Scottish Heart Disease Statistics

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Introduction

Despite a substantial reduction in the rate of death from coronary heart disease (CHD) over the last decade, it remains one of the leading causes of death in Scotland (Health of Scotland’s population - Mortality Rates) and was the largest contributor to the overall burden of disease in 2016 (Scottish Burden of Disease study). In 2017, there were 6,727 deaths in Scotland where CHD was the underlying cause. The disease is caused when the heart's blood vessels, the coronary arteries, become narrowed or blocked and cannot supply enough blood to the heart.

Scotland has a high prevalence of the immediate risk factors associated with heart disease, such as smoking, obesity and high cholesterol. These immediate risk factors are influenced in turn by the conditions in which people live including access to care. Overall, it is estimated that around 6.4% of men and 4.0% of women are living with CHD (Scottish Health Survey 2017). Treating and preventing heart disease is a national clinical priority for Scotland.¹

The Scottish Heart Disease Statistics publication is produced annually to provide information on a range of different heart conditions in Scotland including:

- Coronary heart disease (also referred to as ischaemic heart disease, a collective term that includes angina, heart attack and heart failure)
- Acute myocardial infarction (a medical term for a heart attack)
- Heart failure
- Angina

and the different types of procedures used to diagnose and treat heart disease, including:

- Angiography: a procedure to examine the coronary arteries
- Angioplasty: or percutaneous transluminal coronary angioplasty, a procedure to widen narrowed coronary arteries
- Coronary artery bypass graft: a procedure to replace narrowed coronary arteries with grafts.

This update contains information on incidence (the occurrence of new cases) of heart disease, hospital activity, 30 day survival following first emergency admission, operations, GP prescribing and ambulance service activity up to the period 1 April 2017 - 31 March 2018, and mortality up to the period 1st January - 31st December 2017.

Information is presented at NHS Board level with some tables (activity and mortality) also available at Local Council Area level.

¹ Heart Disease Improvement Plan, August 2014
Main Points

- There has been a steady downward trend in deaths from coronary heart disease in Scotland and the rest of the UK over the last ten years. In Scotland, the mortality rate fell by 35.5% between 2008 and 2017. However, the rate of decline has slowed in the last five years.

- The rate at which new cases of coronary heart disease occur (the incidence) has fallen by 21.7% over the last decade, but there was a small increase in age-standardised incidence rates among both males and females between 2016/17 and 2017/18.

- Both incidence rates and mortality rates for heart attacks have decreased over the last 10 years, although the rate of hospital discharges has increased in this period. The percentage of people who survived 30 days or more following their first heart attack improved over the period 2008/09 to 2017/18 from 88% to 93%.

- Since 2014 there appears to have been a flattening in the rate of decline in the incidence of heart attacks. There were small increases in rates in 2016 and 2017, with increases slightly higher in females than males.

- For heart failure, incidence and mortality rates decreased over the 10 year period while there was a 23% increase in the hospital discharge rate, from 276 per 100,000 population in 2008/09 to 341 in 2017/18. The 30 day survival rate improved slightly over the same period.
Results and Commentary

Coronary Heart Disease (CHD)

CHD Summary

CHD is a collective term that includes angina, heart attack and heart failure. There was a general decrease in incidence, mortality and number of discharges from hospital for CHD over the last 10 years. However, there is evidence of a recent slowing in the decline of incidence and mortality.

Incidence

Incidence is the number of new cases in a defined population during a defined period of time. It reflects the risk of the disease. In the case of CHD, where incidence has been calculated on the basis of hospital admission or death, it also reflects to some extent admission policies and access to care. The number of new cases of CHD decreased over the past decade. The age and sex adjusted incidence rate decreased by 21.7% from 458 per 100,000 population in 2008/09 to 359 in 2017/18. There was a small increase in age-standardised incidence rates among both males and females between 2016/17 and 2017/18.

The incidence of CHD increases sharply with age. The age and sex adjusted incidence rate for the under 75 age group in 2017/18 was 230 per 100,000 population but for the over-75 age group, it was 1,663 per 100,000 population (see Table IC1).

Across all age groups presented in this publication, males were more likely than females to have a new diagnosis of CHD. The adjusted incidence rate has fallen more for females (24.6%) over the last ten years than for males (20.1%) (Table IC1).

Comparing mainland NHS Boards, in 2017/18 the adjusted incidence rate was lowest in NHS Lothian (301 per 100,000 population) and highest in NHS Ayrshire & Arran (422 per 100,000 population) (Table IC1).

Heart disease varies greatly between areas of greater or less deprivation. In Scotland the Scottish Index of Multiple Deprivation (SIMD) is used to measure area deprivation. It is a measurement of multiple deprivation which combines information on income, employment, education, housing, health, crime and geographical access. More information is provided in the glossary and on the Scottish Government website. For this publication, areas in Scotland were divided into five equal groups (quintiles) with decreasing levels of deprivation.

It can be seen from Figure 1 that all levels of deprivation show a decrease in incidence over the last 10 years. However, the most deprived quintile shows a rate that is 76% higher at 480 per 100,000 than that for the least deprived in 2017/18 (273 per 100,000). The incidence rate for the most deprived quintile has increased slightly since 2015/16, while incidence rates in less deprived areas have continued to fall (Table DC8).
Further analysis of the gap in incidence rate between the most and least deprived is presented in figure 2. This shows that, although the overall incidence rate has been falling over time, the gap between the most and least deprived has remained fairly constant, and has been trending upwards over the last two years for males. Over the whole period standardised incidence rates fell by 24% in the least deprived quintile, but by only 17% in the most deprived quintile.
Figure 2: Gap\(^1\) in Coronary heart disease incidence in Scotland due to deprivation\(^2\)

Age and sex adjusted incidence rates per 100,000 population\(^3\)

Notes:
1. Calculated using the slope index of inequality method
2. Uses 2009, 2012 and 2016 version of SIMD, dependent on the year
3. Rates are directly standardised to the 2013 European standard population

Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Mortality

The British Heart Foundation publishes comparisons of CHD mortality rates for the four countries of the UK (figure 3). The mortality rates in Scotland have been higher than England, Wales and Northern Ireland since 1985 but the absolute gap in mortality rates has narrowed over this time.

Figure 3: Coronary heart disease mortality in United Kingdom, England, Wales, Scotland and Northern Ireland

Age-adjusted mortality rates per 100,000 population

Notes: 1. Rates are directly standardised to the 2013 European standard population
In Scotland the age and sex adjusted mortality rate for CHD fell from 214 per 100,000 population in 2008 to 138 in 2017, a reduction of 35.5% over the last 10 years. The change in rate shows decreases in mortality rate each year since 2009 with the exception of 2015. The fall in 2017 was the smallest in the preceding 10 years. (Table MC1 and figure 4).

Figure 4: Coronary heart disease\(^1\): % change from previous year for all ages
Age and sex adjusted mortality rates per 100,000 population\(^2\)

Notes: 1. Analysis uses ICD-10 codes I20-I25
2. Rates are directly standardised to the 2013 European standard population
Data Source: National Records Scotland - Deaths and Population

Between 2008 and 2017 the reduction in adjusted mortality rates for CHD was higher for females (40.6%) than for males (32.7%). The difference in rates between men and women narrowed from 124 deaths per 100,000 population in 2008 to 95 deaths per 100,000 population in 2017.

Of the mainland NHS Health Boards, NHS Lanarkshire had the highest age and sex adjusted mortality rate in 2017 (148 per 100,000 population) while NHS Borders and NHS Forth Valley had the lowest rates (125 per 100,000 population). NHS Forth Valley had the largest percentage reduction in mortality rate among the mainland Health Boards between 2008 and 2017 (45.5%), while NHS Ayrshire & Arran had the lowest percentage reduction in the mortality rate between 2008 and 2017 (29.9%).

The Scottish Government publish a report on the long-term monitoring of health inequalities in Scotland. The report contains data on the impact of deprivation on CHD mortality among those aged 45-74 years and shows that, in 2017, the CHD mortality rate was five times greater in Scotland’s most deprived areas compared to the least deprived in this age group. Furthermore, this gap has been increasing steadily over time. Further information can be found on the [Scottish Government website](http://www.gov.scot).
Discharges

Hospital discharge rates reflect both the occurrence of new cases and also the frequency with which people are readmitted to hospital. It is a useful measure of the amount of NHS hospital activity related to the condition. In the last decade, there was a decreasing trend in the rate of discharges from hospital with CHD. Between 2008/09 and 2017/18, the age and sex adjusted discharge rate fell by 12.5% from 1,091 to 955 per 100,000 population. The actual number of discharges remained fairly steady averaging at over 49,000 discharges per year, reflecting the effect of an ageing population.

The adjusted discharge rate for females was less than half that for males in 2017/18 and there was a larger percentage decrease for males over the last decade (12.9% for males compared to 11.5% for females).

The percentage decrease in the rate was larger in the under-75 year age group (13.2%) than in the over-75 group (11.2%).

Comparing mainland NHS Boards, in 2017/18 the adjusted discharge rate was lowest in NHS Lothian (574 per 100,000 population) and highest in NHS Lanarkshire (1,368 per 100,000 population).

There was considerable variation between NHS Boards in trends over time. Between 2008 and 2017 discharge rates for CHD increased by 19.7% in NHS Ayrshire & Arran and by 17.3% in NHS Greater Glasgow & Clyde, while in other boards there were falls of over 35% (see Figure 5 below). Over the last five years Greater Glasgow & Clyde has continued to have a much larger rise in CHD discharge rate than other boards.
Figure 5: Coronary heart disease\textsuperscript{1}: % change from 2008/09 to 2017/18 in discharges from NHS Boards with coronary heart disease\textsuperscript{1}; Age and sex adjusted mortality rates per 100,000 population\textsuperscript{2}

Notes:
1. Analysis uses ICD-10 codes I20-I25.
2. Rates are directly standardised to the 2013 European standard population.

Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.

Tables AC1 and AC4 provide more detail at NHS Board and Council level.
Heart Attacks

Heart Attacks Summary

Myocardial infarction (or heart attack) is a major cardiovascular event caused by sudden obstruction to coronary arteries. The incidence and mortality rates for heart attacks have decreased over the last 10 years although the rate of discharges have increased in this period. Furthermore, the percentage of people who survived 30 days or more following their first emergency admission to hospital with a heart attack improved over the period 2008/09 to 2017/18.

Incidence

The age and sex adjusted incidence rate for heart attacks (the frequency of new cases) decreased by 13.0% from 259 per 100,000 population in 2008/09 to 225 in 2017/18 (Table IC2 and figure 6). The incidence rate increased slightly between 2007/08 and 2010/11. As previously noted, this is likely to be due to the introduction of more sensitive tests for diagnosis (see Appendix A1 for more information).

Figure 6: Heart attack\(^1\) Age and sex adjusted incidence rates per 100,000 population\(^2\)

Notes:  
1. Analysis uses ICD-10 codes I21-I22  
2. Rates are directly standardised to the 2013 European standard population.  
P. Data are provisional for 2017/18 and are subject to change in future analyses.  
Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Mortality

The age and sex adjusted mortality rate for heart attacks decreased substantially over the last ten years, falling by 34.7% from 121 per 100,000 population in 2008 to 79 in 2017 (Table MC1 and figure 7).

Figure 7: Heart attacks¹: all ages by sex
Age and sex adjusted mortality rates per 100,000 population²

Notes: 1. Analysis uses ICD-10 codes I21-I22
2. Rates are directly standardised to the 2013 European standard population
Data Source: National Records Scotland - Deaths and Population

Since 2014 there appears to have been a flattening in the rate of decline in the incidence of heart attacks. There were small increases in rates in 2016 and 2017, with increases slightly higher in females than males.
Discharges

Over the last 10 years the age and sex adjusted rate for hospital discharges with heart attack has increased by 15.9% from 425 per 100,000 population in 2008/09 to 493 per 100,000 population in 2017/18. More recently the number of discharges has remained relatively stable, with a decrease in the latest year of 5.8% (Table AC1 and Figure 8).

Figure 8: Discharges from hospital with a diagnosis of heart attack\(^1\); Age and sex adjusted discharge rates per 100,000 population\(^2\)

Notes:  
1. Analysis uses ICD-10 codes I21-I22.  
2. Rates are directly standardised to the 2013 European standard population.  
P. Data are provisional for 2017/18 and are subject to change in future analyses.  
Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.

The increase in the number of discharges from hospital with a diagnosis of heart attack since 2008/09 was likely to be due to a change in the way that heart attacks are diagnosed. The more sensitive troponin blood test is now routinely used to diagnose heart attacks. This means that some cases that might previously have been diagnosed as angina or another similar condition may now be classified as a heart attack. It is not possible to calculate the number of additional cases diagnosed because of the use of the troponin test. More information on this test is provided in the background information in Appendix A1.

Survival

The percentage of people who survived 30 days or more following their first emergency admission to hospital with a heart attack improved over the period 2008/09 to 2017/18 (Figure 13). The percentage who survived 30 days for both sexes combined increased from
88% in 2008/09 to 93% in 2017/18 (Table S1 and Figure 9). Although there has been no increase over the last two years. Over the same period, there was a narrowing of the gap in the survival between males and females from 7.1 to 2.9 percentage points.

For those aged 75 and over, 30 day survival increased from 76.6% in 2008/09 to 84.4% in 2017/18, although again there has been no increase over the last two years.

Figure 9: Heart attack¹; Percentage of patients surviving 30 days or more after first emergency admission²

Notes: 1. Analysis uses ICD-10 codes I21-I22
2. y-axis (percentage surviving 30 days) starts at 70% to enable clear comparison between sexes.
P. Data are provisional for 2017/18 and are subject to change in future analyses.

Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Heart Failure

Heart Failure Summary

Heart failure occurs when the heart cannot provide sufficient pump action to meet demand. The incidence and mortality rates decreased over the 10 year period while there was an increase in the discharge rate. The 30 day survival rate shows a slight increase over the same period.

Heart failure can be subdivided into two different types depending on what proportion of blood the heart is able to pump out - the ejection fraction (EF). Heart failure can be diagnosed either with preserved EF - where this is within the normal range - or reduced EF. There is work underway to improve the clinical coding of the ejection fraction. Once the coding is of a sufficient standard, information on ejection fraction will be included within this report.

Incidence

The age and sex adjusted incidence rate for heart failure decreased by 15.2% from 120 per 100,000 population in 2008/09 to 102 in 2017/18 (Figure 10). The rate fell each year from 2008/09 to 2014/15 before seeing a small increase in the latter three years. The 65 – 74 age group has the highest decrease in rate over the time period with a 25.7% fall.

Figure 10: Heart failure\(^1\); Age and sex adjusted incidence rates per 100,000 population\(^2\)

Notes: 1. Analysis uses ICD-10 code I50
2. Rates are directly standardised to the 2013 European standard population.
P. Data are provisional for 2017/18 and are subject to change in future analyses.
Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Mortality

The age and sex adjusted mortality rate for heart failure decreased substantially over the last ten years, falling by 53.4% from 13 per 100,000 population in 2008 to 6 in 2017 (figure 11).

**Figure 11: Heart failure\(^1\): all ages by sex**

Age and sex adjusted mortality rates per 100,000 population\(^2\)

Notes:  
1. Analysis uses ICD-10 code I50  
2. Rates are directly standardised to the 2013 European standard population  
Data Source: National Records Scotland - Deaths and Population

Discharges

The age and sex adjusted discharge rate increased by 23.3%, from 276 per 100,000 population in 2008/09 to 341 in 2017/18. The increase in the actual number of discharges over the last ten years can be seen here. (Figure 12 and Table AC1).
Figure 12: Number of discharges from hospital with a diagnosis of heart failure¹;

Notes: 1. Analysis uses ICD-10 codes I50.
Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.

Survival

In the last ten years, there was a small increase in the number of people surviving 30 days following a first emergency admission to hospital for heart failure. The percentage surviving 30 days increased from 86% to 87% during that time (Table S3 and figure 13). For those aged 75 and over, the percentage surviving 30 days increased from 82.5% to 84.5% over the same period.
Figure 13: Heart failure1;
Percentage of patients surviving 30 days or more after first emergency admission2

Notes: 1. Analysis uses ICD-10 codes I50
2. y-axis (percentage surviving 30 days) starts at 80% to enable clearer comparison between sexes.
P. Data are provisional for 2017/18 and are subject to change in future analyses.
Data Source: ISD SMR01 - discharges; National Records Scotland – Population
**Angina**

**Angina Summary**

Angina is chest pain on exertion as a result of CHD. There was a downward trend in the discharge rate from 2008/09 to 2017/18, but little change in the percentage of people surviving 30 days following admission to hospital.

**Discharges**

In the period 2008/09 to 2017/18, there was a general downward trend in the adjusted discharge rate for angina. The age and sex adjusted discharge rate was 278 per 100,000 population in 2008/09 falling to 122 in 2017/18, a decrease of 56.1% (Figure 14).

![Figure 14: Discharges from hospital with a diagnosis of angina; Age and sex adjusted discharge rates per 100,000 population](image)

**Notes:**
1. Analysis uses ICD-10 code I20.
2. Rates are directly standardised to the 2013 European standard population.
3. Data are provisional for 2017/18 and are subject to change in future analyses.

Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.

Tables **AC1** and **AC4** provide more detail at NHS board and Council level.

**Survival**

In the last ten years, the percentage of people surviving 30 days following a first emergency admission to hospital for angina has remained around the 98 to 99 mark.
Operations

In CHD, the blood supply to the heart is reduced or blocked. Two types of operation are used to improve the flow of blood to the heart. These are Coronary Artery Bypass Grafts (CABG) and angioplasties (Percutaneous Transluminal Coronary Angioplasty - PTCA).

A CABG is an operation in which a blood vessel from another part of the body or a synthetic graft is grafted to the coronary artery or arteries, to bypass narrowed sections and restore blood flow to the heart muscle. This involves a general anaesthetic and major open surgery.

An angioplasty involves passing a thin, hollow tube into the coronary arteries from an artery in the groin or arm. A device on the tube is then used to unblock the artery, and stretch the artery walls so that blood and oxygen can flow to the heart muscle. A small tube (or stent) may be left inside the vessel to ensure that it stays open. An angioplasty has the advantage that it is generally regarded as a less major procedure than a CABG.

Details of hospital activity for CABG, angioplasty, angiography and valve surgery by age, gender, type of admission and NHS board are given in Table OC1.

Coronary Artery Bypass Grafts

Over the last decade there was a decrease in the number of CABG operations. The age and sex adjusted hospital discharge rate decreased from 45 per 100,000 population in 2008/09 to 27 per 100,000 population in 2017/18, a reduction of 39.6% (Table OC1).

Angioplasties

The general downward trend in the number of CABG operations reflects the increasing use of angioplasties in the treatment of CHD. The age and sex adjusted hospital discharge rate for angioplasties increased from 135 per 100,000 population in 2008/09 to 161 in 2017/18, an increase of 19.4% (Table OC1).

CABG and angioplasty are collectively known as revascularisation procedures. The age and sex adjusted hospital discharge rate for revascularisation procedures as a whole increased slightly over the last 10 years from 180 per 100,000 population in 2008/09 to 188 in 2017/18, an increase of 4.6% (Table OC1 and figure 15). However, this slight increase should be set in the context of the marked fall in CHD incidence shown in figure 1.
Coronary Angiography

Coronary angiography is carried out to diagnose coronary artery disease and also as part of its treatment, for example when angioplasty is carried out.

For diagnostic angiographies (angiography with no associated angioplasty), there was a general downward trend in the last decade with a small increase for the latest year. The age and sex adjusted hospital discharge rate dropped from 254 per 100,000 population in 2008/09 to 197 in 2017/18, a reduction of 22.7% (Table OC1).

For diagnostic angiographies used to assist in treatment (angiographies done in association with angioplasty), the adjusted hospital discharge rate increased from 106 per 100,000 population in 2008/09 to 138 in 2017/18, an increase of 29.7%. This reflects the increased use of angioplasties in the treatment of CHD (Table OC1).

Revascularisation by Deprivation Quintiles

Over the last 10 years, use of revascularisation procedures has been increasing for people living in areas with all levels of deprivation, with the exception of people in the least deprived areas, for whom the rate has been fairly flat over that time period. Use of revascularisation is highest in the most deprived group and has increased by 10%, from 215 per 100,000 to 236 per 100,000. This data is summarised in figure 16 and table DC3.
Analysis of the gap due to deprivation in the use of revascularisation procedures shows that this has been increasing over time and is up 26% versus the same time 10 years ago (figure 17). Note that this gap is different from other inequalities described in this report in that the most deprived are more likely than the least deprived to have these procedures. This is consistent with the higher incidence of CHD seen in the most deprived group.
Figure 17: Gap\(^1\) in age-sex standardised\(^2\) revascularisation\(^3\) discharge rate in Scotland due to deprivation\(^4\)

Notes:
1. Calculated using the slope index of inequality method
2. Rates are directly standardised to the 2013 European standard population
3. Analysis uses OPCS codes K40-K46 (main A position only); K49, K50, K75 (any A position)

Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Cardiovascular Prescribing

Cardiovascular disease covers a range of conditions including heart disease, strokes and diseases of the arteries and veins. This section describes statistics on drugs prescribed for the treatment of cardiovascular disease.

Of the prescriptions dispensed in the community, GPs write the vast majority. The remainder are written by nurses, dentists or are written in hospital to be dispensed in the community. Information on those NHS prescriptions is compiled by ISD's Prescribing Team from data provided by Practitioner Services Division (PSD) of NHS National Services Scotland. PSD is responsible for the processing and pricing of all prescriptions dispensed in the community in Scotland. Note that these data exclude drugs dispensed within hospitals.

The overall cost of cardiovascular drugs reduced over the last ten years. The number of prescriptions has been relatively stable, although there has been an increase over the last few years. The changing price of statin drugs (used to prevent heart disease) partly explains this. Simvastatin, pravastatin and atorvastatin, three of the most widely used drugs, have come out of patent during this time, allowing equivalent lower cost non-branded (generic) drugs to be made available. Since then, the prices of these drugs have continued to decline, resulting in reduced overall costs, despite growth in the total volume prescribed. The increase in cost from 2014/15 is mainly due to the increased use of direct oral anti-coagulant drugs (DOACs).

In addition, lower prices have now been set for the non-branded drugs, resulting in further reduction in costs. The introduction of targets for quality improvement in General Practice, as part of the Quality and Outcomes Framework (QOF), is likely to have added to the growth in prescribing volume of statins by providing incentives to identify and treat those at high risk of cardiovascular disease.

The data presented here are identical to those in the prescribing section of the Stroke Statistics publication. This is because many drugs can be used for the treatment of both stroke and heart disease and it is not possible from available data to distinguish whether a drug was used to treat stroke or heart disease.

Number of patients

From 2009/10 - 2017/18, the number of patients have risen from 1.26 million to 1.40 million, an increase of 11.2% (Table G1 and figure 18). From 2009 to 2017, the Scottish population increased by 3.7% in this time, and the overall population demographic is ageing, which will drive the increase in addition to the points above.
Figure 18: Volume and cost of cardiovascular prescribing, financial years ending 31 March 2008-2017

Data Source: Prescribing Information System

**Gross Ingredient Costs**

Gross ingredient cost indicates the total cost of a prescription drug. The overall cost of prescriptions dispensed for cardiovascular-related drugs have increased each year from 2014/15, after falling for each year prior to this from 2009/10 – 2013/14. As mentioned before, this increase in cost is mainly due to the increased use of direct oral anti-coagulant drugs (DOACs). Over the last nine years, the gross ingredient cost has fallen by 23.4%.

Cardiovascular related drugs form approximately 11.7% of the total gross ingredient cost in Scotland (see [Prescription Cost Analysis 2017/18](#)).

**Sacubitril / Valsartan**

Entresto (a combination of valsartan and sacubitril) is used in adult patients for treatment of symptomatic chronic heart failure with reduced ejection fraction. [Table G3](#) and figure 19 show that the number of patients using this treatment has increased greatly from 2016 to the present. Note that the figure for 2018 includes only the period January to October.
Figure 19: Sacubitril / Valsartan prescribing, calendar years 2016 - 2018

The GP Prescribing topic area of the Heart Disease web pages provides links to detailed tables relating to cardiovascular prescribing.
Primary Care Activity

Previous publications included information from the Quality & Outcomes Framework (QOF) data. Up till 2015/16 this was the main source of data relating to primary care activity for heart disease. This was an estimate of the prevalence of heart-related conditions recorded by practices in the form of disease registers. ISD no longer publish this information as the QOF was decommissioned.

Primary Care Information (PCI) are dashboards containing data at GP Practice level, with comparisons against other GP Practices and Scotland. Included in the dashboards are demographics, disease prevalence, Outpatients, SMR01 and Prescribing data. Prevalence data is available for the last three financial years for CHD and Heart Failure at Scotland level and the figures show a fall in both CHD and Heart Failure prevalence over the three year period. The CHD prevalence went from 4.11 per 100 people in 2015/16 to 4.03 in 2016/17 and then to 3.96 in 2017/18. Similarly, the heart failure prevalence fell from 0.85, to 0.84 to 0.83 over the same period. Further information and operational guidance on how to access and then use the dashboards can be found on the ISD website: http://www.isdscotland.org/Health-Topics/General-Practice/Primary-Care-Information-and-TQA/

In future, it is anticipated that further detailed information on heart disease will be available from the Scottish Primary Care Information Resource (SPIRE). This will supersede the Practice Team Information programme which collected data up to 2012/13. SPIRE is presently in development and will build on the data collected for PTI by including richer data from a greater number of practices and will help to inform public health surveillance, research and data linkage.

Ambulance Service Activity

Information on Scottish Ambulance Service (SAS) activity is collected for (a) incidents where a SAS resource attended and (b) conveyances where a patient was conveyed to hospital. More details are included in the glossary and in the definitions for table SC1. The SAS activity data gives an indication of demand on unscheduled care services (also including NHS24 and A&E) for people with suspected heart disease problems.

The data presented in tables SC1 are for the last nine years and by health board of the location of the incident.

SAS Diagnosis - Heart Problems

The full list of conditions included in the heart problems diagnosis group is given in Table SC1. They include cardiac history, abnormal breathing, chest pains, severe respiratory distress, firing of an automatic implantable cardioverter defibrillator (or AICD, a device that monitors a person’s heart rate) and abnormal heart rate. Note that the final diagnosis codes used here are not compatible with ICD10 diagnosis codes used elsewhere in this publication.

In the last nine years, the number of incidents increased from 3,273 to 5,303, although the last year saw a large fall from 7,055 to the 5,303. The increase in the number of conveyances followed a similar pattern, 3,024 to 4,706 although there was a fall from 6,041 to the 4,706 in the last year. (Table SC1 and Figure 20).
Figure 20: Scottish Ambulance Service Activity

Number of incidents and conveyances with a heart problem diagnosis

Data Source: SAS Data Warehouse

Future potential analysis
Heart failure can be subdivided into two different types depending on what proportion of blood the heart is able to pump out - the ejection fraction (EF). Heart failure can be diagnosed either with preserved ejection fraction - where this is within the normal range - or reduced ejection fraction. There is work underway to improve the clinical coding of the ejection fraction, which should allow future analysis to be carried out by ejection fraction.

Further information is available at [http://www.heartfailurehubscotland.co.uk/information-and-coding/](http://www.heartfailurehubscotland.co.uk/information-and-coding/)

In addition, a population classification has been developed by the Health & Social Care team at ISD to map patient pathways. There is the potential next year for us to include in this publication some information on pathways for individuals who had heart failure noted as their main condition.

Finally it may be worth investigating new CHD cases by ethnicity. CHD is harder to treat in certain ethnic groups and if any further analysis on this was possible then it may be worth including in future publications.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ACS</td>
<td>Acute Coronary Syndrome - an inclusive term referring to AMI (see below) and unstable angina.</td>
</tr>
<tr>
<td>Acute Hospital</td>
<td>Acute Hospital Care/Activity includes services such as: consultation with specialist clinicians; emergency treatment; routine, complex and life saving surgery; specialist diagnostic procedures; close observation and short-term care of patients. 'Acute' hospital care includes activity occurring in major teaching hospitals, district general hospitals and community hospitals but excludes obstetric and psychiatric services.</td>
</tr>
<tr>
<td>AICD</td>
<td>Automatic implantable cardioverter defibrillator, a device that monitors a person’s heart rate. It is generally implanted into heart failure patients to speed or slow down their heart rate.</td>
</tr>
<tr>
<td>AMI (also referred to as Heart Attack)</td>
<td>Acute myocardial infarction (heart attack): the result of sudden complete blockage of the blood supply to part of the heart.</td>
</tr>
<tr>
<td>Angina pectoris</td>
<td>Chest pain on exertion as a result of coronary heart disease.</td>
</tr>
<tr>
<td>Angiography</td>
<td>A procedure in which under X-ray guidance a long, thin tube is threaded into the coronary arteries via a blood vessel in the groin or arm. A dye, which can be seen on the X-ray screen, is injected, showing the pattern of the coronary arteries, and demonstrating where the artery is narrowed.</td>
</tr>
<tr>
<td>Angioplasty</td>
<td>A procedure performed to treat coronary heart disease that involves passing a thin, hollow tube into the coronary arteries under X-ray guidance, from an artery in the groin or arm (under local anaesthetic). A device on the tube is then used to unblock the artery, and stretch the artery walls so that more blood and oxygen can flow to the heart muscle. The full name of the procedure is percutaneous transluminal coronary angioplasty (PTCA).</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>Atrial Fibrillation</td>
<td>A heart condition where the upper chambers of the heart (atria) contract randomly, causing an irregular and abnormally fast heart rate.</td>
</tr>
<tr>
<td>CABG</td>
<td>Coronary artery bypass graft. An operation in which a blood vessel from another part of the body is grafted to the coronary artery or arteries, to bypass narrowed sections and restore blood flow to the heart muscle.</td>
</tr>
<tr>
<td>Cardiovascular disease (CVD)</td>
<td>Cardiovascular disease describes disease of the heart or blood vessels, including strokes and other related conditions.</td>
</tr>
<tr>
<td>CHD (also referred to as Ischaemic Heart Disease)</td>
<td>Coronary heart disease. Disease of the coronary arteries that supply the heart. This includes acute myocardial infarction, angina and most cases of heart failure.</td>
</tr>
<tr>
<td>Conveyance</td>
<td>A SAS resource has recorded an at hospital time, indicating the patient was conveyed to hospital.</td>
</tr>
<tr>
<td>Datazone</td>
<td>A small geographical area with a population between 500-1,000 household residents. They are based on groups of 2001 Census output areas.</td>
</tr>
<tr>
<td>Day case</td>
<td>This is when a patient makes a planned attendance to a specialty for clinical care, and requires the use of a bed or trolley in lieu of a bed.</td>
</tr>
<tr>
<td>Discharge</td>
<td>Discharges include transfers to other specialties/significant facilities and hospitals as well as routine discharges home or deaths in hospital. A patient could have more than one discharge in a year.</td>
</tr>
<tr>
<td>Emergency</td>
<td>An emergency admission occurs when, for clinical reasons, a patient is admitted at the earliest possible time after seeing a doctor.</td>
</tr>
<tr>
<td>ePRF</td>
<td>Electronic patient record form used by ambulance crews to record important patient information, including diagnostic data and treatment provided. This information can be accessed electronically by hospital staff.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>European age-standardised rate</td>
<td>The rate that would have been found if the population in Scotland had the same age-composition as the hypothetical standard European population. The 2013 European Standard Population (ESP2013) has been used to calculate EASRs within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Reports published before 2015 used ESP1976 to calculate EASRs. Figures using ESP1976 and ESP2013 are not comparable.</td>
</tr>
<tr>
<td>Final diagnostic code (SAS)</td>
<td>Diagnosis codes recorded by SAS resource after treating the patient.</td>
</tr>
<tr>
<td>Generic drugs</td>
<td>When the patent expires on a branded drug, the manufacturer loses exclusive rights to produce it. Generic drugs are non-branded versions produced by different manufacturers that produce equivalent clinical effects. Normally, the differences in formulation, and the small variation in the amount of drugs absorbed, make no difference clinically. Generic drugs are generally cheaper than their branded equivalents.</td>
</tr>
<tr>
<td>Gross Ingredient Cost (GIC)</td>
<td>Cost of drugs and appliances reimbursed before deduction of any dispenser discount (note: this definition differs from other parts of the UK).</td>
</tr>
<tr>
<td>Heart attack</td>
<td>The result of sudden complete blockage of the blood supply to part of the heart. Also known as acute myocardial infarction (AMI).</td>
</tr>
<tr>
<td>Heart failure</td>
<td>Failure of the heart as a pump, the commonest cause being coronary heart disease.</td>
</tr>
<tr>
<td>Heart problems/AICD</td>
<td>A final diagnostic code group used by SAS. This includes abnormal breathing, cardiac history, changing colour, chest pain, clammy, cocaine taken, difficulty speaking between breaths, firing of AICD, low/high heart rate, just resuscitated or defibrillated, not alert, severe respiratory distress.</td>
</tr>
<tr>
<td>Ischaemic Heart Disease (IHD) – also referred to as</td>
<td>Disease that involves inadequate blood supply to the heart and in practice is synonymous with coronary heart disease.</td>
</tr>
</tbody>
</table>
CHD

Incidence

Incidence refers to the number of new cases of a condition in a defined population during a defined period and is typically expressed as the number of new cases per 100,000 population per year (or other suitable units). In this publication, an incident case is defined as the first admission to hospital (or death without a hospital admission). A first admission is defined as an admission where there has been no admission for the same condition in the previous 10 years. For example, a patient might be admitted with coronary heart disease in 2004 and again in 2005 for the same diagnosis. For the purpose of counting incidence, only the hospital admission in 2004 would be counted. The 2005 admission would not be counted because the previous admission occurred less than 10 years previously. First hospital admission is a reasonable measure of incidence for AMI and most forms of acute CHD since most cases are treated in hospital.

Incident

An incident where a SAS resource attends and record an at scene time.

Inpatient

This is when a patient occupies an available staffed bed in a hospital and either remains overnight whatever the original intention or is expected to remain overnight but is discharged earlier.

Items prescribed

Prescription items are prescribed and dispensed in the community. GPs write the vast majority of these prescriptions, with the remainder written mainly by nurses and dentists. The totals for items prescribed include prescriptions written in hospitals and dispensed in the community, but exclude drugs dispensed within hospitals themselves.

Mainland Health Boards

Health Boards in Scotland excluding the three Island Health Boards (Orkney, Shetland and Western Isles)

Mortality rate

The number of deaths as a rate per 100,000 population per year.

Outpatient

A patient who attends (outpatient attendance) a consultant or other medical clinic or has an arranged meeting with a consultant or a
senior member of their team out with a clinic session.

**Prevalence rate**

The proportion of people with a given condition over a period of time (e.g. a year).

**PTCA**

Percutaneous Transluminal Coronary Angioplasty. The full name for an angioplasty.

A procedure performed to treat coronary heart disease that involves passing a thin, hollow tube into the coronary arteries under X-ray guidance, from an artery in the groin or arm (under local anaesthetic). A device on the tube is then used to unblock the artery, and stretch the artery walls so that more blood and oxygen can flow to the heart muscle.

**PTI**

Practice Team Information (PTI) collects information from a 6% sample of Scottish general practices (60 practices in 2012/13). The population in the sample is a reasonable reflection of the Scottish population with regard to age, gender and deprivation. The information collected is on face-to-face consultations between patients and a GP or practice nurse. 2012/13 was the last year PTI data was collected since it is being superseded by SPIRE (see below).

**QOF**

The Quality & Outcomes Framework (QOF) represents one of the main sources of potential income for general practices (GP surgeries) across the UK. It is a major part of the new General Medical Services (GMS) contract, introduced on 1st April 2004. Participation by general practices in the QOF is voluntary. For those that do participate, the QOF measures achievement against a range of evidence-based indicators, with points and payments awarded according to the level of achievement.

**Quintiles**

Deprivation quintiles each contain 20% of the total population in Scotland. Deprivation quintile 1 contains the 20% of the population living in the most deprived datazones, while quintile 5 contains the 20% of the population living in the least deprived datazones.

**Revascularisation**

An inclusive term referring to CABG and angioplasty procedures.
SAS  The Scottish Ambulance Service.

SIMD  Deprivation for individuals is estimated from aggregate data derived from the census and other routine sources. These are used to estimate the deprivation of small geographical areas. The Scottish Index of Multiple Deprivation (SIMD) has seven domains (income, employment, education, housing, health, crime, and geographical access) at datazone level, which have been combined into an overall index to pick out area concentrations of multiple deprivation. See notes in tables as to which version of SIMD is used.

SMR01  An SMR01 is generated when a patient is discharged from hospital but also when a patient is transferred between hospitals, significant facilities, specialties or to the care of a different consultant.

SPIRE  Scottish Primary Care Information Resource (SPIRE) is a national GP information service being developed. It is open to all consenting GP practices in Scotland and will create a potential source of data for analysis.

Standardisation  See European age standardised rates.

30 day survival  Percentage of people who survive 30 days following a first emergency admission to hospital for a specific condition.

Unstable angina  Unstable angina is a form of acute coronary syndrome (ACS).
# List of Tables

<table>
<thead>
<tr>
<th>Table No.</th>
<th>Name</th>
<th>Time period</th>
<th>File &amp; size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC1</td>
<td>Heart disease discharges by diagnosis, health board, admission type, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [4,090kb]</td>
</tr>
<tr>
<td>AC4</td>
<td>Heart disease discharges by diagnosis, council area, admission type, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [10,983kb]</td>
</tr>
<tr>
<td>IC1</td>
<td>Coronary heart disease incidence by health board, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [266kb]</td>
</tr>
<tr>
<td>IC2</td>
<td>Heart attack incidence by health board, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [263kb]</td>
</tr>
<tr>
<td>IC3</td>
<td>Heart failure incidence by health board, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [260kb]</td>
</tr>
<tr>
<td>OC1</td>
<td>Numbers of Procedures by health board, age group and sex</td>
<td>2008/09-2017/18</td>
<td>Excel [5,559kb]</td>
</tr>
<tr>
<td>S1</td>
<td>30-day survival following first emergency admission for heart attack and unstable angina</td>
<td>2008/09-2017/18</td>
<td>Excel [51kb]</td>
</tr>
<tr>
<td>S3</td>
<td>30-day survival following first emergency admission for heart failure</td>
<td>2008/09-2017/18</td>
<td>Excel [41kb]</td>
</tr>
<tr>
<td>MC1</td>
<td>Heart disease mortality by cause, health board, age group and sex</td>
<td>2008-2017</td>
<td>Excel [738kb]</td>
</tr>
<tr>
<td>MC4</td>
<td>Heart disease mortality by cause, council area, age group and sex</td>
<td>2008-2017</td>
<td>Excel [1,285kb]</td>
</tr>
<tr>
<td>DC1</td>
<td>Coronary heart disease and deprivation; standardised mortality ratios (SMR) by age group and SIMD deciles</td>
<td>2013-2017 Combined</td>
<td>Excel [45kb]</td>
</tr>
<tr>
<td>DC3</td>
<td>Trends in revascularisation activity by SIMD quintile</td>
<td>2008/09-2017/18</td>
<td>Excel [47kb]</td>
</tr>
<tr>
<td>DC4</td>
<td>Trends in heart disease hospital activity by SIMD quintile</td>
<td>2008/09-2017/18</td>
<td>Excel [23kb]</td>
</tr>
<tr>
<td>DC7</td>
<td>Trends in coronary heart disease mortality by SIMD quintile</td>
<td>2008-2017</td>
<td>Excel [48kb]</td>
</tr>
<tr>
<td>DC8</td>
<td>Trends in coronary heart disease incidence by SIMD quintile</td>
<td>2008-2017</td>
<td>Excel [58kb]</td>
</tr>
<tr>
<td>G1</td>
<td><strong>Cardiovascular prescribing - costs and number of prescriptions</strong></td>
<td>2009/10-2017/18</td>
<td>Excel [47kb]</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------</td>
<td>-----------------</td>
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</tr>
<tr>
<td>G3</td>
<td><strong>Sacubitril / Valsartan – number of patients by calendar year</strong></td>
<td>2016-2018</td>
<td>Excel [52kb]</td>
</tr>
<tr>
<td>SC1</td>
<td><strong>Heart problems – number of SAS incidents and conveyances by health board and sex</strong></td>
<td>2009/10-2017/18</td>
<td>Excel [46kb]</td>
</tr>
</tbody>
</table>
Contact

Garry Hecht
Principal Information Analyst
garryhecht@nhs.net
0141 282 2293

Gavin Clark
Senior Information Analyst
gavin.clark2@nhs.net
0141 282 2333

Douglas Clark
Information Analyst
douglasclark@nhs.net
0131 275 7182

Heart Disease and Stroke Mailbox
nss.isdhdstroke@nhs.net

Further Information

Further Information can be found on the ISD website.
For more information on heart disease see the heart disease area of our website. For related information on stroke, please see the stroke pages.
The next release of this publication will be in January 2020.

Rate this publication

Please provide feedback on this publication to help us improve our services.
Appendices

Appendix 1 – Background information

Clarification of Terminology

Different terms can be used when talking about heart disease conditions and operations and sometimes these are interchangeable. For consistency the following terms are used throughout this report.

<table>
<thead>
<tr>
<th>Term used in report</th>
<th>Also known as</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angioplasty</td>
<td>Percutaneous transluminal coronary angioplasty (PTCA)</td>
<td>A procedure performed to treat coronary heart disease that involves passing a thin, hollow tube into the coronary arteries under X-ray guidance, from an artery in the groin or arm (under local anaesthetic). A device on the tube is then used to unblock the artery, and stretch the artery walls so that more blood and oxygen can flow to the heart muscle.</td>
</tr>
<tr>
<td>Coronary heart disease</td>
<td>Ischaemic heart disease</td>
<td>Disease of the coronary arteries that supply the heart. This includes acute myocardial infarction, angina and most cases of heart failure.</td>
</tr>
<tr>
<td>Heart attack</td>
<td>Acute myocardial infarction</td>
<td>The result of sudden complete blockage of the blood supply to part of the heart.</td>
</tr>
<tr>
<td>Heart failure</td>
<td>Cardiac failure</td>
<td>The failure of the heart to function properly as a pump.</td>
</tr>
</tbody>
</table>

Standardisation

Apparent differences in disease rates between areas or deprivation groups may be partially or entirely due to the fact that one population is different from the other in age structure. For example, areas with a larger proportion of younger people are unlikely to have as high levels of mortality as areas with larger proportions of older people. Therefore, if we don’t adjust for these differences, we may draw the wrong conclusion about the health of an area simply because of the age-structure of the population.

Information in this publication has been ‘standardised’ using the 2013 European standard population to calculate the European Age Standardised Rates (EASRs). EASRs make allowances for differences in the age and sex structure of the population between areas or time periods and allow fairer comparisons to be made.
Risk factors associated with CHD

The main preventable risk factors for CHD are smoking, high blood pressure, low levels of physical activity and a poor diet. There is also a strong relationship between social deprivation and these risk factors.

Detailed information on the prevalence of these risk factors is available from the Scottish Health Survey. The results of the Scottish Health survey can be found on the Scottish Government website.

Policy Context

NHS Scotland service provision for patients with CHD operates within the framework of Scottish Government policy. A chronology of policy documents that steer service provision for CHD and stroke patients is outlined below.

Coronary heart disease & stroke task force (2001)

Coronary heart disease & stroke strategy for Scotland (2002)


Delivering for Health (2005) (Scottish Government response to the "Kerr" report "Building a health service fit for the future")

Better health, better care - action plan. (2007)


Better heart disease & stroke care action plan (2009)

Heart disease improvement plan (2014)

Data Collection

Hospital Activity data

Hospital activity data are collected across NHS Scotland and are based on nationally available information routinely drawn from hospital administrative systems across the country. Hospital activity data includes inpatient and day case activity occurring in major teaching hospitals, district general hospitals and community hospitals but excludes obstetric and psychiatric services. This data collection is known as SMR01.
**Tests for Heart Attacks (AMI)**

The introduction of more sensitive tests such as troponin for the diagnosis of CHD - and the incorporation of troponin (and other biomarker) levels in definitions of heart attacks, has affected the diagnosis of heart attack over recent years. Since it is likely that cases previously undiagnosed would now be correctly determined as heart attack, variations in the definition, recording and coding of heart attack may affect inter-Health Board comparisons of heart attack incidence, and post-heart attack survival. ISD issued coding guidance in June 2007 covering the recording of troponin levels in acute coronary syndromes- see Coding Guidelines Number 20.

**Troponin**

Troponin is a protein that is produced by the body when heart muscle is damaged. During a heart attack, the levels of certain types of troponin increase in the bloodstream. Troponin levels in the blood can therefore be used to determine whether a heart attack has taken place. Prior to the introduction of troponin testing, less severe heart attacks may have been diagnosed as unstable angina.

**Prescribing data**

Practitioner Services (PSD), a division of NHS National Services Scotland, processes all NHS prescriptions for payment of pharmacists, dispensing doctors and appliance suppliers. Hospital dispensed prescriptions are NOT included in the figures.

Information on NHS prescriptions dispensed in the community in Scotland is compiled by ISD’s Prescribing Team from data provided by Practitioner Services Division (PSD). PSD are responsible for the processing and pricing of all prescriptions dispensed in Scotland.

**Deaths data**

Information on the quality of National Records of Data on Deaths can be found on the National Records of Scotland website.

**Data Completeness**

The hospital activity figures in this publication are sourced from SMR01 records and the levels of completeness of the SMR01 data are deemed to be fit for publication (99% of the expected figure at the time of extraction).

Information on SMR01 data completeness can be found on the Hospital Records Data Monitoring SMR Completeness web page, while information on the timeliness of SMR01 data submissions can be found on the SMR Timeliness web page. Details on completeness can also be found within the excel data files.
Data Quality

The ISD Data Quality Assurance (DQA) team is responsible for evaluating and ensuring SMR datasets are accurate, consistent and comparable across time and between sources. Details of the quality assurance process for SMRs can be found are published on the DQA web page.

The DQA team’s previous projects web page contains details of past Data Quality Assurance Assessments, including final reports and findings.

The most recent report “Assessment of SMR01 Data 2010-2011” [350kb] was published in May 2012. This report includes feedback on clinical coding accuracy, sensitivity and completeness within defined groups and includes commonly encountered conditions including Ischaemic Heart Disease, Cerebrovascular Disease and Myocardial Infarction.

An earlier report, “Towards Better Data from Scottish Hospitals: An Assessment of SMR01 and Associated Data 2004-2006” [1.77Mb], contains sub-sections on specific conditions and interventions, including some related to CHD.

In hospital discharge data, clinical information for diagnoses and operations/interventions is currently recorded using ICD10 (the International Classification of Diseases 10th Revision maintained by the World Health Organization) and OPCS4 (the Office of Population Censuses & Surveys 4th Revision Classification of Surgical Operations and Procedures maintained by NHS Connecting for Health ( CfH)).


For an extract of OPCS4 codes related to the heart see the file OPCS4 Classification of Surgical Operations and Procedures (Heart) [91kb] for details of the heart operations and procedures in its Chapter K. This document should be read in conjunction with the Information Standards Board document Summary of Changes from OPCS-4.6 to OPCS-4.7 for details of the latest updates to the coding classification.

Supporting information from ISD Scotland

Further information relating to heart disease and stroke is published by ISD Scotland:

1. ScotPHO – the Health and Well Being Profiles produce charts at NHS Board and Local Authority on premature mortality from CHD and CVD and patients hospitalised with CHD and CVD.

2. The Hospital Standardised Mortality Ratios updated quarterly produce information on deaths in hospitals participating in the Scottish Patient Safety Programme. Deaths will include those dying from heart disease and stroke.
3. Detailed tables on number/incidence of hospital episodes by diagnosis, including diseases of the circulatory system and number of procedures in main hospitals, including those associated with heart disease. This is available as part of the Hospital Care topic on the ISD website.

Independent and voluntary sector

Although there are a number of independent and voluntary sector organisations involved in the provision of information and services to CHD patients, two of the main ones, with links to NHSScotland, are the British Heart Foundation (BHF) and Chest, Heart & Stroke Scotland (CHSS). Both organisations are involved in the funding of research and provide extensive information for patients and carers on their respective web sites at http://www.bhf.org.uk/ and http://www.chss.org.uk/

Comparisons

UK comparisons

Hospital activity data relating to CHD in England, Wales and Northern Ireland are available separately. Please note that these figures are sometimes not directly comparable with published data from Scotland due to differences in recording and definitions. Prior to making comparisons, please check the definitions carefully for each of the sources.

England: NHS Hospital Episode Statistics (HES)

Wales: Health and care statistics

Northern Ireland: Hospital Statistics & Research

Mortality from specific causes, including heart disease, in England and Wales is available from the Office for National Statistics.

International comparisons

The Scotland and European Health for All database allows users to make comparisons of trends in CHD mortality in Scotland with countries in the rest of Europe. These include standardised death rates and hospital discharges for coronary heart disease and cerebrovascular disease. European comparisons indicate that while CHD mortality rates have fallen, Scotland still compares unfavourably with most other European countries.

Further Information

Our "Links to other sources" section offers a few examples of other information sources.
### Appendix 2 – Publication Metadata

<table>
<thead>
<tr>
<th>Metadata Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publication title</td>
<td>Scottish Heart Disease Statistics</td>
</tr>
<tr>
<td>Description</td>
<td>Annual update of heart disease statistics. Update including hospital activity, incidence, operations, 30 days survival, mortality, deprivation, prescribing, primary care and ambulance service activity.</td>
</tr>
<tr>
<td>Theme</td>
<td>Health and Social Care</td>
</tr>
<tr>
<td>Topic</td>
<td>Conditions and Diseases</td>
</tr>
<tr>
<td>Format</td>
<td>Excel workbooks</td>
</tr>
</tbody>
</table>
| Data source(s)     | Scottish Morbidity Record 01 (SMR01)  
National Records of Scotland (NRS) Death Registrations and Population Estimates  
Prescribing Information System (PIS)  
Scottish Index of Multiple Deprivation (Scottish Government)  
SAS Data Warehouse  
Quality Outcomes Framework (QOF). |
| Date that data are acquired | November 2018 |
| Release date       | 29 January 2019 |
| Frequency          | Annual |
| Timeframe of data and timeliness | 10 years annual data up to 31-Mar-2018 (hospital activity, operations, incidence, survival), 31-Dec-2017 (mortality). 9 years annual data up to 31-Mar-2018 (prescribing and ambulance service). |
| Continuity of data | Mortality data: Reports data since 2007. There was a change to the coding of causes of death by National Records of Scotland between 2010 and 2011. The overall scale of change was small. For full details, please consult the [NRS website](#).  
Population estimates: Small corrections were made to the 2012-2014 mid-year population estimates by NRS. The errors had no effect on the population for Scotland and a very small effect on health board and council area populations. For full details, please consult the [NRS website](#).  
Prescribing data: The definition of the main measures such as gross ingredient cost and number of items are unchanged over this period. Types and value of dispensing fees are agreed the Scottish Government and set annually. Details can be found in the Scottish... |
Drug Tariff and in **Primary Care circulars** issued by the Government. Drug products are first licensed as proprietary medicines but generic versions often appear once the original patent expires. This can affect the price and uptake of these drugs. The Scottish Government sets the reimbursement price of generic drug products via the **Scottish Drug Tariff** which is updated and issued quarterly.

Hospital admissions: The introduction of more sensitive tests for the diagnosis of acute coronary ischaemia - e.g. troponin - and the incorporation of troponin (and other biomarker) levels in definitions of acute myocardial infarction (AMI), may have affected the recording of AMI over recent years. Variations in the definition, recording and coding of AMI may affect inter-hospital and inter-Health Board comparisons of AMI incidence, prevalence and post-AMI survival. ISD issued coding guidance in June 2007 covering the recording of troponin levels in acute coronary syndromes - see **Coding Guidelines Number 20**.

<table>
<thead>
<tr>
<th>Revisions statement</th>
<th>This publication contains planned revisions. More details below.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revisions relevant to this publication</td>
<td>Historical mortality figures at health board level have been updated. The changes are minor and relate to a small number of death registrations that had not previously been assigned to a health board. Figures at Scotland and council area level are unaffected.</td>
</tr>
<tr>
<td>Concepts and definitions</td>
<td>See <strong>Glossary</strong> and <strong>Appendix A1</strong> contained within this report.</td>
</tr>
<tr>
<td>Relevance and key uses of the statistics</td>
<td>Uses of the data include:</td>
</tr>
<tr>
<td></td>
<td>To allow NHS Boards and the Scottish Government to compare activity levels nationally;</td>
</tr>
<tr>
<td></td>
<td>To provide health intelligence and performance information for NHS Boards and the Scottish Government;</td>
</tr>
<tr>
<td></td>
<td>To provide information to support answers to Parliamentary Questions;</td>
</tr>
<tr>
<td></td>
<td>To support the information requirements of voluntary sector organisations such as British Heart Foundation (BHF), including research and media activity;</td>
</tr>
<tr>
<td></td>
<td>To allow members of the public to readily access information on heart disease;</td>
</tr>
<tr>
<td></td>
<td>To respond to information requests for a variety of customers e.g. researchers, charities, public companies, Freedom of Information requests;</td>
</tr>
<tr>
<td></td>
<td>To assist students and universities conducting studies on topics such</td>
</tr>
</tbody>
</table>
as heart disease;

To assist private companies interested in heart disease information in Scotland, such as pharmaceutical companies and consultancy companies.

| Accuracy       | Mortality: For coding of deaths see the website of the [National Records of Scotland](https://www.nrscotland.gov.uk). Reported data are compared to previous years’ figures and to expected trends.  
Prescribing: The data is sourced from a payment system and routine monthly checks are carried out by PSD on a random sample of approximately 5% of prescription payments. These check all data captured for payment and the accuracy of the payment calculation and have a target accuracy of 98% which is routinely met. Data that is captured but is not mandatory for payment purposes can be of lower quality; principally this includes the prescriber code which links a prescription back to the individual prescriber e.g. GP and their organisation including NHS Board. Routine monitoring of unallocated prescriptions is carried out and correct codes are applied before publication. This ensures that unallocated prescriptions account for under 2% of all prescriptions. For remaining unallocated prescriptions, the prescribing NHS Board is assumed to be the same as the dispensing NHS Board.  

Hospital Activity: SMR01 data are subjected to validation on submission. The figures are compared to previous years’ figures and to expected trends. The SMR01 data are also assessed for accuracy by ISD’s Data Quality Assurance team – see Appendix A1. |
| Completeness   | Mortality: Death registrations are deemed to be complete and finalised.  
Prescribing: The Prescribing Information System holds information on 100% of NHS Scotland prescriptions dispensed within the community and claimed for payment by a pharmacy contractor (i.e. pharmacy, dispensing doctor or appliance supplier). It does not include data on prescriptions dispensed but not claimed (likely to be very small) or prescriptions prescribed but not submitted for dispensing by a patient. Some research has estimated these latter prescriptions to account for around 6% of all prescriptions issued to patients. It is not possible to determine from payment data how much of the medicine dispensed to patients is actually taken in accordance with dosage instructions. |
Hospital Activity: Levels of SMR01 submission are deemed to be 98% complete compared to expected levels of submission at time of extraction.

Comparability

Prescribing: The main measures of drug ingredient cost and volumes of items dispensed in the community are comparable across the UK countries. However, it should be noted that the Gross Ingredient Cost (GIC) within Scotland is equivalent to the Net Ingredient Cost (NIC) in England, i.e., the reimbursement cost of drugs before any pharmacy discounts are applied. Also, each country determines its own dispensing fees based on separate contractual arrangements with dispensing contractors in each country. A common formulary called the **British National Formulary** (BNF) is used to classify drugs based on therapeutic use.

Hospital activity data relating to coronary heart disease in England, Wales, and Northern Ireland are available separately. Please note that these figures are sometimes not directly comparable with published data from Scotland due to differences in recording and definitions. Prior to making comparisons, please check the definitions carefully for each of the sources.

England: [NHS Hospital Episode Statistics (HES)](https://www.hes.nhs.uk/)

Wales: [Health and care statistics](https://www.gov.wales/topics/health-care-statistics/)

Northern Ireland: [Hospital Statistics & Research](https://www.hssni.gov.uk/)

Mortality: Deaths from specific causes, including heart disease, in England and Wales is available from the [Office for National Statistics](https://www.ons.gov.uk/).
measurement registration. Rates are expressed as both a crude rate per 100,000 population and directly standardised for age only or both age and sex as detailed on the notes pages of the relevant Excel table.

The main units of measure of drug reimbursement costs are Gross Ingredient Cost (GIC) and Net ingredient cost (NIC) quantity. The latter takes account of pharmacy discounts, the rates for which are set by the Scottish Government in the Scottish Drug Tariff. There are a large number of individual dispensing remuneration fees paid to dispensing contractors details of which can be found in the Scottish Drug Tariff. The main measures of drug volume are items (the number of individual drug items on a prescription form), quantity (the total number of tablets, capsules etc), and defined daily doses (DDDs - estimated average daily maintenance doses for a total quantity of prescribed).

Hospital activity is based on hospital episodes, which if based on the date of discharge. Rates are expressed as both a crude rate per 100,000 population and directly standardised for age only or both age and sex as detailed on the notes page of the relevant Excel tables.

Disclosure

The ISD protocol on Statistical Disclosure Protocol is followed.

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nss.isdHDstroke@nhs.net

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Appendix 3 – Early access details

**Pre-Release Access**

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD is obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

**Standard Pre-Release Access:**

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads
Appendix 4 – ISD and Official Statistics

About ISD

Scotland has some of the best health service data in the world combining high quality, consistency, national coverage and the ability to link data to allow patient based analysis and follow up.

Information Services Division (ISD) is a business operating unit of NHS National Services Scotland and has been in existence for over 40 years. We are an essential support service to NHSScotland and the Scottish Government and others, responsive to the needs of NHSScotland as the delivery of health and social care evolves.

**Purpose:** To deliver effective national and specialist intelligence services to improve the health and wellbeing of people in Scotland.

**Mission:** Better Information, Better Decisions, Better Health

**Vision:** To be a valued partner in improving health and wellbeing in Scotland by providing a world class intelligence service.

Official Statistics

Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. ISD is designated by legislation as a producer of ‘Official Statistics’. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within ISD.

ISD’s statistical publications are currently classified as one of the following:

- National Statistics (ie assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (ie legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (ie still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on ISD’s statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the [ISD website](#).