People who are successfully resuscitated following a cardiac arrest outside hospital are at increased risk of recurrent, life-threatening arrhythmias. They should be immediately transferred to hospital, assessed by a
cardiologist within 24 hours and referred to a heart rhythm specialist for assessment and treatment prior to discharge.

5.10 All patients diagnosed with arrhythmias and their carers should be offered timely and high quality information and support. This should include information about their condition and how to manage it. Patients should have a formal assessment of their support needs, based on agreed network guidelines. Patients and their carers should have ongoing support and encouragement to actively self-manage their condition. Patients at significantly increased risk of anxiety, depression or a poor quality of life should be offered appropriate care according to Cardiac Network-agreed guidelines. (HcS 7)

5.11 All patients should be given a hard copy of the ECG documenting their arrhythmia and a separate copy should be placed in their hospital or GP records. Patients should be advised to bring this ECG with them to future cardiology appointments or if they experience problems related to their arrhythmia. Services should be working towards electronic archiving of ECGs.

5.12 Timely access to diagnosis and treatment of arrhythmias should be according to Cardiac Network-agreed guidelines which, in addition to investigation of underlying causes, should specify the indications for:

- Diagnostic electrophysiological studies
- Implantable Cardioverter Defibrillators (ICDs)
- Catheter ablation
- DC cardioversion
- Permanent pacemaker implantation.

Decisions about the appropriateness of treatment should take into account the person’s age and general state of health, whether their life expectancy and / or quality of life will be improved by the treatment offered and whether there are any contraindications to the proposed treatment. (HcS 2, 3)

5.13 All acute hospitals admitting patients who may have arrhythmias should have appropriate facilities, including facilities for cardiac monitoring, prolonged patient-activated monitoring, temporary pacing and reprogramming of pacemakers and implantable cardioverter defibrillators (ICDs). Hospitals with more specialist cardiac services should also have facilities to implant loop recorders, insert pacemakers and ICDs. Tertiary

70 Annual targets for referral and treatment are issued by the Welsh Assembly Government in the Annual Operating Framework.
71 Enhanced District General Hospitals and Tertiary Cardiac Services – as described in Standard 3 of this updated National Service Framework.
Cardiac services should also be able to undertake diagnostic electrophysiological studies and catheter ablation. The Wales Quality Requirements for the Care of Patients with Cardiac Disease give details of the expected availability of these and other facilities.

5.14 Arrangements for follow up and ongoing management of patients with arrhythmias should be according to agreed guidelines, with follow up and management taking place in primary care or their local hospital wherever possible. (HcS 11)

5.15 People whose condition is long-term should receive advice and support from a named arrhythmia coordinator, especially:

- Patients at high risk of sudden death and their families;
- Recipients of ICDs and their families;
- Families of people who died from a sudden cardiac death;
- Patients waiting for diagnostic electrophysiological studies and ablations, and their families.

(HcS 7)

5.16 Any child with recurrent loss of consciousness, atypical seizures with a normal EEG or with any documented arrhythmia should be referred to a paediatric cardiologist. In addition to appropriate assessment and treatment, children and young people should have age-appropriate information and support. Information for parents and carers should also be provided. Transition to adult care should take into account the individual needs and wishes of the young person. Paediatric and congenital cardiac services for children are within the remit of the Children and Young People’s Specialised Services Project72 which complements the children’s NSF.73 The project aims to develop standards for an identified group of 22 specialised services for children and young people, enabling equity of access through managed clinical networks.(HcS 6)

5.17 All hospitals should have guidelines for the investigation and management of patients with transient loss of consciousness. Those found to have a cardiac cause for their loss of consciousness should be referred urgently to a heart rhythm specialist.

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72 Children and Young People’s Specialised Services Project (CYPSS), 2008, All Wales Standards for Paediatric and Congenital Cardiac Services, Children and Young People’s Specialised Healthcare Services, Cardiff. WAG
For families where a young person has experienced sudden cardiac death:

5.18 Sudden cardiac death in people aged 40 years or less is often indicative of inherited cardiac disease. There is the potential to prevent further deaths by the appropriate care of family members.

5.19 Unexpected death of a family member is deeply traumatic for those who experience it. Appropriate bereavement counselling should be available to help people to cope with such events. This should include specific support for children and young people who have lost family members. Several voluntary organisations provide bereavement support, often using the experience of people who have experienced similar tragedies.

5.20 All health care professionals who may be involved with families where younger people have experienced sudden cardiac death should have an awareness of the conditions that can lead to sudden death. Appropriate involvement of the coroner, pathologist and heart rhythm specialist in the management of these cases helps to ensure appropriate case identification. Effective evaluation of the family, including genetic counselling and testing, should be offered with the aim of preventing further deaths in the family. People found to be at high risk should be referred to a heart rhythm specialist for further investigation, advice and management. Support from an arrhythmia coordinator should be available to those found to be at high risk.

5.21 A coroner’s post-mortem is vital to determine the cause of death and (subject to appropriate consent) provides the opportunity to assess the potential risk to the family. A standard post-mortem, which specifically looks at the commonest causes of premature sudden death, has been drawn up by the Royal College of Pathologists and should be used. This includes preservation of appropriate tissue or the whole heart, if required for subsequent DNA extraction and histological review. Consent from the family must be obtained for any samples to be held for future testing.

5.22 A nominated pathologist within Wales who has a cardiac interest should provide coroners and coroners’ pathologists with expert advice and guidance. This cardiac pathologist should be part of a network of cardiac pathologists and linked to the National Expert Panel. With consent, DNA samples should be referred to an accredited molecular diagnostics laboratory through the Wales Genetic Service.

74 Relevant voluntary organisations include Cardiac Risk in the Young (CRY), Sudden Adult/Arrhythmia Death Syndrome (SADS UK) and the Arrhythmia Alliance.

75 Including hypertrophic cardiomyopathy, right ventricular cardiomyopathy, long QT syndrome, Brugada syndrome, Wolff-Parkinson-White (WPW) syndrome and familial hypercholesterolaemia.

76 The network of cardiac pathologists and National Expert Panel cover both Wales and England.
CROSS CUTTING INTERVENTIONS (HcS 2)

5.23 Further issues relating to services for people with arrhythmias are described in the section ‘Cross-Cutting Interventions’.

REFERENCES


Standard 6
Providing cardiac rehabilitation

Everyone with established coronary heart disease is offered an appropriate evidence-based cardiac rehabilitation plan and has the high quality, multi-disciplinary cardiac rehabilitation support they need to achieve this plan. (HcS 7)

INTRODUCTION

6.1 Cardiac rehabilitation is defined by the World Health Organisation as:

‘... The sum of the activities needed to influence favourably the underlying cause of the disease, as well as the best possible physical, mental and social conditions, so that they (people) may, by their own efforts preserve, or resume when lost, as normal a place as possible in the community. Rehabilitation cannot be regarded as an isolated form or stage of therapy but must be integrated within secondary prevention services, of which it forms only one facet.’

6.2 Cardiac rehabilitation services should be an integral part of the treatment plan for patients with established coronary heart disease. This Standard therefore supports the treatment and care described in Standards 2, 3, 4, 5 and 7.

6.3 Traditionally, cardiac rehabilitation has been referred to in four phases: (1) inpatient, (2) immediately following discharge, (3) structured hospital programme consisting of exercise, stress management and education and (4) community support / exercise group. It is now recognised that cardiac rehabilitation should be individualised to the needs of each patient and strict adherence to the four phases is no longer relevant. Delivery of programmes can be organised in many different ways and settings.

6.4 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathway; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and implementation aspects of this Standard. The Wales

Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

6.5 Based on the description of actions described in Standard 6, the relevant healthcare standards that map across are based on: information provision to patients (HcS 6); patients developing competence in self-care (HcS 7); patients provided with care based on best practice (HcS 12); the continuous professional development of staff and occupational development (HcS 22), and clinical audit (HcS 28).

**EVIDENCE BASE**

6.6 The evidence for this Standard is based on: British Association of Cardiac Rehabilitation (2006) National Standards for Cardiac Rehabilitation; the Joint British Societies’ Guidelines on Prevention of Cardiovascular Disease in Clinical Practice (2005) and other references listed at the end of this Standard. The recommendations on the organisation of services are the consensus of the Development Group, derived from the implications of this clinical guidance. (HcS 12)

**KEY INTERVENTIONS**

Cardiac rehabilitation programme

6.7 All patients who are admitted to hospital with acute coronary syndromes; those who are diagnosed with angina or heart failure during an acute hospital stay; those who are post-myocardial infarction or have received cardiac revascularisation, surgery or implantation or who have needs arising from congenital heart disease, should normally be referred to the cardiac rehabilitation team within two working days of diagnosis in accordance with agreed referral guidelines and criteria.

6.8 Patients should then have a preliminary assessment of their rehabilitation requirements. Appropriate information about cardiac rehabilitation should be offered to the patient and carer and an initial individualised exercise and mobilisation programme agreed. Prior to discharge, the patient should be given their patient held record and referred to their local cardiac rehabilitation service. (HcS 2,6,14,16)

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6.9 Patients discharged from hospital or referred directly to cardiac rehabilitation teams by their GPs should normally be contacted within seven days and an appointment made for a further assessment. This should include a review of the patient and their carers’ understanding of their diagnosis, advice on risk factors and targets for reduction, symptom recognition and management, activity advice and goals, medication and compliance awareness, functional assessment of activities of daily living, advice on return to work and leisure activities and assessment of the psychological support needs of the patient and carer. The patient should be encouraged to undertake a structured rehabilitation programme and their carer should be involved wherever possible. (HcS 6)

6.10 Further support from the cardiac rehabilitation team should be arranged as required. The multi-disciplinary cardiac rehabilitation team should work with the patient and their carer and regularly update their assessment, achievement targets and their patient-held records. There should be individual patient goal setting and feedback. Further investigations and referrals should be arranged as necessary.

6.11 The structured programme of cardiac rehabilitation should be tailored to the needs of the individual but will normally include health education, supervised exercise sessions or a home exercise programme, and psychological support. Referral to dietetic and smoking cessation services and to other agencies should be arranged if required. All patients and their carers should be advised of the importance of basic life support and given information on local courses and how to access them.

6.12 At the end of the structured programme of cardiac rehabilitation, the patient’s primary care team should be sent written confirmation of the patient’s risk factors, progress in cardiac rehabilitation and future goals. The patient should be offered the opportunity to attend community-based (phase 4) rehabilitation programmes of exercise and support aimed at long term maintenance and, if necessary, further reduction of risk factors. Patients should be able to contact the cardiac rehabilitation team again if they need further advice and support.

ORGANISATION OF CARDIAC REHABILITATION SERVICES

6.13 Local Cardiac Rehabilitation Teams should have a lead clinical nurse specialist or other health professional with responsibility for coordination of cardiac rehabilitation across the local area. The team should also include a lead consultant cardiologist or a physician with a special interest in cardiac rehabilitation, secretarial support, an exercise professional with a Level 4 qualification that meets the standards set out in the National Occupational

79 Evidence base: The recommendations on the organisation of services are the consensus of the Development Group, derived from the implications of this clinical guidance.
Standard Unit D518\(^80\) (Design, Agree and Adapt a Physical Activity Programme for Adults with Cardiac Disease), and staff with skills and competence in nursing, physiotherapy, occupational therapy, dietetics, pharmacy and psychological support. The team may be based in Primary Care or in hospital. They may be made up of staff employed by different organisations who may spend all or only part of their time working on cardiac rehabilitation. Depending on the number of patients served, there may also be other members of the team. Each team will serve a defined district general hospital’s and the general practices which usually refer to it. Cardiac rehabilitation teams in tertiary services will usually support both patients needing more specialist care and those from the local area. (HcS 22)

6.14 Cardiac rehabilitation should be coordinated across primary care, district general hospital and tertiary cardiac services according to agreed guidelines.

6.15 Cardiac rehabilitation teams should be submitting data to the National Audit of Cardiac Rehabilitation (see section 8.17). Individual teams and Cardiac Networks should be using audit results to compare their practice with other services. (HcS 28)

REFERENCES

British Association of Cardiac Rehabilitation (2006) *National Standards for Cardiac Rehabilitation*. www.bcs.com. (Since this Standard was agreed BACR have issued 2007 Guidelines)


*Joint British Societies’ Guidelines on Prevention of Cardiovascular Disease in Clinical Practice* (2005) Heart; December 2005; Volume 91; Supplement V.


Standard 7

Managing the care of adults with congenital heart disease

Each person who has grown up with congenital heart disease has access to high quality, evidence-based assessment, treatment and care

INTRODUCTION

7.1 The term ‘congenital heart disease’ describes a range of conditions resulting from abnormalities of the structure or function of the heart or great vessels that are present from birth. The care of children and young people with congenital heart disease has already been described in Standard 5 of the Children and Young People’s Specialised Services Project Standards. Preparation for the move to adult services starts from age 12. Transition to adult services takes place between 16 and 18 years of age, depending on individual circumstances and the maturity of the young person concerned, and care from age 18 will usually be in the adult services described in this Standard.

7.2 In Wales, around 350 young people with congenital heart disease will start to use adult services each year. It is important that these services have expertise in the care of adults with congenital heart disease and offer an environment appropriate for young people. Without these services, the quality of monitoring and follow up will not be maintained. Transition to adult services is known to be a time when young people may not continue with previously established routines and may lose contact with health services.

7.3 Only a small number of patients with congenital heart disease are ‘cured’ by their treatment. Most patients will need life-long monitoring and care by services with specific expertise in their condition. Congenital heart disease is usually divided into simple, moderate and complex disease, examples of which are shown in Box 7.

7.4 This Standard is linked to the section ‘Cross-Cutting Interventions’ which includes more detail on: the user involvement; care pathway; workforce; facilities and equipment; data collection and audit; information technology; medicines management; research and development; Cardiac Networks, and the planning and funding aspects of this Standard. The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease are based on the Standards of this updated National Service Framework. They show, at a detailed level, what implementation of the structure and process aspects of the Standards should look like in practice.

7.5 Based on the description of actions described in Standard 7, the relevant Healthcare Standards that map across are based on: the planning and delivery of healthcare (HcS 2); information provision to patients (HcS 6); evidence based practice, clinical supervision and leadership, updating of clinical skills and participation in regular audit and review of clinical services (HcS 11); patients provided with care based on best practice (HcS 12); the continuous professional development of staff, and occupational development (HcS 22) and the health needs of the population through an appropriately constituted workforce and better ways of working (HcS 24).

7.6 The rationale for aligning the Cardiac Standards and the Quality Requirements with the Healthcare Standards is to produce a common framework of standards for all sectors, bringing about a seamless and integrated approach to a standards-based system of care and establishing a basis for continuous improvement.

**Box 7: Examples of categories of adults with congenital heart disease**

**Simple**
- Uncomplicated ventricular septal defect
- Pulmonary stenosis
- Repaired atrial septal defect, ventricular septal defect and patent ductus arteriosus
- Bicuspid aortic valve

**Moderate**
- Uncomplicated repair of tetralogy of Fallot
- Unoperated atrial septal defect
- Coarctation of the aorta
- Ventricular septal defect complicated by valve problems
- Post-operative arterial switch

**Complex**
- Fontan circulation
- Eisenmenger syndrome
- Patients with valved conduits
- Senning and Mustard patients
EVIDENCE BASE

7.7 The evidence base for the recommendations in this Standard includes guidance issued by the British Cardiac Society (now British Cardiovascular Society), European Society of Cardiology, Department of Health and Grown-Up Congenital Heart (GUCH) Group of the Welsh Cardiovascular Society. Footnotes are used to denote a specific reference; references given at the end of the Standard indicate the sources which have been used to underpin the general policy direction. (HcS 12)

KEY INTERVENTIONS

7.8 Young people with congenital heart disease should receive the information and support they need during their transition to the care of adult services. This information and support should be sensitively delivered and tailored to the needs of each individual patient. The arrangements for transition to adult services should include discussion with the young person about the timing of transfer, allocation of a named coordinator for the transfer of care from children’s services - ideally someone who knows the young person who can ensure continuity of their care - and communication of clinical information to the adult team. A ‘transition nurse’ from the adult congenital heart disease specialist team will normally be the named coordinator for the transfer of care and will provide the necessary level of support to the young person until their use of adult services is firmly established.

7.9 All adults with congenital heart disease should be offered the information and support they need. This information and support should be easily available and cover their condition, dental care, lifestyle, genetics, contraception, implications for their career and leisure activities and availability of support groups. Regular monitoring, psychological support, dental care, contraceptive services, care during pregnancy and childbirth and management of a range of medical complications will also be needed. All adults with congenital heart disease should have their care reviewed at least once by a cardiologist specialising in the care of adults with congenital heart disease (‘adult congenital cardiologist’). Their ongoing care may be provided by the adult congenital heart disease specialist team, the ‘supra-regional’ services (Section 7.10) or through ‘shared care’ (Section 7.11).

7.10 The focus for care of adults with congenital heart disease will be the adult congenital heart disease specialist team which should be an integral part of a tertiary cardiac service. This team will comprise at least one adult congenital cardiologist, an adult congenital heart disease specialist nurse, a transition nurse and appropriate support services, including other tertiary cardiac services, cardiovascular radiology, dental care and obstetric services with specialist cardiac expertise. Some patients will need referral

82 Relevant support groups include The Grown Up Congenital Heart Disease Association
to highly specialist (‘supra-regional’) services for specific aspects of their care including pulmonary hypertension and transplantation services.

7.11 For many patients, out-patient care will be provided locally through ‘shared care’ between the specialist team and a local adult cardiologist with an interest in congenital heart disease. Shared care clinics should be available at which the adult congenital cardiologist, adult congenital nurse and adult cardiologist with an interest in congenital heart disease should all be available. In order to ensure a ‘critical mass’ of patients and availability of appropriate support services, including arrhythmia services, medical genetics, interventional cardiology and cardiovascular radiology, follow up of adults with congenital heart disease should be based in Enhanced District General Hospitals (see Standard 3). There will be a transition period until Enhanced District General Hospital services, including shared care for adults with congenital heart disease, are fully established.

7.12 All patients should have their diagnosis, follow up and care managed according to agreed guidelines by staff with appropriate training in the care of adults with congenital heart disease. The patient, their General Practitioner and their General Dental Practitioner should always have up to date information about the condition and its management. There should also be good communication between tertiary and local services.

7.13 All adult congenital heart disease specialist teams should be collecting audit data on the patients in their care, including those for whom shared care arrangements are in place, and using these data to audit their clinical practice and clinical outcomes. Individual teams and Cardiac Networks should be using audit results to compare their practice with other services.

References
Heart (2002) *Grown-up congenital heart (GUCH) disease: current needs and provision of services for adolescents and adults with congenital heart disease in the UK*, 88 (Suppl 1), i1-i14


Department of Health (2006) *Adult Congenital Heart Disease: A commissioning guide for services for young people and Grown Ups with Congenital Heart Disease (GUCH).*

Grown-Up Congenital Heart (GUCH) Steering Group of the Welsh Cardiovascular Society (2007) *Adult Congenital Heart Disease Services in Wales.*


Welsh Assembly Government. (Due to be issued in 2008) *All Wales Universal Standards for Children and Young People’s Specialised Services.*
Cross Cutting Interventions

INTRODUCTION

8.1 This section of the NSF describes actions needed to ensure that Standards 1 to 7 and the aims of Designed for Life are achieved. They are additional to the requirements of Standards 1 to 7 and apply to all services for people at risk of or with cardiac disease. They can be summarised as:

- Everyone at risk of or with established cardiac disease should be offered information about their condition and the services available to them. Patients and carers should have opportunities for feedback on these services and to take part in decisions about their organisation. (HcS 6)
- All treatment and care should follow agreed, evidence-based care pathways. (HcS 12)
- All services should have sufficient staff with appropriate skills and competencies for the role they are undertaking. Staff should be undertaking continuing professional development of relevance to their work in this area. (HcS 22)
- All cardiac-related services should be provided in pleasant facilities that are easily accessible, including to people with disabilities. All facilities and equipment should meet nationally-recommended standards and should be regularly maintained. Information technology should be used to support patient care and for data collection. (HcS 4,19)
- Services for people with cardiac disease should have appropriate mechanisms for data collection, audit, monitoring and research. (HcS 28)

8.2 Based on the description of actions in Cross Cutting Interventions, the relevant healthcare standards that map across are based on: patient and public involvement (HcS 1); planning and implementation of services (HcS 2); design and maintenance of premises (HcS 4); information provision to patients (HcS 6); patients developing competence in self-care (HcS 7); patients provided with care based on best practice (HcS 12); participation in research (HcS 13); patients provide feedback on their experiences (HcS 15); demonstrate improvements based on shared local and national experience (HcS 16); medicines management (HcS 19); continual professional development of staff (HcS 22); appropriately constituted workforce (HcS 24); effective information systems (HcS 25); clinical audit (HcS 28) and programmes which meet the requirements of the NSF (HcS 30).
8.3 The Cross-Cutting Interventions recommendations are the consensus of the Development Groups for Standards 2 to 7. They are derived from the implications of the clinical guidance referenced at the end of each Standard. (HcS 12)

8.4 Public and patient involvement (PPI) is fundamental to both the planning and the delivery of NHS services by enabling users of the NHS to have more say in their own treatment and more influence over the way the NHS works. Chapter Three of *Improving Health in Wales - A plan for the NHS with its Partners* outlined why public and patient involvement is important to improving health and healthcare. The main reasons are information, feedback and influence at both the individual and collective levels. Each purpose has specific outcomes ranging from better-informed access to care through to involvement in treatment decisions. (HcS 1, 2)

8.5 The Establishment Agreements of each Cardiac Network should set out the ways for ensuring patient and carer involvement. Initiatives may include involvement in:

- The Expert Patient Programme made available by the Welsh Assembly Government.
- The British Heart Foundation (BHF) Hearty Voices programme which offers training and support for those representing themselves or others on cardiac issues.
- Discovery Interviews - developed by the CHD Collaboratives in England. These use patient interviews to understand ways in which the patient experience can be improved.
- Involvement of voluntary groups specialising in the support of people with cardiac disease, arrhythmias and their families. Details

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83 National Assembly for Wales (2001) *Improving Health in Wales - A plan for the NHS with its Partners*, NAW.
relating to adult congenital heart disease support groups will be included in the full publication of the NSF. (HcS 1, 2)

8.6 All patients should be offered appropriate information and advice to enable them, and their carers, to share in decisions about their care. Patient-held records have already been developed within each Cardiac Network and patients with established coronary heart disease should be offered a patient held record. The information that should be available for patients with different conditions is described in Standards 2 to 7. (HcS 6)

8.7 All services should have mechanisms to gather views from patients and carers about their experience of the services they have used. All services should also have mechanisms to involve service users and carers in decisions about the organisation and management of the service. (HcS 1, 2)

8.8 Cardiac Networks and their constituent organisations should review the range of support groups for service users within their network and consider whether the development of further support groups for people with cardiovascular disease should be encouraged.

**Care Pathways**

8.9 Care pathways should be in place within each Cardiac Network. It is expected that pathways should include:

- A map of the ‘patient journey’, including a patient-focused version of the pathway.
- Clinical guidelines for the main aspects of care, including indications for:
  - investigations and diagnostic criteria
  - non-pharmacological treatment
  - pharmacological treatment
  - interventions and devices.
- Referral guidelines, including the indications for referral and the agreed service to which patients will be referred, whenever the pathway involves patients moving between services.
- Arrangements for monitoring and follow up. (HcS 7)

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88 The National Heart Forum (NHF) is an alliance of national organisations working to reduce the risk of coronary heart disease and related conditions and comprises charities, non-governmental and medical professional organisations. http://www.heartforum.org.uk/

89 Relevant voluntary organisations include Cardiac Risk in the Young (CRY), Sudden Adult/Arrhythmia Death Syndrome (SADS UK) and the Arrhythmia Alliance.
8.10 Treatment guidelines should ensure timely access to treatment for all patients where treatment is indicated by current national guidelines and should:

- Cover all aspects of the patient journey, including assessment, investigation, treatment, monitoring and follow up.
- Cover care that is realistic within current resources and that to which services should be aspiring.
- Be consistent with the latest evidence-based guidance. (HcS 12)
- Be auditable. (HcS 28)
- Be capable of achieving the target waiting times for investigations and treatments, bearing in mind that these target times will become shorter during the implementation of this National Service Framework. (HcS 2)
- Be consistent with and, where necessary, cross-refer to guidelines for the diagnosis and management of conditions covered in other Standards of this National Service Framework.
- Be consistent with and, where necessary, cross-refer to guidelines relating to cardiac rehabilitation services.

**End of Life and Palliative Care**

8.11 Supportive, palliative and end of life care should be provided to those who need it and their carers. The All Wales Care Pathway for the Last Days of Life should be followed for those patients and their carers. If necessary, referral should be made to specialist palliative care services.

**Workforce**

8.12 All services should have sufficient staff with appropriate skills and competencies for the role they are undertaking. The British Cardiovascular Society has recommended staffing levels and services should be working towards these recommendations. Public health advice will also be needed. Staff should be undertaking continuing professional development of relevance to their work in this area. (HcS 22,24)

8.13 Skills for Health have developed national workforce competencies for coronary heart disease and arrhythmias that describe in detail the competencies needed for staff working in CHD and arrhythmia related

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90 Relevant references are given at the end of the section relating to each Standard.
92 [www.bcs.com](http://www.bcs.com)
services. Organisations can also use the national CHD and arrhythmia competencies to help them:

- Plan their workforce requirements
- Design jobs and develop job descriptions
- Redesign roles and patient pathways
- Recruit people with the necessary knowledge, skills and experience
- Provide targeted induction to bring new appointees quickly up to speed
- Identify individual and team development needs and plan to address these
- Appraise and develop the performance of individual practitioners
- Influence service redesign

(HcS 22, 24)

8.14 The organisation of services should ensure that staff are seeing sufficient patients and, where appropriate, undertaking sufficient numbers of procedures, in order to maintain their competence for the roles they are fulfilling. (HcS 22, 24)

**Facilities and equipment**

8.15 All cardiac disease-related services should be provided in pleasant facilities that are easily accessible, including to people with disabilities. All facilities and equipment should meet nationally-recommended standards and should be regularly maintained. Details of the facilities expected for each type of service are given in the Wales Quality Requirements for the Care of Patients with Cardiac Disease. The British Cardiovascular Society also recommends standards for facilities for treating patients with cardiac disease. The Quality Requirements for Adult Critical Care in Wales give more detail of the facilities expected in cardiac care units (level 2 critical care) and ‘step down’ beds (level 1 critical care). (HcS 4)

**Data collection and audit**

8.16 **Data Collection**

Data are collected for audit purposes in primary care (through QOF indicators) and in secondary and tertiary care through a range of Central Cardiac Audit Database (CCAD) programmes. At present, different coding

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93 The competencies can be found at [www.skillsforhealth.org.uk](http://www.skillsforhealth.org.uk)
94 [www.bcs.com](http://www.bcs.com)
95 Welsh Assembly Government, 2006, *Designed for Life: Quality Requirements for Adult Critical Care in Wales*, Cardiff, WAG
96 [www.ccad.org.uk](http://www.ccad.org.uk)
systems are used in primary, secondary and tertiary care. This does not easily allow audit or performance management of the patient pathway across sectors. The development of new information systems to support the Access 09 Project and the monitoring of the waiting time for the whole patient journey will help to make this possible. (HcS 25)

8.17 Audit

A national mechanism for analysis and regular reporting of patterns and trends in cardiac disease across Wales should be developed. This facility will require appropriate expertise and resources. The work undertaken should cover both epidemiological and activity monitoring and include risk factors and risk calculation as well as investigations and treatment. The facility should also support Network or Wales-wide audit programmes where these are agreed by Cardiac Networks. All providers of services will be expected to participate in this work.

Local services should have the capability to analyse local data in addition to the data set required at a national level. As indicated in Standards 3 to 6, hospital cardiac teams, local heart failure teams and cardiac rehabilitation teams should be participating in the relevant CCAD audit programmes, each of which is directed by the relevant professional body. These currently include:

- Adult Cardiac Intervention
- Cardiac Rhythm Management
- Adult Cardiac Surgery Service
- Ambulance Outcomes
- Cardiac Rehabilitation
- Congenital Heart Disease
- Heart Failure
- Infarct Angioplasty
- Myocardial Infarction

A dataset for complications of catheterisation has also been developed in Wales.

Individual practices, teams and Cardiac Networks should use results from CCAD programmes and Network audits to compare their practice with other services. (HcS 28)
Information Technology

8.18 The aim of the Informing Healthcare Programme\textsuperscript{97} is to develop, deploy and maintain across Wales an information infrastructure to ensure the NHS in Wales can provide:

- Continuous and integrated care for patients throughout their journey throughout the health service and social care.
- Care closer to home for patients, keeping them informed about the progress of their care and supporting informed decision making.
- Co-ordinated care so that contributors in the health service are working together for the benefit of the patient.

The implementation of this programme is an important part of improving services for people with cardiac disease. (HcS 25)

Medicines Management

8.19 Primary care teams, community pharmaceutical services and those providing Primary Care support should have programmes for the development of high quality medicines management. These medicines management systems should ensure a partnership approach to improving concordance with treatment, involving the patient, carers and all services involved. Patients should have the option to choose not to take treatment. There should be appropriate flows of information between primary, secondary and tertiary care to ensure a smooth transition of patient care between these services. The expected dosage and duration of treatment should be clearly communicated between services and to the patient. (HcS 19)

8.20 Appropriate pharmacy advice should be available to support the development of medicines management in general practice and community pharmacies. This advice should include arrangements for looking at medicines management issues across primary, secondary and tertiary care to ensure good medicines management for a) patients going into / out of hospital and b) those whose care is managed through shared care arrangements between primary and secondary care.

8.21 Medicines management systems should link to audit programmes so that prescribing patterns can be monitored locally and across the patient pathway, and comparisons made with patterns in other parts of Wales. Feedback from audit programmes should be easily accessible to programmes for improving medicines management. (HcS 28)

\textsuperscript{97} Welsh Assembly Government (2003) Informing Health Care. Transforming healthcare using information and IT, Cardiff, WAG
8.22 Hospital-based medicines management systems should conform to all relevant legislation, the recommendations of the Audit Commission report 'A spoonful of sugar – Medicines Management in NHS hospitals'\(^98\) and demonstrate compliance with Healthcare Standard 19. Appropriate development of pharmacy services, including giving advice and information to patients and supplementary prescribing, are part of making services more responsive to the needs of patients and their carers.

**Research and Development**

8.23 An All-Wales programme of cardiac-related research and development is needed in order to support the future development of treatment and care. This should include participation in appropriate multi-centre trials. (HcS 13)

**Planning, Delivery and Monitoring**

8.24 The organisational arrangements for the planning and delivery of services in NHS Wales will change over the coming years. However services are configured in the future, those responsible for planning and funding services should have a plan to ensure implementation of the National Service Framework. This plan should cover all aspects of the patient pathway, including investigations and treatment, and should ensure achievement of timely access for all patients who need these services (as defined by current guidelines). The plan should take into account the reduction in target waiting times that will be achieved as this NSF is implemented in full. Collaboration will be required to ensure that Network agreed strategies are fully supported in a coherent and integrated manner.

8.25 Regular, rigorous and transparent monitoring processes are essential to ensuring that progress on the development of services for the prevention, diagnosis and treatment of cardiac disease is sustained. These monitoring processes need to cover:

- Progress with implementation plans.
- Monitoring of key targets.
- Epidemiological monitoring.
- Activity monitoring.
- Outcome of clinical audits.

Appendix 1 of the Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease, which accompany this NSF, contains items which could be regularly monitored by Cardiac Networks and reported to Cardiac Network Boards as required.

\(^{98}\) Audit Commission, December 2001. 'A spoonful of sugar – Medicines Management in NHS hospitals',

8.26 The Wales Quality Requirements for the Prevention and Treatment of Cardiac Disease for the implementation of this NSF shows, at a detailed level, what implementation of the structure and process aspects of the Standards and the section ‘Cross-Cutting Interventions’ of this updated National Service Framework should look like in practice. All organisations providing services for the prevention and treatment of cardiac disease should use the Quality Requirements to help improve their services. They can be used for self-assessment or to help structure organisations’ work programmes. They are also suitable for use in peer review although, as yet, there is no agreement to the use of peer review for supporting the development of services and monitoring of progress.
Appendix 1: Acknowledgements and Membership of Development Groups

Acknowledgements

The contributions of Nathan Lester, Professor David Fone and members of the National Public Health Service (NPHS) Health Information Analysis Team to Appendix 2, Chris Tudor-Smith to the updating of Standard 1, members of the Development Groups for Standards 2, 3, 4, 5 and 7 (listed in Appendix 1) and Linda Edmunds and members of the All Wales Cardiac Rehabilitation Working Group are all gratefully acknowledged.

The Cardiac Networks of Wales have been fundamental to the updating process and their input is recognised and appreciated. Dr Phil Thomas, Lead Cardiac Clinical Adviser for Wales and Elizabeth Gould, Programme Co-ordinator have led the process of updating the NSF. The process has been supported throughout by Jane Eminson who facilitated the work of the Development Groups for Standards 2, 3, 4, 5 and 7 and drafted both the updated NSF and Quality Requirements. The updated NSF could not have been achieved without the perseverance and hard work of these many individuals.

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<tr>
<td>Alun Scourfield</td>
<td>General Practitioner, CPD Co-ordinator for Caerphilly and GP Appraisal Co-ordinator</td>
</tr>
<tr>
<td>Jenny Welstand</td>
<td>Clinical Nurse Specialist, North East Wales NHS Trust</td>
</tr>
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</table>

### STANDARD 5

<table>
<thead>
<tr>
<th>Name</th>
<th>Title, Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Anderson</td>
<td>Consultant Cardiologist, Swansea NHS Trust</td>
</tr>
<tr>
<td>Rob Bleasdale</td>
<td>Consultant Cardiologist, Pontypridd and Rhondda NHS Trust</td>
</tr>
<tr>
<td>Elizabeth Gould</td>
<td>CNCG Co-ordinator</td>
</tr>
<tr>
<td>Catrin Hanks</td>
<td>North Wales Cardiac Network Manager</td>
</tr>
<tr>
<td>Lynda McGurk</td>
<td>Principal Cardiac Physiologist, Cardiff and Vale NHS Trust representing Clinical Physiology Sub-Group, Welsh Scientific Advisory Committee</td>
</tr>
<tr>
<td>Alan Morgan</td>
<td>Patient Representative</td>
</tr>
<tr>
<td>Peter O’Callaghan</td>
<td>Consultant Cardiologist, Cardiff &amp; Vale NHS Trust</td>
</tr>
<tr>
<td>Ian O’Connor</td>
<td>Mid &amp; South West Wales Cardiac Network GP</td>
</tr>
<tr>
<td>Karen Pitt</td>
<td>National Clinical Audit Manager and CHD Lead, Welsh Ambulance Services Trust</td>
</tr>
<tr>
<td>Phillip Thomas</td>
<td>Director of Cardiac Services for Wales</td>
</tr>
<tr>
<td>Nick Waterfield</td>
<td>Associate Specialist – Cardiology, Conwy &amp; Denbighshire NHS Trust</td>
</tr>
<tr>
<td>Mandy Welsh</td>
<td>Arrhythmia Specialist Nurse, Cardiff &amp; Vale NHS Trust</td>
</tr>
<tr>
<td>Jayne Williams</td>
<td>Arrhythmia Specialist Nurse, Cardiff &amp; Vale NHS Trust</td>
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<tr>
<td>STANDARD 6</td>
<td>South East Wales Cardiac Network Lead and Cardiac Rehabilitation Nurse Specialist</td>
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<tr>
<td>Rose Batten</td>
<td>Janette Bowen Clinical Lead Occupational Therapist, Cardiac Rehabilitation Team, Carmarthenshire Division, Hywel Dda NHS Trust</td>
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<tr>
<td>Adrienne Cooke</td>
<td>Joanne Davies CNS Cardiac Rehab/CHD, Powys LHB</td>
</tr>
<tr>
<td>Linda Edmunds</td>
<td>Jenny Matthews BHF Cardiac Liaison Specialist Nurse, Cardiac Rehabilitation Team, Carmarthenshire Division, Hywel Dda NHS Trust</td>
</tr>
<tr>
<td>Rachael Owen</td>
<td>Linda Speck Consultant Clinical Health Psychologist, Bro Morgannwg NHS Trust</td>
</tr>
<tr>
<td>Elaine Tanner</td>
<td>Margaret Upton Clinical Lead Physiotherapist, Cardiac Rehabilitation Team, Carmarthenshire Division, Hywel Dda NHS Trust</td>
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<td>Richard Cowell</td>
<td>Consultant Cardiologist, North East Wales NHS Wales</td>
</tr>
<tr>
<td>Angela Haines</td>
<td>Service Improvement Manager, ACHD North West Cardiac Networks</td>
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<tr>
<td>Navroz Masani</td>
<td>Consultant Cardiologist, Cardiff &amp; Vale NHS Trust</td>
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<tr>
<td>Peter O’Callaghan</td>
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<td>Patient Representative</td>
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<td>Phillip Thomas</td>
<td>Lead Cardiac Clinician for Wales</td>
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<tr>
<td>Andrew Wood</td>
<td>Consultant Radiologist, Cardiff &amp; Vale NHS Trust</td>
</tr>
<tr>
<td>Dirk Wilson</td>
<td>Consultant Paediatric Cardiologist, North East Wales NHS Trust</td>
</tr>
</tbody>
</table>
Appendix 2:

Epidemiology of coronary heart disease and arrhythmias in Wales

1 This appendix describes the burden of premature death and ill health which coronary heart disease and arrhythmias place on the Welsh nation. It also covers the risk factors for these diseases, access to services and the relationship of diagnostic and treatment services to socio-economic deprivation within Wales. Data on the risk factors for coronary heart disease are taken from the latest Welsh Health Survey. Data from the Office for National Statistics are used to show the pattern of coronary heart disease mortality. The Patient Episode Database for Wales is used for hospital inpatient and daycase activity relating to coronary heart disease. Data are included from the British Cardiovascular Intervention Society on percutaneous coronary interventions and from the Cardiac Networks Devices Survey Group in collaboration with the UK National Pacemaker and ICD Databases.

2 This appendix uses mainly age-standardised rates. An age-standardised rate is a comparative statistic which uses the age-specific crude rates of an area, for example, an original Local Health Board (LHB), to produce a figure which represents the total number of events that would occur in a standard population if that standard population’s crude rates were the same as those of the LHB. Standardised rates are used primarily when the populations have different age structures and so the comparisons of crude rates may be misleading. Standardised rates provide a more valid comparison.

Deaths from coronary heart disease and arrhythmias

3 Coronary heart disease (CHD) is common – accounting for over 6,000 deaths in Wales in 2004 (ONS VS3). It is a largely preventable cause of ill health and premature death (Farmer, Miller and Lawrenson, 1996). The incidence of CHD increases with age and is higher in men than in women. Figure A2.1 shows age-specific CHD death rates for males and females. Death rates for young and middle aged people are low after which there is a rapid increase.

4 In 2004, deaths from CHD accounted for just under 19% of all deaths in Wales. The CHD death rate in Wales has been falling continuously for a number of years (figure A2.2). Figure A2.2 also shows how the mortality gap between males and females has narrowed.

5 Figure A2.3 shows the age standardised CHD mortality rate for males and females aged 35 to 74 in selected developed countries in the year 2000. The data show that the death rate in the UK is comparatively high. Caution
should be exercised when comparing cause specific death rates across different countries because variations may occur which are due to differences in the way deaths are recorded.

6 Figure A2.4 shows how the European age standardised mortality rate (EASMR) for CHD among men aged 35 to 74 years varies across the United Kingdom. The North East region of England is also included as the population size, age structure and socio-economic make up is similar to that of Wales. The chart shows that the EASMR for Wales is above that of England but lower than Northern Ireland, North East Region and Scotland.

7 Figure A2.5 shows how, within Wales, the CHD EASMR varies considerably from 105 per 100,000 in Monmouthshire to 155 per 100,000 in Caerphilly. The chart shows whether the rate for each local authority is statistically significantly different to the rate for Wales. The areas with the highest rates are mainly in the south Wales valleys and north east Wales.

Figure A2.1 Age-specific CHD death rates, Wales, 2002-2004

Source: ONS ADDE
Figure A2.2 CHD deaths, European age standardised rate (EASMR), Wales, 1990-2003

Source: Healthshow 2005.1

8 Figure A2.6 shows the CHD EASMR at small area level in Wales. The units used are middle super output areas (MSOAs). This is a new statistical geography created by the Office for National Statistics. The advantage is that, unlike electoral ward geography, MSOAs are stable over time and more homogeneous in terms of population size. This allows analysis to be conducted which is less prone to random variation due to small numbers of events and which may be compared across time. The map shows the CHD EASMR grouped into fifths having been placed in rank order. The 83 MSOAs with the highest rates have the darkest colour. The map shows that the MSOAs in the highest fifth are located mainly in the south Wales valleys, north east Wales and parts of Cardiff, Newport and Swansea.

9 Arrhythmias account for more than 3,000 sudden deaths each year in Wales. Many out-of-hospital cardiac arrests are due to arrhythmias and have a 94% fatality rate (Pell et al, 2001).
Figure A2.3  CHD deaths, direct age standardised rate, males and females aged 35 to 74, selected developed countries, 2000

Source: BHF Heartstats
Figure A2.4 CHD deaths, European age standardised rate, males aged 35-74, UK nations, 2004

![Bar chart showing EASMR (European age standardised rate) per 100,000 males for England, Wales, Northern Ireland, North East Region, and Scotland.](chart1)

Source: ONS

Figure A2.5 CHD deaths, European age standardised rates, all persons, Welsh Local Authorities, 2002-2004

![Bar chart showing EASR (European age standardised rate) per 100,000 population for various Welsh local authorities.](chart2)

Compared with Wales:
- Significantly higher
- Higher
- Significantly lower
- Lower

Wales = 133

Source: ONS ADDE
Risk factors for coronary heart disease and arrhythmias

10  Smoking is the major preventable cause of illness and preventable death in Wales. Every year around 6,000 smokers in Wales die as a result of their habit, with smoking estimated to cause 17% of all deaths from heart disease. While the prevalence of smoking has been falling since the 1960’s, 2004-05 Welsh Health Survey data show that over a quarter of adults (29% of men, 26% of women) report that they currently smoke. Smoking amongst adolescent boys has also been falling in recent years though rates among girls have yet to do so. In 2002, 27% of girls and 16% of boys aged 15 in Wales reported smoking at least once a week.
The Welsh Health Survey shows that 73% of adults in Wales are currently exposed to second-hand smoke and it is estimated that a minimum of 400 deaths among non-smokers from lung cancer, CHD, stroke and respiratory disease will be averted in Wales each year as a result of a ban on smoking in workplaces and public places.

National Diet and Nutrition Surveys indicate that, in Wales, the intake of saturated fat, sugars and salt is higher than recommended, while the Welsh Health Survey 2004/05 showed that only 41% of adults in Wales report eating five or more portions of fruit and vegetables per day. It has been estimated that eating at least five portions of fruit and vegetables a day could lead to a reduction of up to 20% in overall deaths from coronary heart disease (Department of Health, 2004).

The Welsh Health Survey showed that only 29% of adults (36% of men, 23% of women) report that they met the guidelines for physical activity in the previous week, that is, at least 30 minutes of at least moderate intensity physical activity on five or more days of the week. The low level of female participation in physical activity appears at an early age. In 2002, 18% of girls compared with 39% of boys aged 15 in Wales reported that they engaged in physical activity for an hour or more on most days.

Familial hypercholesterolaemia (FH) carries a higher risk of coronary heart disease. FH has an incidence of 1 in 500 in populations with a dominant pattern of inheritance. This is equivalent to 6,000 patients in Wales of which, in 2006, only 1,200 have been diagnosed.

Living with coronary heart disease and arrhythmias

Heart failure is the only major cardiovascular disease with increasing incidence and prevalence mainly due to the greater number of survivors of myocardial infarction, and the increasingly elderly population. The Heart of England Screening study suggests that more than 3% of people aged 45 years and over in the UK have definite or probable heart failure. From these prevalence rates it is estimated that some 376,000 men and 301,000 women aged 45 years and over living in the UK have definite heart failure, giving a total of around 676,500. If probable cases of heart failure are included, there are an estimated 489,000 men and 403,000 women, a total of 912,000 people aged 45 years and over, who have heart failure in the UK today.\(^99\) The prevalence of heart failure increases steeply with age, so that while around 1% of men and women aged under 65 years have heart failure, this increases to about 7% of those aged 75 to 84 years and 15% of those aged 85 years and above.

\(^99\) These estimates are given in the British Heart Foundation CHD statistics, 2006 edition and are derived from applying age-specific rates to the UK population. They supersede estimates in previous BHF heart statistics publications.
Arrhythmias also place a considerable burden of disease on Welsh communities. Approximately 3 to 5% of attendances at emergency departments\(^{100}\) and 1 to 3% of hospital admissions are due to transient loss of consciousness. Many of these patients will have arrhythmias (European Society of Cardiology 2004). The prevalence of atrial fibrillation doubles with each advancing decade of age from 0.5% at age 50 to 59 years to almost 9% at age 80 to 89 years (Kannel et al 1998). Atrial fibrillation is associated with a fivefold increased stroke risk compared to people without this condition. The incidence of strokes attributable to atrial fibrillation increases from 1.5% at age 50 to 59 years to 23.5% at age 80 to 89 years (Wolf et al 1998).

**Hospital admissions**

The source of hospital activity data presented within this report is the Patient Episode Database for Wales (PEDW). PEDW is managed by Health Solutions Wales (HSW) and provides an electronic record of all inpatient and daycase activity for Welsh residents in NHS hospitals in England and Wales and for all patients treated in the organisations previously known as Welsh Trusts. Records within PEDW are based on finished episodes of care under a particular consultant in one health care provider (FCEs). Multiple FCEs may occur within one hospital provider spell (or stay in hospital).

Epidemiological analysis of PEDW data using either FCEs or provider spells as the currency has, in the past, been problematic. This is because there is variation in the way provider spells and episodes are recorded across NHS trusts.

In addition to the problem of counting provider spells and FCEs, people may be admitted to hospital more than once during a year for the same underlying illness. FCE or provider spell-based analysis also means that related procedures may be counted more than once. For epidemiological analysis, it is preferable to avoid counting such persons or procedures more than once.

In order to try to overcome these problems, hospital activity data for Welsh residents presented within this report are based on ‘persons per year’ (rather than FCEs or spells) where the admission date is between 1st January 2003 and 31st December 2005. This methodology counts a patient once per calendar year, irrespective of how many separate admissions to hospital they may have had during that year. The methodology is still in its infancy and the results should therefore be treated with some caution.

Figure A2.7 shows the person based hospital admission rate where there is any mention of CHD (ICD-10 I20 to I25), at local authority level between 2003 and 2005. There is considerable variation across local authorities, the

\(^{100}\) Also known as Accident and Emergency (A&E) Departments.
rate more than doubling from 609 in Powys to 1329 in Bridgend. Most of the areas with significantly high rates are partly or entirely within the south Wales valleys area.

22 Figure A2.8 shows the person based hospital admission rate where there is any mention of acute myocardial infarction (ICD-10 I21), at local authority level between 2003 and 2005. The rate varies from 98 in Ceredigion to 169 in Blaenau Gwent. It is interesting to note that the local authorities with the highest rates are not exclusively in the south Wales valley area. Indeed, the rate for Rhondda Cynon Taff is slightly lower than the Welsh average.

23 Figure A2.9 shows the person based hospital admission rate where there is any mention of angina (ICD-10 I20), at local authority level between 2003 and 2005. The rate ranges from 242 in the Isle of Anglesey to 651 in Bridgend. The local authorities with the highest rates are located across the south Wales valleys and in north east Wales.

24 Figure A2.10 shows the person based hospital admission rate where there is any mention of heart failure (ICD-10 I50), at local authority level between 2003 and 2005. The rate almost doubles from 208 on Ceredigion to 399 in Blaenau Gwent. Once again the areas with the highest rates are dominated by local authorities which are partly or entirely within the south Wales valleys area.

25 Figure A2.11 shows the person based hospital admission rate where angiography has been performed (OPCS4 K63 and K65) at local authority level between 2003 and 2005. There is a huge variation in the rate ranging from 133 in Conwy to 427 in Bridgend. Neath Port Talbot also exhibits a very high rate and it is interesting to note that much of the population of these local authorities is served by the same NHS trust. Some of the local authorities with below average rates, such as Merthyr Tydfil, Blaenau Gwent and Rhondda Cynon Taff, have significantly high CHD death rates suggesting that there may not be equity of access to angiography.

26 Figure A2.12 shows the person based hospital admission rate where revascularisation (CABG or PCTA) has been performed (OPCS4 K40 to K50) at local authority level between 2003 and 2005. Once again, there is a very large variation across Wales with the rate ranging from 62 in Monmouthshire to 145 in Neath Port Talbot. As with angiography, the geographic pattern of admissions for revascularisation does not correspond to that for CHD deaths which is suggestive of inequity of access to treatment. The issue of equity of access to diagnostic tests and treatment for CHD is further investigated later in this section.
Figure A2.7 Persons admitted to hospital for CHD, EASMR, Welsh Local Authorities, 2003-2005

Compared with Wales
- Significantly Higher
- Higher
- Lower
- Significantly Lower

Wales rate = 914.5

Figure A2.8 Hospital admission rate (EASMR) for myocardial infarction, person-based, Welsh Local Authorities, 2003-2005

Compared with Wales
- Significantly Higher
- Higher
- Lower
- Significantly Lower

Wales rate = 132.4
Figure A2.9  Hospital admission rate (EASMR) for angina, person-based, Welsh Local Authorities, 2003-2005

Compared with Wales
- **Significantly Higher**
- **Higher**
- **Lower**
- **Significantly Lower**

Wales rate = 424.1

Figure A2.10  Hospital admission rate (EASMR) for heart failure, person-based, Welsh Local Authorities, 2003-2005

Compared with Wales
- **Significantly Higher**
- **Higher**
- **Lower**
- **Significantly Lower**

Wales rate = 267.7
Figure A2.11  Hospital admission rate (EASMR) for angiography, person-based, Welsh Local Authorities, 2003-2005

Compared with Wales
- Significantly Higher
- Higher
- Lower
- Significantly Lower

Wales rate = 212.2

Figure A2.12  Hospital admission rate (EASMR) for revascularisation, person-based, Welsh Local Authorities, 2003-2005

Compared with Wales
- Significantly Higher
- Higher
- Lower
- Significantly Lower

Wales rate = 100.4
Figures A2.13 and A2.14 show that rates of percutaneous coronary interventions (PCIs) are lower in Wales than the rest of the UK and than other developed countries.

**Figure A2.13 Percutaneous coronary interventions (PCIs) per million population**

![Bar chart showing PCIs/million UK Countries (2000 to 2005)](chart.png)

Source: BCIS Audit Returns; Adult Interventional Procedures; 2005
Figure A2.14  Time trends in the annual use of PCI (numbers per 1 million inhabitants)

Source: European Heart Survey

Figure A2.15 shows that rates of coronary artery bypass grafts (CABGs) are lower in Wales than the rest of the UK and than other developed countries.

101 www.escardio.org/knowledge/ehs/slides/
A detailed analysis of pacemaker and implantable cardiac defibrillator (ICD) practice in 2003 and 2004 has been published for Wales. This shows that the need for cardiac pacemakers is higher than the UK average, particularly in Conwy, Powys, Pembrokeshire and Carmarthenshire. The rate of pacemaker implantation in 2003 and 2004 for Wales was 290.7 per million population compared with 411.3 per million for England (adjusted for age and sex differences). Pacemaker implantation rates also varied within Wales with Gwyneth and Wrexham having reasonably high rates and Powys, Swansea, Rhondda, Pembrokeshire, Carmarthenshire and Bridgend having very low rates. ICD implant rates appear higher close to the implant centres in Cardiff and Swansea. Figures A2.16 and A2.17 show new pacemaker and new ICD implant rates in Europe, England and Wales.
Figure A2.16  New ICD implant rate 2003 and 2004 per million population

New ICD Implant Rate

Source: Cardiac Networks Devices Survey Group in collaboration with the UK National Pacemaker and ICD Databases, 2006

Figure A2.17  New pacemaker implant rates 2003 and 2004 per million population

New Pacemaker Implant Rate

Source: Cardiac Networks Devices Survey Group in collaboration with the UK National Pacemaker and ICD Databases, 2006
Trends

Figures A2.18 and A2.19 show trends in the European age standardised death rates (EASMR) for men and women aged 35 to 74 years from 1978 to 2004 for the different countries of the UK. In 1974 Welsh males (along with Scotland and Northern Ireland) had higher rates than England but by 2004 the rates were comparable with England. For women, the rates are lower over this period but the decline has been less.

**Figure A2.18**

European age standardised death rates from CHD per 100,000 population by country, men aged 35-74, 1978-2004

*Source: BHF Heartstats, 2006*
The CHD Health Outcome Target for 2012 is to reduce the age-specific death rate for 65 to 74 year olds in Wales to below 400 per 100,000 population. The CHD Health Inequalities Target is to achieve a more rapid improvement in the most deprived groups. Figure A2.20 shows the age-specific rates for men and women aged 65 to 74 years old (the Key Target group). By 2004, the rate for men had declined from 1,700 to 600 per 100,000 population. The rate for women is already below target, having declined from 750 to 250 per 100,000 population by 2004.
Equity of provision

32 This section aims to show the relationship between CHD risk factors, deaths and hospital treatment and socio-economic deprivation in order to indicate whether services and treatment for people with CHD are being provided in an equitable fashion. The measure of deprivation used is the Townsend index (Townsend, Phillimore & Beattie, 1988). Figure A2.21 shows the index for Wales at electoral division (ward) level. The map is shaded by fifth of deprivation.

33 The Townsend index of deprivation is the most widely used index and is one of the most validated measures of material deprivation (Policy Action Team 18, 2000; Gordon, 1999). It is based on four indicators:

- % persons unemployed;
- % households with no car;
- % households not owner occupied;
- % households overcrowded.

To calculate fifths, electoral divisions are ranked according to deprivation score and divided into five equal groups. The map shows that the most deprived fifths tend to be in the south Wales valleys, parts of Cardiff, Newport, and Swansea. Clusters of deprivation can also be found along the north Wales coast, but there are small pockets located throughout Wales.

34 The following data show CHD risk factors and outcomes grouped by fifth of deprivation. Data are shown as percentages, or standardised ratios or rates, which take the varying age structure among the fifths into account. Ninety-five per cent confidence limits are shown in the tables (in parentheses). ‘Rate ratios’ are included which compare the health of the most deprived fifth with the least deprived fifth. For example, a rate ratio of 2 means that the rate for the most deprived group is twice that of the least deprived group. The tables in the section also show whether health and associated indicators are statistically significantly worse in the most deprived fifth compared with the least deprived fifth.

35 Data from the 1998 Welsh Health Survey are used to present information on the prevalence of CHD risk factors in relation to socio-economic deprivation. Table A2.1 shows the prevalence of smoking among adults aged 18 and over by fifth of deprivation in Wales. At just under 33 per cent, the prevalence of smoking in the most deprived fifth of wards in Wales is more than one and a half times the prevalence in the least deprived fifth.
Figure A2.21  Townsend index of deprivation, Welsh electoral divisions, 2001

Deprivation
Derived from Census 2001

- Most Deprived
- Next Deprived
- Median
- Next Affluent
- Most Affluent
Table A2.1  Percentage of adults who smoke by fifth of deprivation, Wales, 1998

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<tr>
<th>Deprivation fifth</th>
<th>Smoking: percentage (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (least deprived)</td>
<td>19.9 (18.8–21.0)</td>
</tr>
<tr>
<td>2</td>
<td>24.4 (23.2–25.6)</td>
</tr>
<tr>
<td>3</td>
<td>26.6 (25.4–27.8)</td>
</tr>
<tr>
<td>4</td>
<td>29.1 (27.9–30.2)</td>
</tr>
<tr>
<td>5 (most deprived)</td>
<td>32.7 (31.6–33.8)</td>
</tr>
<tr>
<td>Overall</td>
<td>26.9 (26.4–27.4)</td>
</tr>
<tr>
<td>Rate ratio 5:1</td>
<td>1.64 (1.54–1.75)</td>
</tr>
</tbody>
</table>

Source: Welsh Health Survey, 1998

Table A2.2 shows data for healthy diet, physical inactivity and obesity by fifth of deprivation. Standardised ratios are presented, which take into account the varying age structures, allowing valid comparisons to be made with the all Wales figures (standardised ratio for Wales = 100). It is clear that persons resident in the most deprived fifth of wards in Wales are less likely to have a healthy diet, more likely to be physically inactive and more likely to be obese.

Table A2.2 Healthy diet\(^1\), physical inactivity, obesity\(^3\), standardised ratio (95% CI), adults, 1998

<table>
<thead>
<tr>
<th>Deprivation fifth</th>
<th>Healthy diet(^1)</th>
<th>Physical inactivity(^4)</th>
<th>Obesity(^5)</th>
</tr>
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<tr>
<td>1 (least deprived)</td>
<td>122 (116–128)</td>
<td>61 (55–68)</td>
<td>78 (72–84)</td>
</tr>
<tr>
<td>2</td>
<td>114 (108–120)</td>
<td>82 (75–90)</td>
<td>94 (87–101)</td>
</tr>
<tr>
<td>3</td>
<td>103 (97–108)</td>
<td>97 (89–105)</td>
<td>102 (95–109)</td>
</tr>
<tr>
<td>4</td>
<td>88 (83–93)</td>
<td>126 (117–135)</td>
<td>108 (101–115)</td>
</tr>
<tr>
<td>5 (most deprived)</td>
<td>79 (75–84)</td>
<td>127 (118–136)</td>
<td>114 (108–121)</td>
</tr>
<tr>
<td>Overall</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Rate ratio 5:1</td>
<td>0.65 (0.60–0.70)</td>
<td>2.08 (1.83–2.37)</td>
<td>1.47 (1.33–1.62)</td>
</tr>
</tbody>
</table>

Source: WHS98.

Table A2.3 shows how the standardised mortality ratio for CHD increases with socio-economic deprivation. The death rate in the most deprived fifth of wards is almost a third higher than in the least deprived fifth.

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\(^1\) Defined here as green vegetables or salad consumed six or seven days per week.
\(^2\) No weekly exercise.
\(^3\) Defined here as body mass index greater than 30.
Table A2.3CHD mortality, standardised mortality ratio (95% CI), 1996–2000

<table>
<thead>
<tr>
<th>Deprivation fifth</th>
<th>Coronary heart disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (least deprived)</td>
<td>86 (84–88)</td>
</tr>
<tr>
<td>2</td>
<td>93 (91–95)</td>
</tr>
<tr>
<td>3</td>
<td>98 (96–100)</td>
</tr>
<tr>
<td></td>
<td>107 (105–110)</td>
</tr>
<tr>
<td>4</td>
<td>110</td>
</tr>
<tr>
<td>5 (most deprived)</td>
<td>111 (108–113)</td>
</tr>
<tr>
<td>Overall</td>
<td>100</td>
</tr>
<tr>
<td>Rate ratio</td>
<td>5:1 (1.29 (1.25–1.33))</td>
</tr>
</tbody>
</table>

Source: ONS.

Coronary heart disease (CHD), coronary angiography, and coronary revascularisation hospital admission rates have recently been reported for deprivation fifths in Wales (Lester, 2004). It is important to note that the data presented here use the traditional PEDW currencies of provider spells and FCEs. They are therefore not directly comparable with the hospital data presented earlier in this section. Table A2.4 shows that for each of these diseases or interventions, there is an association with deprivation but it may not be linear. Comparing the rate ratios between the most and least deprived fifths, the table shows that the rate ratios decrease from 1.36 for admission to hospital with a CHD diagnosis to 1.19 for coronary angiography. There is a further decline in the rate ratio to 1.14 when looking at treatment in the form of revascularisation (percutaneous transluminal coronary angioplasty and coronary artery bypass graft). This compares with a rate ratio of 1.29 for CHD mortality. The data indicate that there may be an under provision of treatment for people resident in more deprived areas, particularly those in the most deprived fifth of wards. As discussed above, rates of pacemaker implantation show the same relationship with deprivation.
Table A2.4 Hospital admission for coronary heart disease, coronary angiography, and coronary revascularisation European age standardised rate\textsuperscript{106} (95% CI), 2000–2002.

<table>
<thead>
<tr>
<th>Deprivation fifth</th>
<th>Coronary heart disease</th>
<th>Coronary angiography</th>
<th>Coronary revascularisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (least deprived)</td>
<td>442.3 (433.2-451.5)</td>
<td>174.4 (168.2-180.5)</td>
<td>131.3 (126.0-136.5)</td>
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<tr>
<td>2</td>
<td>494.9 (485.3-504.4)</td>
<td>188.4 (182.1-194.8)</td>
<td>138.8 (133.4-144.2)</td>
</tr>
<tr>
<td>3</td>
<td>539.7 (529.8-549.6)</td>
<td>201.4 (194.9-208.0)</td>
<td>149.1 (143.5-154.7)</td>
</tr>
<tr>
<td>4</td>
<td>595.1 (585.2-605.0)</td>
<td>219.4 (213.0-225.9)</td>
<td>162.1 (156.6-167.6)</td>
</tr>
<tr>
<td>5 (most deprived)</td>
<td>601.3 (591.8-610.8)</td>
<td>206.7 (200.8-212.6)</td>
<td>149.1 (144.1-154.1)</td>
</tr>
</tbody>
</table>

Rate ratio 5:1 1.36 1.19 1.14


\textsuperscript{106} European age-standardised rate per 100 000.
References


Naidoo B, Warm D, Quigley R, Taylor L (2004) Smoking and public health: a review of reviews of interventions to increase smoking cessation, reduce smoking
initiation and prevent further uptakes of smoking. Evidence briefing. London HDA,


Glossary and Abbreviations

Glossary

Ablation
A procedure used to correct certain types of heart-rhythm disorder

ACE inhibitors
Angiotensin converting enzyme inhibitors. A class of drug that reduces blood pressure and improves the function of the heart muscle by inhibiting the action of certain circulating hormones (angiotensins) which are raised in heart failure.

Acute coronary syndrome
A pattern of symptoms of chest pain including both unstable angina and heart attack.

Acute myocardial infarction
Heart attack. Refers to the death of heart muscle (myocardium) which follows sudden reduction in or cessation of the flow of blood down the coronary arteries, e.g. narrowing due to atheroma of the vessels, leading to thrombosis in the coronary arteries.

Angina, angina pectoris
Literally pain in the chest. Usually gripping or crushing in nature in the chest and/or left arm and jaw felt when there is insufficient blood supply to the heart muscle.

Stable angina is the term used for angina (pectoris) which is relatively predictable and the intensity and frequency of which remains similar over long periods.

Unstable angina is angina (pectoris) which is severe and unpredictable and which threatens to progress to an acute myocardial infarction.

Angiogram
A procedure in which a fine catheter is inserted via a blood vessel to inject x-ray opaque dye into the coronary arteries to obtain an x-ray image of the anatomy of the coronary arteries.

Angioplasty
A procedure in which a small balloon on the end of a catheter is inserted into an artery (in CHD the coronary arteries) and inflated to widen a narrowed artery.

Anticoagulation treatment
Anticoagulant drugs are used to reduce the risks of blood clots forming.
**Anti-platelet treatment**
Antiplatelet drugs prevent the blood from clotting.

**Arrhythmia**
An abnormal rhythm of the heart.

**Artery**
A blood vessel that carries blood away from the heart.

**Atheroma**
Deposits of fatty material and cholesterol inside the walls of arteries.

**Atrial fibrillation**
Irregular electrical activity in the atria (the receiving chambers of the heart) leading to irregular contraction of the heart muscle.

**Cardiac arrest**
Complete cessation of the heart beat.

**Cardio-pulmonary resuscitation (CPR)**
The techniques of treating arrest of the heart by artificial respiration and cardiac compression.

**Cardiothoracic**
Of the heart and chest contents e.g. oesophagus and lungs.

**Cardioversion**
The application of electric shock or drugs to attempt restoration of a normal heart rhythm in a patient with cardiac arrhythmia.

**Catheter, cardiac**
A long, narrow tube which, when passed through the veins or arteries into the heart cavities is used for measuring pressures or injecting x-ray opaque dye for outlining the heart and blood vessels.

**Cholesterol**
A substance found in many foods and in all cells. Most of the cholesterol in the body is manufactured in the liver. An important constituent of atheroma.

**Coronary Artery Bypass Grafting**
An open-heart operation in which blockages to the coronary arteries are bypassed by grafting on a length of artery or vein to bring a fresh blood supply to the heart muscle.

**Coronary heart disease**
Narrowing or blockage of the coronary arteries by atheroma, leading to angina, coronary thrombosis or heart attack, heart failure, and/or sudden death.
**Defibrillator**
An instrument for delivering an electric shock in an attempt to terminate ventricular fibrillation.

**ECG (Electrocardiogram)**
A recording of the heart's electrical activity obtained from electrodes positioned on the chest wall and limbs. An exercise (stress) ECG is taken before and during exercise (usually using a treadmill or stationary bicycle) to obtain objective and quantitative recording of myocardial ischaemia on exertion.

**Echocardiography**
Gives an image and measurement of the heart obtained using ultrasound.

**Emergency Department**
A hospital department specialising in the initial assessment and treatment of sudden illness or accident – also known as an Accident and Emergency Department.

**Familial Hypercholesterolemia**
A genetic condition giving rise to raised levels of cholesterol in the blood.

**Fibrillation**
Fast, irregular, electrical activity leading to fast irregular beating of the atria or ventricles.

**Gastro-intestinal**
To do with the stomach or intestine.

**Heart attack**
When one of the coronary arteries becomes blocked by a blood clot and part of the heart muscle is starved of oxygen, causing damage to the heart.

**Heart failure**
A condition in which the pumping action of the heart is inadequate. It can result in the accumulation of fluid in the body and/or congestion of the lungs.

**High density lipoprotein (HDL)**
A complex of fat and protein that may serve to remove cholesterol from the tissues. Sometimes described as the ‘good’ form of cholesterol.

**Hypercholesterolaemia**
Raised levels of cholesterol in the blood.

**Hypertension**
Raised blood pressure.
Implantable cardioverter defibrillator (ICD)
A device implanted within the chest wall. It monitors the heart rhythm and if necessary delivers an electrical impulse or shock to stop the abnormal rhythm.

Implantable loop recorder
A recording device used for finding out about the cause of infrequent symptoms such as dizzy spells or blackouts. It is implanted just under the skin on the chest.

Infarction
Death of tissue following interruption of the blood supply.

Ischaemia
Blood supply inadequate for tissue needs especially during exercise.

Low density lipoprotein (LDL)
A complex of fat and protein which is associated with an increased risk of coronary disease.

Myocardial infarction
A heart attack.

NHS Direct
Nurse-led telephone helpline provided by the NHS.

Nicotine Replacement Therapy (NRT)
Nicotine supplied in the form of chewing gum, patches etc. to reduce craving for nicotine in people attempting to give up smoking.

Primary care
The conventional first point of contact between a patient and the National Health Service.

Primary prevention
The prevention of the development of a condition e.g. CHD, by avoidance of factors known to contribute to its development e.g. smoking, lack of exercise. See also secondary prevention.

Protocols
A plan detailing the steps that will be taken in the treatment of a patient or in a research study.

Percutaneous coronary intervention (PCI)
An invasive procedure to unblock the arteries carrying blood to the heart.
Primary Percutaneous coronary intervention (PCI)
The use of PCI as the main or first treatment for people who have had a heart attack

Percutaneous transluminal coronary angioplasty (PTCA)
Angioplasty of the coronary arteries i.e. the introduction of a balloon on a catheter through the skin (percutaneous), into a blood vessel (transluminal) and into the coronary arteries to widen them.

Revascularisation
A procedure to improve the blood supply. In the case of CHD these include CABG and PTCA.

Saturated fat
A form of fat which, when consumed, increases the blood cholesterol; found mainly in meat and dairy products.

Secondary prevention
In the case of CHD, interventions such as lifestyle changes or drugs aimed at slowing or reversing the progression of disease.

Statins
A class of drugs used to treat raised blood cholesterol and reduce the risk of CHD.

Step down beds
Beds providing a higher level of care than is available on a cardiac or general medical ward. This care may be appropriate for patients immediately following their stay in a cardiac care unit or tertiary cardiac service.

Tertiary centre
A major medical centre providing open-heart surgery and PTCA, which receives referrals from both primary and secondary care.

Thrombolysis
The lysis (dissolving) of blood clots by the use of thrombolytic drugs.

Thrombosis
The process of clot formation (thrombus – clot)

Unstable angina pectoris
Angina which threatens progression to heart attack.

Ventricles
The two main pumping chambers of the heart.

Ventricular fibrillation
Rapid and chaotic beating of the ventricles caused by irregular electrical activity. The most common cause of cardiac arrest and death associated with myocardial infarction.

**Ventricular tachycardia**
A condition where there is a fast heart rate in the ventricles (the two larger chambers of the heart).
Abbreviations

**ACE inhibitors**  Angiotensin Converting Enzyme Inhibitors
**AMI**  Acute Myocardial Infarction
**BACR**  British Association for Cardiac Rehabilitation
**BCIS**  British Cardiovascular Intervention Society
**BCS**  British Cardiac Society / British Cardiovascular Society
**BHF**  British Heart Foundation
**BMI**  Body Mass Index
**BP**  Blood pressure
**CABG**  Coronary Artery Bypass Graft
**CCAD**  Central Cardiac Audit Database
**CCT**  Certificate of Completion of Training
**CCST**  Certificate of Completion of Specialist Training
**CCU**  Cardiac Care Unit
**CHD**  Coronary Heart Disease
**CPD**  Continuing Professional Development
**CPR**  Cardio Pulmonary Resuscitation
**CVD**  Cardiovascular disease
**CVS**  Cardiovascular system
**EASMR**  European age-standardised mortality rate
**ECG**  Electro Cardiograph/Cardiogram
**ERG**  External Reference Group
**FCE**  Finished Consultant Episode
**FH**  Familial hypercholesterolaemia
**GMC**  General Medical Council
**GP**  General Practitioner
**Hb**  Haemoglobin
**HCW**  Health Commission Wales
**HDL**  High-density lipoprotein
**ICD**  Implantable cardiac defibrillator
**ICD (Appendix 2)**  International Classification of Diseases
**ICU**  Intensive Care Unit
**IT**  Information Technology
**IV**  Intravenous
**JRCALC**  Joint Royal Colleges Ambulance Liaison Committee
**LDL**  Low Density Lipoprotein
**LHB**  Local Health Board
**MI**  Myocardial Infarction (heart attack)
**MINAP**  Myocardial Ischaemia National Audit Project
**MSOA**  Middle super output area
**NHS**  National Health Service
**NICE**  National Institute for Clinical Excellence
**NRT**  Nicotine Replacement Therapy
**NSF**  National Service Framework
**ONS**  Office of National Statistics
**OPCS**  Office of Population, Censuses and Surveys
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>PCI</td>
<td>Percutaneous Coronary Intervention</td>
</tr>
<tr>
<td>PDP</td>
<td>Personal Development Plan</td>
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<td>PEDW</td>
<td>Patient Episode Database for Wales</td>
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<tr>
<td>Pmp</td>
<td>Per million population</td>
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<tr>
<td>PTCA</td>
<td>Percutaneous Transluminal Coronary Angioplasty</td>
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<td>Peripheral vascular disease</td>
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