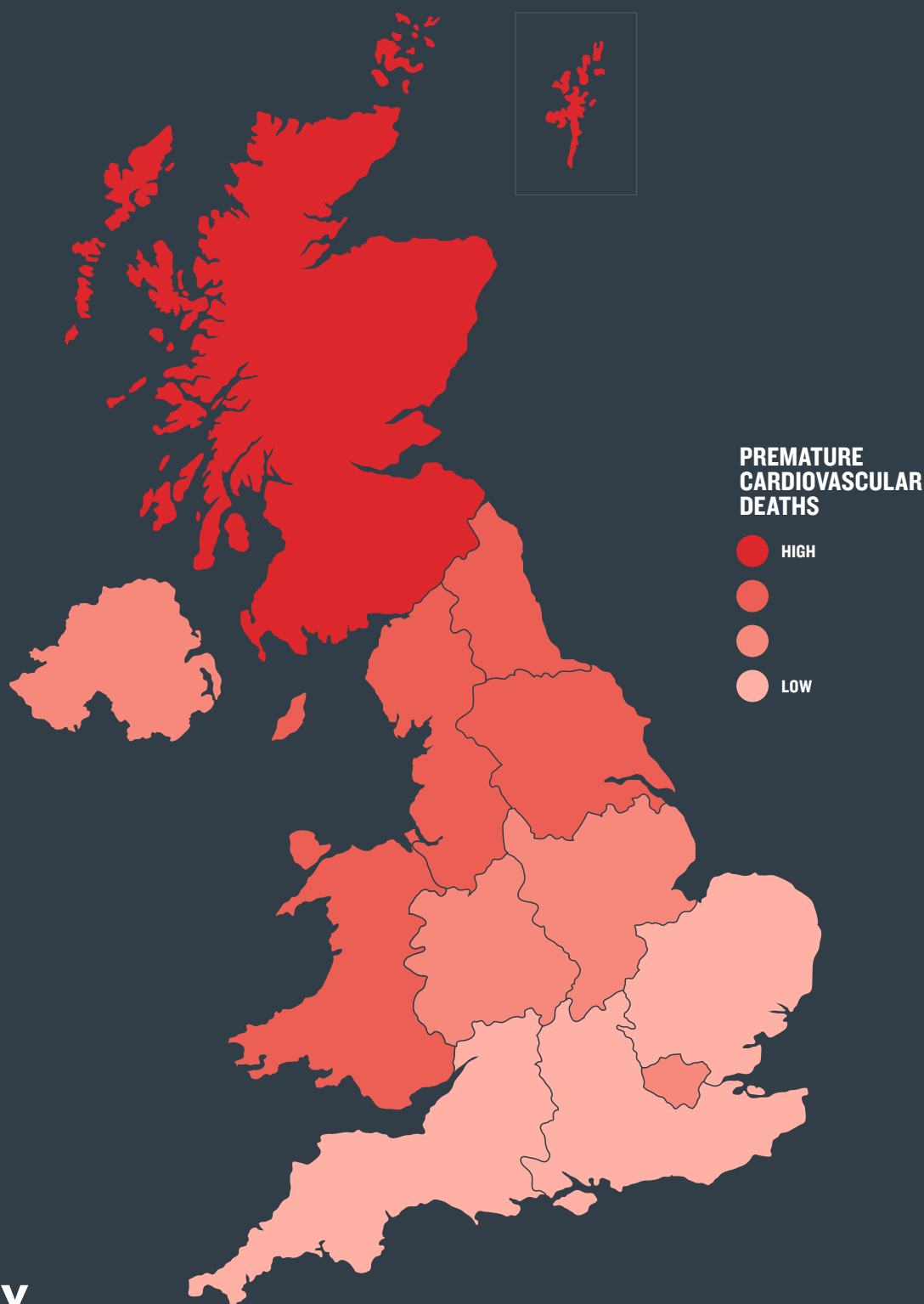




# CARDIOVASCULAR DISEASE STATISTICS 2014

British Heart Foundation Centre on Population Approaches for Non-Communicable Disease Prevention. Nuffield Department of Population Health, University of Oxford



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FOR EVERY  
HEARTBEAT**

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Cover image

Age-standardised death rates from cardiovascular disease in men and women under 75 by country and region, United Kingdom 2010/12. See Table 1.5 for details.

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# CARDIOVASCULAR DISEASE STATISTICS 2014

## BRITISH HEART FOUNDATION CENTRE ON POPULATION APPROACHES FOR NON-COMMUNICABLE DISEASE PREVENTION

Nick Townsend, Julianne Williams, Prachi Bhatnagar, Kremlin Wickramasinghe and Mike Rayner. Nuffield Department of Population Health, University of Oxford

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## FOREWORD

This edition of *Cardiovascular disease statistics* shows that we are making progress towards our vision of a world in which people do not die prematurely or suffer from cardiovascular disease (CVD). Annual mortality statistics show that deaths from cardiovascular disease continue to fall and that cancer has now overtaken CVD as the biggest killer in the UK. This shows the progress we are making in our mission to win the fight against CVD. However, as other statistics in this publication demonstrate, we still have much more work to do.

CVD kills over 160,000 individuals every year in the UK and is still the greatest cause of mortality in women. Furthermore, over 40,000 premature deaths, those in individuals under 75 years of age, are caused by CVD, with more than two thirds of these occurring in men. This highlights what a challenge the BHF faces. Additionally, more people die from coronary heart disease, the cause of heart attacks, than from any single type of cancer, making it still the single biggest cause of death in the UK.

We must recognise that inequalities exist in the number of people dying from and living with CVD and we should redouble efforts to ensure that all individuals have an equal chance of avoiding or surviving CVD. As well as gender inequalities, we find that regional differences persist, with some parts of the UK experiencing double the CVD death rates of others. These differences are even greater for premature deaths. Within England, both mortality and morbidity rates are higher in the North, whilst Scotland, Wales and Northern Ireland almost always have higher prevalence and mortality rates than those found in England.

Medical advances, many of them founded on BHF-funded research, are unquestionably playing a crucial role in decreasing both the incidence of and deaths from CVD. But we need to be better at promoting healthier lifestyles, so that fewer individuals develop CVD. This will improve the health of the population and will alleviate some of the economic burden of CVD.

Since the BHF was formed, more than fifty years ago, we have made huge strides in tackling the burden of CVD in the UK. Our strategy for the future is to strengthen our research to generate new knowledge that is rapidly translated into better prevention of CVD, improved survival from CVD and support for a better quality of life for those living with it. We are making progress but still have a long way to go.



**Professor Peter Weissberg**  
Medical Director, British Heart Foundation

## INTRODUCTION

This is the nineteenth edition of statistics related to heart disease published by the British Heart Foundation. The series of publications began over twenty years ago with the aim of documenting the burden of coronary heart disease (CHD) in the United Kingdom. Since then these publications have expanded to include information on other cardiovascular conditions including stroke and heart failure and are now called Cardiovascular disease statistics.

Cardiovascular disease statistics compendia will return to being annual publications of statistics related to CVD, including mortality, morbidity, treatment and economic costs. We aim to utilise nationally representative statistics released annually which allow us to compare between years confidently and to describe the burden of CVD in all UK countries. In many cases the statistics we present here have been published previously elsewhere but there are a number of tables and figures that are new to this publication; these include age standardised regional mortality data in chapter one and UK prevalence estimates in chapter two. To complement these compendia we will also publish supplements with a special focus on CVD subtypes or risk factors. A supplement of physical activity statistics is due to be released later this year.

This compendium is divided into five chapters. Chapter one describes mortality from cardiovascular diseases including total CVD, CHD and stroke. Data are presented for all ages and for those under 75 years (premature mortality), by gender and by region. Chapter two describes the morbidity burden of cardiovascular diseases in the UK, focusing on estimates of incidence through inpatient hospital episodes and prevalence from general practice data systems. Chapter three presents statistics on the treatment of CVDs through drug therapy and surgical intervention. Chapter four provides estimates of the economic costs of CVDs to the health systems of UK countries. Chapter five presents summary statistics on medical risk factors of CVD, specifically obesity, high blood pressure, diabetes and cholesterol, whilst chapter six covers behavioural risk factors: smoking, diet, physical inactivity and alcohol consumption.

Chapters one to four contain a set of tables and figures to illustrate key points and a brief review of the data presented. Chapters five and six present summary statistics and links to surveys from which more information can be found. Additional tables and figures of risk factors, along with all the tables and figures included in this publication are available from the British Heart Foundation's website at [bhf.org.uk/statistics](http://bhf.org.uk/statistics). This website aims to be the most comprehensive and up-to-date source of statistics on cardiovascular disease in the UK. The website is updated on an ongoing basis and contains a wider range of tables and figures than is available in the Cardiovascular disease statistics series of publications. Further copies of this publication can be downloaded from the website, as can copies of recent supplements to this series, including:

- Children and Young People Statistics (2013)
- European Cardiovascular Disease Statistics (2012)
- Physical Activity Statistics (2012)
- Trends in Coronary Heart Disease, 1961–2011 (2011)
- Ethnic Differences in Cardiovascular Disease (2010)



# SUMMARY

## Chapter 1 MORTALITY

This section reports on cardiovascular disease (CVD) mortality in the United Kingdom, in the context of mortality from other chronic conditions, regional, local and seasonal differences in CVD, coronary heart disease (CHD) and stroke.

- For the first time since the BHF was formed, cardiovascular disease is no longer the leading cause of death in the United Kingdom. In 2012 CVD caused 28% of all deaths while cancer caused 29%.
- CHD by itself is the biggest single cause of death in the UK. In 2012, 16% of male deaths and 10% of female deaths were from CHD, a total of around 74,000 deaths.
- Around 41,000 deaths were from stroke, with 6% and 9% of deaths from stroke in men and women respectively.
- 26% of male and 18% of female premature (under-75s) mortality was attributed to CVD in 2012. In total there were almost 42,000 premature deaths from CVD in the UK.
- There is a pattern of excess winter cardiovascular mortality in England and Wales.
- Age-standardised premature death rates for CVD, CHD and stroke are highest in Scotland and the North West of England; the lowest rates are in the South East and South West of England.

## Chapter 2 MORBIDITY

This section presents statistics on country-level estimates of the incidence and prevalence of cardiovascular disease (CVD), coronary heart disease (CHD) myocardial infarction (heart attack), heart failure and stroke.

- In the United Kingdom, there were more than 1.6 million episodes related to cardiovascular disease in NHS hospitals, accounting for 10% of all inpatient episodes among men and 6.2% among women.
- There were around 404,000 inpatient episodes of CHD in National Health Service hospitals in 2012/13 in England, more than 47,000 in Scotland, more than 24,000 in Wales and just under 15,000 in Northern Ireland.
- The proportion of inpatient episodes attributed to CHD was almost twice as high among men as among women, accounting for 3.5% of all inpatient episodes in men and 1.5% in women in the United Kingdom.
- In the UK, myocardial infarction (heart attack) accounts for about 1% of all episodes in men and 0.5% in women. In 2012, there were almost 141,000 inpatient episodes of acute myocardial infarction in England, about 22,000 in Scotland, just under 8,000 in Wales and more than 4,500 in Northern Ireland, totalling over 175,000 for the United Kingdom.
- As a proportion of all conditions, stroke accounts for about 1% of all hospital episodes in the United Kingdom. In 2012/13, the incidence was higher among women than men in every UK country.
- Throughout the UK the proportion of men who have had a heart attack is almost three times as high as the proportion of women.
- More than 2.3 million people in the UK are living with some form of CHD, more than 500,000 are living with heart failure, 1.15 million have been diagnosed with atrial fibrillation and more than 1.3 million have had a stroke.
- Comparing between UK countries the prevalence of CVD is lowest in England. Within England the prevalence is highest in the north.

## Chapter 3 TREATMENT

This chapter reports on different methods of treatment for cardiovascular disease (CVD), with a focus on treatments for coronary heart disease (CHD). The chapter includes tables and figures on the number of prescriptions, operations and cardiac arrest survival in the UK.

- In 2013, more than 300 million prescriptions were dispensed for CVD in England, more than six times as many as issued in 1981.
- In 2013, around 23 million prescriptions were dispensed for CVD in Wales.
- In Scotland, more than 24 million prescriptions were dispensed for CVD treatment and prevention in 2012.
- In Northern Ireland more than 8.5 million prescriptions were dispensed for the treatment and prevention of CVDs.
- Over 92,000 percutaneous coronary interventions (PCI) were carried out in the UK in 2012, more than two times higher than a decade ago.
- In 2012 there were 4,561 isolated aortic valve replacements and a further 3,263 aortic valve replacements with coronary artery bypass graft surgery (CABGs) in the UK.
- In 2012 there were 1,456 isolated mitral valve repairs and 638 isolated mitral valve replacements. There were a further 820 mitral valve surgeries with CABG in the UK.
- In 2013/14, there were 198 heart transplants in the UK plus a further 8 combined heart/ lung transplants.

## Chapter 4 ECONOMIC COSTS

This chapter presents the economic burden of cardiovascular disease (CVD) within the UK. It presents total costs and costs per person to the NHS of treating CVD broken down by CVD subtype by NHS care setting, region for England, as well as by region and CVD subtype for Wales and Northern Ireland.

- More than £6.8 billion was spent on treating CVD within the NHS in England in 2012/13. Sixty three per cent of these costs came within secondary care and 21% within primary care.
- The percentage of total health expenditure which is spent on CVD within regions in England ranged from 7.9% in the South East to 6.3% in London.
- Expenditure data from the programme budget returns in Wales reported that in 2012/13 expenditure on CVD by the NHS within Wales came to more than £440 million.
- These data reported that Powys Teaching Local Health Board has the highest costs per head of population (£187) and Cardiff & Vale University Health Board the lowest (£111).
- Costs for inpatient episodes and day case attendances in acute hospital settings in Northern Ireland reported the total expenditure on CVD in Northern Ireland in 2012/13 to be £393 million.
- Expenditure per head of population was greatest in Belfast (£433), more than twice that found for Northern Ireland as a whole (£215 per person). The lowest expenditure by population is found in the Northern Trust with £124 spent on total CVD per person.

## GLOSSARY

This section provides a definition for some of the terms used in this publication.

**Age-standardised rate** – a measure of the rate that a population would experience if it had a standard age structure. It is useful to present rates as age standardised as it allows for comparisons between populations with very different age structures.

**Angina** – a pain or discomfort most commonly felt in the chest, which may also be felt in the arms, neck, stomach or jaw. Angina occurs when the coronary arteries become narrowed and not enough oxygen-rich blood can reach the heart muscle, particularly when its demands are high, such as during exercise.

**Angioplasty** – a technique to widen narrowed blood vessels by inflating a balloon that has been passed into the narrowed location via a catheter. When the balloon is inflated, fatty plaques are squashed against the walls of the arteries. A small metal tube called a stent is commonly used to help keep the artery open.

**Atherosclerosis** – a potentially serious condition where arteries become clogged up by fatty substances known as plaques or atheroma. The disease is commonly referred to as hardening or furring of the arteries.

**Atrial fibrillation** – a heart condition that causes an irregular and sometimes abnormally fast heart rate.

**Blood pressure** – the physical pressure of blood in the blood vessels. It is similar to the concept of air pressure in a car tyre. These values are quoted in units known as millimetres of mercury (mmHg). See also Systolic Blood Pressure and Diastolic Blood Pressure.

**Body mass index (BMI)** – a formula relating body weight to height to assess whether a person is overweight. BMI is calculated by dividing a person's weight (in kilograms) by their height (in metres) squared. Adults with a BMI between 25 and 30 are considered to be overweight and those with a BMI of over 30 are considered obese.

**British National Formulary (BNF)** – a publication that provides key information on the selection, prescribing, dispensing and administration of all medicines that are generally prescribed in the UK.

**Cardiovascular disease (CVD)** – the collective term for all diseases affecting the heart and blood vessels.

**Cerebrovascular disease** – the collective term for all diseases affecting blood vessels that supply the brain. Technically, stroke (and the many subtypes of stroke) is a subset of cerebrovascular disease, but the two terms are often used interchangeably.

**Coronary artery bypass graft (CABG)** – an operation to bypass a narrowed section of a coronary artery and improve the blood supply to the heart muscle.

**Coronary heart disease (CHD)** – the collective term for diseases that occur when the walls of the coronary arteries become narrowed by a gradual build-up of fatty material called atheroma. The two main forms of CHD are heart attack (also known as myocardial infarction) and angina.

**Diabetes** – characterised by high blood glucose levels. Type 1 diabetes is present from birth, and occurs when the pancreas will not produce any insulin. Type 2 is an acquired condition. There is either very little insulin produced, or the body has become resistant to insulin. The resulting chronic high blood glucose levels (hyperglycaemia) are associated with long-term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels.

**Diastolic blood pressure** – a common blood pressure reading might be 120/80 mmHg. The lower pressure (80) represents the pressure in the arteries when the heart is relaxed between beats. This is called diastolic pressure.

**European Standard Population (ESP)** – an artificial population structure, originally published in 1976, which is used in the weighting of mortality or incidence data to produce age standardised rates. The ESP was updated in 2013 to better reflect the age distribution of Europe.

**HDL (high density lipoprotein) cholesterol** – HDL carries cholesterol away from the cells and back to the liver, where it is either broken down or passed out of the body as a waste product. For this reason, it is referred to as “good cholesterol” and higher levels are better. Low levels of HDL-cholesterol are associated with an increased risk of atherosclerosis.

**Heart attack** – most commonly caused by a blockage of one of the coronary arteries that supplies the heart muscle with oxygen. The pain usually feels like a heaviness or tightness in the chest, which may also spread to the arms, neck, stomach or jaw. There may also be sweating, light-headedness, nausea or shortness of breath.

**Heart failure** – occurs when the heart muscle is unable to pump blood as efficiently to meet the demands of the body. It occurs because the heart muscle is damaged or overworked. Some people with heart failure may have very few symptoms. Others with different forms of heart failure may suffer from a number of problems including shortness of breath, fatigue and fluid retention.

**Hospital inpatient episodes** – periods of continuous admitted patient care under the same consultant.

**Hypertension** – a clinical condition of having a high blood pressure. Mostly it is considered blood pressures of 140/90 mmHg and greater to be high, although this is influenced by other factors.

**Incidence** – a measure of morbidity based on the number of new episodes of an illness arising in a population over a defined time period.

**International Classification of Disease (ICD)** – a coding system published by the World Health Organization that provides an internationally recognised method of coding diseases in order to categorise mortality and morbidity statistics. The ICD is revised approximately every ten years. The tenth and most recent revision (ICD-10) was introduced in 2000. Change between revisions can result in discontinuities in mortality and morbidity trends, such as the move from ICD-9 to ICD-10 which resulted in an artificial increase in the number of reported stroke incidents and mortalities.

**LDL (low density lipoprotein) cholesterol** – LDL carries cholesterol from your liver to the cells that need it. If there is too much cholesterol for the cells to use, it can build up in the artery walls, leading to disease of the arteries. For this reason, LDL cholesterol is known as “bad cholesterol”.

**Myocardial infarction (MI)** – see heart attack.

**Percutaneous coronary intervention (PCI)** – see angioplasty.

**Peripheral arterial disease (PAD)** – a condition in which a build-up of fatty deposits in the arteries restricts blood supply to areas such as the legs, pelvis, abdomen and neck. It is also known as peripheral vascular disease (PVD).

**Prevalence** – a measure of morbidity based on the current level of a disease in the population at any particular time.

**Primary prevention** – interventions aimed at reducing the risk of disease before the disease has presented. Primary prevention interventions are usually aimed at populations, such as regulation of tobacco advertising.

**Secondary prevention** – interventions aimed at reducing the risk of disease recurrence after the disease has initially presented. Secondary prevention interventions are therefore targeted at individuals already at high-risk of disease.

**Stent** – a short tube of expandable mesh which is inserted at the part of the artery that is to be widened by coronary angioplasty. It helps to keep the artery open and prevent re-narrowing.

**Stroke** – the consequence of an interruption to the flow of blood to the brain. Symptoms include weakness in one side of the face or an arm and speech problems. Stroke is most commonly caused by atherosclerosis, but can also be caused by a haemorrhage.

**Systolic blood pressure** – a common blood pressure reading might be 120/80 mmHg. The higher pressure (120) represents the pressure in the arteries when the heart beats, pumping blood into the arteries. This is called systolic pressure.

**Transient ischaemic attacks (TIA)** – a temporary disruption in the blood supply to part of the brain. Sometimes called a mini-stroke, however, a TIA does not last as long as a stroke. The effects only last for a few minutes and are usually fully resolved within 24 hours.

**Waist circumference** – a measure of central obesity, where fat is concentrated in the abdomen. For men, central obesity is defined as a waist circumference greater than 102cm. For women, central obesity is defined as a waist circumference of greater than 88cm.

## Chapter 1

# MORTALITY

This chapter reports on cardiovascular disease (CVD) mortality in the United Kingdom. It presents CVD mortality in the context of mortality from other chronic conditions, as well as local, regional and seasonal differences in CVD, coronary heart disease (CHD) and stroke. Where possible, the latest data from routinely collected, national datasets have been used. Within this chapter we present a selection of key tables and maps on mortality in the UK.

A full selection of maps and tables related to mortality from CVD, CHD and stroke in men and women, for all ages and under 75s can be found on the Heart statistics website [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

## TOTAL MORTALITY

In 2012, for the first time since 1961, CVD went from being the first main cause to the second main cause of death in the United Kingdom. In this year CVD caused 28% of all deaths and cancers 29%. The story is different when broken down by gender however, with CVD still being the main cause of death for women. In men, cancer accounted for 32% of deaths and CVD 29%, whilst in women these figures were 27% and 28% respectively (Table 1.1, Figures 1.1a and 1.1b).

The main forms of CVD are CHD and stroke; just under half of CVD deaths are from CHD (46%) and around a quarter are from stroke (26%). CHD by itself is the biggest single cause of death in the UK. In 2012, 16% of male deaths and 10% of female deaths were from CHD, a total of just over 73,500 deaths. Around 41,000 deaths were from stroke, making up 6% and 9% of total deaths in men and women respectively (Table 1.1, Figures 1.1a and 1.1b).

Other heart diseases caused 16% of all CVD deaths, and were mainly due to pulmonary heart diseases, heart failure and atrial fibrillation. About 18% of CVD deaths in women were from other heart diseases, compared to 13% in men. Of people dying from CVD under the age of 35, around 47% of these deaths are from these other heart diseases. Diseases of the arteries, arterioles and capillaries comprised around 6% of all CVD deaths (Table 1.1, Figures 1.1a and 1.1b).

**28%**

For the first time since the BHF was formed, cardiovascular disease is no longer the leading cause of death in the United Kingdom. In 2012 CVD caused 28% of all deaths while cancer caused 29%



Table 1.1  
Deaths by cause, by gender and age, United Kingdom 2012

		All ages	Under 35	35-44	45-54	55-64	65-74	75-84	85+
All causes	Men	273,347	7,452	6,279	13,625	28,214	54,073	86,332	77,372
	Women	295,677	4,235	3,726	9,449	19,534	38,960	81,794	137,979
	Total	569,024	11,687	10,005	23,074	47,748	93,033	168,126	215,351
All diseases of the circulatory system (CVD) (I00-I99)	Men	79,050	476	1,163	3,603	7,631	15,224	26,349	24,604
	Women	82,202	247	518	1,351	3,141	8,388	24,058	44,499
	Total	161,252	723	1,681	4,954	10,772	23,612	50,407	69,103
Chronic rheumatic heart diseases (I05-I09)	Men	381	2	5	12	35	66	145	116
	Women	850	4	6	17	41	118	324	340
	Total	1,231	6	11	29	76	184	469	456
Hypertensive diseases (I10-I15)	Men	2,275	10	44	121	257	437	691	715
	Women	3,267	4	14	50	135	351	832	1,881
	Total	5,542	14	58	171	392	788	1,523	2,596
Coronary heart disease (I20-I25)	Men	42,819	119	596	2,250	5,033	9,256	14,129	11,436
	Women	30,861	27	151	505	1,383	3,770	9,537	15,488
	Total	73,680	146	747	2,755	6,416	13,026	23,666	26,924
Other heart diseases (I26-I52)	Men	10,614	221	236	489	778	1,516	3,162	4,212
	Women	15,195	119	137	223	451	1,176	3,880	9,209
	Total	25,809	340	373	712	1,229	2,692	7,042	13,421
Stroke (I60-I69)	Men	16,196	80	174	477	934	2,438	5,774	6,319
	Women	25,202	56	131	394	824	2,073	7,100	14,624
	Total	41,398	136	305	871	1,758	4,511	12,874	20,943
Diseases of arteries, arterioles and capillaries (I70-I79)	Men	5,367	19	47	129	345	1,160	2,075	1,592
	Women	4,790	11	18	48	134	582	1,713	2,284
	Total	10,157	30	65	177	479	1,742	3,788	3,876
Diseases of veins, lymphatic vessels and lymph nodes* (I80-I89)	Men	1,380	25	61	125	248	350	371	200
	Women	2,013	25	61	114	173	318	667	655
	Total	3,393	50	122	239	421	668	1,038	855
Cancer (C00-D48)	Men	87,061	654	1,045	4,026	12,195	23,739	29,070	16,332
	Women	78,757	710	1,491	4,838	10,653	18,402	24,099	18,564
	Total	165,818	1,364	2,536	8,864	22,848	42,141	53,169	34,896
Colo-rectal cancer (C18-C21)	Men	8,918	32	115	447	1,288	2,295	3,051	1,690
	Women	7,594	51	110	361	850	1,493	2,413	2,316
	Total	16,512	83	225	808	2,138	3,788	5,464	4,006
Lung cancer (C33,C34)	Men	19,333	13	129	781	3,100	6,238	6,392	2,680
	Women	16,086	17	108	698	2,520	4,762	5,251	2,730
	Total	35,419	30	237	1,479	5,620	11,000	11,643	5,410

		All ages	Under 35	35-44	45-54	55-64	65-74	75-84	85+
Breast cancer (C50)	Men	74	1	1	1	9	18	26	18
	Women	11,662	79	494	1,427	1,938	2,317	2,790	2,617
	Total	11,736	80	495	1,428	1,947	2,335	2,816	2,635
Prostate cancer (C61)	Men	10,846	–	2	74	604	2,093	4,287	3,786
	Total	10,846	–	2	74	604	2,093	4,287	3,786
Other cancers (C00-C17, C22-C32, C35-C49, C51-D48)	Men	47,890	608	798	2,723	7,194	13,095	15,314	8,158
	Women	43,415	563	779	2,352	5,345	9,830	13,645	10,901
	Total	91,305	1,171	1,577	5,075	12,539	22,925	28,959	19,059
Respiratory disease (J00-J99)	Men	37,673	182	213	661	2,251	6,412	13,049	14,905
	Women	42,226	137	155	463	1,737	4,991	12,047	22,696
	Total	79,899	319	368	1,124	3,988	11,403	25,096	37,601
Diabetes (E10-E14)	Men	3,625	167	125	205	377	650	1,163	938
	Women	4,013	132	80	140	257	501	1,184	1,719
	Total	7,638	299	205	345	634	1,151	2,347	2,657
Dementia/Alzheimer’s disease (F01-03, G30)	Men	15,804	–	1	26	153	1,063	5,616	8,945
	Women	34,082	1	2	26	183	1,106	8,100	24,664
	Total	49,886	1	3	52	336	2,169	13,716	33,609
All other causes	Men	50,134	5,973	3,732	5,104	5,607	6,985	11,085	11,648
	Women	54,397	3,008	1,480	2,631	3,563	5,572	12,306	25,837
	Total	113,390	8,981	5,212	7,747	9,290	13,096	26,135	42,929

Notes ICD-10 codes in parentheses. ¶ \*Not classified elsewhere ¶ This table compiles data from the four countries of the UK. In Northern Ireland, the data for Lung Cancer only includes ICD-10 code C34. Source England and Wales, Office for National Statistics (2014) Deaths registered by cause, sex and age. www.statistics.gov.uk (accessed January 2014). ¶ Scotland, National Records of Scotland (2014) Deaths, by sex, age and cause. www.gro-scotland.gov.uk (accessed January 2014). ¶ Northern Ireland, Statistics and Research Agency (2014) Registrar General Annual Report. NISRA: Belfast.

Around 41,000 deaths were from stroke – 6% of male and 9% of female deaths

CHD by itself is the biggest single cause of death in the UK

Figure 1.1a  
Deaths by cause in men, United Kingdom 2012

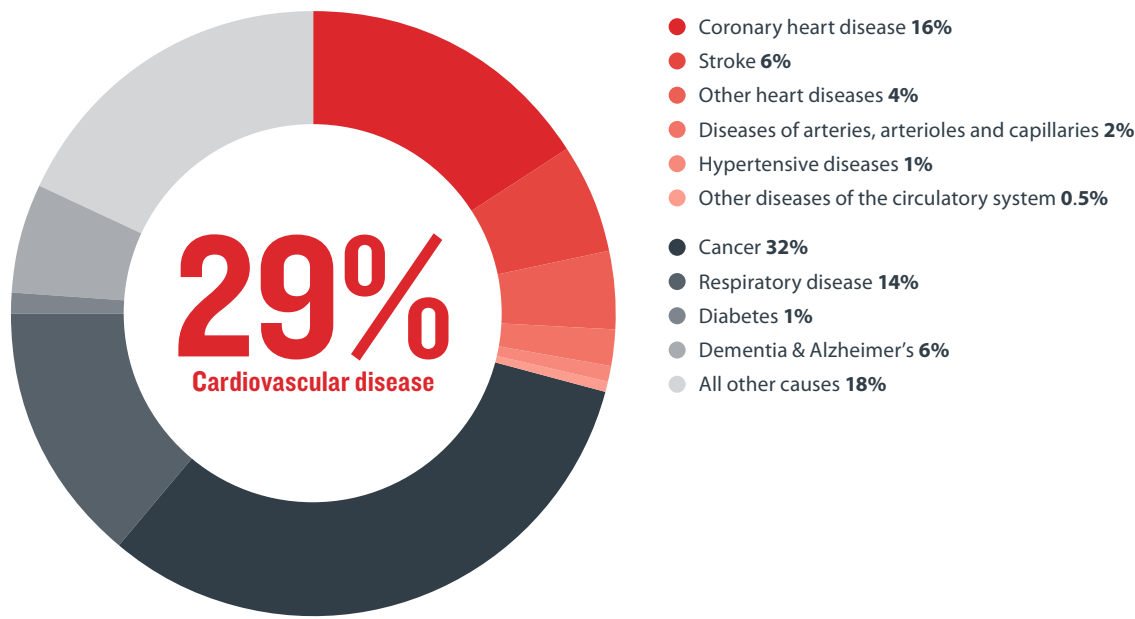


Figure 1.1b  
Deaths by cause in women, United Kingdom 2012

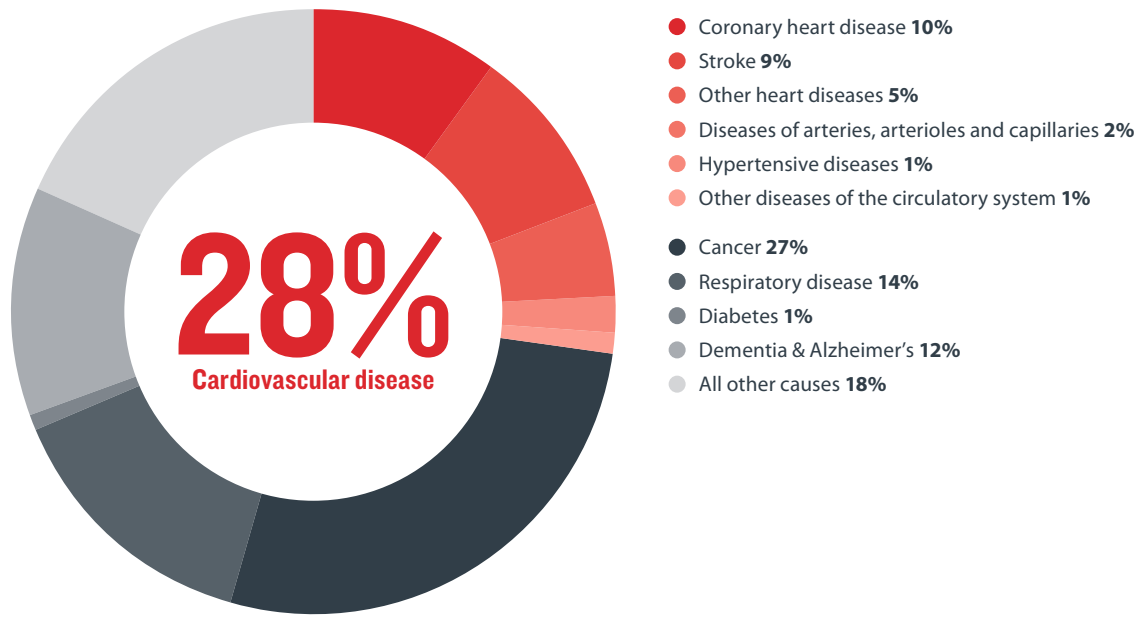


Table 1.2a  
Deaths by cause, all ages by gender, England, Wales, Scotland, Northern Ireland and United Kingdom 2012

Cause		All ages				
		England	Wales	Scotland	Northern Ireland	United Kingdom
All causes	Men	224,460	15,172	26,015	7,094	273,347
	Women	242,319	16,330	28,922	7,662	295,677
	Total	466,779	31,502	54,937	14,756	569,024
All diseases of the circulatory system (CVD) (I00-I99)	Men	64,659	4,608	7,610	1,924	79,050
	Women	67,000	4,688	8,279	2,077	82,202
	Total	131,659	9,296	15,889	4,001	161,252
Chronic rheumatic heart diseases (I05-I09)	Men	329	19	26	4	381
	Women	697	60	72	17	850
	Total	1,026	79	98	21	1,231
Hypertensive diseases (I10-I15)	Men	1,895	126	207	38	2,275
	Women	2,740	187	265	68	3,267
	Total	4,635	313	472	106	5,542
Coronary heart disease (I20-I25)	Men	34,726	2,554	4,258	1,138	42,819
	Women	24,904	1,776	3,283	837	30,861
	Total	59,630	4,330	7,541	1,975	73,680
Other heart diseases (I26-I52)	Men	8,851	602	903	237	10,614
	Women	12,624	861	1,316	366	15,195
	Total	21,475	1,463	2,219	603	25,809
Stroke (I60-I69)	Men	13,145	929	1,686	394	16,196
	Women	20,312	1,381	2,789	683	25,202
	Total	33,457	2,310	4,475	1,077	41,398
Diseases of arteries, arterioles and capillaries (I70-I79)	Men	4,480	308	457	98	5,367
	Women	3,908	304	471	89	4,790
	Total	8,388	612	928	187	10,157
Diseases of veins, lymphatic vessels and lymph nodes* (I80-I89)	Men	1,217	70	71	15	1,380
	Women	1,794	119	80	17	2,013
	Total	3,011	189	151	32	3,393
Cancer (C00-D48)	Men	71,892	4,637	8,134	2,232	87,061
	Women	64,275	4,275	8,029	2,028	78,757
	Total	136,167	8,912	16,163	4,260	165,818
Colo-rectal cancer (C18-C21)	Men	7,297	534	844	233	8,918
	Women	6,190	399	804	190	7,594
	Total	13,487	933	1,648	423	16,512
Lung cancer (C33,C34)	Men	15,618	1,045	2,094	541	19,333
	Women	12,697	849	2,095	416	16,086
	Total	28,315	1,894	4,189	957	35,419
Breast cancer (C50)	Men	58	3	8	4	74
	Women	9,698	594	1,063	288	11,662
	Total	9,756	597	1,071	292	11,736

Table 1.2a (continued)  
Deaths by cause, all ages by gender, England, Wales, Scotland, Northern Ireland and United Kingdom 2012

Cause		All ages				
		England	Wales	Scotland	Northern Ireland	United Kingdom
Prostate cancer (C61)	Men	9,133	556	881	267	10,846
	Women	–	–	–	–	–
	Total	9,133	556	881	267	10,846
Other cancers (C00–C17, C22–C32, C35–C49, C51–D48)	Men	39,786	2,499	4,307	1,187	47,890
	Women	35,690	2,433	4,067	1,134	43,415
	Total	75,476	4,932	8,374	2,321	91,305
Respiratory disease (J00–J99)	Men	31,277	2,166	3,233	977	37,673
	Women	34,778	2,437	3,935	1,046	42,226
	Total	66,055	4,603	7,168	2,023	79,899
Diabetes (E10–E14)	Men	2,188	150	407	86	3,625
	Women	2,428	156	347	88	4,013
	Total	4,616	306	754	174	7,638
Dementia/ Alzheimer’s disease (F01-03, G30)	Men	13,154	823	1,385	435	15,804
	Women	28,033	1,836	3,224	985	34,082
	Total	41,187	2,659	4,609	1,420	49,886
All other causes	Men	41,290	2,788	5,246	1,440	50,134
	Women	45,805	2,938	5,108	1,438	54,397
	Total	87,095	5,726	10,354	2,878	113,390

Notes ICD-10 codes in parentheses. ¶ \*Not classified elsewhere. ¶ This table compiles data from the four countries of the UK. In Northern Ireland, the data for Lung Cancer only includes ICD-10 code C34. ¶ The four countries in this table do not always add up to the United Kingdom totals, as the separate England and Wales figures are only for people who were residing in the country at the time of death; therefore the mortality figures for England and Wales separately are lower than the published mortality figures for England and Wales together. ¶ Source England and Wales, Office for National Statistics (2014) Deaths registered by cause, sex and age. www.statistics.gov.uk (accessed January 2014). ¶ Scotland, National Records of Scotland (2014) Deaths, by sex, age and cause. www.gro-scotland.gov.uk (accessed January 2014). ¶ Northern Ireland, Statistics and Research Agency (2014) Registrar General Annual Report. NISRA: Belfast.w

## PREMATURE MORTALITY

Death before the age of 75 years is considered to be premature. More than one quarter of premature deaths in men and around 18% of premature deaths in women were from CVD in 2012. In total that year, there were nearly 42,000 premature deaths from CVD in the UK.

CHD by itself is the most common cause of premature death in the UK in men. More than 15% of male premature deaths in 2012 were from CHD, equating to around 17,000 deaths under the age of 75. In women, CHD by itself caused just under 8% of premature deaths, equating to almost 6,000 deaths. Around 4% of premature deaths were from stroke, accounting for about 7,500 deaths and about 3% of premature deaths were from other heart diseases, equating to around 5,000 deaths (Table 1.2b, Figures 1.2a and 1.2b).

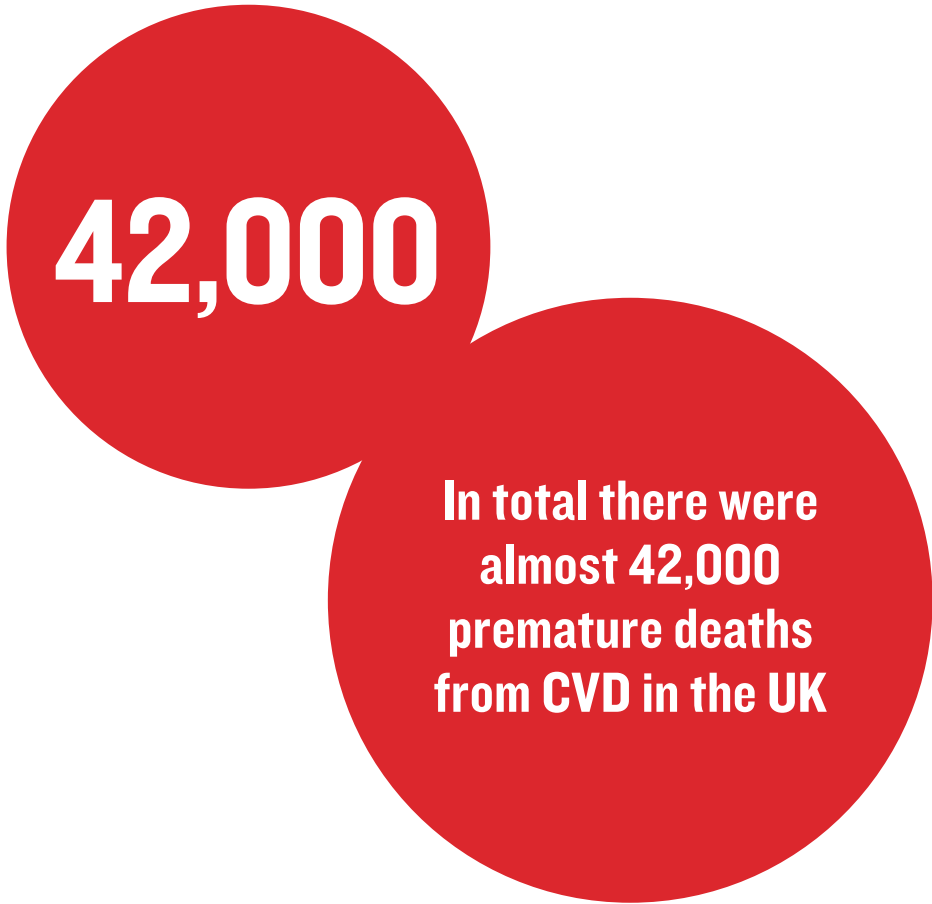


Table 1.2b  
Deaths by cause, under-75, by gender, England, Wales, Scotland, Northern Ireland and United Kingdom 2012

Cause		Under 75				
		England	Wales	Scotland	Northern Ireland	United Kingdom
All causes	Men	87,986	6,132	11,938	3,140	109,643
	Women	60,721	4,298	8,508	2,090	75,904
	Total	148,707	10,430	20,446	5,230	185,547
All diseases of the circulatory system (CVD) (I00-I99)	Men	22,437	1,614	3,127	748	28,097
	Women	10,821	807	1,610	320	13,645
	Total	33,258	2,421	4,737	1,068	41,742
Chronic rheumatic heart diseases (I05-I09)	Men	97	9	10	3	120
	Women	140	13	26	5	186
	Total	237	22	36	8	306
Hypertensive diseases (I10-I15)	Men	692	53	101	16	869
	Women	461	28	55	7	554
	Total	1,153	81	156	23	1,423
Coronary heart disease (I20-I25)	Men	13,638	995	2,015	500	17,254
	Women	4,509	388	738	163	5,836
	Total	18,147	1,383	2,753	663	23,090
Other heart diseases (I26-I52)	Men	2,641	175	330	83	3,240
	Women	1,729	106	223	36	2,106
	Total	4,370	281	553	119	5,346
Stroke (I60-I69)	Men	3,248	261	463	106	4,103
	Women	2,751	189	433	81	3,478
	Total	5,999	450	896	187	7,581
Diseases of arteries, arterioles and capillaries (I70-I79)	Men	1,419	85	155	27	1,700
	Women	634	44	91	16	793
	Total	2,053	129	246	43	2,493
Diseases of veins, lymphatic vessels and lymph nodes* (I80-I89)	Men	701	36	52	13	809
	Women	596	39	44	12	691
	Total	1,297	75	96	25	1,500
Cancer (C00-D48)	Men	33,954	2,262	4,161	1,174	41,659
	Women	29,248	1,983	3,790	972	36,094
	Total	63,202	4,245	7,951	2,146	77,753
Colo-rectal cancer (C18-C21)	Men	3,387	267	398	122	4,177
	Women	2,295	159	328	76	2,865
	Total	5,682	426	726	198	7,042
Lung cancer (C33,C34)	Men	8,181	585	1,160	314	10,261
	Women	6,323	447	1,085	236	8,105
	Total	14,504	1,032	2,245	550	18,366
Breast cancer (C50)	Men	23	0	5	1	30
	Women	5,150	322	608	159	6,255
	Total	5,173	322	613	160	6,285

Cause		Under 75				
		England	Wales	Scotland	Northern Ireland	United Kingdom
Prostate cancer (C61)	Men	2,294	131	250	93	2,773
	Women	–	–	–	–	–
	Total	2,294	131	250	93	2,773
Other cancers (C00-C17, C22-C32, C35-C49, C51-D48)	Men	20,069	1,279	2,348	644	24,418
	Women	15,480	1,055	1,769	501	18,869
	Total	35,549	2,334	4,117	1,145	43,287
Respiratory disease (J00-J99)	Men	7,893	564	999	248	9,719
	Women	5,911	441	935	185	7,483
	Total	13,804	1,005	1,934	433	17,202
Diabetes (E10-E14)	Men	754	53	195	27	1,524
	Women	487	33	115	22	1,110
	Total	1,241	86	310	49	2,634
Dementia/ Alzheimer’s disease (F01-03, G30)	Men	987	71	133	51	1,243
	Women	1,026	90	156	46	1,318
	Total	2,013	161	289	97	2,561
All other causes	Men	21,961	1,568	3,323	2,332	27,401
	Women	13,228	944	1,902	1,983	16,254
	Total	35,189	2,512	5,225	4,315	44,326

Notes ICD-10 codes in parentheses. ¶ \*Not classified elsewhere. ¶ This table complies data from the four countries of the UK. In Northern Ireland, the data for Lung Cancer only includes ICD-10 code C34. ¶ The four countries in this table do not always add up to the United Kingdom totals, as the separate England and Wales figures are only for people who were residing in the country at the time of death; therefore the mortality figures for England and Wales separately are lower than the published mortality figures for England and Wales together. ¶ Source England and Wales, Office for National Statistics (2014) Deaths registered by cause, sex and age. www.statistics.gov.uk (accessed January 2014). ¶ Scotland, National Records of Scotland (2014) Deaths, by sex, age and cause. www.gro-scotland.gov.uk (accessed January 2014). ¶ Northern Ireland, Statistics and Research Agency (2014) Registrar General Annual Report. NISRA: Belfast.w

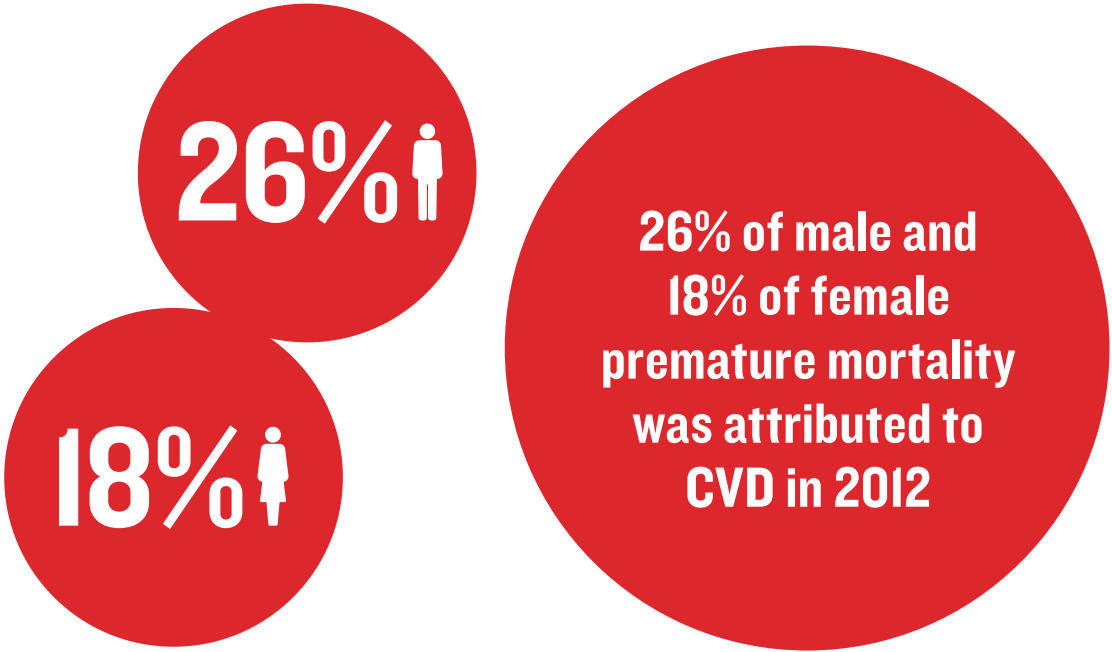




Figure 1.2a  
Deaths under 75 by cause in men, United Kingdom 2012

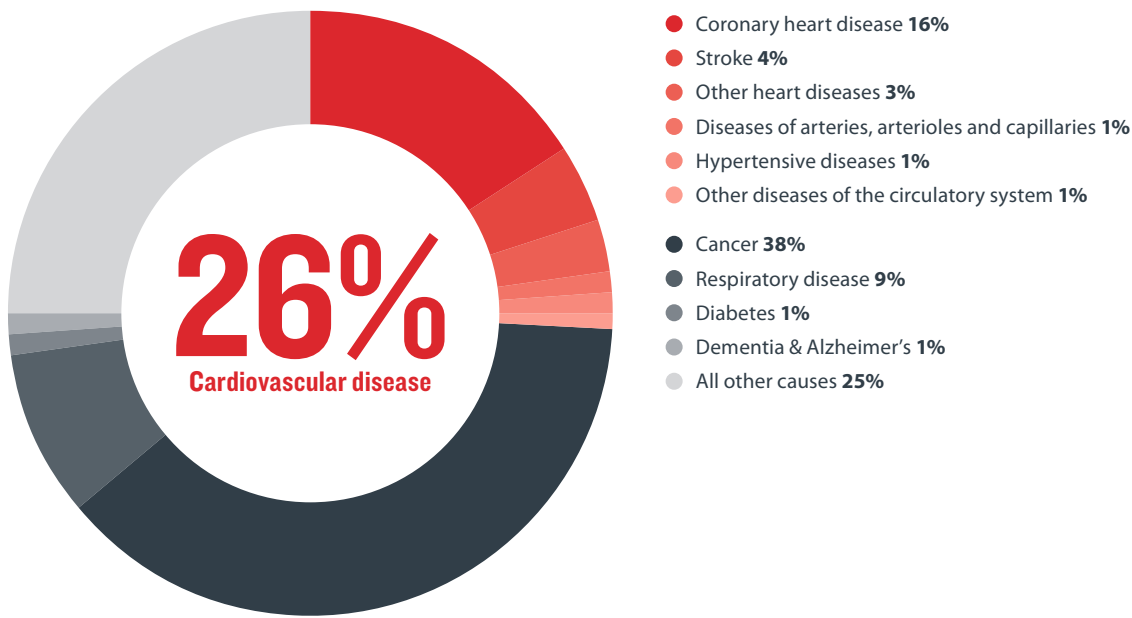
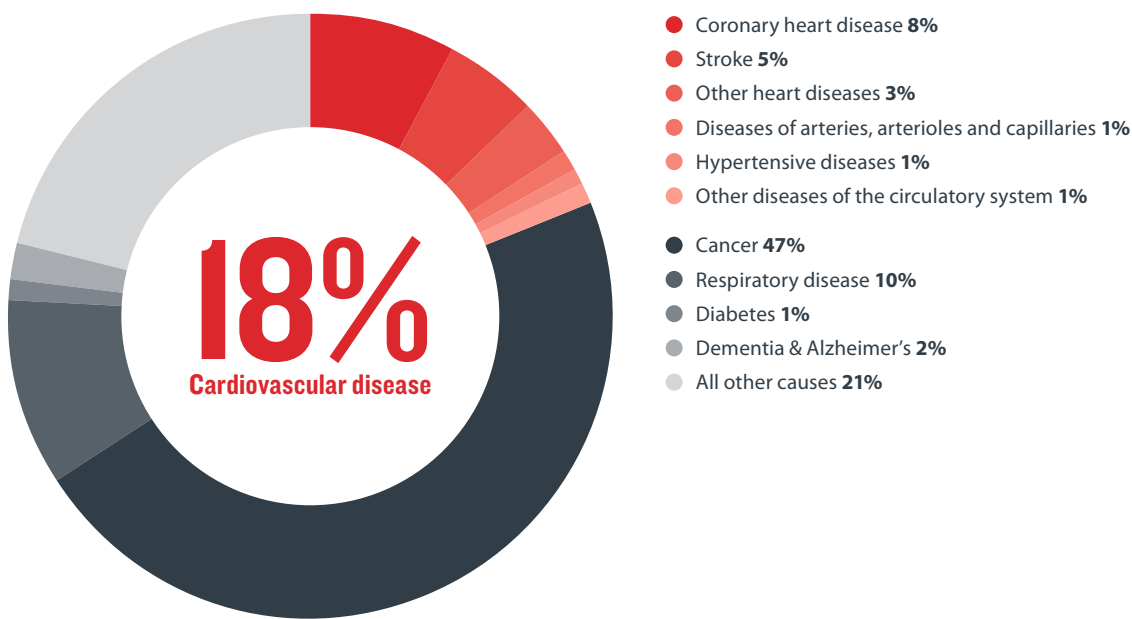


Figure 1.2b  
Deaths under 75 by cause in women, United Kingdom 2012



## EXCESS WINTER MORTALITY (EWM)

There is a pattern of excess winter CVD mortality in England and Wales. In 2011/12, over 7,000 more people died of CVD in the winter months (December to March) in comparison to the same length of time in non-winter months. This excess was over 3,500 for CHD.

In England in 2011/12 there were about 15% more male CVD deaths and 17% more female CVD deaths in the winter months. In Wales during the winter months there were around 13% more male CVD deaths and around 18% more female CVD deaths than in non-winter months (Table 1.3).

Table 1.3  
Excess winter mortality for CVD by gender and age, England and Wales 2011/12

		Men		Women	
		Excess winter deaths	EWM Index (%)	Excess winter deaths	EWM Index (%)
0–64	England	270	8.0	210	15.9
	Wales	10	4.4	10	11.8
65–74	England	570	14.6	220	10.7
	Wales	50	16.6	0	1.8
75–84	England	1,000	14.6	970	15.7
	Wales	30	5.4	90	22.8
85+	England	1,300	20.5	2,210	19.5
	Wales	100	22.7	150	19.4
All ages	England	3,130	15.3	3,600	17.3
	Wales	180	12.5	250	17.8

**Notes** Excess winter mortality calculation: winter deaths-average non-winter deaths. ¶ Excess winter mortality index calculation: (Excess winter mortality/average non-winter deaths)\*100. ¶ The relatively low numbers of CVD deaths of each age-group in the winter months for Wales may mean that there are large percentage variations in EWM between each year, which could be due to natural fluctuations rather than meaningful increases or decreases between each year. ¶ The figures for individual age-groups may not sum up to the 'all ages' total due to rounding of figures. **Source** England and Wales, Office for National Statistics (2014) Personal communication.

There is a pattern  
of excess winter  
cardiovascular  
mortality in  
England and Wales

A similar pattern for excess winter mortality is found for CHD. In England in 2011/12 there were around 18% more male CHD deaths and 19% more female CHD deaths in the winter months. During the winter months in Wales there were just under 12% more male CHD deaths and just under 17% more female CHD deaths when compared to non-winter months (Table 1.4).

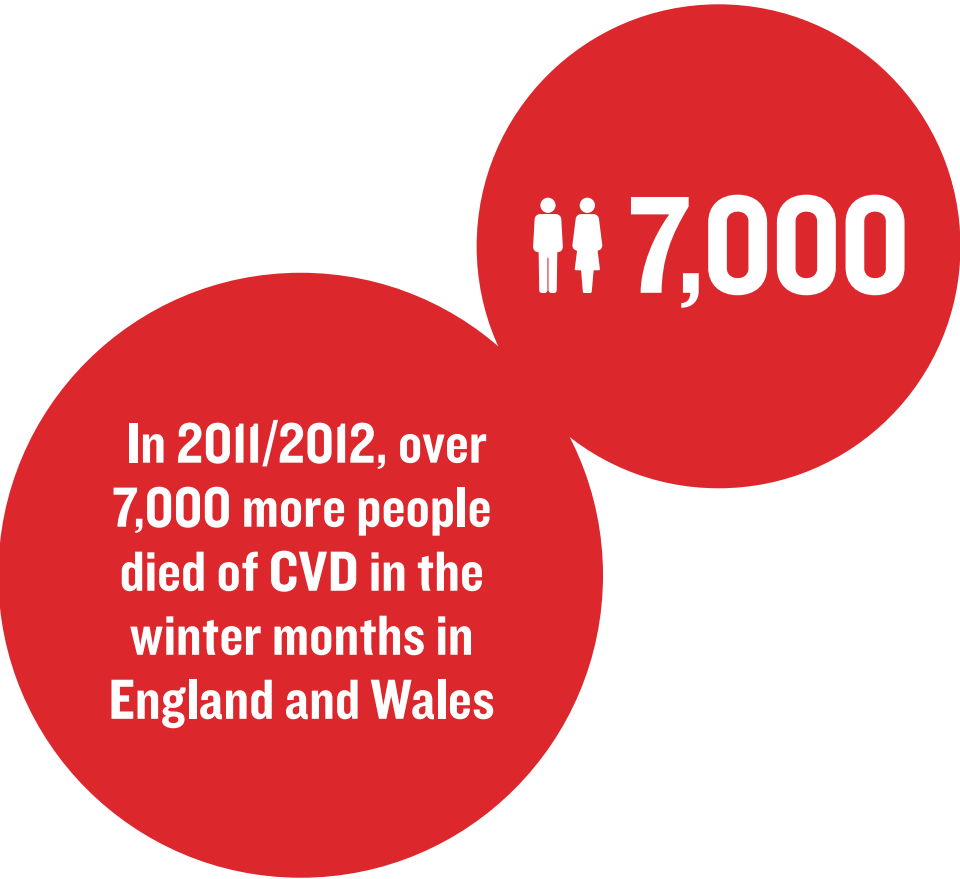
**Table 1.4**  
Excess winter mortality for coronary heart disease by gender and age, England and Wales 2011/12

		Men		Women	
		Excess winter deaths	EWM Index (%)	Excess winter deaths	EWM Index (%)
0–64	England	230	11.4	70	13.3
	Wales	0	0.3	10	15.0
65–74	England	400	17.4	130	14.7
	Wales	40	24.3	0	1.3
75–84	England	560	15.4	420	17.3
	Wales	20	6.9	30	20.6
85+	England	720	24.7	840	21.2
	Wales	30	15.8	50	19.2
All ages	England	1,910	17.6	1,460	18.7
	Wales	100	11.7	90	16.8

**Notes** Excess winter mortality calculation: winter deaths-average non-winter deaths. ¶ Excess winter mortality index calculation: (Excess winter mortality/average non-winter deaths)\*100. ¶ The relatively low numbers of CHD deaths of each age-group in the winter months for Wales may mean that there are large percentage variations in EWM between each year, which could be due to natural fluctuations rather than meaningful increases or decreases between each year. ¶ The figures for individual age-groups may not sum up to the 'all ages' total due to rounding of figures. **Source** England and Wales, Office for National Statistics (2014) Personal communication.

## REGIONAL DIFFERENCES IN MORTALITY

To compensate for the small populations and numbers of deaths in each local authority, three years’ worth of data are combined in order to give more robust age-standardised death rates. Age-standardised death rates for the years 2010 to 2012 have been calculated by standardising to the new European Standard Population (ESP). The new ESP is the first update since 1976 and reflects the older age-structure of the present population of Europe.<sup>1</sup> As CVD affects older age-groups more than younger age-groups, the larger number of older people in the new ESP means that any age-standardised rates for CVD mortality calculated will be higher than if they were calculated using the old ESP from 1976. This means that the age-standardised mortality rates presented in this publication are not comparable to the rates that have been presented in previous years. For example, the CHD age-standardised death rate for those aged under 75 in the UK in 2012 was 30.79 using the old ESP, but is 40.56 using the new ESP.



MORTALITY BY COUNTRY AND REGION

For both men and women combined, age-standardised CVD death rates were the highest in Scotland and the lowest in the South West of England. For total CVD mortality, the rate in Scotland was 347 per 100,000 population whilst it was 269/100,000 in the South West. In those aged under 75, CVD deaths rates in Scotland were 99/100,000 compared to 63/100,000 in the South West of England. There is a North-South gradient within England.

For premature deaths, the North East, North West and Yorkshire & The Humber all had age-standardised death rates over 80/100,000; Wales, Northern Ireland and Scotland also had premature death rates that were 80/100,000 or above (Table 1.5).

The lowest age-standardised premature death rates for CVD, CHD and stroke are in the South East and South West of England

Table 1.5  
Numbers of deaths and age-standardised death rates from cardiovascular disease (CVD) in men and women, all ages and under 75, by Government Office Region and country, United Kingdom 2010/12

Country/Region	All ages					
	Age-standardised death rates/100,000			Average numbers of CVD deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	358.19	246.37	296.36	81,680	84,541	166,222
England	350.03	240.16	289.36	67,137	69,253	136,391
North East	368.66	248.55	301.74	3,599	3,567	7,166
North West	386.97	266.93	320.51	9,798	10,036	19,834
Yorkshire and The Humber	384.54	258.60	314.12	7,299	7,376	14,675
East Midlands	354.93	241.90	292.90	6,082	6,010	12,092
West Midlands	360.35	239.94	293.61	7,391	7,360	14,751
East of England	332.26	231.80	276.89	7,600	7,951	15,551
London	337.45	229.21	277.76	7,111	7,025	14,136
South East	323.53	228.31	271.24	10,745	11,853	22,598
South West	324.96	222.94	268.62	7,513	8,076	15,589
Wales	389.20	265.56	320.60	4,722	4,860	9,583
Scotland	416.58	292.39	347.31	7,791	8,315	16,106
Northern Ireland	373.95	254.58	307.02	2,030	2,112	4,142

Country/Region	Under 75					
	Age-standardised death rates/100,000			Average numbers of CVD deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	109.18	48.68	77.98	29,423	13,854	43,277
England	105.51	46.59	75.17	23,714	11,018	34,732
North East	119.00	54.12	85.46	1,400	677	2,077
North West	124.89	58.55	90.79	3,853	1,897	5,750
Yorkshire and The Humber	118.71	52.56	84.67	2,709	1,265	3,974
East Midlands	106.30	47.74	76.48	2,180	1,005	3,185
West Midlands	109.90	47.72	78.09	2,686	1,217	3,903
East of England	93.98	41.70	67.11	2,445	1,139	3,584
London	110.10	47.58	77.34	2,799	1,296	4,096
South East	89.93	38.77	63.54	3,370	1,532	4,902
South West	89.99	37.20	62.81	2,271	990	3,261
Wales	117.61	55.39	85.65	1,680	834	2,514
Scotland	137.89	64.02	99.19	3,217	1,633	4,850
Northern Ireland	114.32	48.73	80.27	811	370	1,181

Notes ICD-10 codes I00-I99. Directly standardised using the 2013 European Standard Population. Source England and Wales: rates calculated in partnership with the Office for National Statistics. ¶ Scotland: Rates calculated in partnership with the General Register Office for Scotland. ¶ Northern Ireland: Rates calculated in partnership with Northern Ireland Statistics and Research Agency.

For people dying from CHD, for both all ages and those under 75, death rates were highest in Scotland and Northern Ireland and lowest in the South East and South West of England. In those of all ages, CHD death rates were above 200/100,000 in men and above 100/100,000 in women in Yorkshire & The Humber and the North West of England. In men and women dying under 75, the highest rates within England were in the North West, at 78/100,000 in men and 26/100,000 in women; of the UK countries, Scotland had the highest premature CHD death rate for both men (88/100,000) and women (30/100,000).

For all people dying from CHD, the highest age-standardised death rates within England were in the North West; at all ages the rate was 153/100,000 whilst in the under 75s it was 51/100,000. The highest premature mortality rates in the UK countries were in Scotland (58/100,000), with rates substantially higher than England (41/100,000) and the UK overall rate (43/100,000) (Table 1.6).



**Table 1.6**  
Numbers of deaths and age-standardised death rates from coronary heart disease (CHD) in men and women, all ages and under 75, by Government Office Region and country, United Kingdom 2010/12

Country/Region	All ages					
	Age-standardised death rates/100,000			Average numbers of CHD deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	189.90	93.90	135.60	44,049	31,823	75,872
England	184.06	90.27	131.10	35,864	25,702	61,567
North East	195.57	96.26	139.52	1,957	1,371	3,328
North West	212.01	108.41	153.40	5,474	4,039	9,513
Yorkshire and The Humber	210.17	105.45	150.87	4,072	2,978	7,049
East Midlands	192.63	93.83	137.53	3,367	2,309	5,677
West Midlands	190.35	87.57	132.48	3,993	2,652	6,645
East of England	172.77	88.38	125.20	3,994	2,999	6,993
London	172.99	84.54	123.01	3,673	2,546	6,220
South East	161.39	77.91	114.02	5,422	3,987	9,409
South West	167.61	78.89	117.17	3,911	2,821	6,732
Wales	210.55	103.82	150.08	2,597	1,878	4,476
Scotland	228.58	119.73	166.33	4,392	3,379	7,772
Northern Ireland	214.90	104.69	151.20	1,195	863	2,058

Country/Region	Under 75					
	Age-standardised death rates/100,000			Average numbers of CHD deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	66.67	21.06	43.15	17,978	5,966	23,945
England	63.88	19.80	41.19	14,359	4,658	19,016
North East	73.46	23.29	47.55	869	291	1,160
North West	77.69	26.18	51.22	2,401	847	3,248
Yorkshire and The Humber	74.36	23.67	48.30	1,703	568	2,271
East Midlands	67.20	20.39	43.35	1,381	428	1,809
West Midlands	68.98	20.44	44.14	1,687	519	2,206
East of England	55.37	17.78	36.05	1,440	484	1,924
London	63.55	19.67	40.53	1,582	519	2,102
South East	51.90	15.23	32.99	1,948	598	2,547
South West	53.25	15.09	33.61	1,348	403	1,750
Wales	71.94	24.44	47.54	1,031	368	1,399
Scotland	87.80	30.13	57.56	2,056	768	2,823
Northern Ireland	74.87	22.88	47.90	533	173	706

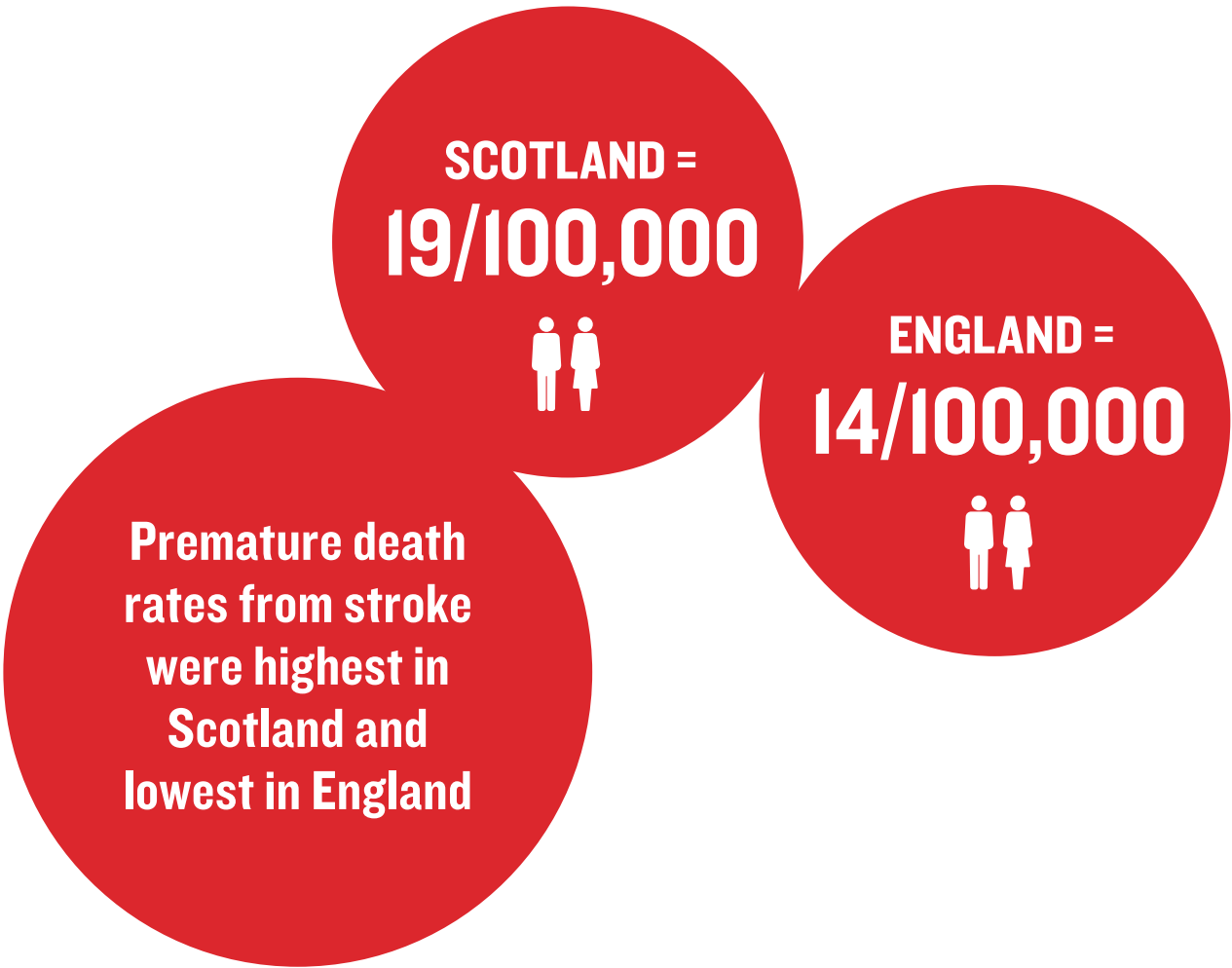
Notes ICD-10 codes I20-I25. Directly standardised using the 2013 European Standard Population. Source England and Wales: rates calculated in partnership with the Office for National Statistics. ¶ Scotland: Rates calculated in partnership with the General Register Office for Scotland. ¶ Northern Ireland: Rates calculated in partnership with Northern Ireland Statistics and Research Agency.



In men of all ages, death rates from stroke in UK countries were highest in Scotland, at 101/100,000 and lowest in England, at 76/100,000. Patterns within England differ between those dying at all ages and those dying before the age of 75, and while a North-South gradient is still present, rates for all ages in the West Midlands (81/100,000) are comparable to those of northern regions, which have rates greater than 83/100,000.

In women of all ages, the highest death rates from stroke were in the Northern regions of England, all greater than 79/100,000, but these were also high in the West Midlands at 79/100,000 deaths. In women aged under 75, the highest rates were in the North West (16/100,000) and North East (14/100,000) of England and lowest in the South West (10/100,000).

For men and women combined, premature death rates from stroke were highest in Scotland, at 19/100,000 and lowest in England, at 14/100,000. Within England, the highest death rates at all ages were in the Northern regions comprising the North East (82/100,000), Yorkshire & The Humber (82/100,000) and the North West (83/100,000). The lowest rate was in London (66/100,000) (Table 1.7).



**Table 1.7**  
Numbers of deaths and age-standardised death rates from stroke in men and women, all ages and under 75, by Government Office Region and country, United Kingdom 2010/12

Country/Region	All ages					
	Age-standardised death rates/100,000			Average numbers of stroke deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	78.57	77.05	78.44	17,292	26,776	44,069
England	76.12	74.49	75.87	14,117	21,757	35,874
North East	83.74	79.70	82.09	781	1,155	1,936
North West	83.32	81.36	82.93	2,022	3,090	5,112
Yorkshire and The Humber	84.37	79.66	82.29	1,534	2,303	3,837
East Midlands	72.70	72.14	72.87	1,194	1,813	3,007
West Midlands	80.86	79.26	80.53	1,587	2,461	4,048
East of England	70.31	69.18	70.21	1,565	2,406	3,971
London	70.46	62.38	66.25	1,440	1,919	3,359
South East	70.45	71.91	72.18	2,289	3,787	6,075
South West	75.22	76.36	76.72	1,706	2,823	4,529
Wales	81.90	80.20	81.73	963	1,486	2,449
Scotland	100.56	98.52	100.57	1,781	2,830	4,611
Northern Ireland	83.63	84.26	85.23	432	704	1,135

Country/Region	Under 75					
	Age-standardised death rates/100,000			Average numbers of stroke deaths per year 2010/12		
	Men	Women	Both	Men	Women	Both
UK	16.66	12.48	14.50	4,425	3,545	7,971
England	15.98	11.92	13.88	3,540	2,813	6,353
North East	19.32	14.03	16.57	225	175	400
North West	19.43	15.56	17.42	591	504	1,095
Yorkshire and The Humber	18.29	13.18	15.63	407	316	723
East Midlands	14.71	11.81	13.23	296	249	545
West Midlands	15.82	12.40	14.07	382	314	697
East of England	13.84	10.13	11.92	356	276	632
London	17.85	11.96	14.75	447	328	775
South East	13.69	10.09	11.83	508	397	905
South West	13.13	9.51	11.26	329	252	581
Wales	17.94	14.40	16.12	254	216	470
Scotland	22.22	16.41	19.16	508	418	926
Northern Ireland	17.66	13.00	15.24	124	98	222

Notes ICD-10 codes I60-I69. Directly standardised using the 2013 European Standard Population. Source England and Wales: rates calculated in partnership with the Office for National Statistics. ¶ Scotland: Rates calculated in partnership with the General Register Office for Scotland. ¶ Northern Ireland: Rates calculated in partnership with Northern Ireland Statistics and Research Agency.

MORTALITY BY LOCAL AUTHORITY

Age-standardised death rates for CVD, CHD and stroke mortality all show a clear pattern for higher death rates in urban areas of the UK, which can be seen in the maps included here. To download maps for men and women separately, and for the full tables of CVD, CHD and stroke mortality by local authority, please see [bhf.org.uk/statistics](http://bhf.org.uk/statistics). While there is some variation for each condition, overall, the highest CVD, CHD and stroke death rates are in Scotland and the North of England, and the lowest rates are in the South of England.

Age-standardised death rates by local authority demonstrate a clear trend for high CVD rates in Scotland and the North of England, and low CVD rates in the South of England. Glasgow City in Scotland had the highest rate of CVD deaths in 2010/12, for both premature mortality (144/100,000) and mortality at all ages (400/100,000). Half of the local authorities with the highest ten CVD death rates in the UK were in Scotland, four were in the North of England and one was in Wales (Table 1.8, Figures 1.8a & 1.8b).

The Isles of Scilly had the lowest CVD death rate in 2010/12 for both total mortality (157/100,000) and premature mortality (no premature deaths). For premature CVD mortality, after the Isles of Scilly, Hart in the South East of England had the lowest premature CVD death rate at 35/100,000. The ten local authorities with the lowest CVD death rates were all in the South or East of England (Table 1.8, Figures 1.8a & 1.8b).

Glasgow City in Scotland had the highest rate of CVD deaths in 2010/12, for both premature and all ages mortality

Age-standardised death rates for CVD, CHD and stroke mortality all show a clear pattern for higher death rates in urban areas of the UK

Table 1.8  
Rankings for local authorities with highest and lowest cardiovascular disease (CVD) mortality rates, United Kingdom 2010/12

All ages			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
00QS	Glasgow City	Scotland	399.89
30UG	Hyndburn	North West	395.23
00PL	Blaenau Gwent	Wales	395.11
00BT	Tameside	North West	393.82
00EX	Blackburn with Darwen	North West	393.34
00RC	Renfrewshire	Scotland	389.62
00RJ	Eilean Siar	Scotland	386.95
36UG	Scarborough	Yorkshire & The Humber	385.37
00QZ	North Lanarkshire	Scotland	384.95
00QG	West Dunbartonshire	Scotland	381.43
Median local authorities			
37UC	Bassetlaw	East Midlands	290.71
26UH	Stevenage	East of England	290.47
Ten lowest death rates			
19UG	Purbeck	South West	231.26
43UL	Waverley	South East	230.93
19UD	East Dorset	South West	224.22
12UG	South Cambridgeshire	East of England	222.48
24UP	Winchester	South East	221.58
00BD	Richmond upon Thames	London	215.49
24UG	Hart	South East	213.12
00AW	Kensington and Chelsea	London	197.31
00AA	City of London	London	177.63
00HF	Isles of Scilly	South West	157.34

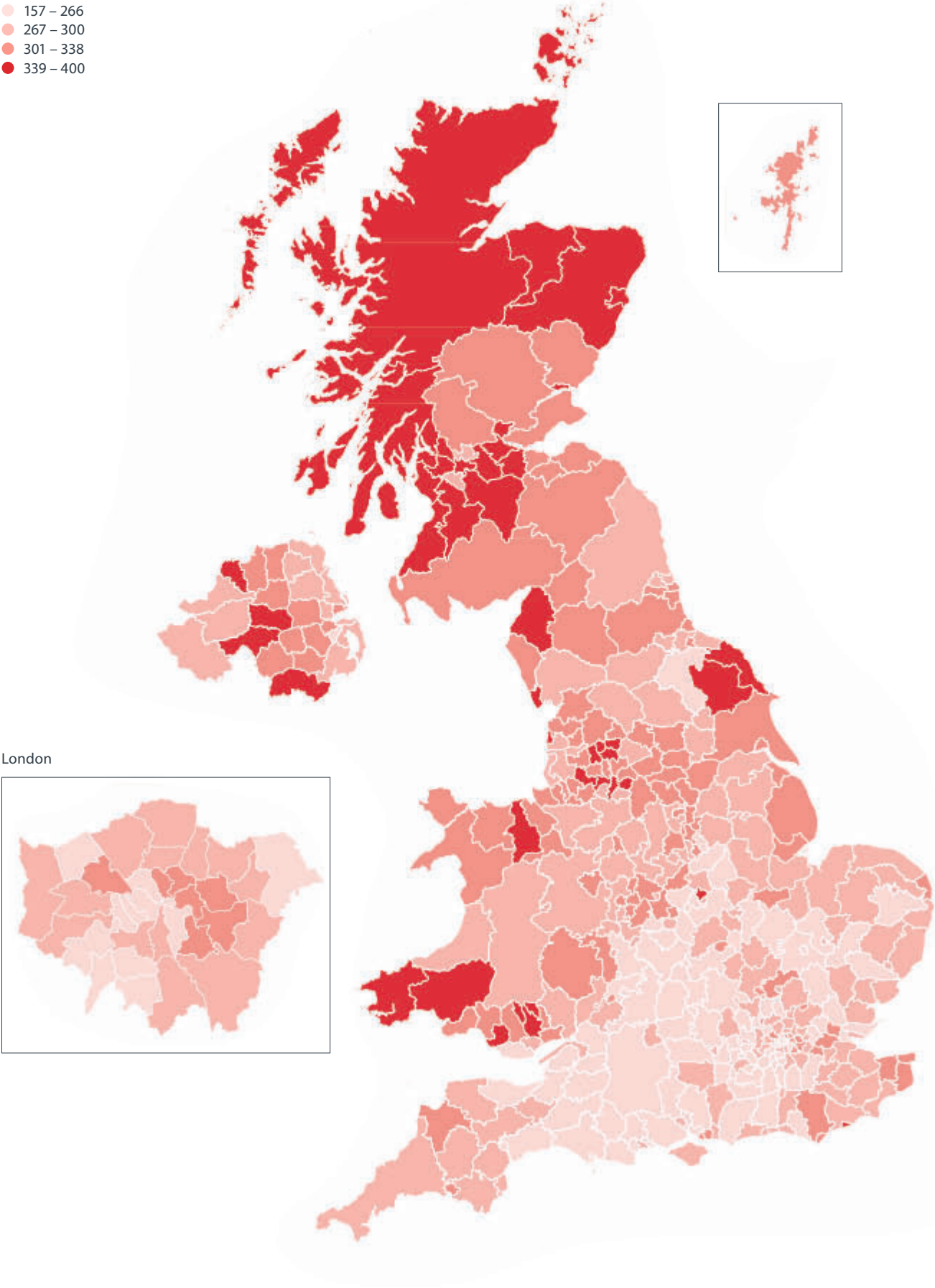
Note Full table available at [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

Table 1.8 (continued)  
Rankings for local authorities with highest and lowest cardiovascular disease (CVD) mortality rates, United Kingdom 2010/12

Under 75			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
00QS	Glasgow City	Scotland	143.54
00BN	Manchester	North West	133.92
00EY	Blackpool	North West	125.27
00QJ	Dundee City	Scotland	123.21
00QU	Inverclyde	Scotland	122.85
00QZ	North Lanarkshire	Scotland	122.62
00RJ	Eilean Siar	Scotland	119.02
00PL	Blaenau Gwent	Wales	118.24
00QG	West Dunbartonshire	Scotland	116.25
00EX	Blackburn with Darwen	North West	114.31
Median local authorities			
47UD	Redditch	West Midlands	74.56
95X	Ards	Northern Ireland	74.32
Ten lowest death rates			
19UD	East Dorset	South West	47.92
43UD	Guildford	South East	47.85
45UF	Horsham	South East	47.83
11UC	Chiltern	South East	47.74
43UL	Waverley	South East	47.07
43UE	Mole Valley	South East	44.81
12UG	South Cambridgeshire	East of England	44.54
24UP	Winchester	South East	43.41
24UG	Hart	South East	34.94
00HF	Isles of Scilly	South West	0.00

Note Full table available at [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

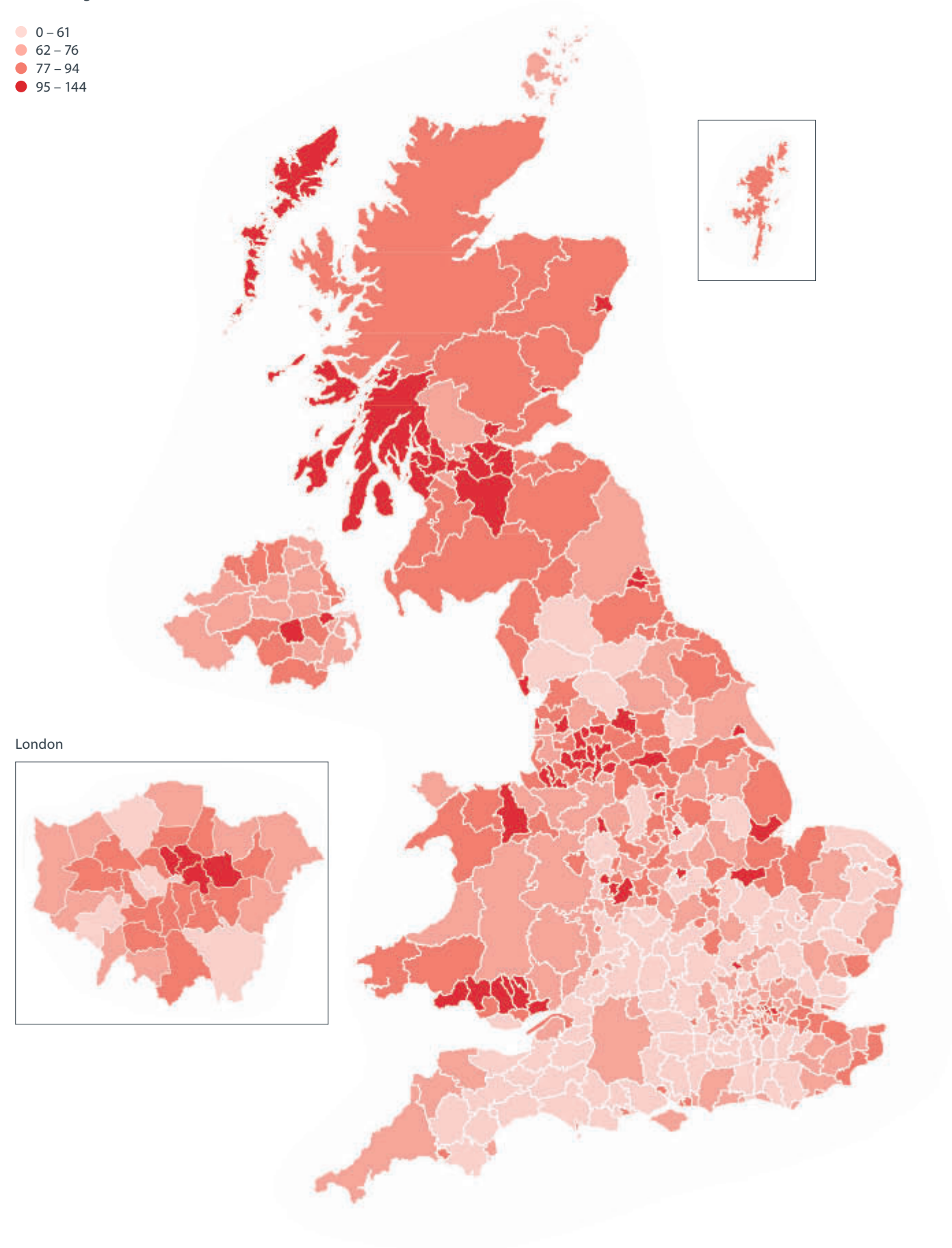
Figure 1.8a  
Age-standardised death rates from CVD in men and women all ages, per 100,000, by local authority, United Kingdom 2010/12





**Figure 1.8b**  
Age-standardised death rates from CVD in men and women under 75, per 100,000, by local authority, United Kingdom 2010/12

0 – 61  
62 – 76  
77 – 94  
95 – 144



A similar pattern of high death rates in Scotland and the North of England is also apparent for CHD. Tameside in Greater Manchester had the highest all-ages CHD death rate (235/100,000) and Glasgow City in Scotland had the highest premature CHD death rate (86/100,000). For CHD deaths at all ages, half of the local authorities with the top ten highest death rates were in Scotland, four were in the North West of England and one was in Northern Ireland. For premature death rates, the ten local authorities with the highest CHD death rates were all in Scotland or the North West of England (Table 1.9, Figures 1.9a & 1.9b).

The City of London had the lowest CHD death rate for total mortality (72/100,000), and the Isles of Scilly had the lowest premature CHD death rate, with no deaths under age 75. The ten local authorities with the lowest CVD death rates were all in the South or East of England (Table 1.9, Figures 1.9a & 1.9b).

**The City of London  
had the lowest  
CHD death rate for  
all ages mortality**

**The Isles of Scilly had  
the lowest premature  
CHD death rate, with  
no deaths under age 75**



Table 1.9  
Rankings for local authorities with highest and lowest coronary heart disease (CHD) mortality rates, United Kingdom 2010/12

All ages			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
00BT	Tameside	North West	235.07
30UG	Hyndburn	North West	217.56
00EX	Blackburn with Darwen	North West	215.29
00QS	Glasgow City	Scotland	198.34
30UD	Burnley	North West	198.07
00QG	West Dunbartonshire	Scotland	195.32
00RJ	Eilean Siar	Scotland	189.44
95N	Craigavon	Northern Ireland	189.06
00QZ	North Lanarkshire	Scotland	186.67
95M	Dungannon	Scotland	186.31
Median local authorities			
00KB	Bedford	East of England	131.59
36UH	Selby	Yorkshire & The Humber	131.35
Ten lowest death rates			
00BK	Westminster	London	94.51
38UD	South Oxfordshire	South East	94.42
00BD	Richmond upon Thames	London	93.65
43UK	Tandridge	South East	91.79
12UG	South Cambridgeshire	East of England	90.54
29UK	Sevenoaks	South East	89.48
24UG	Hart	South East	86.51
00HF	Isles of Scilly	South West	74.83
00AW	Kensington and Chelsea	London	73.55
00AA	City of London	London	71.97

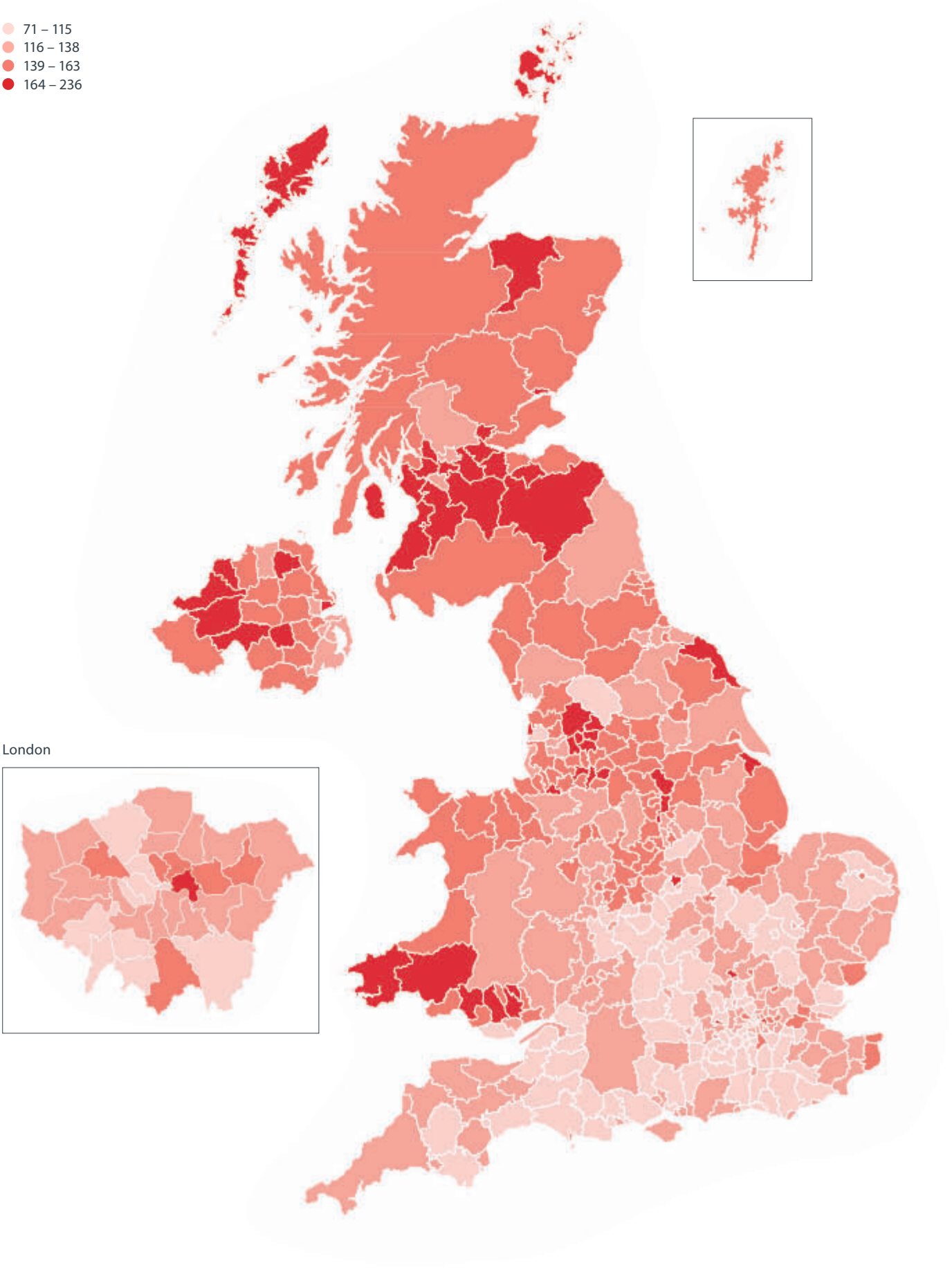
Note Full table available at [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

Under 75			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
00QS	Glasgow City	Scotland	85.56
00BN	Manchester	North West	74.82
00QG	West Dunbartonshire	Scotland	74.04
00QJ	Dundee City	Scotland	73.76
00BT	Tameside	North West	72.78
00EX	Blackburn with Darwen	North West	71.73
00QZ	North Lanarkshire	Scotland	71.40
30UD	Burnley	North West	69.79
00EY	Blackpool	North West	69.08
00KA	Luton	East of England	68.21
Median local authorities			
00GA	Herefordshire, County of	West Midlands	40.59
95C	Coleraine	Northern Ireland	40.55
Ten lowest death rates			
22UQ	Uttlesford	East of England	23.16
45UF	Horsham	South East	23.10
43UE	Mole Valley	South East	23.09
43UL	Waverley	South East	22.82
11UE	South Bucks	South East	22.56
21UF	Lewes	South East	22.29
24UC	East Hampshire	South East	20.94
00AW	Kensington and Chelsea	London	20.54
24UG	Hart	South East	17.13
00HF	Isles of Scilly	South West	0.00

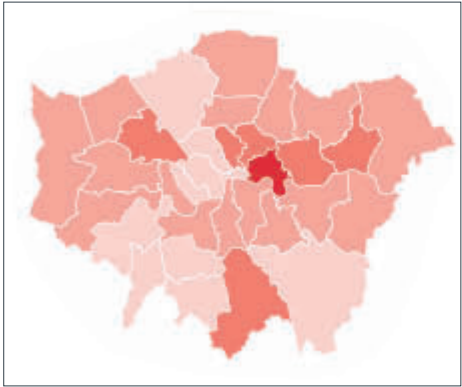
Note Full table available at [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

**Figure 1.9a**  
Age-standardised death rates from CHD in men and women all ages, per 100,000, by local authority, United Kingdom 2010/12

- 71 – 115
- 116 – 138
- 139 – 163
- 164 – 236

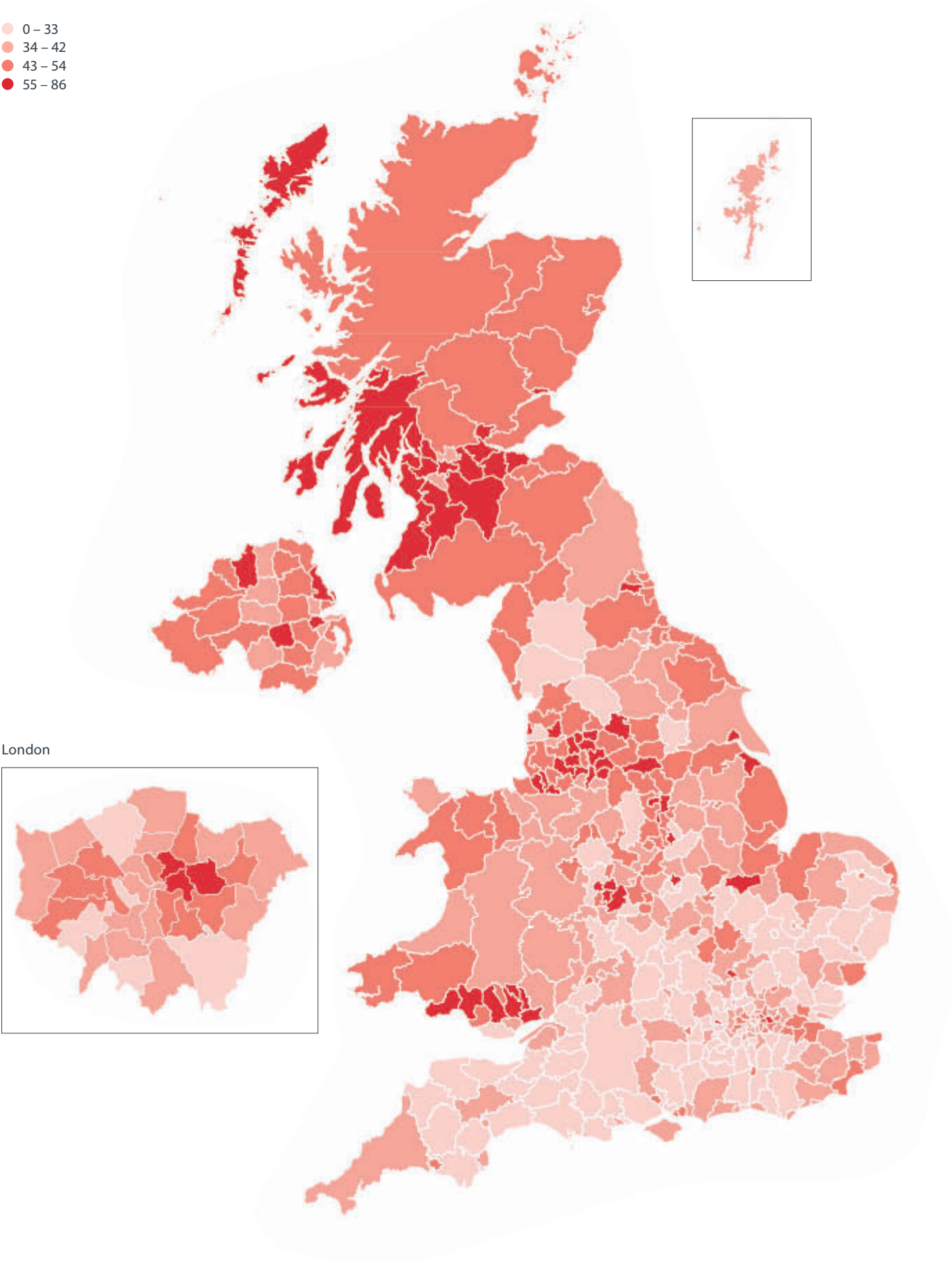


London

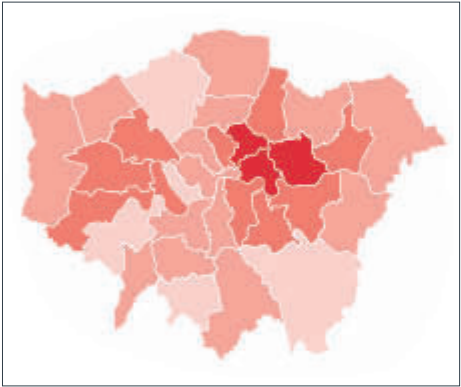


**Figure 1.9b**  
Age-standardised death rates from CHD in men and women under 75, per 100,000, by local authority, United Kingdom 2010/12

- 0 – 33
- 34 – 42
- 43 – 54
- 55 – 86



London



The highest age-standardised death rates from stroke are in Northern Ireland, Scotland and Yorkshire & The Humber for deaths at all ages. For premature stroke deaths, the highest rates occur in Scotland, the North West of England and Northern Ireland. Ballymena and Cookstown in Northern Ireland had the highest death rates from stroke in the UK, at 140/100,000, however six of the ten local authorities with the highest stroke death rates were in Scotland. For premature death rates from stroke, Inverclyde in Scotland had the highest death rate in the UK.

The lowest death rates from stroke, both at all ages and for premature death were in the South and East of England, and two council areas in Northern Ireland. For total stroke mortality, the lowest death rate was in the City of London (41/100,000). For premature stroke mortality, the lowest rate was in the Isles of Scilly which had no premature stroke deaths; the second lowest premature stroke death rate was in Three Rivers in the East of England (6/100,000). For age-standardised stroke deaths, Northern Ireland has both some of the highest and lowest rates in the UK (Table 1.10, Figures 1.10a & 1.10b).

The highest age-standardised death rates from stroke are in Northern Ireland, Scotland and Yorkshire & The Humber for deaths at all ages

The lowest death rates from stroke, both at all ages and for premature death were in the South and East of England, and two council areas in Northern Ireland

Table 1.10  
Rankings for local authorities with highest and lowest stroke mortality rates, United Kingdom 2010/12

All ages			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
95G	Ballymena	Northern Ireland	139.73
95I	Cookstown	Northern Ireland	139.73
00RC	Renfrewshire	Scotland	135.87
00QU	Inverclyde	Scotland	122.58
36UG	Scarborough	Yorkshire & The Humber	120.05
00RA	Orkney Islands	Scotland	117.65
00QS	Glasgow City	Scotland	114.74
95B	Limavady	Northern Ireland	114.40
00QG	West Dunbartonshire	Scotland	111.34
00QQ	Falkirk	Scotland	109.99
Median local authorities			
00CU	Walsall	West Midlands	76.46
40UC	Sedgemoor	South West	76.43
Ten lowest death rates			
95E	Moyle	Northern Ireland	57.44
43UD	Guildford	South East	56.39
00BD	Richmond upon Thames	London	55.15
42UB	Babergh	East of England	53.17
00AW	Kensington and Chelsea	London	53.03
00BK	Westminster	London	53.00
00AG	Camden	London	52.37
00AQ	Harrow	London	52.30
00HF	Isles of Scilly	South West	42.86
00AA	City of London	London	40.83

Note Full table available at [bhf.org.uk/statistics](https://www.bhf.org.uk/statistics)

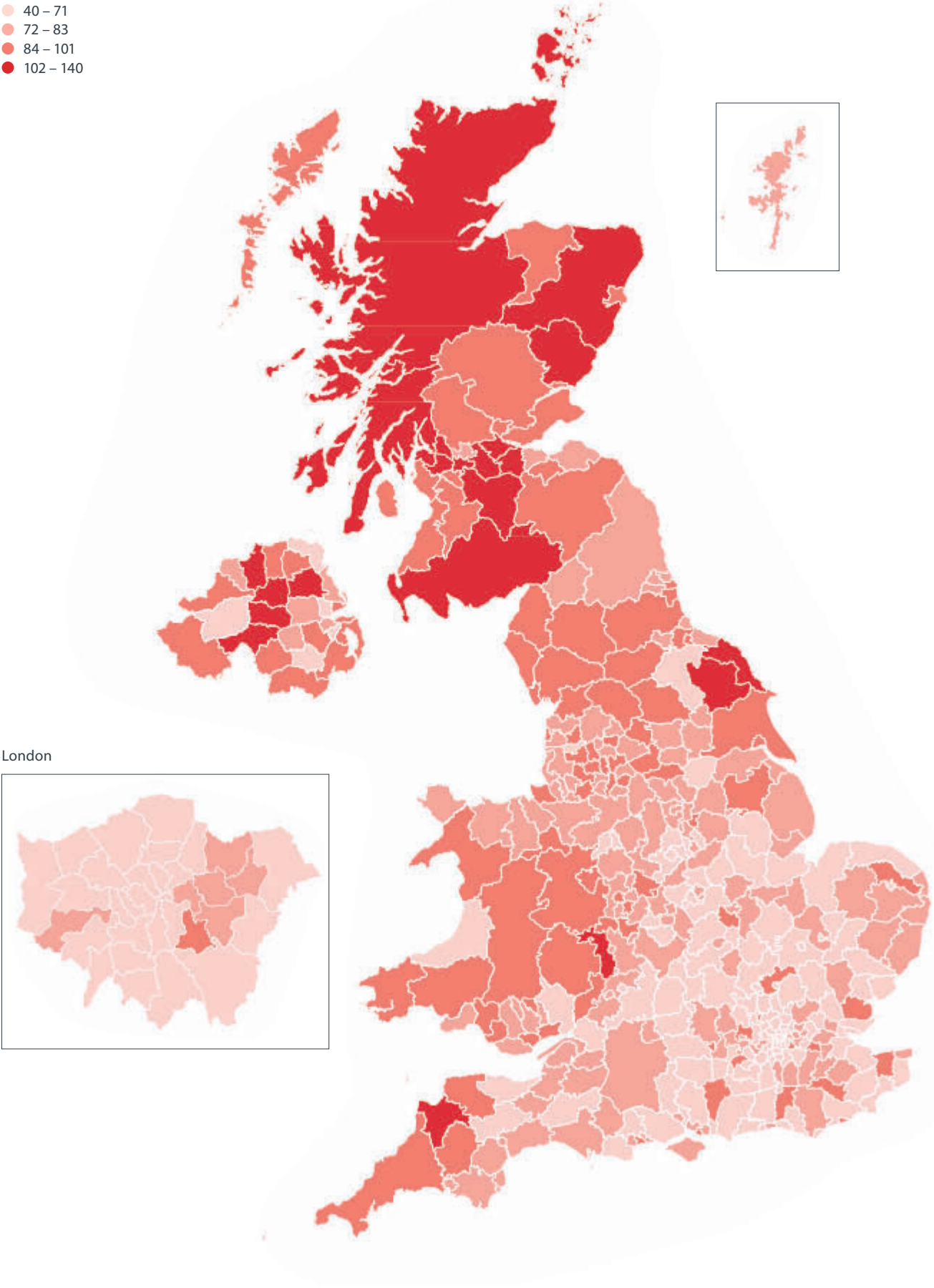


Table 1.10 (continued)  
Rankings for local authorities with highest and lowest stroke mortality rates, United Kingdom 2010/12

Under 75			
Code	Local authority	Country/Region	Age-standardised death rate per 100,000
Ten highest death rates			
00QU	Inverclyde	Scotland	31.22
00QS	Glasgow City	Scotland	27.09
00BN	Manchester	North West	26.88
00RC	Renfrewshire	Scotland	26.63
95I	Cookstown	Northern Ireland	24.99
00RJ	Eilean Siar	Scotland	24.94
00EY	Blackpool	North West	23.90
00EX	Blackburn with Darwen	North West	23.83
00QZ	North Lanarkshire	Scotland	23.68
34UB	Corby	Northern Ireland	23.09
Median local authorities			
29UB	Ashford	South East	13.47
00FK	Derby	East Midlands	13.45
Ten lowest death rates			
24UP	Winchester	South East	7.48
23UF	Stroud	South West	7.12
22UE	Castle Point	East of England	6.98
17UF	Derbyshire Dales	East Midlands	6.79
19UG	Purbeck	South West	6.31
95K	Omagh	Northern Ireland	6.20
24UN	Test Valley	South East	6.17
24UG	Hart	South East	6.05
26UJ	Three Rivers	East of England	6.03
00HF	Isles of Scilly	South West	0.00

Note Full table available at [bhf.org.uk/statistics](http://bhf.org.uk/statistics)

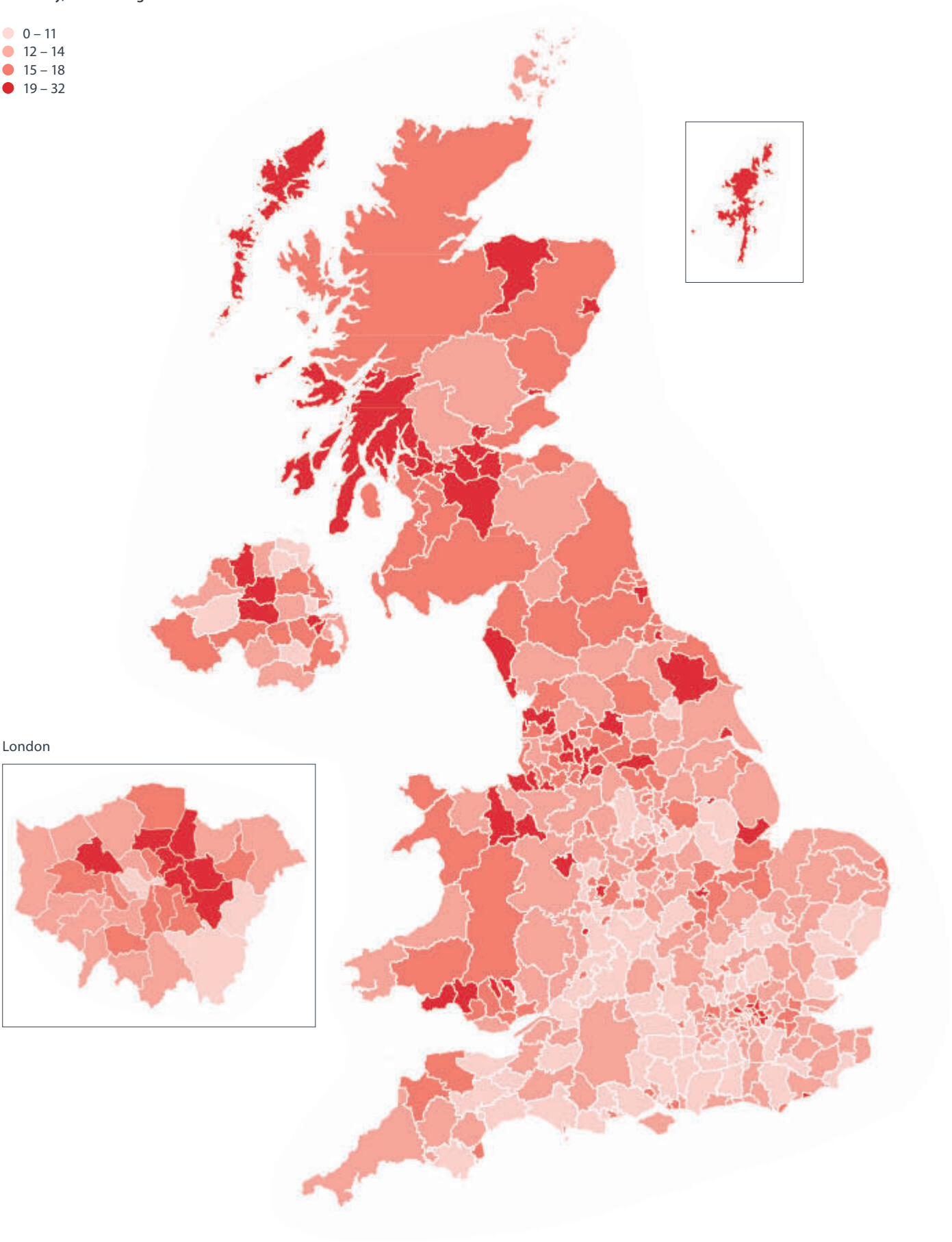
Figure 1.10a  
Age-standardised death rates from stroke in men and women all ages, per 100,000, by local authority, United Kingdom 2010/12





**Figure 1.10b**  
Age-standardised death rates from stroke in men and women under 75, per 100,000, by local authority, United Kingdom 2010/12

0 – 11  
12 – 14  
15 – 18  
19 – 32



**ENDNOTES**

1 Mortality rates are standardised to the European Standard Population in order to account for different age-structures between populations in different regions and across time. Mortality is strongly related to age, therefore by accounting for the age-structure of a population, we are able to compare mortality rates between populations with very different age-structures.

The European Standard Population is a theoretical population that has been designed to reflect the average age-structure of all European populations. By standardising rates to this population, we are comparing mortality rates as if all deaths had occurred in populations with the age-structures of the European Standard population. For more information on the European Standard Population, please visit [http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-RA-13-028/EN/KS-RA-13-028-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-13-028/EN/KS-RA-13-028-EN.PDF) (accessed 30 May 2014).

## Chapter 2

# MORBIDITY

In this chapter we present country-level estimates of the incidence and prevalence of a number of cardiovascular diseases (CVD), including coronary heart disease (CHD), myocardial infarction (heart attack), heart failure and stroke. Relative to collecting mortality data, which involves counting the number of deaths that have occurred due to a disease, collecting accurate measures of morbidity is challenging. For example, individuals may not be aware that they have a disease or be able to accurately report the date of its onset. For this reason, the estimates of morbidity presented in this chapter should be interpreted with caution.

Here we present the best available estimates of cardiovascular disease incidence and prevalence for UK countries, drawing upon data from GP registers and hospital episode statistics. Both data sources have a unique set of strengths and limitations, some of which are detailed in this chapter.

## INCIDENCE

The incidence of a disease is the number of new cases that develop within a population over a specified time period. The incidence data featured in the 2014 Compendium is based on annual records of inpatient episodes from National Health Service hospitals in England, Scotland, Northern Ireland and Wales. An episode is defined as the main diagnosis attributed to a patient when he or she is discharged from the hospital. While these records represent the best available estimates of the morbidity from CVD for countries within the UK, they have several limitations as a source of incidence data. One limitation is that individual patients may have multiple hospital episodes attributed to them over the course of the year, which may over-estimate the true number of new cases. At the same time, hospital episodes may under-estimate certain conditions, such as those with a high mortality rate. In instances where a person dies before reaching medical care, their condition will not be picked up in the hospital records. In hospital episodes there are two main types of statistics reported. They are finished consultant episodes (FCE) and ordinary admissions. This chapter reports FCEs as they include both ordinary admissions and day cases. Sometimes statistics based only on hospital admissions are used to estimate the incidence of diseases, but this will result in an underestimate for conditions which do not require hospital admissions or long hospital stays.

In the United Kingdom, there were more than 1.6 million episodes related to cardiovascular disease in NHS hospitals, accounting for 10% of all inpatient episodes among men and 6.2% among women. In England, CVD accounts for 9.9% of all inpatient episodes in men and 6.0% in women. In Scotland, it accounts for 12.1% and 8.4% of episodes for men and women respectively; 11.3% of episodes amongst men in Wales and 7% of episodes among women are for CVD, whilst it accounts for 8% and 6.5% of episodes among men and women from Northern Ireland respectively (Table 2.1, Figures 2.1a-2.1j).

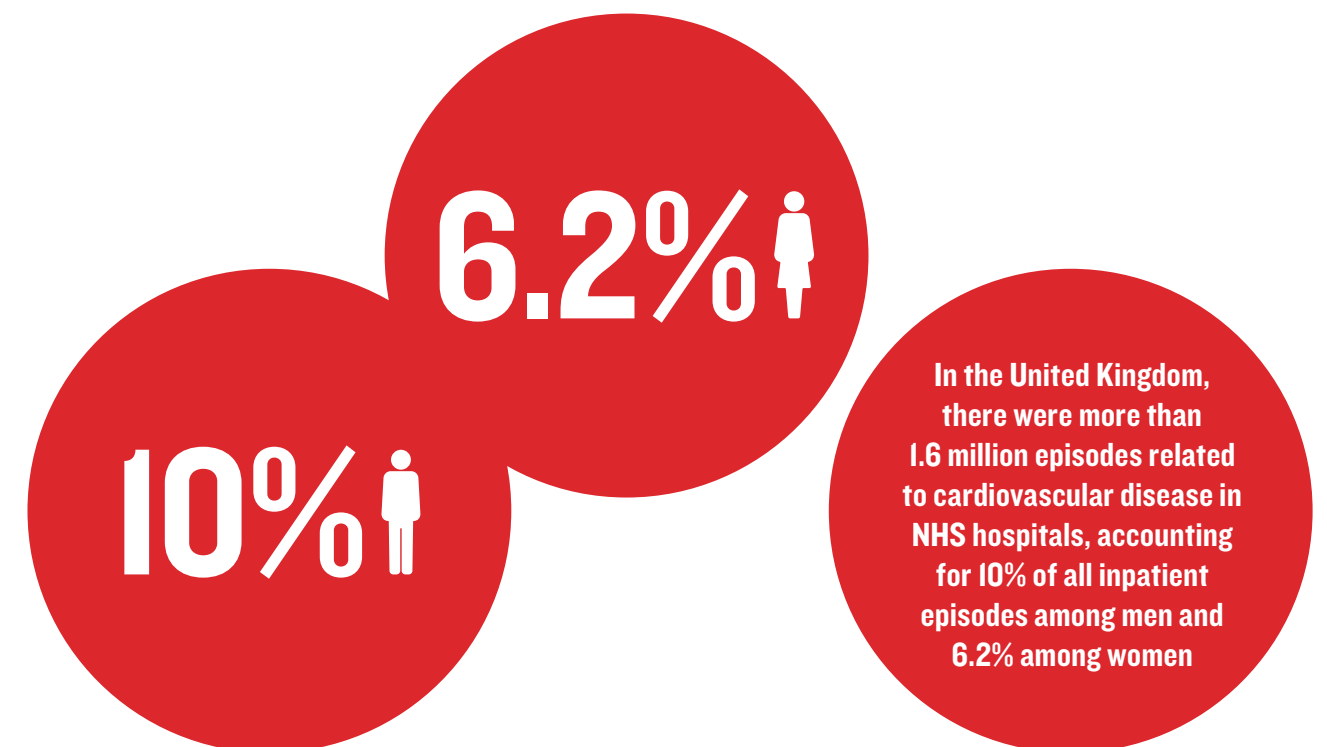


Table 2.1  
Inpatient episodes by main diagnosis in National Health Service hospitals, by gender, England, Scotland, Wales, Northern Ireland and United Kingdom 2012/13

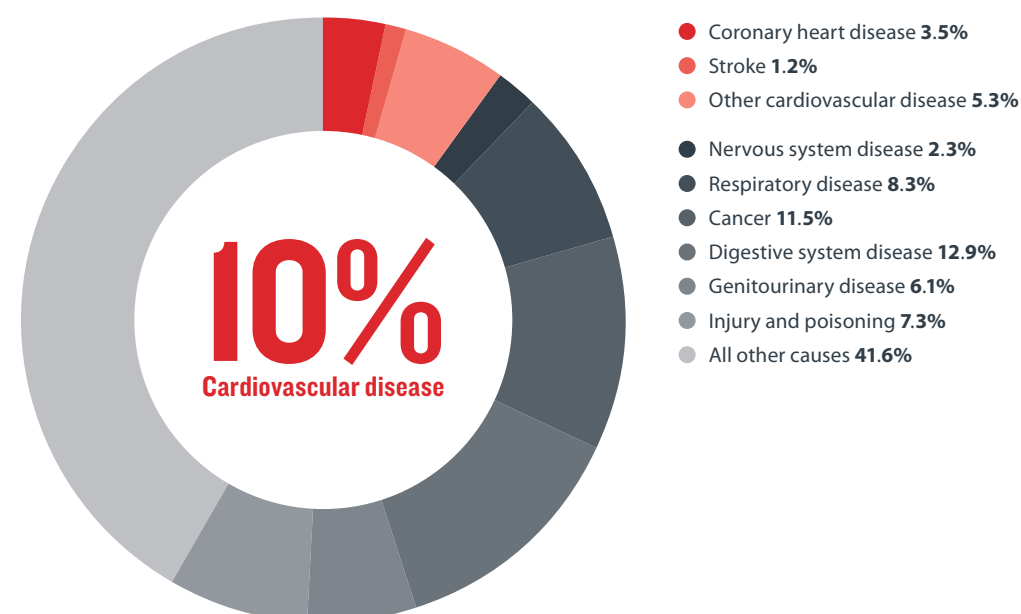
Diagnosis	England		Scotland		Wales	
	Men	Women	Men	Women	Men	Women
All diagnoses	7,888,761	9,824,399	685,043	766,766	400,102	510,175
All diseases of the circulatory system (CVD) (I00-I99)	777,888	596,206	82,982	64,422	45,446	35,507
Coronary heart disease (I20-I25)	265,102	138,987	30,999	16,401	15,745	8,590
Stroke (I60-I69)	96,502	99,579	11,391	11,990	5,672	6,408
Other cardiovascular disease	416,284	357,640	40,592	36,031	24,029	20,509
Specific conditions						
Angina pectoris (I20)	61,099	41,443	3,964	2,914	4,228	2,809
Acute myocardial infarction (I21)	88,314	52,676	14,001	8,076	4,963	3,023
Heart failure (I50)	66,354	60,710	6,226	5,565	4,848	4,087
Diabetes (E10-E14)	40,071	33,520	4,189	3,744	2,302	1,966
Obesity (E66)	3,258	8,592	228	228	49	62
All cancer (C00-D48)	912,786	937,814	91,471	105,837	31,879	29,311
Colo-rectal cancer (C18-C21)	93,540	65,646	10,493	8,931	2,969	2,132
Lung cancer (C33-C34)	57,774	46,718	8,460	8,284	2,291	1,883
Breast cancer (C50)	980	179,611	95	21,286	37	3,306
Bladder cancer (C67)	60,076	19,337	3,388	1,430	2,912	950
All diseases of the nervous system (G00-G99)	182,467	213,177	15,902	19,738	8,498	10,528
All diseases of the respiratory system (J00-J99)	647,788	641,950	62,619	68,987	41,085	41,943
All diseases of the digestive system (K00-K93)	1,014,396	1,035,779	92,098	99,013	47,797	50,410
All diseases of the genitourinary system (N00-N99)	462,223	660,982	38,647	55,101	24,300	36,369
Injury and poisoning (S00-T98)	571,165	585,633	58,486	58,820	30,263	31,474
All other diagnoses	3,276,719	5,110,746	238,421	290,876	168,483	272,605

Diagnosis	Northern Ireland		United Kingdom	
	Men	Women	Men	Women
All diagnoses	302,738	290,630	9,276,644	11,391,970
All diseases of the circulatory system (CVD) (I00-I99)	24,198	19,013	930,514	715,148
Coronary heart disease (I20-I25)	9,986	4,699	321,832	168,677
Stroke (I60-I69)	1,448	1,507	115,013	119,484
Other cardiovascular disease	12,764	12,807	493,669	426,987
Specific conditions				
Angina pectoris (I20)	2,039	1,242	71,330	48,408
Acute myocardial infarction (I21)	2,938	1,642	110,216	65,417
Heart failure (I50)	1,984	2,164	79,412	72,526
Diabetes (E10-E14)	2,352	1,703	48,914	40,933
Obesity (E66)	10	26	3,545	8,908
All cancer (C00-D48)	31,027	33,613	1,067,163	1,106,575
Colo-rectal cancer (C18-C21)	3,565	2,583	110,567	79,292
Lung cancer (C33-C34)	2,349	1,603	70,874	58,488
Breast cancer (C50)	64	6,324	1,176	210,527
Bladder cancer (C67)	1,645	473	68,021	22,190
All diseases of the nervous system (G00-G99)	4,491	5,490	211,358	248,933
All diseases of the respiratory system (J00-J99)	22,134	23,037	773,626	775,917
All diseases of the digestive system (K00-K93)	38,242	38,242	1,192,533	1,223,444
All diseases of the genitourinary system (N00-N99)	75,225	61,547	600,395	813,999
Injury and poisoning (S00-T98)	18,838	16,705	678,752	692,632
All other diagnoses	86,222	91,254	3,769,845	5,765,481

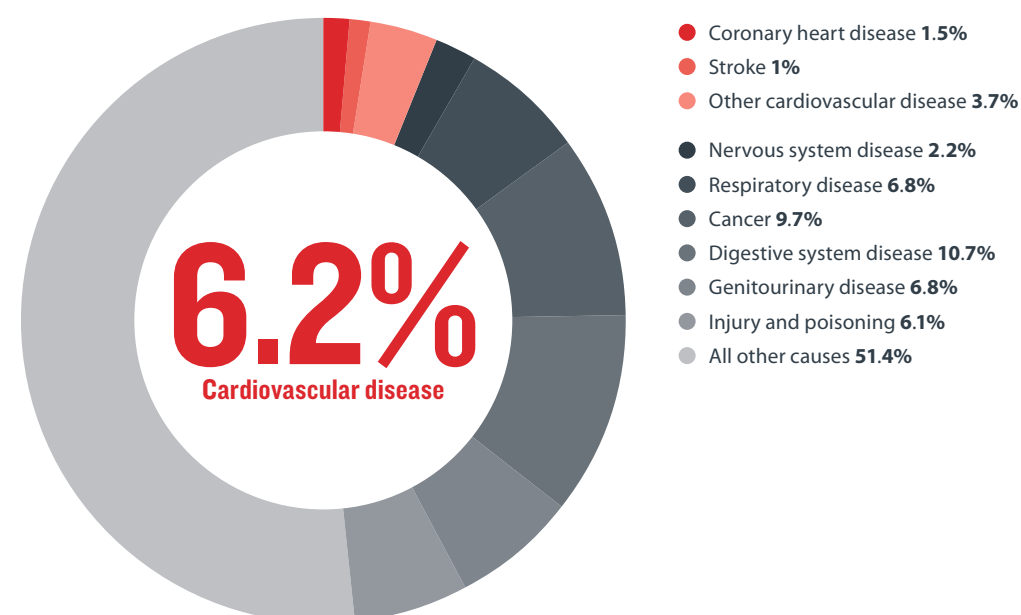
Notes Finished consultant episodes; ordinary admissions and day cases combined. Pregnancy cases not included. ICD-10 codes in parentheses. Source Department of Health (2013). Hospital Episode Statistics 2012/13. www.hesonline.nhs.uk (accessed January 2014). ¶ Information Services Division Scotland (2012). Main diagnosis discharges from hospital 2012/13. www.isdscotland.org (accessed January 2014). Personal correspondence. ¶ NHS Wales Informatics Service (2013). The Patient Episode Database for Wales – 2012/13. www.infoandstats.wales.nhs.uk (accessed January 2014). ¶ Hospital Information Branch (2012). Northern Ireland Episode Based Acute Inpatient and Day Case Activity Data (2012/13) www.dhsspsni.gov.uk (accessed January 2014). Personal correspondence.

For both men and women in all UK countries 'All other causes' makes up a significant proportion of total episodes. This category encompasses a large number of conditions including infectious diseases, digestive and intestinal conditions, anaemia and other blood disorders, eye disorders including cataracts and mental health. In addition individuals who show signs or symptoms of a condition, but for whom no final diagnosis is made, are also included as other causes.

**Figure 2.1a**  
Inpatient episodes by main diagnosis in men for National Health Service hospitals, United Kingdom, 2012/13

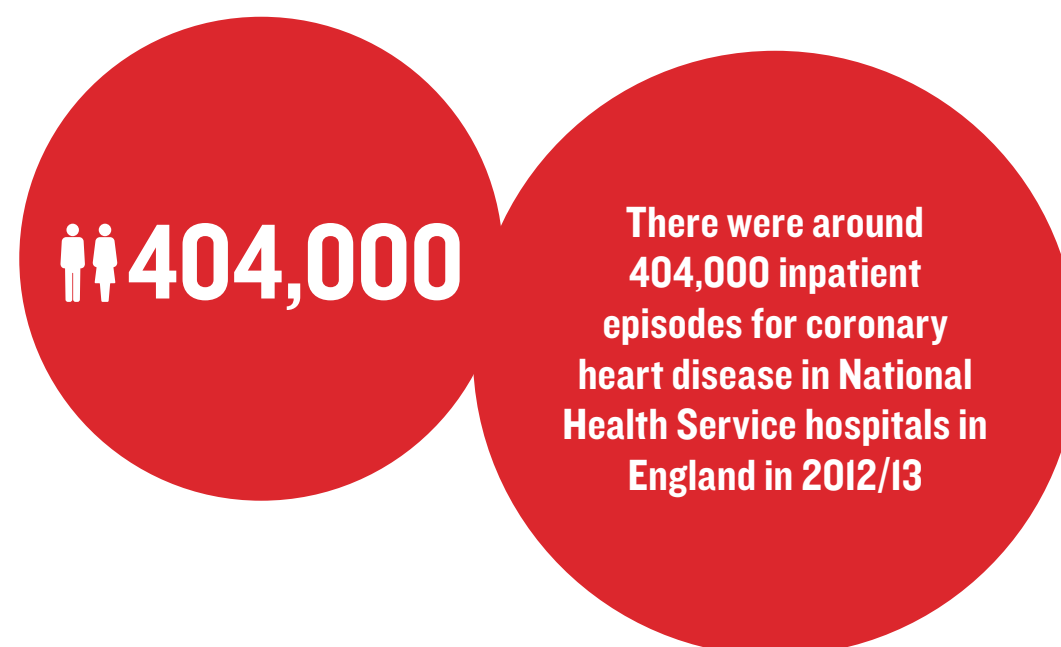
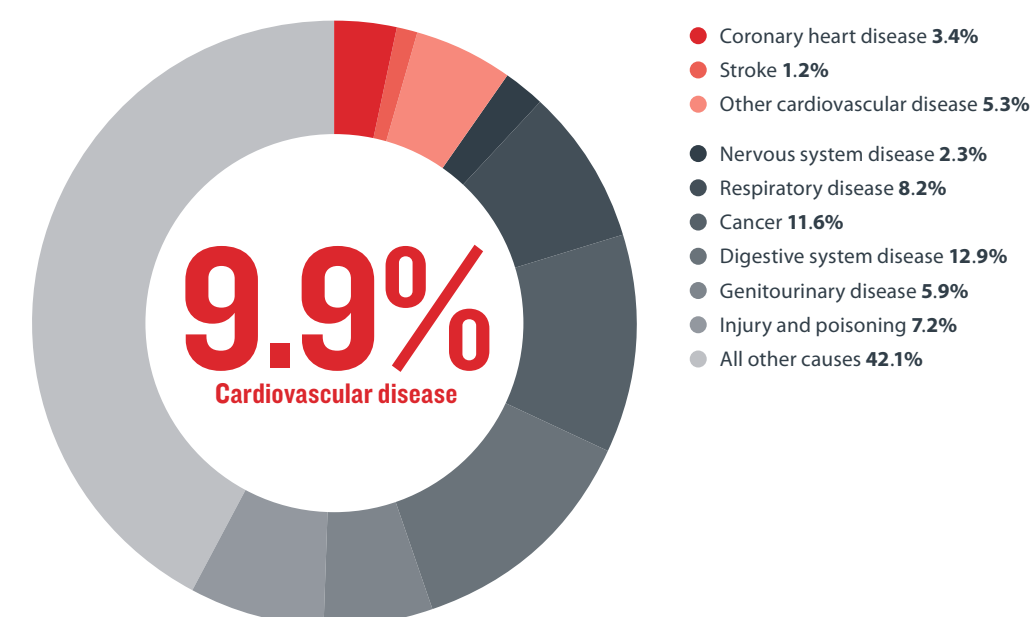


**Figure 2.1b**  
Inpatient episodes by main diagnosis in women for National Health Service hospitals, United Kingdom, 2012/13



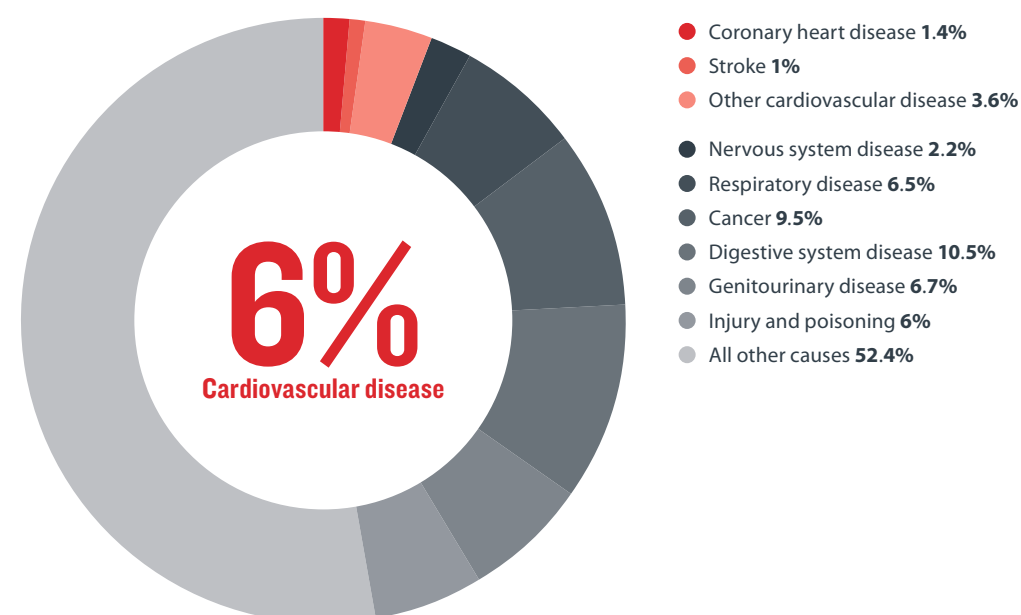
There were around 404,000 inpatient episodes of coronary heart disease (CHD) in National Health Service hospitals in 2012/13 in England, more than 47,000 in Scotland, more than 24,000 in Wales and just under 15,000 in Northern Ireland. The proportion of inpatient episodes attributed to CHD was almost twice as high among men as among women, accounting for 3.5% of all inpatient episodes in men and 1.5% in women in the United Kingdom. In England, CHD accounts for 3.4% of all inpatient episodes in men and 1.4% in women. In Scotland, it represents 4.5% and 2.1% of all inpatient episodes for men and women respectively, 3.9% of episodes amongst men and 1.7% of episodes amongst women in Wales are for CHD, whilst in Northern Ireland, it is responsible for 3.3% and 1.6% of episodes among men and women respectively (Table 2.1, Figure 2.1a-2.1j).

**Figure 2.1c**  
Inpatient episodes by main diagnosis in men for National Health Service hospitals, England, 2012/13





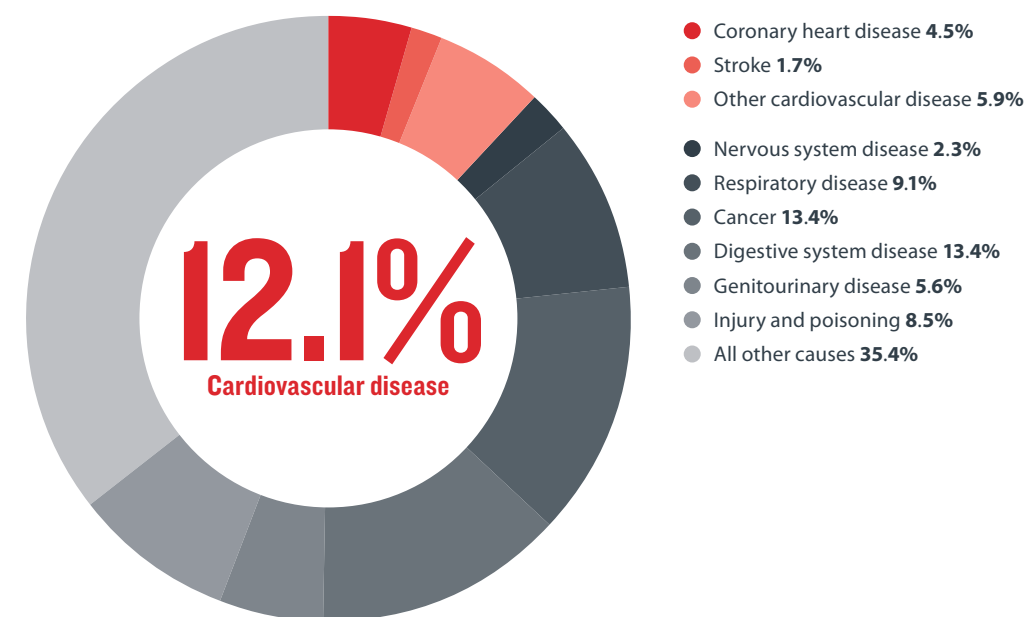
**Figure 2.1d**  
Inpatient episodes by main diagnosis in women for National Health Service hospitals, England, 2012/13



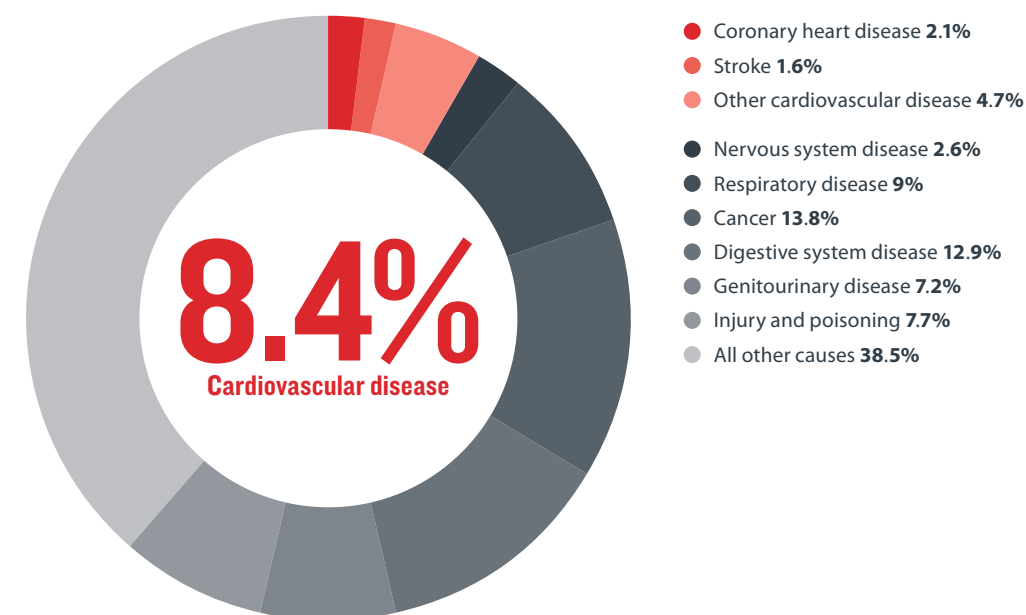
The incidence of myocardial infarction (MI) has declined in many developed countries, including England, since the 1970s.<sup>1,2,3</sup> In 2012, there were almost 141,000 inpatient episodes of acute MI in England, about 22,000 in Scotland, just under 8,000 in Wales and more than 4,500 in Northern Ireland, totalling around 175,000 for the United Kingdom. If hospital episodes were an exact measure of incidence, this figure would translate to someone in the UK going to hospital due to a heart attack every three minutes. In the UK, MI accounts for about 1% of all episodes in men and 0.5% in women. While the incidence of acute MI has declined in recent years, the number of reported inpatient episodes for the condition increased between 2011/12 and 2012/13. This increase was primarily due to a change in the national clinical coding standards; previously, only a patient's first MI was coded as such with all subsequent MIs occurring in a patient's lifetime assigned to an alternative category. In 2012/13, however, the fourth edition of the International Classification of Disease (ICD-10 v4) was introduced and the standards changed to include both initial and subsequent MIs under the same heading. For this reason, comparison between years should be interpreted with caution (Table 2.1, Figures 2.1a – 2.1j).

**The proportion of inpatient episodes attributed to CHD was almost twice as high among men as among women**

**Figure 2.1e**  
Inpatient episodes by main diagnosis in men for National Health Service hospitals, Scotland, 2012/13

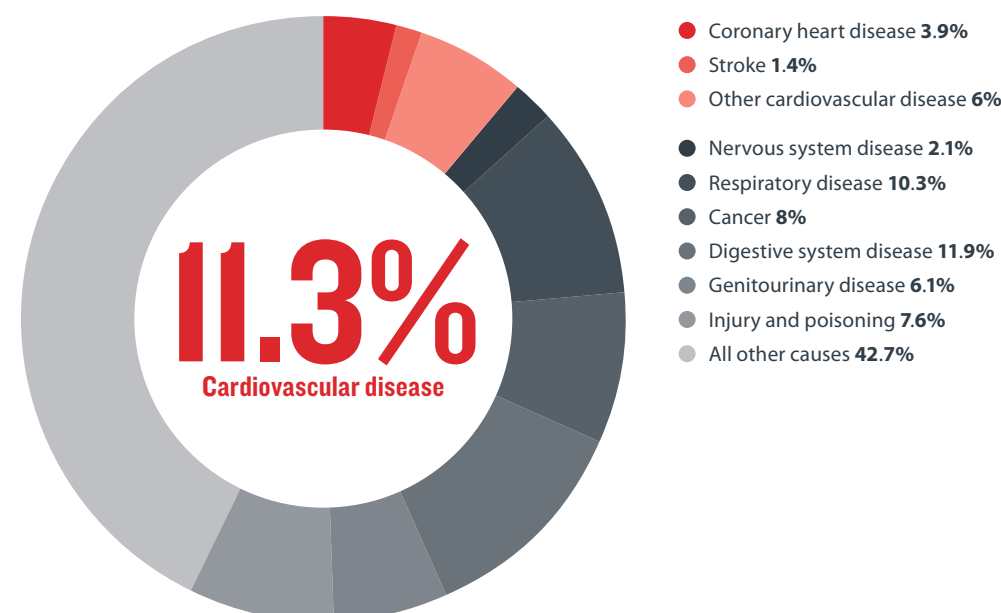


**Figure 2.1f**  
Inpatient episodes by main diagnosis in women for National Health Service hospitals, Scotland, 2012/13

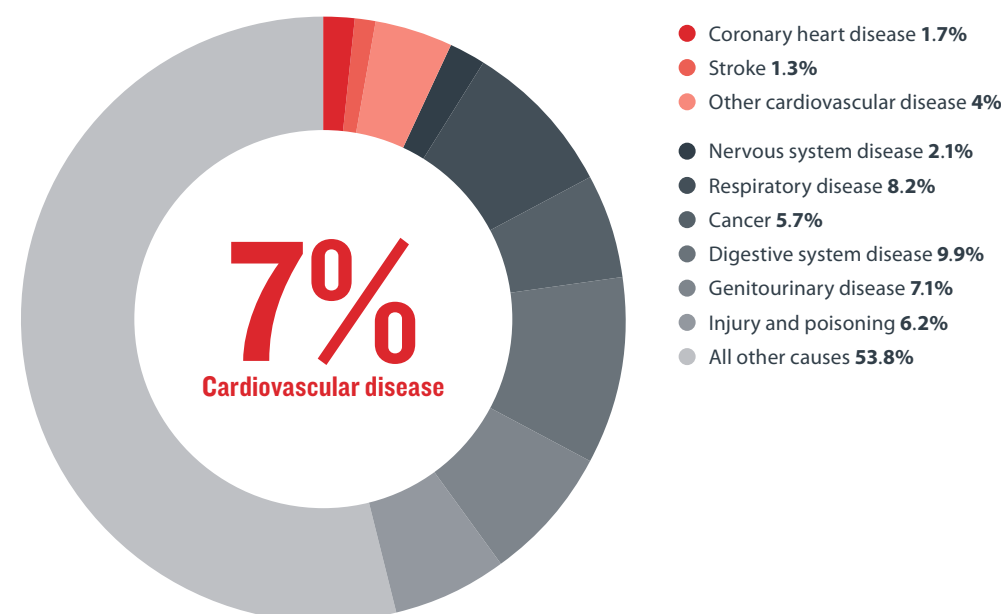


In 2012/13, there were slightly fewer than 152,000 inpatient episodes of heart failure in NHS hospitals. There were more episodes among men than among women in every country except Northern Ireland. The overall number of episodes for men in the UK was 79,412 compared to 72,526 episodes in women (Table 2.1). As with the incidence of MI, the incidence of stroke in the UK has decreased in recent years. Between 1999 and 2008, the incidence of stroke in the UK dropped by 30%.<sup>4</sup> In 2012/13, the incidence of stroke was higher among women than men in every UK country.

**Figure 2.1g**  
Inpatient episodes by main diagnosis in men for National Health Service hospitals, Wales, 2012/13

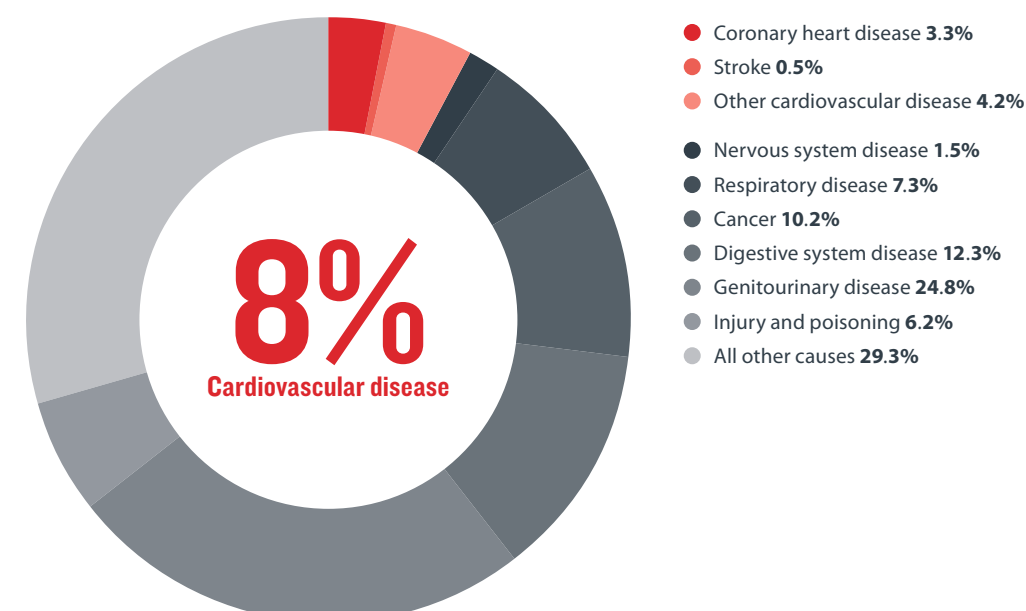


**Figure 2.1h**  
Inpatient episodes by main diagnosis in women for National Health Service hospitals, Wales, 2012/13

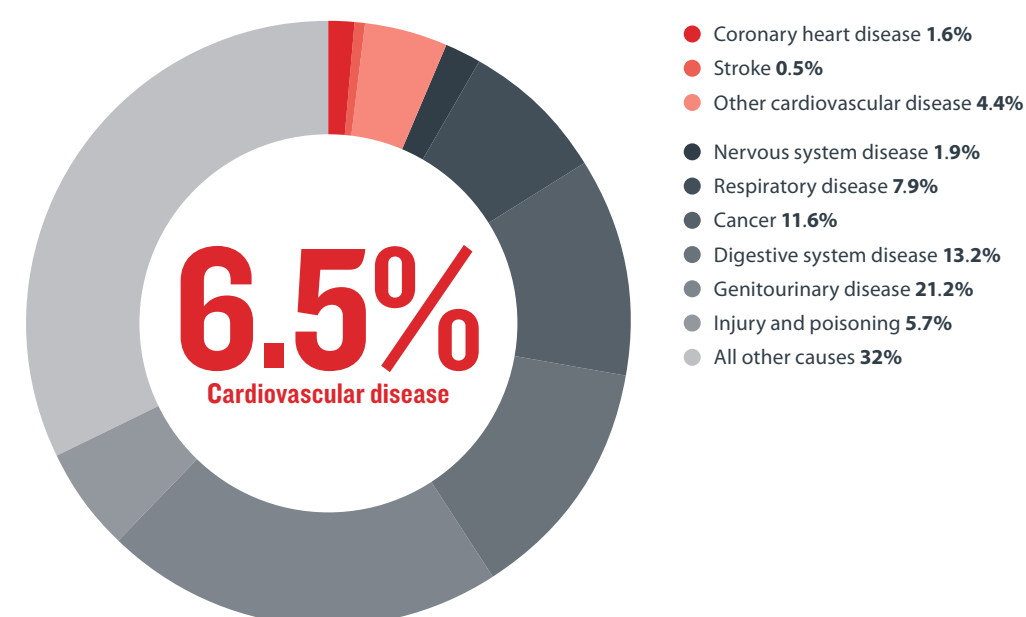


In England, there were about 96,502 and 99,579 stroke episodes recorded among men and women respectively. In Scotland, there were 11,391 stroke episodes among Scottish men and 11,990 among women whilst in Wales, 5,672 strokes episodes were recorded for men and 6,408 for women, with around 1,500 episodes for both men and women in Northern Ireland. The total number of hospital episodes attributed to stroke in the United Kingdom is around 235,000 each year, which translates to someone going to hospital every two minutes due to stroke. As a proportion of all conditions, stroke accounts for only about 1% of all hospital episodes in the United Kingdom. (Table 2.1, Figures 2.1a – 2.1j).

**Figure 2.1i**  
Inpatient episodes by main diagnosis in men for National Health Service hospitals, Northern Ireland, 2012/13



**Figure 2.1j**  
Inpatient episodes by main diagnosis in women for National Health Service hospitals, Northern Ireland, 2012/13



# PREVALENCE

The prevalence of a disease is the number of people in a population who are currently living with that disease or in the case of cardiovascular events, such as a heart attack, the number of people who have ever suffered an event. As with incidence data, gaining accurate statistics on prevalence in the UK population is challenging and much more complicated than counting the number or people who have died from a disease.

The Clinical Practice Research Datalink (CPRD) GOLD database, formerly known as the General Practice Research Database (GPRD), is the world’s largest validated computerised database of medical records for primary care.<sup>5</sup> GOLD derives records from a widely used GP software system and covers approximately 8.8% of the UK population, including practices in England, Northern Ireland, Scotland and Wales.<sup>6</sup>

CPRD GOLD data show that prevalence rates for cardiovascular conditions, such as myocardial infarction (MI), angina, heart failure, atrial fibrillation and stroke, increase with age and are higher in men than in women. Comparing between countries, prevalence is lowest in England for all conditions and both sexes except for atrial fibrillation in women for which Scotland shows the lowest prevalence (Tables 2.2 to 2.6).

The proportion of men who have had a heart attack is almost three times as high as the proportion of women

2.3 million

2.3 million people living in the UK are living with CHD

Prevalence of MI, those who have ever suffered a heart attack, is highest in Northern Ireland for men and in Scotland for women, although Scottish men have a prevalence which is very close to that found in Northern Ireland. Throughout the UK, prevalence of MI in men is almost three times greater than that found in women. Applying country and age specific population estimates to prevalence data suggests that more than 915,000 people (more than 640,000 men and around 275,000 in women) in the UK have suffered an MI and more than 1.3 million are living with angina (more than 775,000 men and 560,000 women). Prevalence of angina is highest in Wales for men and in Scotland for women, but these figures are very close to the prevalence in Northern Ireland. Combining estimates for the number of people suffering MI and angina we find that close to 2.3 million individuals in the UK are living with some form of coronary heart disease (CHD) (Tables 2.2 and 2.3).

**Table 2.2**  
Prevalence of myocardial infarction, by gender and age, England, Scotland, Wales, Northern Ireland and United Kingdom 2013

	England	Scotland	Wales	Northern Ireland	United Kingdom
	%	%	%	%	%
Men					
0-44	0.06	0.08	0.08	0.05	0.06
45-54	1.07	1.47	1.18	1.39	1.14
55-64	3.37	4.51	3.53	4.20	3.55
65-74	6.75	8.66	6.95	8.75	7.05
75+	11.50	14.78	12.59	15.71	12.08
All ages	2.35	3.05	2.51	3.08	2.46
Women					
0-44	0.01	0.03	0.01	0.02	0.02
45-54	0.26	0.43	0.29	0.45	0.29
55-64	0.82	1.24	0.93	1.08	0.89
65-74	1.87	2.96	2.28	2.62	2.06
75+	5.26	6.96	5.46	6.65	5.50
All ages	0.81	1.16	0.89	1.08	0.87

Number of cases in sample					
Men	34,128	6,492	4,897	1,932	47,449
Women	13,934	2,907	2,060	846	19,747

**Notes** Estimates are based on records from a sample of general practices in each of the constituent countries of the United Kingdom. ¶ Estimates for all ages are age-standardised to the European Standard Population. ¶ Calculating the total number of cases should always take account of the prevalence rate in each age group, rather than applying the ‘all ages’ prevalence to national population figures. **Source** Clinical Practice Research Datalink (CPRD) (2014) Personal communication. This table is based on data from the Clinical Practice Research Datalink GOLD database, 2014. Copyright and database rights over the data belong to the Crown. The interpretation and conclusions contained in this report are those of the authors alone.

**Table 2.3**  
Prevalence of angina, by gender and age, England, Scotland, Wales, Northern Ireland and United Kingdom 2013

	England	Scotland	Wales	Northern Ireland	United Kingdom
	%	%	%	%	%
Men					
0-44	0.05	0.04	0.04	0.01	0.05
45-54	0.91	0.94	0.97	0.97	0.92
55-64	3.43	4.16	4.19	3.78	3.60
65-74	8.29	10.42	10.47	10.53	8.83
75+	16.14	19.40	19.62	20.20	16.96
All ages	2.90	3.51	3.54	3.53	3.05
Women					
0-44	0.03	0.04	0.01	0.02	0.03
45-54	0.51	0.47	0.45	0.51	0.50
55-64	1.60	2.35	2.11	1.59	1.74
65-74	4.11	6.70	5.84	6.31	4.66
75+	10.41	13.69	13.40	13.39	11.15
All ages	1.65	2.31	2.15	2.14	1.79

Number of cases in sample					
Men	41,635	7,252	6,869	2,171	57,927
Women	29,251	5,839	5,065	1,685	41,840

**Notes** Estimates are based on records from a sample of general practices in each of the constituent countries of the United Kingdom. ¶ Estimates for all ages are age-standardised to the European Standard Population. ¶ Calculating the total number of cases should always take account of the prevalence rate in each age group, rather than applying the ‘all ages’ prevalence to national population figures. **Source** Clinical Practice Research Datalink (CPRD) (2014) Personal communication. This table is based on data from the Clinical Practice Research Datalink GOLD database, 2014. Copyright and database rights over the data belong to the Crown. The interpretation and conclusions contained in this report are those of the authors alone.

Comparing between UK countries the prevalence of CVD is lowest in England. Within England the prevalence is highest in the north

Scotland shows the greatest prevalence of heart failure in men, whereas Wales has the greatest prevalence for women. It should be noted, however, that errors made in the calculation of both numerator and denominator in the CPRD GOLD database (then GPRD) in the past mean that prevalence rates in the older age groups (75 years and older) in this publication are much lower than those calculated in previous publications in 2010 and 2012. Applying current prevalence figures to population estimates suggests that more than 550,000 individuals (more than 308,000 men and slightly fewer than 250,000 women) in the UK are living with heart failure, much lower than those calculated from previous CPRD prevalence figures. The revised estimates are much closer to those from the Quality and Outcomes Framework (QOF), the annual reward and incentive programme detailing GP practice achievement, which total around 486,000 individuals (Tables 2.4 and 2.7).

**Table 2.4**  
Prevalence of heart failure, by gender and age, England, Scotland, Wales, Northern Ireland and United Kingdom 2013

	England	Scotland	Wales	Northern Ireland	United Kingdom
	%	%	%	%	%
Men					
0-44	0.05	0.06	0.07	0.06	0.05
45-54	0.31	0.40	0.40	0.20	0.33
55-64	1.04	1.42	1.42	0.97	1.12
65-74	2.73	3.72	3.39	2.97	2.92
75+	7.64	8.72	8.25	8.48	7.84
All ages	1.17	1.44	1.37	1.25	1.22
Women					
0-44	0.03	0.06	0.05	0.02	0.04
45-54	0.15	0.18	0.18	0.12	0.15
55-64	0.43	0.55	0.52	0.54	0.45
65-74	1.22	1.56	1.80	1.34	1.32
75+	5.80	5.97	6.37	6.22	5.89
All ages	0.74	0.82	0.87	0.79	0.76

Number of cases in sample					
Men	16,618	2,942	2,638	756	22,954
Women	13,382	2,094	2,089	636	18,201

**Notes** Estimates are based on records from a sample of general practices in each of the constituent countries of the United Kingdom. ¶ Estimates for all ages are age-standardised to the European Standard Population. ¶ Calculating the total number of cases should always take account of the prevalence rate in each age group, rather than applying the ‘all ages’ prevalence to national population figures. **Source** Clinical Practice Research Datalink (CPRD) (2014) Personal communication. This table is based on data from the Clinical Practice Research Datalink GOLD database, 2014. Copyright and database rights over the data belong to the Crown. The interpretation and conclusions contained in this report are those of the authors alone.



Estimates from CPRD GOLD data suggest that more than 1.13 million people have been diagnosed with atrial fibrillation in the UK (632,000 men; 503,000 women), with the highest prevalence found in Northern Ireland for both men and women. The highest prevalence of stroke is found in Scotland for both sexes, with a similar number of men (around 647,000) and women (more than 633,000) having suffered a stroke at some point, a total of 1.28 million people (Tables 2.5 and 2.6).

**Table 2.5**  
Prevalence of atrial fibrillation, by gender and age, England, Scotland, Wales, Northern Ireland and United Kingdom 2013

	England	Scotland	Wales	Northern Ireland	United Kingdom
	%	%	%	%	%
Men					
0-44	0.09	0.09	0.10	0.13	0.09
45-54	0.75	0.73	0.88	0.92	0.76
55-64	2.23	2.52	2.34	2.52	2.28
65-74	6.12	6.41	6.32	7.00	6.20
75+	15.17	15.62	16.47	16.02	15.38
All ages	2.44	2.54	2.61	2.68	2.47
Women					
0-44	0.03	0.03	0.03	0.04	0.03
45-54	0.25	0.30	0.23	0.33	0.26
55-64	0.91	0.75	1.05	1.06	0.91
65-74	3.20	3.36	3.59	3.80	3.28
75+	11.68	11.30	12.16	12.50	11.71
All ages	1.55	1.52	1.65	1.72	1.56

Number of cases in sample					
Men	34,746	5,129	5,069	1,653	46,597
Women	27,811	3,850	3,939	1,367	36,967

**Notes** Estimates are based on records from a sample of general practices in each of the constituent countries of the United Kingdom. ¶ Estimates for all ages are age-standardised to the European Standard Population. ¶ Calculating the total number of cases should always take account of the prevalence rate in each age group, rather than applying the ‘all ages’ prevalence to national population figures. **Source** Clinical Practice Research Datalink (CPRD) (2014) Personal communication. This table is based on data from the Clinical Practice Research Datalink GOLD database, 2014. Copyright and database rights over the data belong to the Crown. The interpretation and conclusions contained in this report are those of the authors alone.

**Table 2.6**  
Prevalence of stroke, by gender and age, England, Scotland, Wales, Northern Ireland and United Kingdom 2013

	England	Scotland	Wales	Northern Ireland	United Kingdom
	%	%	%	%	%
Men					
0-44	0.10	0.13	0.12	0.10	0.11
45-54	0.85	1.14	0.90	0.88	0.89
55-64	2.60	3.26	2.70	2.82	2.69
65-74	6.08	7.51	7.15	7.39	6.40
75+	14.55	16.92	15.21	15.42	14.89
All ages	2.44	2.95	2.64	2.69	2.53
Women					
0-44	0.11	0.11	0.11	0.13	0.11
45-54	0.75	0.96	0.86	0.92	0.79
55-64	1.80	2.57	2.18	2.43	1.96
65-74	4.16	5.33	4.77	5.26	4.39
75+	12.17	14.05	12.27	13.74	12.43
All ages	1.92	2.34	2.05	2.29	1.99

Number of cases in sample					
Men	35,006	6,107	5,113	1,662	47,888
Women	34,014	5,941	4,794	1,800	46,549

**Notes** Estimates are based on records from a sample of general practices in each of the constituent countries of the United Kingdom. ¶ Estimates for all ages are age-standardised to the European Standard Population. ¶ Calculating the total number of cases should always take account of the prevalence rate in each age group, rather than applying the ‘all ages’ prevalence to national population figures. **Source** Clinical Practice Research Datalink (CPRD) (2014) Personal communication. This table is based on data from the Clinical Practice Research Datalink GOLD database, 2014. Copyright and database rights over the data belong to the Crown. The interpretation and conclusions contained in this report are those of the authors alone.

Estimates of the number of people in the UK who have these cardiovascular conditions, derived from the CPRD GOLD database, are broadly supported by results from the Quality and Outcomes Framework (QOF). This framework became part of general practice contracts in 2004, and rewards GPs for keeping up-to-date records of the number of patients within their practices who are suffering from certain conditions. QOF data suggest that in 2012/13 there were around 2.3 million people living with CHD, 1.17 million people suffering from stroke, around 1 million from atrial fibrillation and just over 480,000 from heart failure. When comparing between regions in England the North had a higher prevalence for all cardiovascular conditions than the South, with the highest prevalence reported in the North East for all diseases described here. London had the lowest prevalence for all. Amongst UK countries England had the lowest prevalence for all conditions except hypertension, for which Northern Ireland was lowest. Scotland had the highest prevalence for CHD, stroke and peripheral arterial disease (PAD), whilst Wales had the highest for hypertension, heart failure and atrial fibrillation. It should be noted, however, that these rates have not been adjusted to account for differences in the age structure of populations, and so differences in rates should be treated with caution (Table 2.7).

Table 2.7  
Prevalence of selected cardiovascular conditions by Government Office Region and country,  
United Kingdom 2012/13

Country/Region	List Size	Coronary Heart Disease Register		Stroke or Transient Ischaemic Attacks (TIA) Register		Hypertension Register	
		Number	%	Number	%	Number	%
North East	2,696,547	121,807	4.5	57,845	2.1	418,078	15.5
North West	7,397,503	292,461	4.0	139,228	1.9	1,051,020	14.2
Yorkshire and The Humber	5,524,195	218,663	4.0	105,366	1.9	775,989	14.0
East Midlands	4,735,883	170,392	3.6	84,601	1.8	676,809	14.3
West Midlands	5,880,643	202,258	3.4	104,690	1.8	864,902	14.7
East of England	6,113,986	199,093	3.3	101,965	1.7	859,211	14.1
London	9,056,401	193,614	2.1	94,989	1.0	999,576	11.0
South East	9,074,471	275,806	3.0	150,792	1.7	1,213,525	13.4
South West	5,536,574	196,447	3.5	112,083	2.0	801,615	14.5
England	56,016,203	1,870,541	3.3	951,559	1.7	7,660,725	13.7
Scotland	5,552,133	236,466	4.3	116,879	2.1	760,317	13.7
Wales	3,180,153	125,421	3.9	63,634	2.0	493,266	15.5
Northern Ireland	1,909,338	74,648	3.9	33,470	1.8	245,730	12.9
UK	66,657,827	2,307,076	3.5	1,165,542	1.7	9,160,038	13.7

Country/Region	List Size	Heart Failure Register		Atrial Fibrillation Register		Peripheral Arterial Disease (PAD) Register	
		Number	%	Number	%	Number	%
North East	2,696,547	23,603	0.9	45,050	1.7	26,520	1.0
North West	7,397,503	62,564	0.8	117,998	1.6	65,560	0.9
Yorkshire and The Humber	5,524,195	42,028	0.8	87,908	1.6	43,682	0.8
East Midlands	4,735,883	37,662	0.8	75,494	1.6	30,443	0.6
West Midlands	5,880,643	44,561	0.8	90,844	1.5	39,829	0.7
East of England	6,113,986	44,340	0.7	98,755	1.6	34,950	0.6
London	9,056,401	44,179	0.5	80,989	0.9	35,140	0.4
South East	9,074,471	55,659	0.6	147,135	1.6	51,394	0.6
South West	5,536,574	42,997	0.8	105,323	1.9	37,902	0.7
England	56,016,203	397,593	0.7	849,496	1.5	365,420	0.7
Scotland	5,552,133	45,074	0.8	84,250	1.5	48,521	0.9
Wales	3,180,153	29,613	0.9	58,698	1.8	22,912	0.7
Northern Ireland	1,909,338	14,400	0.8	27,756	1.5	13,802	0.7
UK	66,657,827	486,680	0.7	1,020,200	1.5	450,655	0.7

Notes England – Copyright © Health and Social Care Information Centre 2014. Source England – Information Centre QOF achievement data 2012/13. ¶ Wales – StatsWales. QOF 20012/13 achievement data. ¶ Scotland – ISD Scotland. QOF achievement data 2012/13. ¶ Northern Ireland – Department of Health, Social Services and Public Safety. QOF achievement data 2012/13

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## Chapter 3

# TREATMENT

This chapter reports on different methods of treatment for cardiovascular disease (CVD), with a focus on treatments for coronary heart disease (CHD). This chapter includes tables and figures on the number of prescriptions, operations and cardiac arrest survival in the UK.

## PRESCRIPTIONS

The Prescription Cost Analysis (PCA) data are based on the therapeutic groups used in the British National Formulary. A prescription item refers to a single item prescribed by a doctor or authorised prescribers, such as nurses and dentists, on a prescription form. Currently PCA data includes all prescriptions dispensed in the community. The rapid increase in the number of prescriptions for the treatment and prevention of CVD began in the late 1980s. In 2013, more than 307 million prescriptions were dispensed for CVD in England, more than six times as many as issued in 1981, and an increase of 2.2% from the number of prescriptions in 2012 (Table 3.1).

Since 1990, the number of prescriptions dispensed for antiplatelet drugs has increased steadily; there are now over 38 million prescriptions for antiplatelet drugs in England every year. The increase in the number of prescriptions of lipid lowering drugs was slow until the late 1990s, but since then has been very rapid, with the number of prescriptions for lipid lowering drugs now more than six times higher than in 2000 (Table 3.1 and Figure 3.1).

**307 million**

**In 2013, more than  
307 million prescriptions  
were dispensed for  
CVD in England, more  
than six times as many  
as issued in 1981**

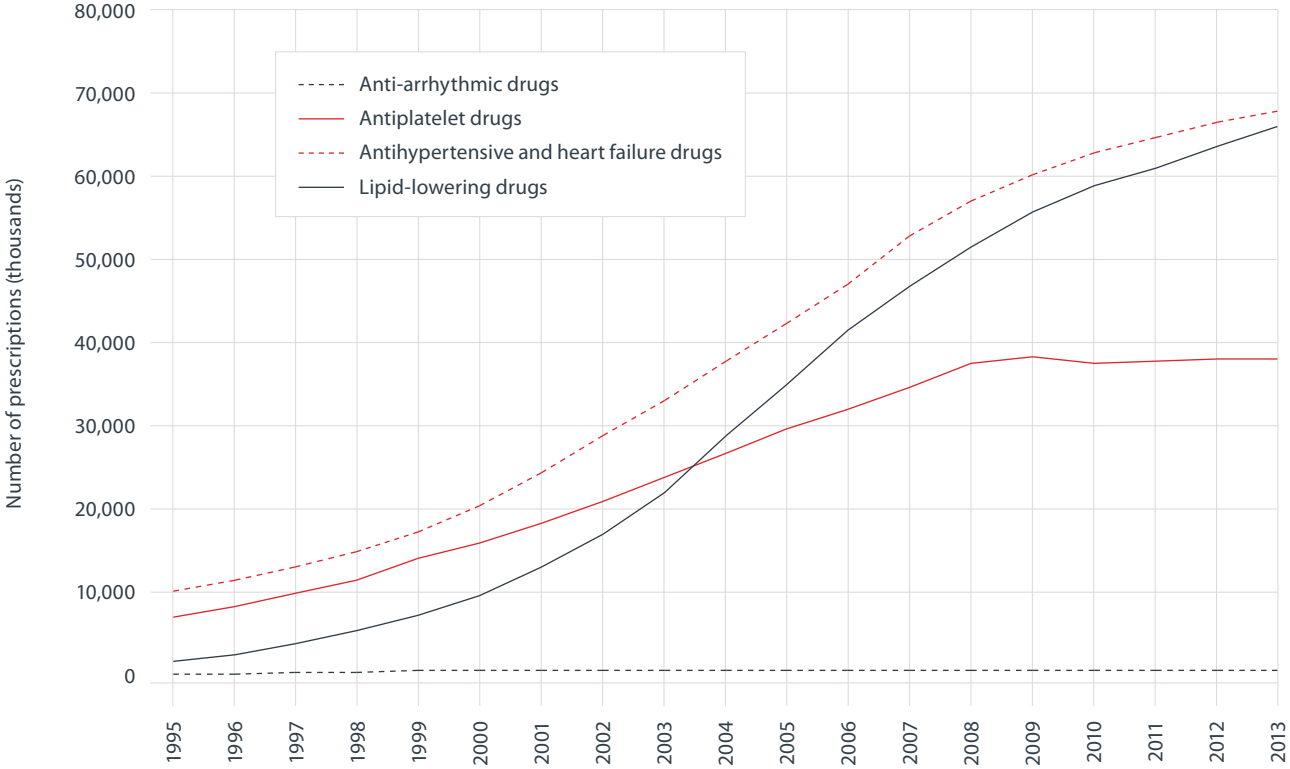
Table 3.1  
Prescriptions used in the prevention and treatment of cardiovascular disease, England 1981 to 2013

Prescriptions	Thousands (000s)						
	1981	1986	1991	1996	2001	2006	2007
Digoxin and other positive inotropic drugs (2.1)	4,243	3,722	3,822	3,871	4,031	4,126	4,141
Diuretics (2.2)	20,678	21,996	22,195	23,106	30,203	37,582	37,355
Anti-arrhythmic drugs (2.3)	232	334	532	840	1,292	1,265	1,247
Beta-adrenoreceptor blocking drugs (2.4)	9,827	12,525	14,282	14,375	20,439	27,378	26,810
Antihypertensive and heart failure drugs (2.5)	4,912	4,424	6,431	12,125	25,047	47,742	53,634
Nitrates, calcium blockers & other antianginal drugs (2.6)	5,156	10,314	16,718	21,971	26,814	34,707	37,214
Anticoagulants and protamine (2.8)	629	900	1,356	2,609	4,609	6,790	7,309
Antiplatelet drugs (2.9)	281	1,058	3,619	9,002	18,891	32,779	35,382
Anti-fibrinolytic drugs and haemostatics (2.11)					282	327	352
Lipid-lowering drugs (2.12)	295	247	1,066	3,138	13,523	42,098	47,412
All prescriptions for disease of the circulatory system	46,252	55,520	70,022	91,037	145,131	234,793	250,855

Prescriptions	Thousands (000s)					
	2008	2009	2010	2011	2012	2013
Digoxin and other positive inotropic drugs (2.1)	4,149	4,119	4,088	4,006	3,900	3,770
Diuretics (2.2)	37,536	37,511	37,687	37,563	37,258	36,650
Anti-arrhythmic drugs (2.3)	1,226	1,188	1,174	1,156	1,129	1,107
Beta-adrenoreceptor blocking drugs (2.4)	27,634	28,529	29,686	30,924	32,355	33,597
Antihypertensive and heart failure drugs (2.5)	57,823	60,838	63,571	65,449	67,184	68,652
Nitrates, calcium blockers & other antianginal drugs (2.6)	39,100	40,575	42,043	43,086	44,675	45,868
Anticoagulants and protamine (2.8)	7,991	8,546	9,157	9,773	10,723	11,906
Antiplatelet drugs (2.9)	38,124	39,107	38,182	38,351	38,603	38,661
Anti-fibrinolytic drugs and haemostatics (2.11)	358	363	373	392	396	393
Lipid-lowering drugs (2.12)	52,190	56,452	59,550	61,649	64,399	66,795
All prescriptions for disease of the circulatory system	266,130	277,244	285,530	292,370	300,647	307,424

**Notes** The data up to 1990 are not consistent with data from 1991 onwards. Figures up to 1990 are based on fees and on a sample of 1 in 200 prescriptions dispensed by community pharmacists and appliance contractors only. Figures from 1991 are based on items and cover all prescriptions dispensed by community pharmacists, appliance contractors, dispensing doctors and prescriptions submitted by prescribing doctors for items personally administered. British National Formulary (BNF) codes in parentheses. **Source** Office for National Statistics (2014). Prescription cost analysis 2013. Health and Social Care Information Centre, and previous editions.

Figure 3.1  
Prescriptions used in the prevention and treatment of CVD, England 1995 to 2013





The number of prescriptions dispensed for the treatment and prevention of CVD in Wales in 2013 was just over 23 million. This is 5 million prescriptions more than in 2005 (Table 3.2 and Figure 3.2).

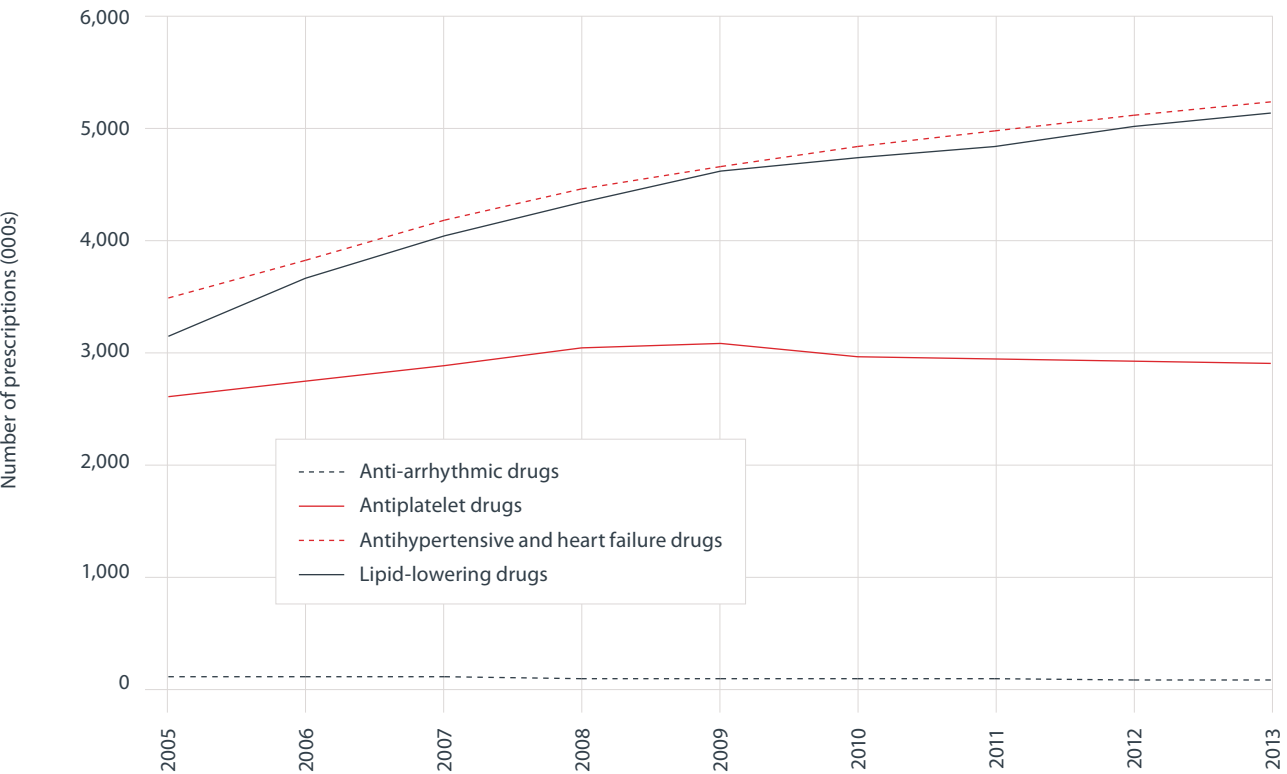
**Table 3.2**  
Prescriptions used in the prevention and treatment of cardiovascular disease, Wales 2005 to 2013

Prescriptions	Thousands (000s)				
	2005	2006	2007	2008	2009
Digoxin and other positive inotropic drugs (2.1)	362	357	337	319	307
Diuretics (2.2)	3,083	3,091	3,028	3,000	2,979
Anti-arrhythmic drugs (2.3)	99	94	87	81	75
Beta-adrenoreceptor blocking drugs (2.4)	2,093	2,110	2,071	2,116	2,165
Antihypertensive and heart failure drugs (2.5)	3,442	3,774	4,124	4,402	4,601
Nitrates, calcium blockers & other antianginal drugs (2.6)	2,731	2,892	3,032	3,135	3,205
Anticoagulants and protamine (2.8)	576	612	650	689	723
Antiplatelet drugs (2.9)	2,563	2,716	2,846	3,011	3,045
Anti-fibrinolytic drugs and haemostatics (2.11)	23	24	28	30	30
Lipid-lowering drugs (2.12)	3,103	3,626	3,985	4,297	4,562
All prescriptions for disease of the circulatory system	18,073	19,296	20,188	21,082	21,691

Prescriptions	Thousands (000s)			
	2010	2011	2012	2013
Digoxin and other positive inotropic drugs (2.1)	296	284	273	259
Diuretics (2.2)	2,971	2,960	2,940	2,897
Anti-arrhythmic drugs (2.3)	68	64	62	60
Beta-adrenoreceptor blocking drugs (2.4)	2,237	2,322	2,424	2,505
Antihypertensive and heart failure drugs (2.5)	4,781	4,920	5,063	5,173
Nitrates, calcium blockers & other antianginal drugs (2.6)	3,263	3,314	3,390	3,437
Anticoagulants and protamine (2.8)	764	808	874	944
Antiplatelet drugs (2.9)	2,933	2,905	2,890	2,859
Anti-fibrinolytic drugs and haemostatics (2.11)	31	33	34	33
Lipid-lowering drugs (2.12)	4,693	4,788	4,956	5,076
All prescriptions for disease of the circulatory system	22,037	22,399	22,906	23,247

**Notes** British National Formulary (BNF) codes in parentheses. **Source** Health Statistics and Analysis Unit (2014). Prescription cost analysis 2013. Welsh Government: Cardiff and previous editions.

**Figure 3.2**  
Prescriptions used in the prevention and treatment of CVD, Wales 2005 to 2013



**In 2013,  
around 23 million  
prescriptions  
were dispensed  
for CVD in Wales**

In Scotland more than 24 million prescriptions were dispensed in the treatment of CVD in 2013/14 and this number has remained fairly consistent since 2008. Prescriptions for lipid-lowering drugs have increased threefold since 2001 and antihypertensive and heart failure prescriptions have doubled over the same period (Table 3.3 and Figure 3.3).

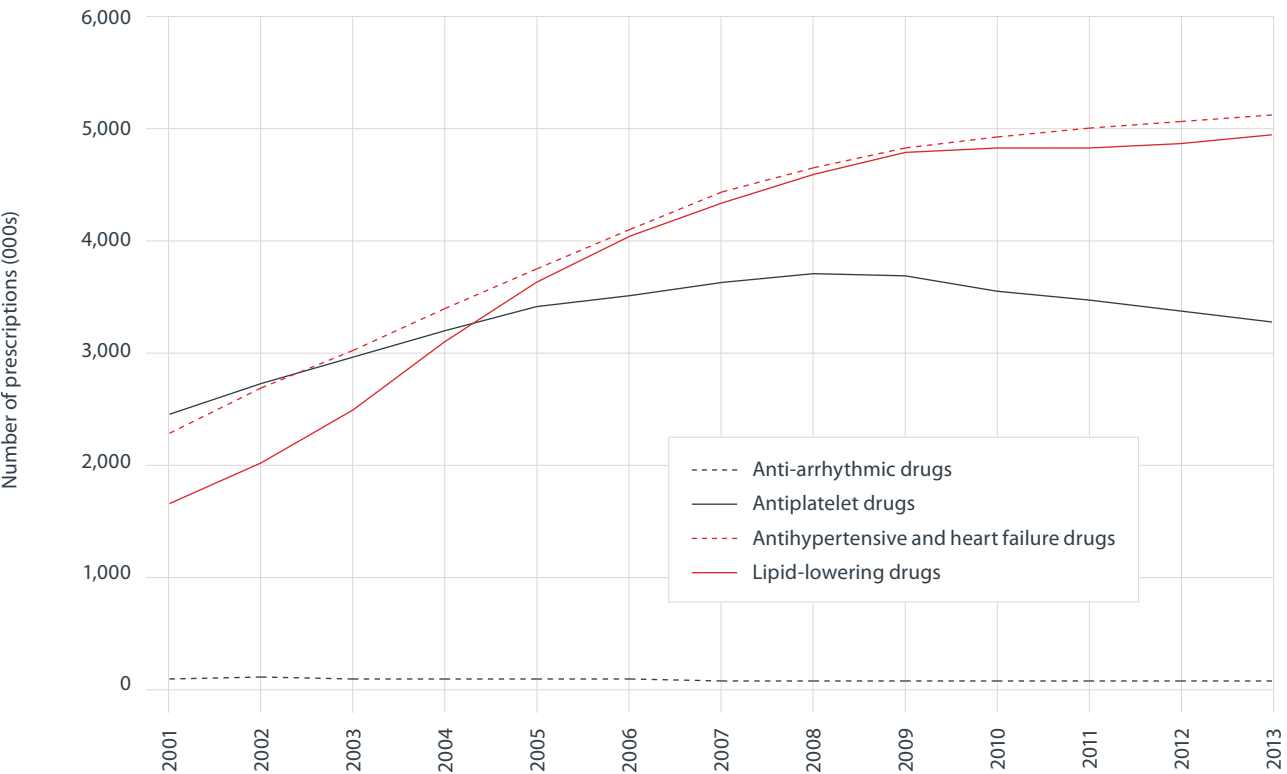
**Table 3.3**  
Prescriptions used in the prevention and treatment of cardiovascular disease, Scotland  
2001/02 to 2013/14

Prescriptions	Thousands (000s)				
	2001/02	2005/06	2006/07	2007/08	2008/09
Digoxin and other positive inotropic drugs (2.1)	358	323	315	305	296
Diuretics (2.2)	3,469	3,914	3,810	3,680	3,597
Anti-arrhythmic drugs (2.3)	102	90	85	81	77
Beta-adrenoreceptor blocking drugs (2.4)	2,508	3,027	2,940	2,853	2,850
Antihypertensive and heart failure drugs (2.5)	2,298	3,777	4,127	4,462	4,693
Nitrates, calcium blockers & other antianginal drugs (2.6)	3,278	3,542	3,625	3,666	3,683
Anticoagulants and protamine (2.8)	489	612	646	676	707
Antiplatelet drugs (2.9)	2,461	3,448	3,545	3,652	3,743
Anti-fibrinolytic drugs and haemostatics (2.11)	35	36	38	39	41
Lipid-lowering drugs (2.12)	1,667	3,649	4,081	4,376	4,624
All prescriptions for disease of the circulatory system	16,667	22,418	23,212	23,791	24,312

Prescriptions					
	2009/10	2010/11	2011/12	2012/13	2013/14
Digoxin and other positive inotropic drugs (2.1)	291	283	276	269	260
Diuretics (2.2)	3,544	3,457	3,382	3,269	3,154
Anti-arrhythmic drugs (2.3)	73	70	71	69	68
Beta-adrenoreceptor blocking drugs (2.4)	2,883	2,909	2,957	2,998	3,048
Antihypertensive and heart failure drugs (2.5)	4,875	4,965	5,045	5,095	5,160
Nitrates, calcium blockers & other antianginal drugs (2.6)	3,714	3,697	3,699	3,716	3,735
Anticoagulants and protamine (2.8)	743	773	819	884	958
Antiplatelet drugs (2.9)	3,724	3,577	3,506	3,404	3,295
Anti-fibrinolytic drugs and haemostatics (2.11)	42	43	44	47	47
Lipid-lowering drugs (2.12)	4,826	4,875	4,861	4,907	4,977
All prescriptions for disease of the circulatory system	24,716	24,649	24,660	24,657	24,703

Notes British National Formulary (BNF) codes in parentheses. Source ISD Scotland (2014). Prescription Cost Analysis 2013/14. NHS National Services: Edinburgh. and previous editions.

**Figure 3.3**  
Prescriptions used in the prevention and treatment of CVD, Scotland 2001 to 2013



**In Scotland, more than 24 million prescriptions were dispensed for CVD treatment and prevention in 2012**

There were more than 8.7 million prescriptions dispensed for the treatment and prevention of CVD in Northern Ireland in 2013, an increase of more than 4 million compared to 2000. Prescriptions for lipid lowering drugs showed the greatest increase, from 9,000 dispensations in 2000 to almost two million in 2013 (Table 3.4 and Figure 3.4).

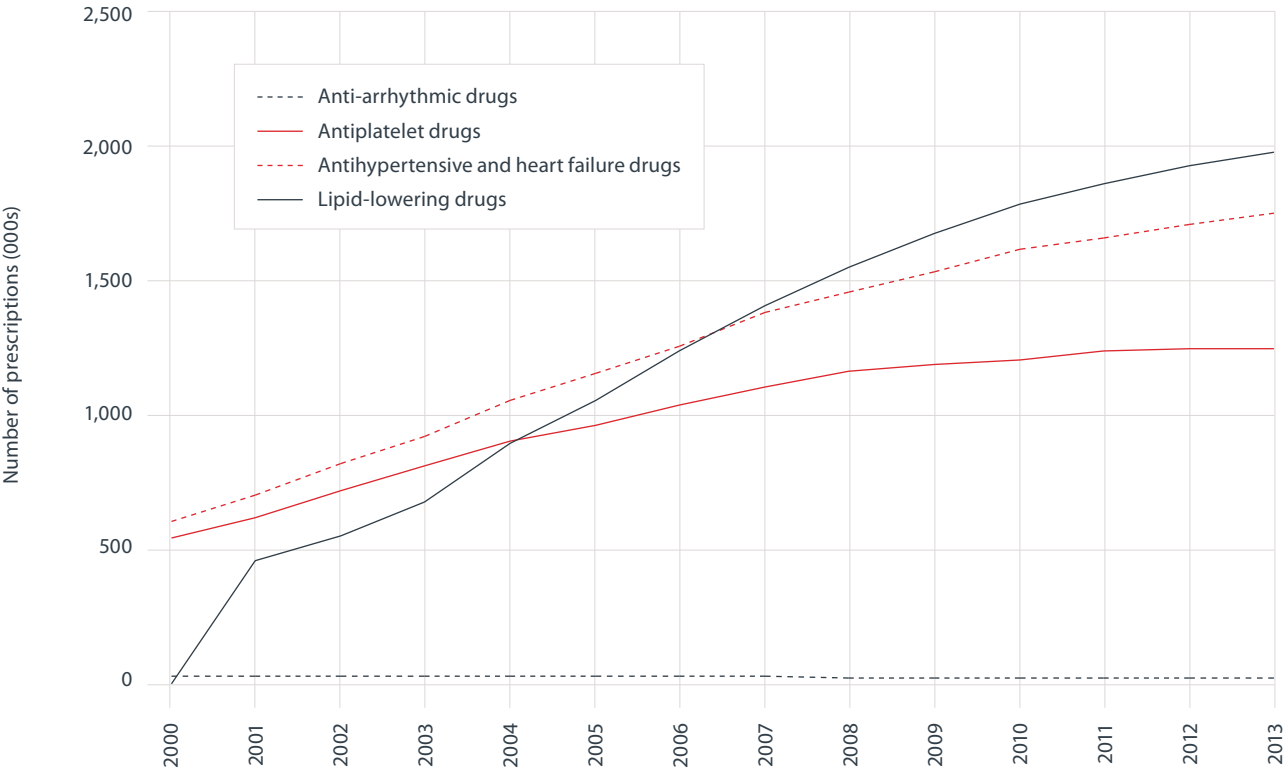
**Table 3.4**  
Prescriptions used in the prevention and treatment of cardiovascular disease, Northern Ireland 2000 to 2013

Prescriptions	Thousands (000s)				
	2000	2005	2006	2007	2008
Digoxin and other positive inotropic drugs (2.1)	132	107	104	101	99
Diuretics (2.2)	819	1,015	1,009	992	983
Anti-arrhythmic drugs (2.3)	41	38	36	35	34
Beta-adrenoreceptor blocking drugs (2.4)	641	908	918	915	937
Antihypertensive and heart failure drugs (2.5)	602	1,145	1,247	1,364	1,445
Nitrates, calcium blockers & other antianginal drugs (2.6)	928	1,001	1,039	1,080	1,089
Anticoagulants and protamine (2.8)	138	183	194	207	220
Antiplatelet drugs (2.9)	539	957	1,026	1,095	1,151
Anti-fibrinolytic drugs and haemostatics (2.11)	0	12	12	13	13
Lipid-lowering drugs (2.12)	9	1,047	1,227	1,393	1,534
All prescriptions for disease of the circulatory system	4,226	6,413	6,812	7,195	7,505

Prescriptions	Thousands (000s)				
	2009	2010	2011	2012	2013
Digoxin and other positive inotropic drugs (2.1)	96	95	93	92	90
Diuretics (2.2)	983	992	1,002	996	978
Anti-arrhythmic drugs (2.3)	32	31	32	31	30
Beta-adrenoreceptor blocking drugs (2.4)	967	1,020	1,059	1,108	1,150
Antihypertensive and heart failure drugs (2.5)	1,517	1,595	1,640	1,689	1,728
Nitrates, calcium blockers & other antianginal drugs (2.6)	1,097	1,124	1,154	1,188	1,218
Anticoagulants and protamine (2.8)	233	249	274	300	334
Antiplatelet drugs (2.9)	1,177	1,192	1,223	1,239	1,239
Anti-fibrinolytic drugs and haemostatics (2.11)	14	14	16	17	16
Lipid-lowering drugs (2.12)	1,652	1,761	1,838	1,901	1,954
All prescriptions for disease of the circulatory system	7,769	8,073	8,331	8,560	8,736

Notes British National Formulary (BNF) codes in parentheses. Source HSC (2014). Prescription Cost Analysis 2013. Business Services Organisation: Belfast.

**Figure 3.4**  
Prescriptions used in the prevention and treatment of CVD, selected BNF drug groups, Northern Ireland 2000 to 2013



**In Northern Ireland  
more than 8.5 million  
prescriptions were  
dispensed for the  
treatment and  
prevention of CVD**

In 2013, antihypertensive drugs were the most prescribed drugs for CVD in all four countries. The total number of prescriptions dispensed for CVD in the UK was over 364 million. More than 22% of these prescriptions were for antihypertensive and heart failure drugs and 21% of them were for lipid-lowering drugs (Table 3.5).

**Table 3.5**  
Prescriptions used in the prevention and treatment of cardiovascular disease, United Kingdom  
latest available year

Prescriptions	Thousands (000s)				
	England 2013	Wales 2013	Scotland 2013/14	Northern Ireland 2013	UK
Digoxin and other positive inotropic drugs (2.1)	3,770	259	260	90	4,379
Diuretics (2.2)	36,650	2,897	3,154	978	43,680
Anti-arrhythmic drugs (2.3)	1,107	60	68	30	1,265
Beta-adrenoreceptor blocking drugs (2.4)	33,597	2,505	3,048	1,150	40,301
Antihypertensive and heart failure drugs (2.5)	68,652	5,173	5,160	1,728	80,713
Nitrates, calcium blockers & other antianginal drugs (2.6)	45,868	3,437	3,735	1,218	54,258
Anticoagulants and protamine (2.8)	11,906	944	958	334	14,141
Antiplatelet drugs (2.9)	38,661	2,859	3,295	1,239	46,055
Antifibrinolytic drugs & haemostatics (2.11)	393	33	47	16	489
Lipid-lowering drugs (2.12)	66,795	5,076	4,977	1,954	78,802
All prescriptions for disease of the cardiovascular system	307,424	23,247	24,703	8,736	364,110

**Notes** Figures are based on items and cover all prescriptions dispensed by community pharmacists, appliance contractors, dispensing doctors and prescriptions submitted by prescribing doctors for items personally administered. British National Formulary (BNF) codes in parentheses. **Source** Office for National Statistics (2014). Prescription cost analysis 2013. The Information Centre: Leeds. ¶ Welsh Government (2014). Prescription Cost Analysis 2013. Health Statistics and Analysis Unit: Cardiff. ¶ ISD Scotland (2014). Prescription Cost Analysis 2013/14. NHS National Services: Edinburgh. ¶ HSC (2014). Prescription Cost Analysis 2013. Business Services Organisation: Belfast.

In 2013, the number of prescriptions issued in England for cardiovascular diseases increased by 2.2% to 307 million, compared to the number dispensed in 2012. Despite the increase in number of prescriptions by 1.5 million to treat hypertension and heart failure, the cost of prescriptions dispensed decreased by approximately £80 million, between 2012 and 2013, to just over £198 million.<sup>1</sup> However, the cost of prescriptions for cardiovascular diseases may not increase at the same rate as the increase in the number of prescriptions, as when commonly used drugs come out of patent they can be replaced by cheaper generic drugs.

## OPERATIONS

When coronary arteries become narrowed or occluded due to coronary heart disease (CHD), interventions are considered to improve the blood supply to the heart muscle. These interventions fall into two main categories: coronary artery bypass grafting (CABG) and catheter-based percutaneous coronary interventions (PCI).

The total number of interventions carried out to treat CHD is increasing in the UK. The number of PCIs carried out in the UK in 2012 was more than two times higher than a decade earlier; over 92,000 procedures are now carried out annually in the UK. But the number of CABG surgeries reached a peak in the late 1990s to early 2000s; these have become less common due to the more widespread use of less invasive procedures such as PCI. Currently just under 17,000 CABG procedures are carried out in the UK each year (Table 3.6 and Figure 3.6).

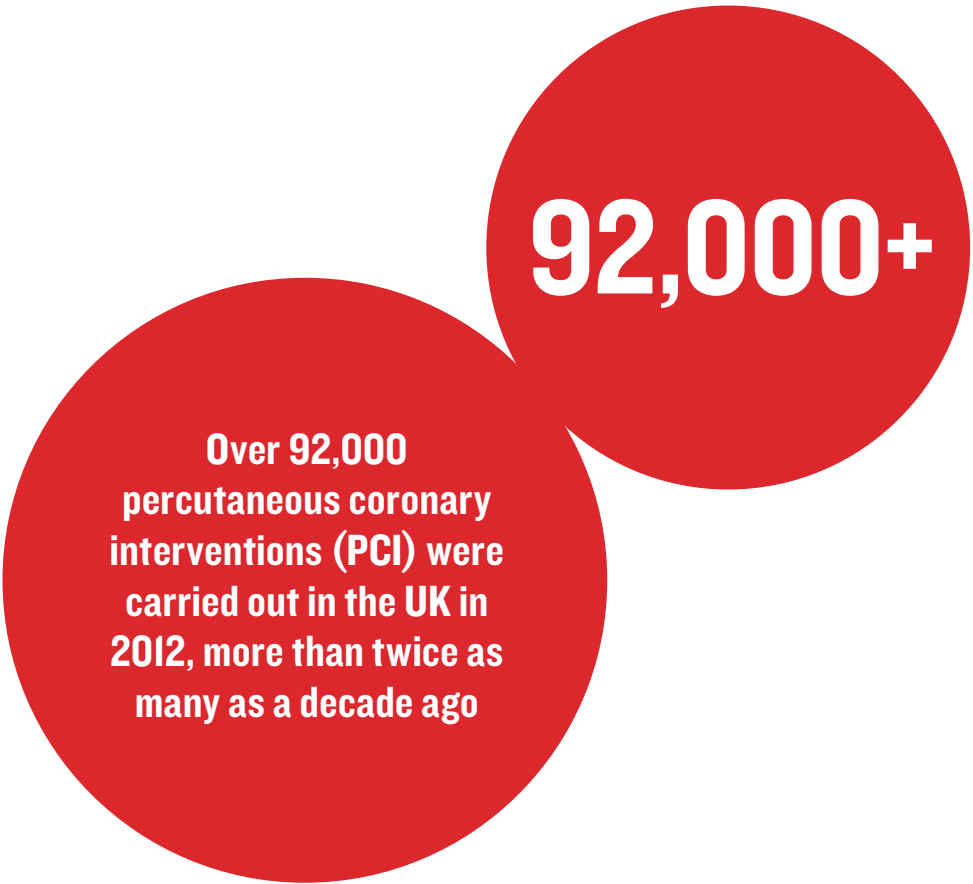


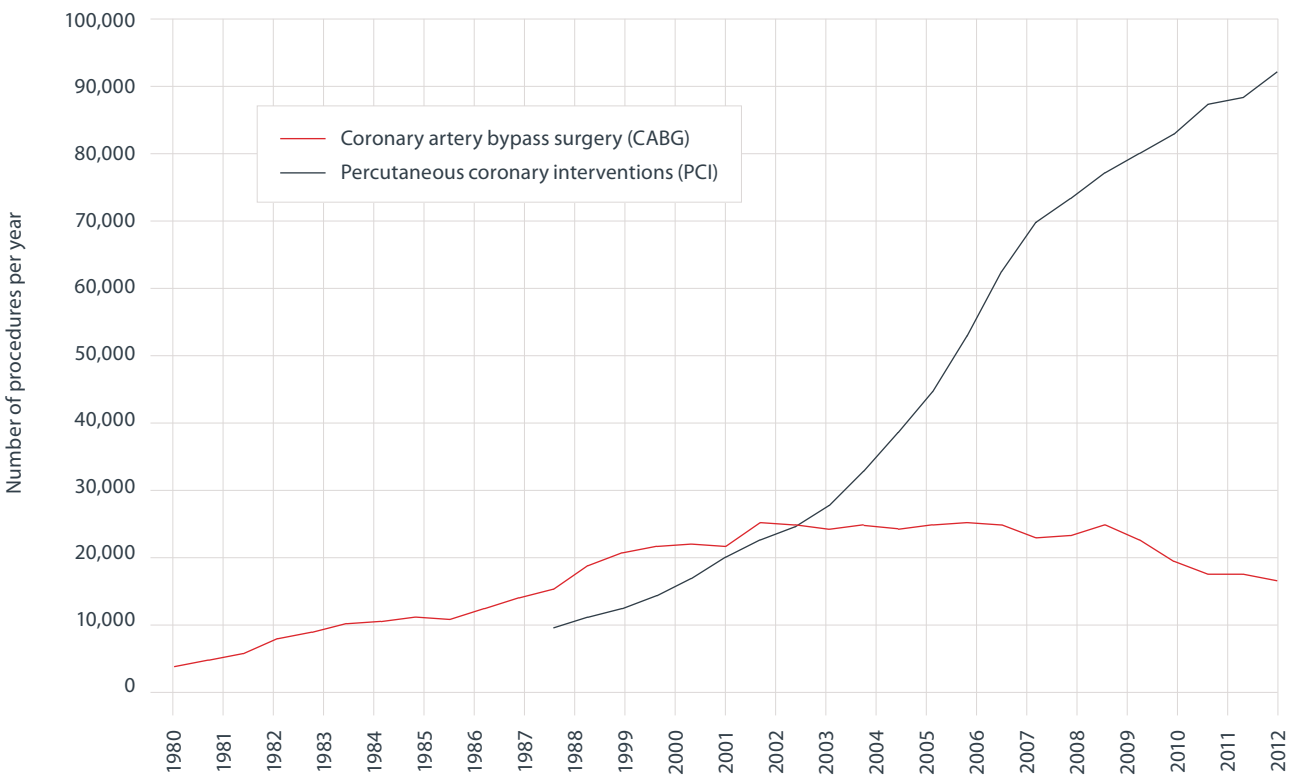


Table 3.6  
Number of CABGs and PCIs, United Kingdom 1977 to 2012

	Coronary artery bypass surgery (CABG)	Percutaneous coronary interventions (PCI)
1977	2,297	
1978	2,653	
1979	2,918	
1980	4,057	
1981	5,130	
1982	6,008	
1983	8,332	
1984	9,433	
1985	10,667	
1986	10,767	
1987	11,521	
1988*	11,113	
1989	12,648	
1990	14,431	
1991	15,659	9,933
1992	19,241	11,575
1993	21,031	12,937
1994	22,056	14,624
1995	22,475	17,344
1996	22,160	20,511
1997	25,639	22,902
1998	25,083	24,899
1999	24,733	28,133
2000	25,127	33,256
2001	24,663	38,992
2002	25,277	44,913
2003	25,461	53,261
2004	25,160	62,780
2005	23,412	70,142
2006	23,623	73,692
2007	25,372	77,373
2008	22,846	80,331
2009	19,766	83,130
2010	17,986	87,676
2011	17,751	88,692
2012	16,791	92,445

Notes Operations performed in NHS hospitals and selected private hospitals are included. ¶ Data not available for PCIs until after 1990. \* One centre did not make a return this year Source British Cardiovascular Intervention Society (2013). BCIS Audit returns. Personal communication. ¶ The Society for Cardiothoracic Surgery in Great Britain & Ireland (2014). <http://bluebook.scts.org/#ActivityRates>. Accessed in March 2014

Figure 3.6  
Number of coronary artery bypass operations and percutaneous coronary interventions per year, United Kingdom 1980 to 2012



Despite the substantial shift towards PCI in the past years, CABG procedures will remain as one of the main surgical treatments for certain more complex conditions.<sup>2</sup> For example it is recommended that CABG remains the standard revascularisation care for patients with complex coronary lesions or severe left main coronary artery disease. Where patients are eligible for both CABG and PCI, the National Institute for Health and Care Excellence (NICE) reports that the latter should be performed; although CABG is still effective it is not cost-effective when compared with PCI.<sup>3</sup>

In 2012 there were 4,561 isolated aortic valve replacements and a further 3,263 aortic valve replacements with coronary artery bypass graft surgery (CABGs) in the UK.

VALVE REPLACEMENTS

Heart valve disease can be congenital or acquired later in life. The aortic valve lies between the left ventricle (which pumps blood) and the aorta (the main artery which carries oxygenated blood from the heart). There are two main diseases associated with the aortic valve – stenosis and regurgitation. Stenosis is due to thickening of the valve and narrowing of the lumen. This will limit the blood flow during contractions of the heart. Regurgitation (also called valvular insufficiency) is due to the inability of the valve leaflets to close completely. It will allow ejected blood to flow back through the closed valve into the heart when it relaxes. In 2012 there were 4,561 isolated aortic valve replacements and a further 3,263 aortic valve replacements with CABGs (Table 3.7).

Table 3.7  
Number of valve replacements and repairs, United Kingdom 2003 to 2012

Operation	2003	2004	2005	2006	2007
Isolated Aortic valve replacement	3,361	3,494	3,549	3,627	4,051
Aortic valve replacement & Coronary artery bypass surgery (CABG)	2,445	2,520	2,797	2,912	3,111
Isolated Mitral repair	771	911	1,019	1,119	1,189
Mitral repair & Coronary artery bypass surgery (CABG)	450	552	582	653	591
Isolated Mitral replacement	797	805	742	734	845
Mitral replacement & Coronary artery bypass surgery (CABG)	347	341	308	350	325

Operation	2008	2009	2010	2011	2012
Isolated Aortic valve replacement	4,445	4,389	4,284	4,799	4,561
Aortic valve replacement & Coronary artery bypass surgery (CABG)	3,426	3,194	3,134	3,204	3,263
Isolated Mitral repair	1,332	1,308	1,358	1,378	1,456
Mitral repair & Coronary artery bypass surgery (CABG)	663	625	577	576	588
Isolated Mitral replacement	876	739	668	684	638
Mitral replacement & Coronary artery bypass surgery (CABG)	315	301	244	250	232

Notes First time operations only. ¶ Operations performed in NHS hospitals and selected private hospitals are included. Source The Society for Cardiothoracic Surgery in Great Britain & Ireland (2014). <http://bluebook.scts.org/#ActivityRates>. Accessed in March 2014

The mitral valve is located between the left atrium and left ventricle, acting as a one-way valve which allows blood to flow into the ventricle when the heart relaxes. Disorders of the mitral valve are the most common of the valvular heart diseases. The main types of mitral valve diseases are bulging backwards during closure (prolapse), leaking blood when it is closed (regurgitation) and obstruction due to narrowing of the valve (stenosis).<sup>4</sup> In 2012 there were 1,456 isolated mitral valve repairs and 638 isolated mitral valve replacements. There were a further 820 mitral valve surgeries with CABG in the UK (Table 3.7).

CARDIOTHORACIC TRANSPLANTS  
(HEART AND/OR LUNG TRANSPLANTS)

A heart transplant or cardiac transplant is a surgical procedure in which a diseased heart is replaced by a healthy heart from a human donor. Patients who develop heart failure due to a number of heart attacks might need a heart transplant. Children may also require a heart transplant to treat congenital heart diseases. Since this is a very specialised activity, a relatively small number of operations are carried out in the country in a select number of hospitals; just seven carry out heart transplants on adults. During 2013/14, 334 patients who required transplants joined the heart list and a further 12 patients joined the heart/lung list (Table 3.8).

Table 3.8  
Cardiothoracic transplant list, United Kingdom 2013/14

Heart transplant list	New registrations in 2013/14		Total	
	Number	%	Number	%
Remained active / suspended	142	43	255	47
Transplanted	139	42	195	36
Removed	30	9	56	10
Died	23	7	35	6
Total	334		541	

Heart/lung transplant list	New registrations in 2013/14		Total	
	Number	%	Number	%
Remained active / suspended	8	67	15	56
Transplanted	3	25	8	30
Removed	0	0	0	0
Died	1	8	4	15
Total	12		27	

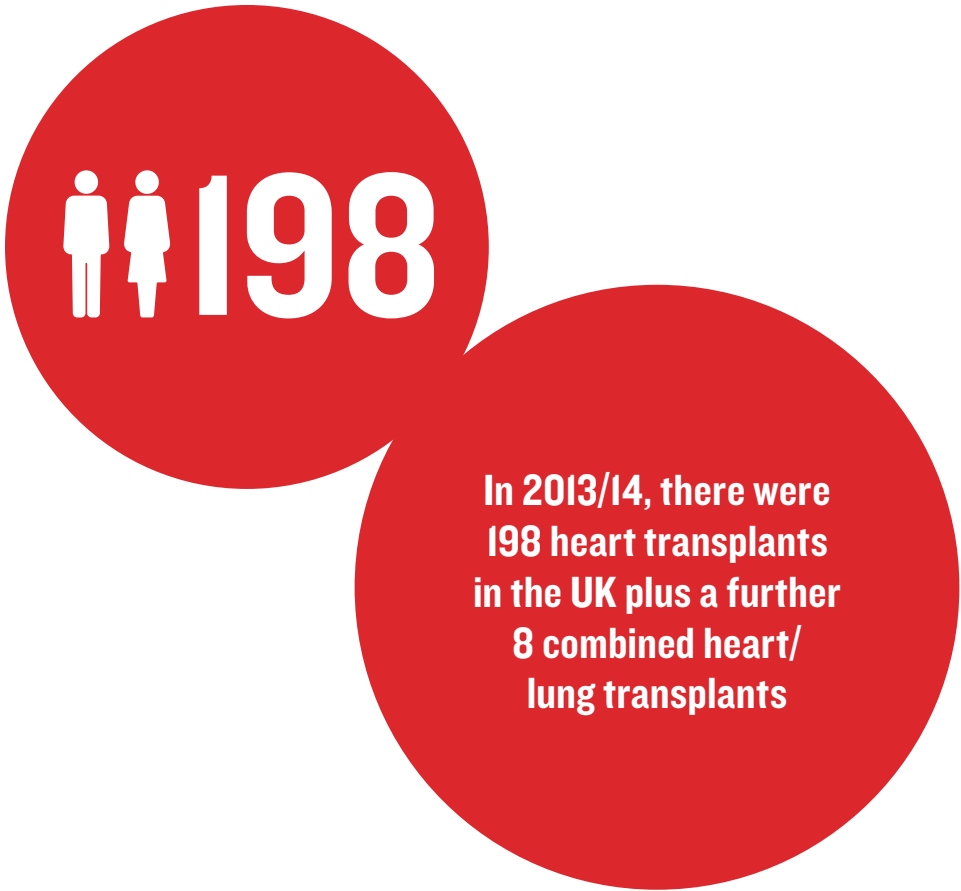
Notes Includes re-registrations for second or subsequent transplants. ¶ Activities for the year ending 31 March 2014 Source NHS Blood and Transplant (2014). Organ donation and transplantation. NHS

Within the year ending March 2014, there were 198 heart transplants in the UK plus a further 8 combined heart/lung transplants. The overall heart and lung transplant rate was 6.4 per million population. Northern Ireland reported the lowest rate (4.4 per million) and Scotland reported the highest overall rate with 7.7 per million (Table 3.9).

**Table 3.9**  
Cardiothoracic transplants and rate per million population, by country, United Kingdom 2013/14

Country	Heart transplants		All heart and lung transplants	
	number	rate	number	rate
England	163	3.0	342	6.4
Wales	4	1.3	18	5.9
Scotland	21	4.0	41	7.7
Northern Ireland	5	2.7	8	4.4
Patients from outside UK	5		4	
UK	198	3.0	414	6.4

**Notes** Lung transplants includes the small number (8) of heart/lung transplants performed. <sup>¶</sup> UK rates exclude the patients who live outside the UK and one patient with unknown address. **Source** NHS Blood and Transplant (2014). Organ donation and transplantation. NHS



OUT-OF-HOSPITAL CARDIAC ARRESTS

Survival rates of out-of-hospital cardiac arrests (OHCA) depend on several factors, such as the presence of bystanders, time to arrive for emergency medical services, prompt cardio pulmonary resuscitation (CPR), early defibrillation and pre-hospital return of spontaneous circulation.<sup>5</sup> Improved response times and training on CPR for ambulance services have contributed to improvements in the survival rates. In the year ending March 2014 more than 28,000 patients received resuscitation for OHCA in England – just 8.7% were discharged alive from hospital.

There are various other ways of measuring survival rates from OHCA, often yielding higher survival rates. NHS England publish Utstein survival rates for a subset of around 1 in 10 OHCA events which meet certain criteria; for 2013/14 the survival rate for this subset was 26%. Alternatively the Scottish Ambulance Service measure survival in terms of successful Return of Spontaneous Circulation (ROSC). Survival rates for Wales and Northern Ireland are not published.

The London Ambulance Services reported that resuscitation was initiated for only 44% of OHCA cases attended in 2012/13.<sup>6</sup> Some patients may have gone in to arrest hours before the emergency calls were made.

**Table 3.10**  
Out of hospital cardiac arrest survival data, England, 2013/14

Overall survival	2013/14
Number of patients	28,354
Number discharged from hospital alive	2,457
Proportion discharged from hospital alive (%)	8.7

**Notes** Resuscitation commenced / continued by ambulance service. **Source** NHS England (2014).Ambulance Quality Indicators. Analytical Service (Operations); Leeds.

ENDNOTES

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2 Mohr FW, Morice M, Kappetein AP, et al (2013). Coronary artery bypass graft surgery versus percutaneous coronary intervention in patients with three-vessel disease and left main coronary disease: 5-year follow-up of the randomised, clinical SYNTAX trial. The Lancet (381):629-638.

3 NICE (2011). Cost effectiveness of CABG and PCI – Appendix H: Cost-effectiveness analysis.

4 Turi ZG (2004). Mitral Valve Disease. Circulation. (109):e38-e41

5 Sasson C, Rogers MA, Dahl J, Kellermann AL (2010). Predictors of survival from out-of-hospital cardiac arrest: a systematic review and meta-analysis. Circulation: Cardiovascular Quality and Outcomes. (3): 63-81.

6 Clinical Audit and Research Unit (2013). Cardiac Arrest Annual Report 2012/13. London Ambulance Service NHS Trust: London.

Chapter 4

ECONOMIC COSTS

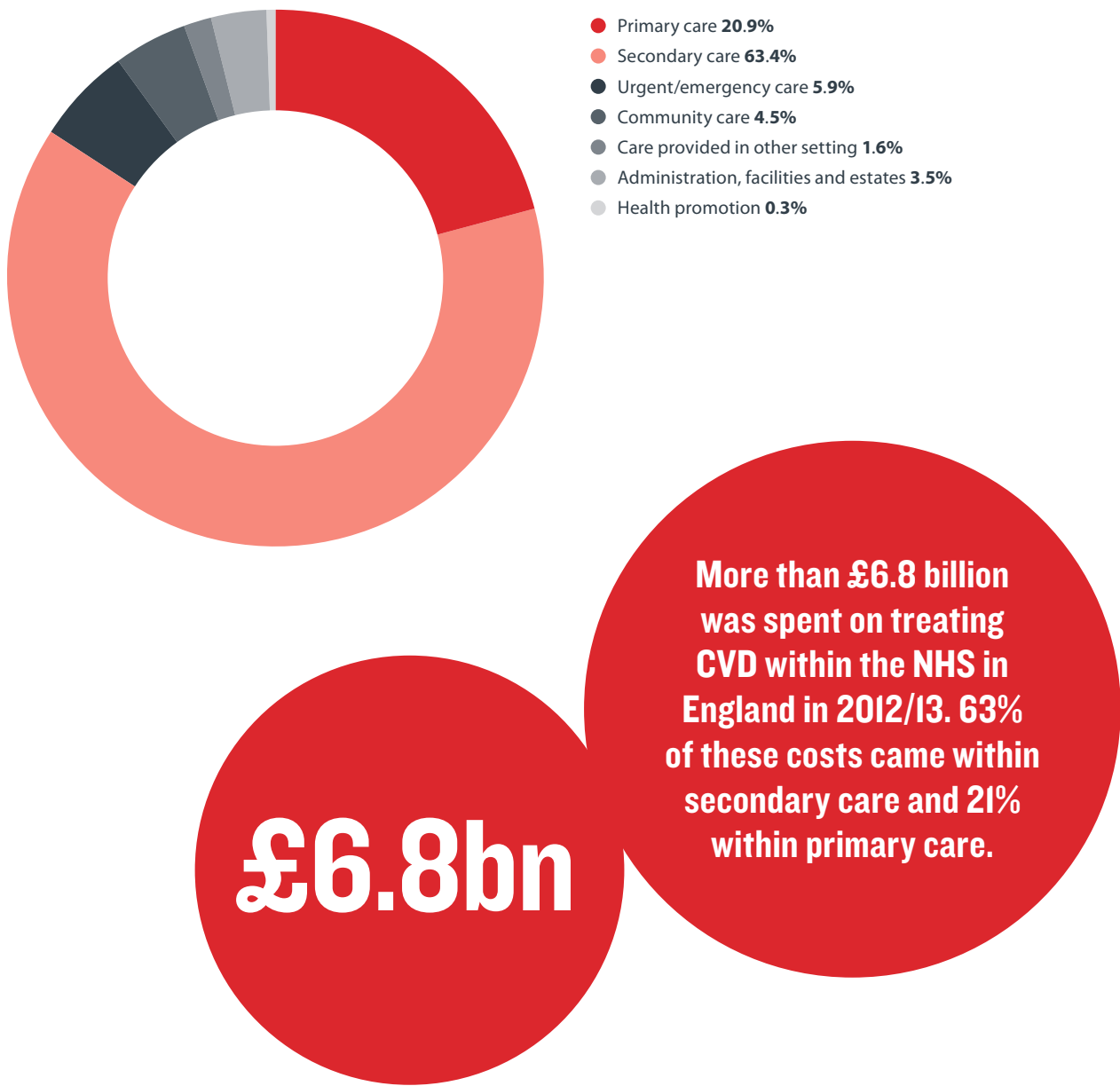
As well as human costs, both cardiovascular disease (CVD) and coronary heart disease (CHD) have major economic consequences for the United Kingdom. In this chapter we present costs to the NHS in treating heart disease, in all UK countries for which data are available. The data presented here are updated annually but the latest figures may not be comparable to estimates published in previous publications.



# ENGLAND

The programme budgeting data return is an analysis of commissioning expenditure by healthcare condition (such as circulatory diseases) and care setting (for example, primary, secondary and community). It provides commissioner-level analysis of NHS expenditure on specific healthcare conditions. Estimates of expenditure are calculated using the price paid for specific activities and services purchased from healthcare providers for each region. Regions follow standard guidance, procedures and mappings when calculating programme budgeting data. Although this does not include total NHS expenditure, around 80% of planned NHS funding in England is allocated in this way.<sup>1</sup> For 2012/13, programme budgeting data was produced at PCT level, by PCT successor organisations. This will change in 2013/14 so that data is produced at the Clinical Commissioning Group (CCG) level.

Figure 4.1  
Percentage of NHS expenditure on CVD by care setting, England 2012/13



Programme Budgeting data for the whole of England, aggregated to care settings, demonstrate the expenditure on CVD by treatment type. Secondary care demonstrates the highest expenditure for all CVD and for each subtype, with £4,373 million spent on secondary care for CVD in 2012/13, equating to 63% of total CVD expenditure (£6,897 million). Within secondary care, non-elective inpatient admittance, i.e. emergency admissions, had the greatest expenditure with £1,925 million. The care setting with the second highest expenditure was in Primary care, with 21% of total CVD expenditure (£1,441 million) spent here. The majority of costs within primary care come from prescribing. Urgent or emergency care made up 5.9% of total costs, within which ambulance expenditure was higher than that for Accident and Emergency (A&E). Community care (4.5%) followed this, with Administration, facilities & estates (3.5%) and Care provided in other settings (1.6%) the next lowest. Prevention and Health Promotion, made up only 0.3% of total expenditure (Table 4.1, Figure 4.1). Definitions for care settings can be found in Box 4.1 below.

Box 4.1  
Programme Budgeting Care Settings

Prevention & health promotion	Includes primary & secondary prevention, health promotion, family planning, school health services, national screening programmes, public health programmes for communicable and non-communicable disease, epidemiological surveillance and public health administration.
Primary care	Primary care costs relating to services provided by GPs, primary dental services and primary ophthalmic services, excluding those which relate to prevention/health promotion.
Primary prescribing	Primary care activity relating to prescribing or pharmaceutical services, excluding those which relate to prevention/health promotion.
Inpatient: Elective & Daycase	Admitted patient care activity which takes place in a hospital setting where the admission was elective or as a day-case.
Inpatient: Non-elective	Admitted patient care activity which takes place in a hospital setting where the admission was as an emergency/non-elective.
Outpatient	Outpatient attendances or procedures.
Other secondary care	Activity included with this setting will include direct access services, unbundled services (excluding critical care) and secondary care services which cannot be allocated to more specific settings. Mental Health secondary care services should also be included within this care setting.
Ambulance	Urgent and emergency transport, i.e. Ambulance activity and 111 expenditure which deals with non-life threatening emergencies.
A&E	Activity which takes place within A&E departments and minor injury units.
Community care	Care delivered outside of a hospital and within local communities. Inpatient and outpatient activity carried out within community hospitals should be classified as secondary care activity. All other activity carried out in community hospitals should be classified as community care.
Care provided in other settings	All other health and social care services which are not included within the other health settings. Includes prison healthcare, nursing homes, hospice care. Continuing care, intermediate care, respite care, free nursing care should be included within this setting. Social care and learning disability services should be included within this setting unless otherwise specified by the mappings.
Administration, facilities & estates	Expenditure which is not related to the commissioning or provision of health / social care services (e.g. costs relating to facilities & estates).

Source NHS England – Analytical services – Programme Budgeting Team (2014) 2012/13 Programme Budgeting Benchmarking

When comparing between CVD subtypes, ‘other CVD’ resulted in the highest total expenditure with around 65% of the total costs and was the highest for each care setting. Although this subtype includes a large range of diseases (including rheumatic and hypertensive diseases) these data were not available broken down any further. Additionally, due to the way data is collected and classified, distinguishing between costs due to subtype can be challenging. The best example of this is in the A&E care setting, in which the three Accident and Emergency Diagnosis codes for CVD are assigned to only two of the programme budgeting codes, meaning that A&E expenditure for CHD is zero, despite this including treatment of acute myocardial infarction which takes place in an A&E setting. All CHDs in this care setting are therefore included under ‘other CVD’. CHD had the second greatest total expenditure with 23.2%, with stroke the lowest (11.9%) (Table 4.1).

**Table 4.1**  
NHS expenditure in £ millions on cardiovascular disease by care setting and condition, England 2012/13

	Prevention/ Health Promotion	Primary care		
		Primary care	Primary prescribing	Total Primary Care
Coronary heart disease	2.5	5.4	574.1	579.5
Stroke	0.7	0.2	25.8	26.1
Other CVD	16.0	47.8	787.6	835.4
Total CVD	19.2	53.5	1,387.5	1,441.0

	Secondary care				
	Inpatient: Elective and Daycase	Inpatient Non-elective	Outpatient	Other secondary care	Total Secondary Care
Coronary heart disease	246.1	527.6	8.0	66.8	848.5
Stroke	46.3	444.1	19.7	60.9	571.0
Other CVD	556.3	952.7	520.8	923.9	2,953.7
Total CVD	848.6	1,924.5	548.6	1,051.5	4,373.2

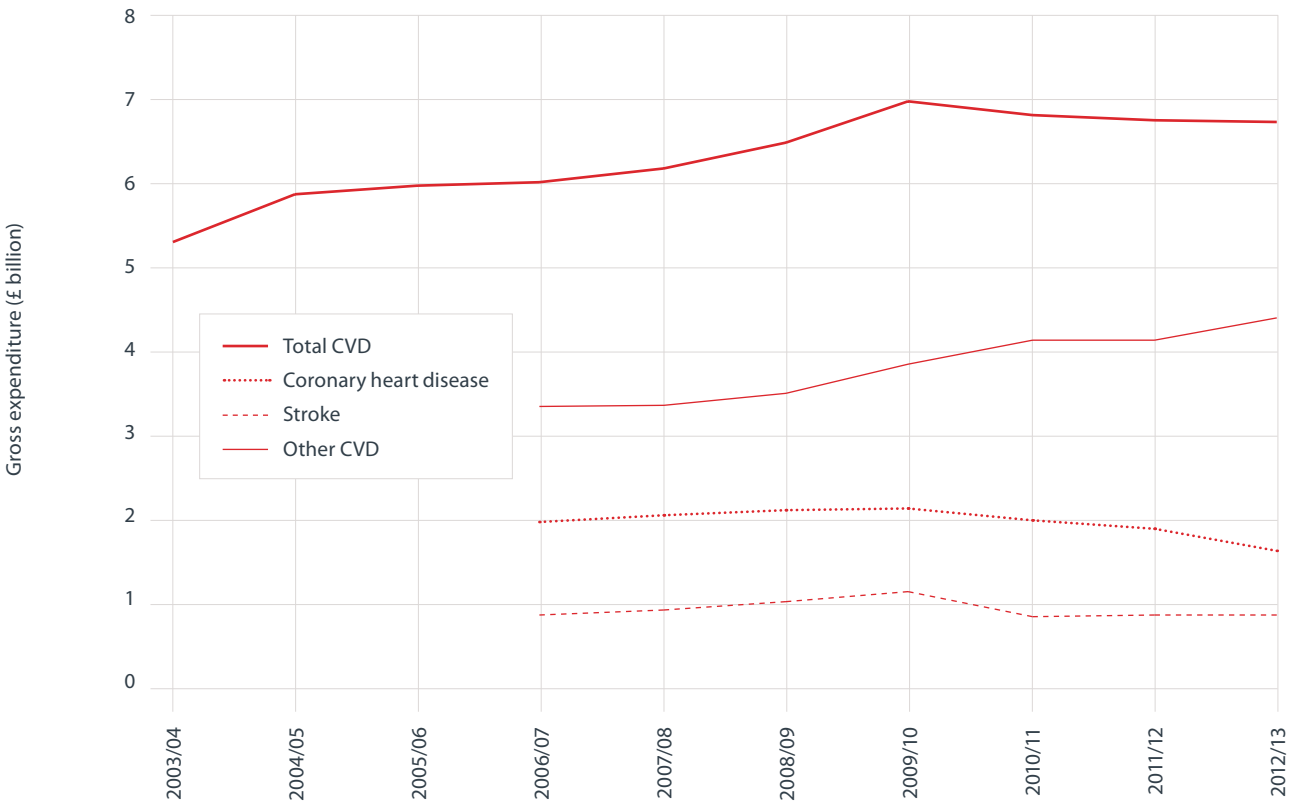
	Urgent / emergency care		Community Care	Care provided in other setting	Administration, facilities and estates	Total expenditure
	Ambulance	Accident and Emergency				
Coronary heart disease	33.0	0.0	60.6	18.5	55.2	1,597.9
Stroke	61.6	16.3	80.6	34.9	27.9	819.1
Other CVD	224.6	73.0	167.4	55.1	155.0	4,480.3
Total CVD	319.2	89.4	308.6	108.5	238.1	6,897.2

**Notes** Expenditure data included within this workbook are taken from the 2012/13 programme budgeting returns. Programme budgeting returns are based on a subset of PCT accounts data and represent a subset of overall NHS expenditure data. ¶ Estimates of expenditure are calculated using price paid for specific activities and services purchased from healthcare providers. PCTs follow standard guidance, procedures and mappings when calculating programme budgeting data. ¶ The analysis of programme budgeting data by care setting was introduced for the first time in 2010/11. For this reason, programme budgeting data within individual care settings should be interpreted with caution. ¶ The allocation of expenditure to programme budgeting subcategories is not always straightforward, and subcategory level data should therefore be used with caution. ¶ Due to differences in the level of information available to PCTs on A&E attendances a national split has been applied to PCT total A&E expenditure to apportion it across programme budgeting categories. ¶ When converting A&E diagnosis codes to Programme Budgeting subcategories of disease, no codes are included in CHD, with MI and other CHD included in Other CVD, resulting in no A&E spend for CHD. ¶ **Source** NHS England – Analytical services – Programme Budgeting Team (2014) 2012/13 Programme Budgeting Benchmarking Tool. <http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/> (accessed February 2014).

ENGLAND TRENDS

An analysis of expenditure in England has been provided for total CVD since 2003/04 and by subtypes of CVD from 2006/07. These data show an increase in total spend on CVD between 2003/04 and 2009/10 from £5.42 billion to £7.17 billion. Total spend on CVD then dropped in 2010/11 (£6.99 billion) with further decreases in 2012/13 (£6.90 billion). Since 2009/10 expenditure on CHD and stroke has also been seen to decrease, although the costs of ‘other CVD’ have increased (Table 4.2, Figure 4.2).

**Figure 4.2**  
NHS expenditure on CVD, England 2003/04 to 2012/13



The percentage of total health expenditure which is spent on CVD within regions in England ranged from 7.9% in the South East to 6.3% in London

Although these data come from the same source, in order to improve data quality, continual refinements have been made to the programme budgeting data calculation methodology since the first collection in 2003/04. The underlying data which support programme budgeting data are also subject to yearly changes. Users of the data should note that significant changes to the data calculation methodology were introduced in 2010/11.

**Table 4.2**  
NHS expenditure on cardiovascular disease, England 2003/04 to 2012/13

	Gross expenditure (£billion)									
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Coronary heart disease				1.96	2.04	2.11	2.14	1.98	1.89	1.60
Stroke				0.81	0.88	0.99	1.12	0.79	0.81	0.82
Other CVD				3.39	3.40	3.55	3.91	4.22	4.22	4.48
Total CVD	5.42	6.02	6.11	6.16	6.33	6.66	7.17	6.99	6.92	6.90

**Notes** In order to improve data quality, continual refinements have been made to the programme budgeting data calculation methodology since the first collection in 2003/04. Significant changes to the data calculation methodology were introduced in 2010/11. ¶ Figures for years 2003/04 to 2009/10 are calculated using provider costs as a basis. Figures for 2010/11 to 2012/13 are calculated using price paid for specific activities and services purchased from healthcare providers. ¶ For 2003/04, figures are based on net expenditure. For 2004/05 onwards, figures are based on spend on own population. This is calculated by adjusting net expenditure to add back expenditure funded from sources outside the NHS. **Source** NHS England – Analytical services – Programme Budgeting Team (2014) 2012/13 Programme Budgeting Benchmarking Tool. <http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/> (accessed February 2014).

## ENGLAND BY REGION

The expenditure for total CVD per head of population ranged from a minimum in the East Midlands of £113.39 to a maximum of £141.51 in the South East. Regional expenditure will be affected by the local cost of health services provision. This is taken into account when calculating allocated budgets, along with population, the level of healthcare need and health inequality. The amount of money each region receives is based on the interaction of these factors, along with others, calculated through a complex funding formula. In general the North of England tends to have higher allocations than they would under a simple population-based formula, and the South (excluding London) a lower allocation. The reason for this is that health needs, as measured by the formula, tend to be greater in the North.<sup>2</sup> When accounting for these differences in allocation, by reviewing percentage of total health expenditure which is spent on total CVD, we find that the percentage of total costs spent on CVD ranges from 7.9% in the South East to 6.3% in London (Table 4.3).

**Table 4.3**  
NHS expenditure on CVD by Government Office Region, England 2012/13

Region	Expenditure per head of population / £				
	CHD	Stroke	Rhythm	Other CVD	Total CVD
North East	36.14	14.79	7.71	65.09	123.73
North West	32.09	15.81	7.70	80.72	136.32
Yorkshire and the Humber	29.53	15.41	7.28	75.81	128.03
East Midlands	26.02	12.63	7.10	67.64	113.39
West Midlands	21.61	13.33	8.32	86.64	129.91
East of England	27.25	14.19	7.18	84.42	133.05
London	30.47	14.67	7.69	67.77	120.60
South East	33.83	19.33	10.23	78.12	141.51
South West	34.37	16.79	20.89	64.15	136.21

Region	Total expenditure (£ million)				
	CHD	Stroke	Rhythm	Other CVD	Total CVD
North East	107.2	43.9	22.9	193.0	366.9
North West	248.8	122.6	59.7	626.0	1,057.1
Yorkshire and the Humber	161.6	84.3	39.9	414.9	700.7
East Midlands	114.8	55.7	31.3	298.5	500.4
West Midlands	122.3	75.5	47.1	490.6	735.6
East of England	150.1	78.2	39.6	464.9	732.8
London	248.9	119.9	62.8	553.7	985.3
South East	267.0	152.6	80.8	616.6	1,117.0
South West	177.0	86.5	107.6	330.4	701.5

Region	Percentage of total health care expenditure				
	CHD	Stroke	Rhythm	Other CVD	Total CVD
North East	2.0	0.8	0.4	3.7	7.0
North West	1.8	0.9	0.4	4.5	7.6
Yorkshire and the Humber	1.7	0.9	0.4	4.3	7.2
East Midlands	1.5	0.7	0.4	3.9	6.6
West Midlands	1.2	0.8	0.5	4.9	7.3
East of England	1.6	0.8	0.4	4.9	7.7
London	1.6	0.8	0.4	3.6	6.3
South East	1.9	1.1	0.6	4.4	7.9
South West	1.9	0.9	1.2	3.6	7.7

**Notes** Expenditure data included within this workbook are taken from the 2012/13 programme budgeting returns. Programme budgeting returns are based on a subset of accounts data and represent a subset of overall NHS expenditure data. ¶ Estimates of expenditure are calculated using price paid for specific activities and services purchased from healthcare providers. Regions follow standard guidance, procedures and mappings when calculating programme budgeting data. ¶ The analysis of programme budgeting data by care setting was introduced for the first time in 2010/11. For this reason, programme budgeting data within individual care settings should be interpreted with caution. ¶ The allocation of expenditure to programme budgeting subcategories is not always straightforward, and subcategory level data should therefore be used with caution. ¶ Due to differences in the level of information available to regions on A&E attendances a national split has been applied to total A&E expenditure to apportion it across programme budgeting categories. ¶ When converting A&E diagnosis codes to Programme Budgeting subcategories of disease, no codes are included in CHD, with MI and other CHD included in Other CVD, resulting in no A&E spend for CHD. **Source** NHS England – Analytical services – Programme Budgeting Team (2014) 2012/13 Programme Budgeting Benchmarking Tool. <http://www.england.nhs.uk/resources/resources-for-ccgs/prog-budgeting/> (accessed February 2014).

## WALES

Expenditure data from Wales comes from the programme budget returns from Local Health Boards (HBs). Total expenditure from this source on CVD in Wales in 2012/13 came to £442.3 million. These data reported that Powys Teaching LHB has the highest costs per head of population (£186.82) and Cardiff & Vale UHB the lowest (£111.49). Cardiff & Vale UHB had the lowest expenditure per head for all CVD subtypes, whilst Powys Teaching LHB had the highest expenditure per head for stroke and Hywel Dda LHB the highest for CHD (Table 4.4).

**Table 4.4**  
NHS expenditure on CVD by Health Board, Wales 2012/13

HSC Trust Name	Expenditure per head / £			
	CHD	Stroke	Other CVD	Total CVD
Abertawe Bro Morgannwg UHB	43.87	26.69	72.16	142.72
Aneurin Bevan LHB	40.58	19.61	76.69	136.89
Betsi Cadwaladr UHB	41.68	28.80	85.36	155.84
Cardiff & Vale UHB	34.15	19.65	57.69	111.49
Cwm Taf LHB	43.60	27.61	82.82	154.03
Hywel Dda LHB	47.19	26.58	78.23	152.00
Powys Teaching LHB	47.11	58.03	81.68	186.82
Wales	41.79	26.17	75.93	143.89

Health board	Total expenditure (£ millions)			
	CHD	Stroke	Other CVD	Total CVD
Abertawe Bro Morgannwg UHB	22.8	13.9	37.5	74.1
Aneurin Bevan LHB	23.5	11.3	44.3	79.1
Betsi Cadwaladr UHB	28.8	19.9	58.9	107.6
Cardiff & Vale UHB	16.2	9.3	27.4	53.0
Cwm Taf LHB	12.8	8.1	24.4	45.4
Hywel Dda LHB	18.1	10.2	30.0	58.3
Powys Teaching LHB	6.3	7.7	10.9	24.8
Wales	128.5	80.4	233.4	442.3

**Notes** Health Boards allocate as much expenditure as they can, given the activity information available. The apportionment of the remainder means that some figures are approximate. ¶ Some services are commissioned on a ‘host’ authority basis and have not been recharged to HB area. ¶ Programme budget categories are defined by reference to ICD 10 codes. ¶ To calculate expenditure per head of population, the ONS revised mid-year population 2013 estimates were used. **Source** Financial Information Strategy, Public Health Wales (2014) Personal communication.

## NORTHERN IRELAND

Although programme budgeting data are not available from Northern Ireland, information is available on the cost of inpatient episodes and day case attendances in an acute hospital setting. Hospital Information Branch identifies finished consultant episodes where a patient was treated for a diagnosis of coronary heart disease, stroke, or other cardiovascular disease using the relevant ICD–10 codes. In order to produce an estimate of the total cost, the Finance Directorate of The Department of Health, Social Services and Public Safety Northern Ireland (DHSSPSNI) has applied 2012/13 Healthcare Resource Group (HRG) reference costs derived from annual trust costing returns to finished consultant episodes. HRG reference costs are fully absorbed unit costs including capital charges. All costs relate only to inpatient and day case admitted care. Costs for some services are not collected at the level of detail required to enable an estimate on what has been spent on individuals with specific diagnoses. This means comparisons to data from other UK countries cannot be made confidently (Table 4.5).

**Table 4.5**  
NHS expenditure on CVD by Health and Social Care Trust, Northern Ireland 2012/13

Trust name	Expenditure per head of population / £			
	CHD	Stroke	Other CVD	Total CVD
Belfast	163.67	22.68	246.95	433.31
Northern	48.76	9.02	66.81	124.59
Southern	71.12	11.71	90.26	173.09
South Eastern	65.26	9.64	116.76	191.66
Western	65.41	13.15	103.17	181.72
Northern Ireland	80.99	12.94	121.57	215.50

Trust name	CVD expenditure (£ millions)			
	CHD	Stroke	Other CVD	Total CVD
Belfast	57.0	7.9	86.0	150.9
Northern	22.7	4.2	31.1	58.0
Southern	24.9	4.1	31.6	60.6
South Eastern	23.7	3.5	42.4	69.6
Western	19.4	3.9	30.6	53.9
Northern Ireland	147.7	23.6	221.7	393.0

**Notes** Hospital Information Branch identifies finished consultant episodes where a patient was treated for a diagnosis of coronary heart disease, cardiovascular disease or stroke using the relevant ICD-10 codes. To this activity information, Finance Directorate has applied 2012/13 HRG reference costs derived from annual trust costing returns, in order to produce an estimate of the total cost. ¶ All costs relate only to inpatient and daycase admitted care. Substantial A&E, outpatient, primary care, community and personal social services may also be provided to patients. ¶ Costs for these services are not collected at the level of detail required to enable an estimate on what has been spent on individuals with specific diagnoses. **Source** Hospital Information Branch, Department of Health, Social Services and Public Safety, Northern Ireland Executive (2014) Personal communication.

The total expenditure on CVD in Northern Ireland in 2012/13 was £393 million. Expenditure per head of population was greatest in Belfast (£433.31), more than twice that found for Northern Ireland as a whole (£215.50 per person). The lowest expenditure by population is found in the Northern Trust with £124.59 spent on total CVD per person (Table 4.5).



# SCOTLAND

A pilot application of 2007/08 Programme Budgeting data in Scotland suggested that over £750 million was spent on treating that year; this was 9.4% of the total NHS expenditure and the clinical programme budget group with the highest expenditure.<sup>3</sup> Although it is planned to release Scottish Health Service Costs data by subtype of CVD, these were not available at time of publication.

# NON-HEALTH CARE COSTS

Looking only at the health care costs of CVD grossly underestimates the total cost of CVD in the UK. Production losses from death and illness in those of working age and from the informal care of people with the disease contribute greatly to the overall financial burden. There are no data of production losses from CVD regularly published in the UK. However, statistics published in our previous compendium suggest that in 2009, production losses due to mortality and morbidity associated with CVD cost the UK over £6 billion, with around 21% of this cost due to death and 13% due to illness in those of working age. The cost of informal care for people with CVD in the UK was around £3.8 billion in 2009. Production losses due to mortality and morbidity associated with stroke cost the UK almost £1 billion. The cost of informal care for people with stroke was £1 billion in 2009.<sup>4</sup>

Expenditure data from the programme budget returns in Wales reported that in 2012/13 expenditure on CVD by the NHS within Wales exceeded £440 million

Costs for inpatient episodes and day case attendances in acute hospital settings in Northern Ireland reported the total expenditure on CVD in Northern Ireland in 2012/13 to be £393 million

## ENDNOTES

- 1 Harker (2012). NHS Funding and expenditure. House of Commons, London. <http://www.nhshistory.net/parlymoney.pdf>
- 2 DH Financial Planning and Allocations Division (2011). Equality Impact Assessment: PCT Resource Allocations 2011/12. Department of Health, Leeds.
- 3 Twaddle S, Marshall M, Michael N (2012). Programme Budgeting \_testing the Approach in Scotland. The Scottish Government, Edinburgh.
- 4 Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London.

## Chapter 5

# MEDICAL RISK FACTORS

Over the following pages we present summary statistics for a number of medical risk factors all of which are associated with cardiovascular diseases (CVD). These include obesity, hypertension, diabetes and blood cholesterol. Statistics in this section are taken from health surveys collected in each UK nation. Some data, such as key anthropometric measurements, are updated annually, whereas others are only updated when surveys include additional cardiovascular disease specific fieldwork.

## OBESITY

Overweight and obesity increases the risk of multiple diseases including CVD, cancer and type 2 diabetes.<sup>1</sup> Adults with a body mass index<sup>2</sup> (BMI) ( $\text{kg}/\text{m}^2$ ) of 25 to 30 are considered to be overweight. Those with a BMI of over 30 are considered obese.<sup>3</sup> Both generalised and abdominal obesity are associated with increased risk of morbidity and mortality. Abdominal obesity (fat concentrated in the abdomen) is a predisposing factor for cardiovascular disease.<sup>1</sup> Central abdominal obesity is measured by using waist circumference and waist-hip ratio. The World Health Organization recommended cut-off points, above which individuals are at risk, are for waist circumference 94cm for men and 80cm for women. For waist-hip ratio cut-off points are 0.9 for men and 0.85 for women.<sup>4</sup>

## HIGH BLOOD PRESSURE

Risk of cardiovascular disease is directly related to higher levels of blood pressure.<sup>5</sup> Unhealthy diet is estimated to be responsible for half of hypertension with physical inactivity and obesity accounting for 20% each.<sup>6</sup> Drug treatment and lifestyle changes, particularly weight loss, physical activity and dietary improvements, can effectively lower blood pressure.

## DIABETES

There are two main types of diabetes: type 1 and type 2.<sup>7</sup> Diabetes substantially increases the risk for CVD and people with diabetes are at about three times the risk of heart attack compared to those without.<sup>8</sup> Recent data show that CVD burden attributable to diabetes is on the rise.<sup>9</sup>

## BLOOD CHOLESTEROL

Blood cholesterol level is positively associated with coronary heart diseases in both middle and old ages.<sup>10</sup> Blood cholesterol levels can be reduced by physical activity, dietary changes and by drugs. High-density lipoprotein cholesterol (HDL) is an independent predictor of cardiovascular risk, high levels being protective and lower levels increasing the risk. NICE guidelines were revised in 2014, with a new recommendation to use non-HDL cholesterol, rather than the ratio of total/HDL cholesterol, as the optimal predictor of CVD risk.<sup>11</sup>

OBESITY

ADULTS

Taking data from individual health surveys for UK countries and weighting by the populations in each country suggests that in 2012, 24.8% of adults in the UK were obese (BMI of 30 or more).

- In England in 2012, the percentage of adults measured as overweight or obese (BMI of 25 or more) was 67% in men and 57% in women; the percentage measured as obese was 24% in men and 25% in women.<sup>12</sup>
- In Wales in 2012, 64% of men and 53% of women reported being overweight or obese; 23% of men and women reported being obese.<sup>13</sup>
- In Scotland in 2012, 68% of men and 60% of women were overweight or obese; 27% of men and 28% of women were obese.<sup>14</sup>
- In Northern Ireland in 2012/13, 62% of men and 69% of women were overweight or obese; 25% of men and 26% of women were obese.<sup>15</sup>
- In England in 2012, 45% of women and 34% of men had a raised waist circumference. A raised waist circumference is measured as above 102cm in men and 88cm in women.<sup>1</sup>

CHILDREN

- In England in 2012, 28% of children aged 2 to 15 years were overweight or obese and 14% were obese.<sup>1</sup>
- In Wales in 2013 35% of boys and 33% girls were overweight or obese; 20% of boys and 19% of girls were obese.<sup>2</sup>
- In Scotland in 2012 for those aged 2 to 15, 34% of boys and 28% of girls were at risk of being overweight or obese; 20% of boys and 14% of girls were considered to be at risk of obesity.<sup>3</sup>
- In Northern Ireland in 2011 children aged 2 to 15 years, 30% of boys and 32% of girls were overweight or obese, and 10% were considered to be obese.<sup>5</sup>
- In Northern Ireland in 2012/13 in children aged 2 to 10 years, 22% of boys and 27% of girls were considered to be overweight or obese; 6% of boys and 5% of girls were considered to be obese.<sup>4</sup>

HYPERTENSION

- In England, the prevalence of hypertension in 2012 was 31% among men and 27% among women, remaining at a similar level over the last few years.<sup>16</sup>
- In England, between 2003 and 2012, the percentage of the population with controlled hypertension increased from 5% to 9% among men, and from 6% to 9% among women, a slight decrease from 11% and 10% respectively in 2011.<sup>16</sup>
- In England, the percentage of adults with untreated hypertension decreased from 2003 to 2012 for both sexes (20% to 16% among men and 16% to 11% among women). Whilst the proportion of women with untreated hypertension is about the same as 2011 the proportion for men has risen slightly resulting in an increase in the overall figures which had maintained a steady decline since 2003.<sup>16</sup>
- In Scotland in 2010/11, around a third of men (33%) and women (32%) aged 16 and over had hypertension. Around one in five (18.5%) men and one in six (15.7%) women had untreated hypertension.<sup>17</sup>
- In Wales, in 2013, 20% of men and 20% of women reported currently being treated for high blood pressure.<sup>12</sup>
- In Northern Ireland, one-quarter of respondents (27%) reported that they had high blood pressure. Figures by gender were 26% amongst men and 27% amongst women in 2012/13.<sup>14</sup>

DIABETES

- In England, the prevalence of doctor-diagnosed diabetes increased between 1994 and 2012 from 2.9% to 6.7% among men and from 1.9% to 4.9% among women.<sup>16</sup>
- In Wales, 8% of men and 6% women reported currently being treated for diabetes.<sup>12</sup>
- In Scotland, the proportion of adults (aged 16 to 64) with doctor-diagnosed diabetes has increased from 1.5% in 1995 to 3.7% in 2012; 5.5% of all adults (aged 16 and over) had diabetes in 2012.<sup>13</sup>
- In Northern Ireland 5% of adults (6% of men and 4% of women) had doctor diagnosed diabetes in 2012/13.<sup>14</sup>
- According to Quality and Outcomes Framework (QOF) data there are around 3.2 million diagnosed diabetes patients in the UK.<sup>18</sup>
- A Diabetes UK report estimates that there are around 850,000 people in the UK who have diabetes but have not been diagnosed.<sup>19</sup>

CHOLESTEROL

- In England, average levels of total serum cholesterol were lower in men than women (5.1mmol/L and 5.2mmol/L respectively) in 2011.<sup>16</sup>
- In England, 44% of men and 43% of women had total cholesterol levels below 5mmol/L (the ‘audit level’ for those with CVD, diabetes or hypertension who are on drug treatment), while only 14% and 12% respectively had levels below 4mmol/L (the current target for the same group) in 2011.<sup>16</sup>
- In Scotland, between 1995 and 2008/11, mean total cholesterol in men aged 16 to 64 years declined from 5.6 to 5.2 mmol/l. The equivalent figures for women were 5.6mmol/l and 5.3 mmol/l.<sup>17</sup>
- In Scotland in 2008/11, more than half of men (56%) and women (61%) with a valid cholesterol measurement reported having a total cholesterol measurement of ≥5 mmol/l.<sup>17</sup>

ENDNOTES

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## Chapter 6

# BEHAVIOURAL RISK FACTORS

In the following sections, we present statistics related to four major lifestyle factors that increase the risk of cardiovascular disease (CVD): smoking, poor diet, physical inactivity and excess alcohol consumption.

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## SMOKING

Tobacco smoking is one of the leading risk factors for disease.<sup>1</sup> Among its many health consequences, it increases risk of coronary heart disease by raising blood pressure and the tendency of blood to clot while decreasing exercise tolerance and blood levels of HDL ('good' cholesterol). The long-term hazards of cigarette smoking have been studied over a long period of time, most notably by Sir Richard Doll and colleagues who demonstrated in a 50 year cohort study that smoking kills about half of all persistent smokers.<sup>2</sup> In England in 2013, an estimated 79,700 deaths among adults aged 35 and older (around 17% of deaths) were attributed to smoking and an estimated 14% of deaths (17,300) from circulatory diseases were attributable to smoking.<sup>3</sup>

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## POOR DIET

Dietary patterns also influence risk of coronary heart disease. In particular, a high-sodium diet increases risk of hypertension, which is a risk factor for CVD. High consumption of saturated and trans fats contributes to the development of atherosclerosis. Consumption of fruits and vegetables, by contrast, has a protective effect.<sup>4</sup>

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## PHYSICAL INACTIVITY

Another key risk factor for cardiovascular disease is physical inactivity. A sedentary lifestyle contributes to CVD risk factors such as high blood pressure, elevated triglycerides, low HDL, diabetes and obesity.<sup>5</sup>

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## ALCOHOL CONSUMPTION

Excessive alcohol consumption increases blood pressure and blood levels of triglycerides, which increase a person's risk of atherosclerosis.<sup>6</sup>

## SMOKING

### ADULTS

- The prevalence of regular cigarette smoking in the UK halved between 1974 and 2011, dropping from 51% to 21% of men and 41% to 19% of women.<sup>7</sup> According to estimates from 2011, 20% of English men and 18% of English women smoked regularly. According to the most recent data, 26% of men and 23% of women smoked in Scotland. In Wales, prevalence rates were higher among women than among men, with around 22% of men and 25% of women regularly smoking.
- The prevalence of smoking in Northern Ireland has been declining since the 1980s. In 1983, 39% of men and 29% of women in Northern Ireland smoked. In 2012/13, about one quarter of respondents (25% of males and 23% of females) were current smokers.<sup>8</sup>

### CHILDREN

- Overall, there has been a decline in the proportion of children in the UK who smoke regularly (defined as usually smoking at least one cigarette per week).
- In England, the prevalence of regular smoking among boys and girls aged 11 to 15 years decreased from 9% in 2003 to 3% in 2013.<sup>9</sup> Historically, a higher percentage of girls have been regular smokers compared to boys (7% of boys and 11% of girls in 2003), but the figures from recent years indicate that this gap is closing and similar proportions of boys and girls are regular smokers (4% of boys and girls in 2012; 3% of boys and 4% of girls in 2013).
- Since 1998, the prevalence of regular smoking among 13-year-olds in Scotland dropped from 9% to 3% among boys and 11% to 3% among girls. Among 15-year-olds over the same time period, it reduced from 29% to 22% of boys and 26% to 14% of girls.<sup>10</sup>
- Consistent with the UK trend, prevalence of regular smoking among young people in Wales increases with age. According to the most recent estimates, 3% of boys and 6% of girls aged 13 years smoked regularly. Among 15-year-olds, 16% of girls and 11% of boys reported regular smoking.<sup>11</sup>
- The most recent figures show a decreasing prevalence of weekly smoking among young people in Wales, particularly among 13-year-olds, with rates in 2010 nearly half of those observed in 2006.<sup>12</sup>
- In Northern Ireland, there was an increase between 2006 and 2010 in the proportion of 11 to 16 year old boys who reported smoking at least once a week, from 5% to 7%. Among females, by contrast, the prevalence decreased from 10% to 6%.<sup>13</sup> In 2013, 9% of pupils aged 11 to 16 reported that they had smoked at least one cigarette in the last year.<sup>14</sup>

## POOR DIET

### ADULTS EATING 5-A-DAY

- The latest National Diet and Nutrition Survey provides an assessment of the quality of the diet for adults in the United Kingdom. These results suggest that adults aged 19 to 64 years consumed an average of 4.1 portions of fruit and vegetables per day. Less than a third (30%) of adults met the “5-a-day” recommendation.<sup>15</sup>
- In general, household food purchases do not match recommendations in terms of the proportions of food types that compose a healthy diet. Household purchases of vegetables (particularly fresh vegetables) declined between 2005 and 2012, when purchases fell 6.1% from 1,156 grams to 1,086 grams average weekly consumption per person.<sup>16</sup>

### ADULT CONSUMPTION OF FAT

- According to the latest estimates, most groups of adults in the UK met recommendations related to mean intake of total fat (no more than 35% food energy), but mean intakes of saturated fat exceeded the daily recommended values (no more than 11% food energy).<sup>1</sup>
- On average fat made up 12.6% of food energy consumed by adults. Mean consumption of oily fish fell below the recommended portion (140g per week) in all age groups; the mean consumption in adults was 54 grams per week (52 grams for men and 54 grams for women).

### ADULT CONSUMPTION OF SALT

- The best available estimates indicate that the average daily intake of salt among adults in the UK exceeds the recommended target of less than 6 grams per day.
- A 2008 study estimated salt intake by analysing the urine of a representative sample of UK adults and found that both men and women exceeded recommendations: the estimated daily salt intake was 9.7 grams for men and 7.7 grams for women (8.6 grams/day overall).<sup>17</sup>
- More recent data is available from England and it suggests that in 2011, men had a mean intake of 9.3 grams per day and women a mean intake of 6.8 grams per day. Overall, 70% of adults exceed recommendations.<sup>18</sup>

### CHILDREN EATING 5-A-DAY

- According to the Health Survey for England 2011, 16% of boys and 20% of girls consumed at least five portions of fruit and vegetables per day in 2011. Boys consume an average of 3.0 portions per day and girls an average of 3.2.<sup>19</sup> This reflects an overall increase in mean intake since 2001, from 2.4 and 2.6 daily portions among boys and girls respectively.

PHYSICAL INACTIVITY

Box 6.1  
2011 UK guidelines for physical activity

Adults aged between 19 to 64	Adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes (2½ hours) of moderate intensity activity in bouts of 10 minutes or more – one way to approach this is to do 30 minutes on at least 5 days a week.
	Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or combinations of moderate and vigorous intensity activity.
	Adults should also undertake physical activity to improve muscle strength on at least two days a week.
	All adults should minimise the amount of time spent being sedentary (sitting) for extended periods.
Children and young people aged between 5 to 18	All children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day.
	Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week.
	All children and young people should minimise the amount of time spent being sedentary (sitting) for extended periods.
Children aged under 5 who can walk	Children of pre-school age who are capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day.
	All under 5s should minimise the amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).

ADULTS

- In England in 2012, 67% of men and 55% of women aged over 19 met the most recent physical activity guidelines.<sup>20</sup> These guidelines were updated in 2011 to allow for more flexibility in how the recommended levels for adults can be achieved.
- Figures for people aged over 16 were similar in Scotland, with 67% of men and 58% of women meeting the guidelines.<sup>21</sup>
- Activity levels are lower in Northern Ireland with 59% of men and 49% of women aged over 19 meeting the physical activity guidelines in 2012/13.<sup>22</sup>
- The data for Wales are in relation to pre-2011 guidelines so are not comparable to the data from the other countries of the UK. In Wales in 2013, 37% of men and 23% of women met the previous physical activity guidelines, which was similar to previous years.<sup>23</sup> The pre-2011 guidelines recommended 30 minutes of moderate activity on at least five days a week.
- The proportion of people meeting the physical activity guidelines decreases with age in all countries of the UK.

CHILDREN

- In 2012, 9% of boys and 10% of girls in England aged 2 to 4 years were active for at least 180 minutes on all 7 days in the previous week, excluding activity in school.<sup>1</sup>
- In Scotland in those aged 2 to 4 in 2012, 72% of boys and girls were active for at least 60 minutes on all 7 days in the previous week, excluding activity in school.<sup>2</sup>
- In 2012, of those aged 5 to 15 in England, 21% of boys and 16% of girls met the physical activity guidelines for children and young people.<sup>1</sup>
- In Wales in 2012, in those aged 4 to 14, 41% of boys and 28% of girls met the recommended levels of physical activity.<sup>4</sup>
- In Scotland in 2012 73% of boys and 68% of girls amongst children aged 2 to 15 years met the physical activity guidelines for children and young people.<sup>2</sup>

ALCOHOL CONSUMPTION

ADULTS

- In England the proportion of men consuming more than four units on the heaviest day’s drinking in the last week did not show substantial change between 2006 and 2012 (37% in 2012), and similarly the proportion of men who drink more than twice the recommended amount showed little change over the period (21% in 2012).<sup>19</sup>
- The picture was different among women in England as there was a decrease between 2006 and 2012 both in the percentage consuming more than three units on the heaviest day’s drinking last week (from 33% to 28%), and in the percentage drinking more than twice the recommended amount (from 16% to 13%). Both these proportions have remained the same for the last two years.
- In Wales, in 2013, 48% of men and 36% of women reported drinking above the recommended daily allowance.<sup>23</sup>
- A quarter of men and 18% of women in Scotland drank at hazardous or harmful levels (more than 21 units per week for men and more than 14 units for women) in 2012.<sup>21</sup>
- In Scotland the percentage of adults drinking at hazardous or harmful levels has declined since 2003 (from 33% of men and 23% of women to 25% of men and 18% of women in 2012) but again there has been no change in the most recent year with 2012 figures equal to 2011.
- Almost four-fifths of those surveyed (79%) aged 18 and over in Northern Ireland stated that they currently drank alcohol, while 15% said that they had never drunk alcohol.<sup>22</sup>

CHILDREN

- In England in 2013, around two-fifths (39%) of children aged 11 to 15 had drunk alcohol at least once. Boys and girls were equally likely to have done so. The proportion of children who have had an alcoholic drink increased from 6% of 11 year olds to 72% of 15 year olds.<sup>24</sup>
- In England around one in ten (9%) children aged 11 to 15 years had drunk alcohol in the last week, compared to 25% in 2003.<sup>5</sup>
- In Scotland, prevalence of alcohol consumption in 15 year old boys fell from 48% to 35% between 1996 and 2010 and 46% to 34% in girls for the same age.<sup>25</sup>
- In Wales, 17% of boys and 14% of girls (aged 11 to 16 years) reported drinking alcohol at least once a week in 2009/10.<sup>26</sup>

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## BRITISH HEART FOUNDATION RESOURCES

The following resources will give you more information on making changes to your lifestyle and reducing your risk of diseases of the heart and circulation.

These are our resources most closely related to the topics in this publication. For more information on the services, programmes and resources that are available from the British Heart Foundation please order our **Heart Health Resources & Services catalogue (order code: M116)**.

Information for teachers, parents and youth workers of 3-18 years olds can also be found in our **Teaching Heart Disease a Lesson catalogue (order code: G66)**.

Details of how to order our resources are provided at the end of this list.

## MEDICAL RISK FACTORS

### Blood pressure (order code: HIS4)

This booklet is for people who want to know more about blood pressure. It may be particularly useful for people with high blood pressure, and for their family and friends.

### 10 minutes to change your life – High blood pressure (order code: G933)

This simple guide is for people who have been told they have high blood pressure, or are at risk of getting it. It explains what high blood pressure is, what can cause it, and what you can do to lower it. This booklet comes with a planner for you to track your salt intake, alcohol intake, and physical activity, then set a goal to help reduce your blood pressure.

### Reducing your blood cholesterol (order code: HIS3)

This booklet explains what cholesterol is, its role in coronary heart disease, what causes high levels and how it can be kept under control. It also explains which medicines are used to treat high levels.

### 10 minutes to change your life – Lowering cholesterol (order code: G991)

This simple guide is for people who have been told they have high cholesterol, or are at risk of getting it. It explains what high cholesterol means, what can cause it, and what you can do to lower it. This booklet comes with a challenge chart for you to track your physical activity and saturated fat intake over a week, then set a goal to help reduce your cholesterol.

### Diabetes and your heart (order code: HIS22)

This booklet is for people who have diabetes, and for their families and friends. It may also be useful if you don't have diabetes but you have been told you may develop it in the future.

### Risking It (order code: DVD21)

This series of short motivational films is designed to help identify and tackle risk factors for coronary heart disease. The films cover high cholesterol, high blood pressure, smoking, weight loss and more. Following six people who decide to take positive action to lower their risk of CHD, these films show how small changes can make a big difference.

For more information, visit [bhf.org.uk/riskfactors](http://bhf.org.uk/riskfactors)

## DIET

### Eating well (order code: G186)

If you want to eat more healthily to look after your health and reduce your risk of heart disease, then our Eating Well booklet can help. It explains the benefits of a balanced diet and how you can follow a healthy eating plan as part of your daily life.

### Cut the saturated fat (order code: M4)

Our wall chart includes information on the different types of fat in food and advice on the healthiest options to choose, both when cooking or eating out.

### Cut down on salt (order code: G160)

This booklet provides practical tips and recipe ideas. It describes guideline levels salt intake for adults and how to identify high salt foods.

### This label will change your life (order code: G54)

Our new guide helps people choose which foods to shop for, and which to drop. It includes a small card that explains colour-coded labels on foods and drinks. These labels could change lives by helping people to check, compare and choose heart healthy options.

### 10 minutes to change your life – Time to eat well (order code: G923)

This booklet explains what to eat and what not to eat to help keep your heart healthy. It comes with a challenge chart to help track how much fruit and veg you're eating, and tells you which foods are high in saturated fat and salt.

For more information, visit [bhf.org.uk/healthyeating](http://bhf.org.uk/healthyeating)

## PHYSICAL INACTIVITY

### Get active, stay active (order code: G12)

This A5 booklet helps you understand why you need to keep your heart healthy with physical activity. It also gives you tips and tools to work physical activity into your daily routine.

### Physical activity and your heart (order code: HIS1)

This booklet is for people who have a heart condition, and for those who are at a high risk of developing heart disease, for example because they have high blood pressure or a high cholesterol level.

### 10 minutes to change your life – Time to get moving (order code: G924)

This simple guide to getting active includes information about why you should be active, and tells you what type of activity you need to do to help your heart. It comes with a challenge chart to help you track your activity over a week and set yourself a goal for the future.

For more information, visit [bhf.org.uk/active](http://bhf.org.uk/active)

## ALCOHOL

For information on alcohol and cardiovascular disease, go to [bhf.org.uk/alcohol](http://bhf.org.uk/alcohol)

Use our Alcohol Calculator to see how many units are in your drinks.

## SMOKING

### Stop smoking (order code: G118)

This booklet provides practical tips for smokers who are thinking about giving up and helps them to understand more about why they smoke and how they can stop smoking for good. It explains the link between smoking and heart disease and discusses different approaches to quitting, with tips and activities to help you on your journey.

### 10 minutes to change your life – Time to quit (order code: G925)

A quick guide explaining why it's important to quit smoking. It talks about different ways to quit and how to find people who can help you. It comes with a chart to help you plan how you're going to quit, and tick off your smoking-free days.

For more information, visit [bhf.org.uk/smoking](http://bhf.org.uk/smoking)

## HEART CONDITIONS

### Quick guides for patients (order codes: G960-G970)

Our new quick guides cover 11 of the most common heart and circulatory conditions, tests and treatments. These guides provide information on a range of topics including heart attack, stroke, atrial fibrillation, cardiac rehab and atherosclerosis.

### Inherited heart conditions (order codes: M111A-M111F)

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