Stroke Statistics Update

Year Ending 31 March 2014

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**Introduction**

Cerebrovascular disease (CVD) is a condition that develops as a result of problems with the blood vessels supplying the brain. Although it is largely a preventable disease, there are approximately 4,500 deaths in Scotland each year (4,452 people in 2013) where CVD is the underlying cause.

One of the common types of CVD is stroke. A stroke occurs when the blood supply to part of the brain is interrupted and brain cells are starved of oxygen. This usually occurs because a blood vessel becomes blocked by fatty deposits or a blood clot. Stroke is more common in older people over the age of 65.

Scotland has a high prevalence of the risk factors associated with CVD such as smoking, high blood pressure, poor diet, lack of exercise and alcohol consumption above recommended limits. Treating and preventing stroke continues to be a national clinical priority for Scotland.  

In the **Scottish Health Survey 2013**, 3.2% of men and 2.7% of women reported that they had experienced a stroke.

This ‘Stroke Statistics Update’ is produced annually to provide information on a range of cerebrovascular diseases in Scotland including:

- All CVD
- Stroke
- Transient ischaemic attack (TIA) – a temporary form of stroke, sometimes referred to as a ‘mini-stroke’
- Subarachnoid haemorrhage – a leak of blood caused by the rupture of a blood vessel beneath the membrane covering the brain

and one of the main procedures used to treat CVD and stroke:

- Carotid endarterectomy – which removes blockage in the artery in the neck to improve blood flow to the brain

This update contains information on hospital activity, incidence, operations, 30 day survival following first emergency admission, GP prescribing and ambulance service activity up to the period 1 April 2013 - 31 March 2014, and mortality up to the period 1st January - 31st December 2013. The update also includes previously published Practice Team Information (PTI) and Quality Outcomes Framework (QOF) data.

Information is presented at NHS Board level with some tables also available at Community Health Partnership (hospital activity) or Local Council Area level (mortality).

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1. Better Heart Disease and Stroke Care Action Plan, June 2009; Stroke Improvement Plan, August 2014
Key points

- Cerebrovascular disease (CVD) develops as a result of problems with the blood vessels supplying the brain. The number of new cases of CVD in Scotland has decreased over the last decade. The incidence rate of CVD in Scotland was 328.9 per 100,000 population in 2004/05 compared to 257.4 per 100,000 in 2013/14, a decrease of 21.8%. Incidence rates for CVD are consistently higher in males than females.

- The decrease in mortality rates for stroke in men (43.1%) has been greater than for women (39.3%). For the last three years, the stroke mortality rate for women has been slightly higher than that for men.

- The percentage of people surviving 30 days or more following their first emergency admission to hospital with a stroke has improved slightly over the last 10 years from 80.8% in 2004/05 to 84.9% in 2013/14.

- Although the number of prescriptions for drugs to treat cardiovascular disease (all diseases of the circulation, including stroke) increased by 16.9% in the last 10 years, the overall costs of prescriptions dispensed for cardiovascular drugs fell in 2013/14 to £102.9 million, a reduction of 7.8% on the previous year. This is the lowest cost for these drugs over the last ten years (since 2004/05). Costs may continue to reduce as medicines become available in less expensive, non-branded (generic) form.
Methods

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. Information in this update has been ‘standardised’ using the 2013 European standard population to calculate the European Age Standardised Rates (EASRs). This makes allowances for differences in the age and sex structure of the population between areas or time periods and allows fairer comparisons to be made.

The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. Therefore, findings from this publication are not comparable with previous ISD reports. Further detail regarding this change and a worked example of EASRs using both ESP1976 and ESP2013 is included in Appendix A1.

Please note that since the last publication of this report, the population estimates for 2002-2010 have been recalculated based on the 2011 census by National Records of Scotland. These updated population estimates have resulted in slightly different crude rates for 2002-2010 compared to the report that was published in January 2014.

Clarification of Terminology

Different terms can be used when talking about cerebrovascular disease conditions and operations and sometimes these are interchangeable. For consistency the following terms will be 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>Stroke</td>
<td>Cerebrovascular accident</td>
<td>A stroke occurs when an area of the brain is deprived of its blood supply because of a blockage of a blood vessel supplying the brain.</td>
</tr>
<tr>
<td>Transient ischaemic attack (TIA)</td>
<td>“mini-stroke”</td>
<td>A temporary disruption to the blood supply to the brain as a result of a blockage of a blood vessel supplying the brain.</td>
</tr>
</tbody>
</table>
Results and Commentary

Hospital Activity\(^2\)

Discharges

This section of the report examines the number of discharges from hospital with a specific cerebrovascular disease. Note that one patient can have more than one discharge from hospital within a given time period.

Figures on discharges provide an indication of hospital usage for the diagnosis and treatment of cerebrovascular disease in either an inpatient or day case setting. This excludes activity relating to outpatients.

Age and sex standardised discharge rates are presented here. Further information is available in the section on terminology.

Cerebrovascular Disease (CVD)

Cerebrovascular disease develops as a result of problems with blood vessels supplying the brain. This can cause a stroke, a transient ischaemic attack (TIA) or a subarachnoid haemorrhage.

Figure 1: Discharges from hospital with a diagnosis of cerebrovascular disease\(^1\); 2013 European age and sex standardised discharge rates per 100,000 population\(^2\)

Notes:
1. Analysis includes ICD-10 codes I60-I69, G45.
2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable.
3. Data are provisional for 2013/14 and are subject to change in future analyses.

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

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\(^2\) See Appendix A2 for details of completeness of hospital activity figures derived from SMR01 records.
Although there were more CVD hospital discharges for women than men (14,902 women compared to 13,982 men in 2013/14) the age and sex standardised rates were higher for men. This is because CVD is more common in older people and men have a higher risk of stroke. A larger proportion of the older male population have an admission due to CVD compared to women (there are more women in the older population than men). Men therefore have a higher discharge rate than women. In all age groups included in this report (0-44, 45-64, 65-74, <75 and 75+), men had higher standardised rates than women (see Table AS1 and figure 1).

The age and sex standardised discharge rate decreased between 2004/05 and 2007/08, then remained relatively stable between 2008/09 and 2011/12 before increasing slightly between 2012/13 and 2013/14. The rate has increased overall by 3.8% from 570.4 per 100,000 population in 2004/05 to 592.0 in 2013/14. The rate has increased by 7.4% for women but only increased by 1.0% for men (see Tables AS1 and AS4).

**Stroke**

There were slightly more hospital discharges for stroke for women than men (9,819 women compared to 9,423 men in 2013/14), but the age and sex standardised discharge rate for men was higher (442.3 per 100,000 population for men compared to 350.1 per 100,000 population for women in 2013/14).

In the last decade, the age and sex standardised discharge rate for stroke has increased slightly by 1.9% from 388.7 per 100,000 population in 2004/05 to 396.2 in 2013/14. Over the last ten years, the trend has been fairly similar in both men and women but there has been a slightly larger increase in rates for women (3.1%) than in rates for men (1.0%) (Figure 2).

**Figure 2: Discharges from hospital with a diagnosis of stroke**

2013 European age and sex standardised discharge rates per 100,000 population

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Notes: 1. Analysis includes ICD-10 codes I61, I63 and I64.
2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable.
3. Data are provisional for 2013/14 and are subject to change in future analyses.

Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.
The change in the standardised rates over the last decade is different for the different age groups. The 0-44 and 45-64 age groups have both seen an increase in the standardised rates with the 65-74 group seeing a decrease and the 75+ group seeing little change (see Tables AS1 and AS4).

**Transient Ischaemic Attack (TIA)**

A TIA is similar to a stroke but the interruption of the blood supply to the brain is temporary, and the symptoms only last up to 24 hours. However having a TIA is a risk factor for having a later stroke.

There has been an increase of 26.8% in the age and sex standardised rate for a diagnosis of TIA in the last decade – from 61.7 per 100,000 population in 2004/05 to 78.2 per 100,000 population in 2013/14 (see Tables AS1, AS4 and Figure 3).

**Figure 3: Discharges from hospital with a diagnosis of transient ischaemic attack**

![](Figure3.png)

Notes: 1. Analysis includes ICD-10 code G45. 2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable. Data are provisional for 2013/14 and are subject to change in future analyses.

**Subarachnoid Haemorrhage**

A subarachnoid haemorrhage is a leak of blood caused by the rupture of one of the blood vessels beneath one of the layers of membrane covering the brain.

The age and sex standardised rate for a diagnosis of subarachnoid haemorrhage rose from 29.1 per 100,000 population in 2004/05 to 32.9 per 100,000 population in 2013/14. The overall change in the rate between 2004/05 and 2013/14 was an increase of 12.9% (see Tables AS1, AS4 and figure 4).
Figure 4: Discharges from hospital with a diagnosis of subarachnoid haemorrhage\(^1\); 2013 European age and sex standardised discharge rates per 100,000 population\(^2\)

Notes:  
1. Analysis includes ICD-10 code I60.  
2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable.  
Data are provisional for 2013/14 and are subject to change in future analyses.  
Data Source: ISD SMR01 - discharges; National Records Scotland – population estimates.

Further details of hospital activity for CVD, stroke TIA and subarachnoid haemorrhage by age, gender, type of admission and health board area are given in Table AS1.  
Corresponding information by Community Health Partnership area can be found in Table AS4.
Incidence

Incidence is the number of new cases of a specific condition in a population during a defined time period. It is presented here as the number of people with a first hospital admission for CVD (or death from CVD without a prior admission to hospital). Further information is available in the glossary.

Age and sex standardised incidence rates are presented here. Further information is available in the section on terminology.

The number of new cases of CVD has decreased over the past decade. The age and sex standardised incidence rate for CVD decreased by 21.8% from 328.9 cases per 100,000 population in 2004/05 to 257.4 per 100,000 in 2013/14 (see Table IS1 and Figure 5).

Figure 5: Cerebrovascular Disease\(^1\); 2013 European Age Standardised Incidence Rates per 100,000 Population\(^2\), based on first hospital admissions

Notes: 1. Analysis includes ICD-10 codes I60-I69 and G45.
2. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Figures using ESP1976 and ESP2013 are not comparable.
\(^p\) data are provisional for 2013/14 and are subject to change in future analyses.
Data Source: ISD SMR01 - discharges; National Records Scotland – Population

Incidence is strongly related to age. The age and sex standardised rate for the under 75s in 2013/14 was 123.0 per 100,000 population and for those aged 75 and over for the same period it was 1,616.6 per 100,000 population (see Table IS1).
Operations

**Carotid Endarterectomy**

Carotid endarterectomy is a common operation used to deal with a blocked artery in the neck that may lead to a stroke. It involves clearing the blocked artery to improve the flow of blood through the artery to the brain.

Age and sex standardised discharge rates are presented here. Further information is available in the section on terminology.

The age and sex standardised rate for carotid endarterectomy has shown an overall slight downward trend over the last 10 years (see Table OS1 and Figure 6). It has fluctuated between 12.2 per 100,000 population (the figure in 2006/07) and 9.2 per 100,000 population (the figure for 2013/14 and the lowest rate in the last 10 years).

**Figure 6: Carotid Endarterectomies**

2013 European Age Standardised Discharge Rates per 100,000 Population

Notes: 1. Analysis includes OPCS4 codes L294 or L295 (in any position).
2. Rates are directly standardised to the 2013 European standard population.

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

The rate for males has been more than twice the rate for females in most of the last 10 years (13.0 per 100,000 population for males compared to 5.3 for females in 2013/14).
Survival

Thirty day survival is widely used as a measure of the outcome of hospital admission and reflects the severity of disease as well as the quality of care.

Stroke

The percentage of people surviving 30 days or more following their first emergency admission to hospital with a stroke has improved slightly over the last 10 years from 80.8% in 2004/05 to 84.9% in 2013/14 (Table S2 and Figure 7).

For those aged 75 and over, 30 day survival was 75.5% in 2004/05, rising to 78.6% in 2013/14.

Figure 7: Stroke^1; Percentage of patients surviving 30 days or more after first emergency admission

Notes: 1. Analysis includes ICD-10 codes I61, I63 and I64.
2. y-axis (percentage surviving 30 days) starts at 70% to enable clear comparison between sexes.

Data Source: ISD SMR01 - discharges; National Records Scotland – Population
Mortality³

*Cerebrovascular Disease (CVD)*

This section provides information on the number of deaths from CVD, as well as the common types of CVD, i.e. stroke, TIA and subarachnoid haemorrhage separately.

As in the rest of Europe, there is a continuing downward trend in mortality from CVD (including stroke) in Scotland and the absolute gap in mortality has narrowed relative to both the UK and to the EU as a whole. For the most recent 2 years available, the Scottish rate has been slightly below the EU rate (see Figure 8 below but please note that the mortality rates are standardised to the 1976 European Standard Population). ⁴

![Figure 8: Cerebrovascular disease⁴: mortality in Scotland, UK and EU 1976 European age and sex standardised mortality rates per 100,000 population²](image)

**Notes:**
1. Analysis includes ICD-10 codes I60-I69 and G45.
2. Rates are directly standardised to the 1976 European standard population.
   Data Source: WHO/Europe and ScotPHO, Scotland and European HfA Database 2012.

In Scotland, the age and sex standardised mortality rate for CVD has fallen steadily in the last 10 years from 161.9 per 100,000 population in 2004 to 96.6 in 2013, a reduction of 40.3% in the last 10 years (Table MS1 and Figure 9). The rates in Figure 9 have been standardised using the 2013 European Standard Population. Further information is available in the terminology section.

³ The figures included in this section refer to calendar years
**Figure 9: Cerebrovascular disease**: all ages by sex 2004-2013
2013 European age and sex standardised mortality rates per 100,000 population

Notes: 1. Analysis includes ICD-10 codes I60-I69 and G45.
2. Rates are directly standardised to the 2013 European standard population.

Data Source: National Records Scotland - Deaths and Population

**Stroke**

The age and sex standardised mortality rate for stroke has decreased over the last 10 years, from 89.9 per 100,000 population in 2004 to 52.8 per in 2013, a reduction of 41.2% over the ten years. (Table MS1).

Between 2004 and 2013, the reduction in age and sex standardised mortality rates for stroke was slightly larger for males (43.1%) than females (39.3%). For the last three years, the standardised mortality rate has been slightly higher for women. (Table MS1).

Of the mainland NHS Health Boards, NHS Lanarkshire had the highest age standardised mortality rate in 2013 (65.9 per 100,000 population) and NHS Lothian the lowest rate (43.9 per 100,000 population). Both NHS Lothian and NHS Tayside had the highest percentage reduction in the age standardised mortality rate between 2004 and 2013 (49.4%) while NHS Forth Valley had the lowest percentage reduction in the mortality rate among the mainland Health Boards between 2004 and 2013 (29.1%) (Table MS1 and Figure 10).
Figure 10: Stroke\textsuperscript{1}: all ages by sex 2004-2013
2013 European age and sex standardised mortality rates per 100,000 population\textsuperscript{2}

Notes:  
1. Analysis includes ICD-10 codes I61, I63 and I64.
2. Rates are directly standardised to the 2013 European standard population.

Data Source: National Records Scotland - Deaths and Population

**Subarachnoid Haemorrhage**

The age and sex standardised mortality rate for subarachnoid haemorrhage has decreased from 4.7 per 100,000 population in 2004 to 3.4 per 100,000 population in 2013, a reduction of 28.3\% over ten years (Table MS1 and Figure 11).
Figure 11: Subarachnoid haemorrhage\textsuperscript{1}: all ages by sex 2004-2013
2013 European age and sex standardised mortality rates per 100,000 population\textsuperscript{2}

Notes:  
1. Analysis includes ICD-10 code I60.  
2. Rates are directly standardised to the 2013 European standard population.  

Data Source: National Records Scotland - Deaths and Population

Further details of mortality from CVD, stroke and subarachnoid haemorrhage by age, gender and health board area are given in Table MS1. Corresponding information by council area can be found in Table MS4.
Deprivation\(^5\)

Rates of CVD mortality vary between areas of greater or less material 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 10 equal groups (deciles) where decile 1 is most deprived and decile 10 is least deprived. The information is presented using age standardised mortality ratios (SMRs). SMRs are the ratio of actual deaths to expected deaths (calculated using the average Scottish mortality rate). It adjusts for the age and sex of the population being examined. If the actual mortality rate was the same as the expected mortality rate, the SMR would have a value of 100.

Figure 12 shows that the association between mortality and deprivation was stronger in the under 65 age category than in the over 65 category. In the under 65s there is a clear pattern between SMR and deprivation decile. The SMR in the under 65 age category was over 4 times higher for the most deprived 10% of the population compared to the least deprived 10% of the population (see [Table DS1](#) and Figure 12), while the ratio for those aged 65 and over was 1.4.

![Figure 12: Cerebrovascular Disease](#)

**Standardised Mortality Ratios\(^1\)**

by broad age grouping and SIMD decile; 2009-2013

Notes:  1. Scotland is used as the ‘standard population’.

Data Source: National Records Scotland (NRS) deaths data 2009-2013

\(^5\) The figures included in this section refer to calendar years.
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. Please note that these data exclude drugs dispensed within hospitals.

The overall cost of cardiovascular drugs reduced year on year for the last eight years, whilst the number of prescriptions rose. 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.

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.

Atorvastatin, one of the drugs used to reduce the risk of cardiovascular disease, was amongst the Top 10 Drugs by Cost in 2012/13 as detailed in the Prescribing area of ISD Scotland's website. This drug came out of patent in 2012/13 and as a result, the gross ingredient cost has dropped from approximately £13 million in 2012/13 to approximately £5 million in 2013/14. Atorvastatin no longer appears in the list of top 10 drugs by cost.

The data presented here are identical to those in the prescribing section of the Heart Disease 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.

Prescriptions Dispensed

Over the decade 2004/05 - 2013/14, the numbers of prescriptions dispensed for cardiovascular related drugs rose from 21,108,333 items to 24,680,809 items prescribed, an increase of 16.9%. However, there has been no appreciable change since 2009/10 (Table G1 and figure 13).
Gross Ingredient Costs

Gross ingredient cost indicates the total cost of a prescription drug. The overall cost of prescriptions dispensed for cardiovascular-related drugs fell in 2013/14 to £102.9 million, a reduction of 7.8% on the previous year. This is the lowest gross ingredient cost for cardiovascular drugs observed for any year over the last decade 2004/05 to 2013/14.

The large decrease in gross ingredient cost for statins over the last year (£32.6 million to £23.5 million) can be explained by atorvastatin coming out of patent in May 2012. The large decrease in gross ingredient cost for angiotensins over the last year (£12.8 million to £6.7 million) can be explained by the fact that the angiotensin-II group of inhibitors are in the process of leaving patent and also is slowly growing in activity. This has contributed to the increase in defined daily doses of angiotensins as a whole increasing from 45.6 million to 83.7 million in the last year.

Cardiovascular related drugs form approximately 10.6% of the total gross ingredient cost in Scotland (see Prescription Cost Analysis 2013/14). This has reduced from 11.7% of the total gross ingredient cost in 2012/13.

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

There are two main sources of data relating to primary care activity for cerebrovascular disease. The first is an estimate of the number of consultations with a GP or practice nurse, which was collected by the Practice Team Information (PTI) programme. The second is an estimate of the prevalence of heart-related conditions which is taken from Quality & Outcomes Framework (QOF) data recorded by practices in the form of disease registers.

Information on the number of consultations with a GP or practice nurse is available from the PTI programme for the years 2003/04 to 2012/13. Data has been collected from a sample of 6% of practices through the PTI programme. Information was recorded for stroke and TIA by age group and sex.

It should be noted that 2012/13 is the last year the PTI data is available. A new national GP information system - the Scottish Primary Care Information Resource (SPIRE) - is in development and will supersede and build on the data collected for PTI. SPIRE aims to include richer data from a greater number of practices and will help to inform public health surveillance, research and data linkage. For more information on SPIRE see: http://www.spire.scot.nhs.uk/.

Figure 14: Patients in Scotland consulting a GP or practice nurse at least once in the year for a stroke/TIA; 2003/04 – 2012/13; Rates per 1,000 registered patients

Figure 14 shows that the crude rates per 1,000 population for patients consulting a GP/practice nurse for stroke have increased from 7.4 to 11.0 over the last 10 years. The initial increase between 2003/04 and 2004/05 may be related to the introduction of the Quality and Outcomes Framework as part of the new GP contract in April 2004. The rates for stroke also tend to increase with increasing age. The rates for males are generally
higher than those for females but the differences are less marked for the younger age groups. More information can be found in the PTI data table for stroke.

The QOF measures a general practice’s achievement against a set of evidence-based indicators designed to promote good practice. Payments are made to each general practice on the basis of their level of achievement against those indicators. One of the features of QOF is the collection of prevalence data in the form of practice “registers”. A QOF register may count patients with one specific disease or condition, or it may include multiple conditions. There may also be other criteria for inclusion on a QOF register, such as age or date of diagnosis. More details are available on the ISD website.

Prevalence data is recorded as part of QOF for stroke and TIA. The prevalence estimates are available for Scotland, NHS Board, CHP and practice. Table 1 shows the number of patients on the register for Scotland and the raw prevalence rate per 100 patients in 2013/14. There were 117,457 patients on the stroke/TIA QOF register in 2013/14. The raw prevalence rate was 2.2% of the number of patients registered with a practice in Scotland. A more detailed table can be found on the ISD website.

Table 1. Estimated Scottish prevalence of stroke/TIA reported from the QOF register1; 2013/14.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Patients on QOF register</th>
<th>Raw prevalence rate (per 100 patients)²,³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke/TIA</td>
<td>117,457</td>
<td>2.2</td>
</tr>
</tbody>
</table>

1 Although the QOF is part of the new General Medical Services (GMS), practices with other contract types (17C or 2C) may also choose to use the QOF. These figures include data from practices of any contract type, and are therefore based on larger numbers of practices than tables based on GMS practices alone.

² Prevalence = number of patients on the specified QOF register, divided by list size, multiplied by 100.

³ List size is the total number of patients registered to the practice. This information is as at 1st January in the given financial year.
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 SS1. The SAS activity data gives an indication of demand on unscheduled care services (also including NHS24 and A&E) for people with a suspected stroke.

The data presented in table SS1 are for the last 5 years and by health board of the location of the incident. As the numbers for each age group were too small to be published, the information is presented for all ages.

SAS Diagnosis - Stroke

The full list of conditions included in stroke are given in table SS1. They include stroke history, numbness, paralysis, speech/movement/vision problems. Note that the final diagnosis codes used here are not compatible with ICD10 diagnosis codes used elsewhere in this publication.

In the last 5 years, the number of incidents have increased overall by 14.6% from 9,866 to 11,311 and the number of conveyances have increased by a similar amount – 14.2% from 9,417 to 10,754. However in both cases the numbers has stabilised in the last year (Table SS1 and Figure 15).

Figure 15: Scottish Ambulance Service incidents and conveyances with a stroke diagnosis

![Graph showing increase in numbers of incidents and conveyances with stroke diagnosis]

Data Source: SAS Data Warehouse

The increase in numbers reflects the increased overall demand experienced by the Scottish Ambulance Service. However, it should be noted that better recording of the diagnosis over time may also be responsible for some of the increase.
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<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, psychiatric and long stay care services.</td>
</tr>
<tr>
<td>Carotid Endarterectomy</td>
<td>An operation to remove a blockage in the carotid artery in the neck.</td>
</tr>
<tr>
<td>Cerebrovascular disease (CVD)</td>
<td>Cerebrovascular Disease is a condition that develops as a result of problems with the blood vessels supplying the brain. It includes subarachnoid haemorrhage, stroke (non-traumatic intracerebral haemorrhage and cerebral infarction) and transient ischaemic attacks (TIAs).</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>Includes diseases which affect the heart and the blood vessels, including coronary heart disease, stroke and other cerebrovascular diseases.</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>Deciles</td>
<td>Deprivation deciles each contain 10% of the total population in Scotland. Deprivation decile 1 contains the 10% of the population living in the most deprived datazones, while decile 10 contains the 10% of the population living in the least deprived datazones.</td>
</tr>
<tr>
<td>Discharge</td>
<td>A discharge marks the end of an episode of care. Discharges include deaths and transfers to other specialties/significant facilities and hospitals as well as routine discharges home.</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>European age-</td>
<td>The rate that would have been found if the population in Scotland were subjected to the same mortality profile as the population of Scotland.</td>
</tr>
</tbody>
</table>
standardised rate 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. Previous reports used ESP1976 to calculate EASRs. Figures using ESP1976 and ESP2013 are not comparable. Therefore, findings from this publication are not comparable with previous ISD reports. See Appendix A1 for further details.

Final diagnostic code (SAS) Diagnosis codes recorded by SAS resource after treating the patient.

Generic drugs 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.

Gross Ingredient Cost (GIC) Cost of drugs and appliances reimbursed before deduction of any dispenser discount (note: this definition differs from other parts of the UK).

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 CVD in 2004 and again in 2005 for the same diagnosis. For the purpose of counting incidence, only the hospital episode in 2004 would be counted. The 2005 episode would not be counted because the previous episode occurred less than 10 years previously. First hospital admission is a reasonable measure of incidence for CVD 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.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainland Health Boards</td>
<td>Health Boards in Scotland excluding the three Island Health Boards (Orkney, Shetland and Western Isles)</td>
</tr>
<tr>
<td>Mortality rate</td>
<td>The number of deaths as a rate per 100,000 population per year.</td>
</tr>
<tr>
<td>Outpatient</td>
<td>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.</td>
</tr>
<tr>
<td>Prevalence rate</td>
<td>The proportion of people with a given condition over a period of time (e.g. a year).</td>
</tr>
<tr>
<td>PTI</td>
<td>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 superceded by SPIRE (see below).</td>
</tr>
<tr>
<td>QOF</td>
<td>The Quality &amp; 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.</td>
</tr>
<tr>
<td>SAS</td>
<td>The Scottish Ambulance Service.</td>
</tr>
<tr>
<td>SIMD</td>
<td>Deprivation for individuals is estimated from aggregate data derived from the census and other routine sources. These are used to estimate the level of material deprivation in 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.</td>
</tr>
<tr>
<td>SMR01</td>
<td>An SMR01 episode 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.</td>
</tr>
<tr>
<td>SPIRE</td>
<td>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 dataset to provide a</td>
</tr>
</tbody>
</table>
**Standardised Mortality Ratio**
The ratio of actual deaths to expected deaths based on indirect standardisation. Expected deaths are the number of deaths that would be expected in each deprivation decile given the age-sex distribution of the underlying populations and the death rates in the reference population (in this case the whole Scottish population).

**Stroke**
A stroke occurs when an area of the brain is deprived of its blood supply because of a blockage of a blood vessel supplying the brain.

**Subarachnoid haemorrhage**
A leak of blood as a result of the rupture of one of the blood vessels beneath one of the layers of membrane that covers the brain.

**30 day survival**
Number of people who survived 30 days following a first emergency admission to hospital for a specific condition.

**TIA**
Transient ischaemic attack. A transient ischemic attack is a temporary disruption to the blood supply to the brain as a result of a blockage of a blood vessel supplying the brain.
<table>
<thead>
<tr>
<th>Table No.</th>
<th>Name</th>
<th>Time period</th>
<th>File &amp; size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1</td>
<td>Cerebrovascular Disease discharges – by diagnosis (Cerebrovascular Disease, Stroke, Subarachnoid Haemorrhage, Transient Ischaemic Attack and related syndromes), health board, admission type, age group and sex for financial years 2004/05-2013/14; numbers, crude rates and age standardised rates (direct to Europe)</td>
<td>2004/05-2013/14</td>
<td>Excel [2,172kb]</td>
</tr>
<tr>
<td>AS4</td>
<td>Cerebrovascular Disease discharges – by diagnosis (Cerebrovascular Disease, Stroke, Subarachnoid Haemorrhage, Transient Ischaemic Attack and related syndromes), Community Health Partnership, admission type, age group and sex for financial years 2004/05-2013/14; numbers, crude rates and age standardised rates (direct to Europe)</td>
<td>2004/05-2013/14</td>
<td>Excel [5,052kb]</td>
</tr>
<tr>
<td>IS1</td>
<td>Cerebrovascular Disease (CVD) incidence by health board, age group and sex for financial years 2004/05-2013/14; numbers, crude rates and age-sex standardised rates (direct to Europe)</td>
<td>2004/05-2013/14</td>
<td>Excel [174kb]</td>
</tr>
<tr>
<td>OS1</td>
<td>Numbers of Carotid Endarterectomies, with crude and age-sex standardised discharge rates, by health board, age, sex and year, 2004/05 - 2013/14.</td>
<td>2004/05-2013/14</td>
<td>Excel [201kb]</td>
</tr>
<tr>
<td>S2</td>
<td>Survival after first emergency admission for stroke ; numbers of patients treated and % surviving 30 days for financial years 2004/05-2013/14</td>
<td>2004/05-2013/14</td>
<td>Excel [53kb]</td>
</tr>
<tr>
<td>MS1</td>
<td>Cerebrovascular Disease mortality - by cause (Cerebrovascular Disease, Stroke, Subarachnoid Haemorrhage), health board, age group and sex for calendar years of death registration 2004-2013; numbers, crude rates and age-sex standardised rates (direct to Europe)</td>
<td>2004-2013</td>
<td>Excel [785kb]</td>
</tr>
<tr>
<td>MS4</td>
<td>Cerebrovascular Disease mortality - by cause (Cerebrovascular Disease, Stroke, Subarachnoid Haemorrhage ), year of death registration, council area, age group and sex for calendar years 2004-2013; numbers, crude rates and age-sex standardised rates (direct to Europe)</td>
<td>2004-2013</td>
<td>Excel [1,669b]</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Period</td>
<td>File Size</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>DS1</td>
<td>Cerebrovascular Disease and Deprivation; mortality crude rates and standardised mortality ratios (SMR) by age group and SIMD deciles; 2009-2013.</td>
<td>2009-2013</td>
<td>Excel [74kb]</td>
</tr>
<tr>
<td>G1</td>
<td>Cardiovascular prescribing (costs and number of prescriptions) for years 2004/05 - 2013/14.</td>
<td>2004/05 - 2013/14</td>
<td>Excel [76kb]</td>
</tr>
<tr>
<td>G2</td>
<td>Cardiovascular prescribing (costs, defined daily doses and numbers per 1000 population) by drug group and Health Board for year 2013/14.</td>
<td>2013/14</td>
<td>Excel [144kb]</td>
</tr>
<tr>
<td>G3</td>
<td>Cardiovascular prescribing (costs, defined daily doses and numbers per 1000 population) by drug group and Community Health Partnership for year 2013/14.</td>
<td>2013/14</td>
<td>Excel [329kb]</td>
</tr>
<tr>
<td>SS1</td>
<td>Stroke – number of SAS incidents and conveyances by health board and sex for financial years 2009/10 to 2013/14.</td>
<td>2009/10 to 2013/14</td>
<td>Excel [178kb]</td>
</tr>
</tbody>
</table>
Contact

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Further Information

Further information on stroke and cerebrovascular disease can be found on the Stroke area of the ISD website.

Corresponding information on heart disease can be found on the Heart Disease area of the ISD website.

Further information on other ISD publications and datasets can be found on the ISD website.

Rate this publication

It is important that we understand the range of users and uses of the statistics and gain feedback on our publications so that we can make the data more useful to users.

Click here to provide feedback and rate this publication.
Appendix

A1 – Changes to the European Standard Population

The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Previous reports used ESP1976 to calculate EASRs. EASRs calculated using ESP1976 cannot be compared with EASRs calculated using ESP2013. This section contains a worked example of EASRs using both ESP1976 and ESP2013 to show how the rates differ and why they cannot be compared.

Example: Trend in age-standardised mortality rates for cerebrovascular disease 2004-2013

Based on the number of death registrations in each of the calendar years, the following rates were calculated:

Crude Rate

The crude rate is the total number of people with an illness (or who die) in a country or region, divided by the total population of that country or region, and is normally expressed ‘per 1,000’, ‘per 10,000’ or ‘per 100,000’.

Making comparisons on the crude rate can be misleading if the age structures of the populations of the countries or regions are quite different. Areas with larger percentages of younger people are unlikely to have as high levels of death as areas with larger percentages of older people – and 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. EASRs allow us to make comparisons between different geographical areas as they allow the effects of having different age structures in either the same population over time or different geographies to be removed.

European Age-Sex Standardised Rate (EASR) using ESP1976

For each 5 year age group, the crude rate is calculated and then the weighted average of all age groups is taken based on the weightings of the 1976 European Standard Population, to give the overall EASR.

European Age-Sex Standardised Rate (EASR) using ESP2013

For each 5 year age group, the crude rate is calculated and then the weighted average of all age groups is taken based on the weightings of the 2013 European Standard Population, to give the overall EASR.

The table and chart below are for illustrative purposes to show how the rates differ.
Table A1.1: Comparison of European Age-Sex Standardised Rates (EASRs)\(^{1,2}\) of mortality for cerebrovascular disease using both 1976\(^3\) and 2013\(^4,5\) European Standard Populations, and crude rates, by calendar year (2004-2013)

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of deaths</td>
<td>6,174</td>
<td>5,801</td>
<td>5,479</td>
<td>5,336</td>
<td>5,378</td>
<td>4,911</td>
<td>4,767</td>
<td>4,600</td>
<td>4,479</td>
<td>4,452</td>
</tr>
<tr>
<td>Crude rate per 100,000 population</td>
<td>121.4</td>
<td>113.5</td>
<td>106.7</td>
<td>103.2</td>
<td>103.4</td>
<td>93.9</td>
<td>90.6</td>
<td>86.8</td>
<td>84.3</td>
<td>83.6</td>
</tr>
<tr>
<td>EASR per 100,000 population (ESP1976)</td>
<td>75.1</td>
<td>68.1</td>
<td>63.2</td>
<td>60.5</td>
<td>60.0</td>
<td>53.5</td>
<td>50.8</td>
<td>47.9</td>
<td>45.6</td>
<td>45.4</td>
</tr>
<tr>
<td>EASR per 100,000 population (ESP2013)</td>
<td>161.9</td>
<td>147.2</td>
<td>135.7</td>
<td>131.6</td>
<td>129.3</td>
<td>116.7</td>
<td>109.9</td>
<td>102.9</td>
<td>97.5</td>
<td>96.6</td>
</tr>
</tbody>
</table>

Source: National Records of Scotland

Figure A1.1: Comparison of European Age-Sex Standardised Rates (EASRs)\(^{1,2}\) of mortality for cerebrovascular disease using both 1976\(^3\) and 2013\(^4,5\) European Standard Populations, and crude rates, by calendar year (2004-2013)

From this example (see Table A1.1 and Figure A1.1 above), it can be seen that the EASR (using ESP2013) is the highest of the three rates. The Crude Rate is in the middle and the EASR (using ESP1976) is the lowest. The mortality of cerebrovascular disease is higher in older age groups. ESP2013 differs from ESP1976 by its inclusion of fewer young people.
and more people from older age groups. Therefore, in this example, the EASRs calculated using ESP2013 are higher than those calculated using ESP1976. The trends shown for each method of calculating rates are similar, giving confidence to trend analysis. EASRs (using ESP1976) are not comparable with EASRs (using ESP2013). For example, comparing the EASR (using ESP1976) for calendar year 2012 in a report issued in 2013, to an EASR (using ESP2013) relating to the same year 2012, in a report issued in 2014, is meaningless. On this basis, findings from this publication are not comparable with previous ISD reports.

Further information can be obtained from:


A2 – Background Information

**Stroke**

Cerebrovascular Disease includes cerebrovascular accident (stroke) and transient ischaemic attack (TIA). A stroke or TIA happens when narrowing of the arteries that supply the brain interrupts the blood supply to part of the brain and brain cells are starved of oxygen. Stroke is more common in older people.

**Risk factors associated with CVD & stroke**

The main preventable risk factors for stroke are smoking, high blood pressure, lack of exercise and a poor diet. Research also indicates 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 latest available survey being from 2013. The 2003 survey included a specific report on Cardiovascular Disease. The Scottish Health Survey is now operating as a rolling survey running continuously from 2008-2015.

The results of the Scottish Health survey can be found on the Scottish Government website.

**Policy Context**

NHSScotland service provision for patients with stroke operates within the framework of the Scottish Government policy. A chronology of policy documents that steer service provision for 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)
- **Stroke improvement plan** (2014)

**Data Collection**

**Hospital Activity data**

Hospital activity data are collected across NHSScotland 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.

**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 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.

ISD are working with NHS Boards to resolve ongoing data submission issues. The majority of these issues have resulted from implementation of the new PMS TrakCare system and other existing system issues.

**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 methodology 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 and stroke.
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)).

Lists of ICD10 codes are available at http://www.who.int/classifications/icd/en/. OPCS4 codes are available from http://systems.hscic.gov.uk/data/clinicalcoding/codingstandards/opcs4

**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](http://www.isd Scotland/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](http://www.isd Scotland/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.

4. The [Scottish Stroke Care Audit](http://www.isd Scotland/stroke-care-audit) reports on stroke services in Scottish hospitals

**Independent & voluntary sector**

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

**Comparisons**

**UK comparisons**

Hospital activity data relating to cerebrovascular 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. In particular, the ICD-10 codes used to define cerebrovascular disease may vary between sources. Scotland includes code G45 (Transient Ischaemic Attack and related syndromes) while other areas may not include this code.


Wales: [Health and care statistics](http://www.raisondetre.com/health-and-care-statistics)
Northern Ireland: Hospital Statistics & Research

Mortality from specific causes, including cerebrovascular 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 mortality in Scotland with countries in the rest of Europe. These include standardised death rates and hospital discharges for CVD. European comparisons indicate that while CVD 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.
### A3 – Publication Metadata (including revisions details)

<table>
<thead>
<tr>
<th>Metadata Indicator</th>
<th>Description</th>
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</thead>
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<tr>
<td>Publication title</td>
<td>Stroke Statistics</td>
</tr>
<tr>
<td>Description</td>
<td>Annual update of stroke 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>
<tr>
<td>Data source(s)</td>
<td>Scottish Morbidity Record 01 (SMR01), National Records of Scotland (NRS) Death Registrations, Prescribing Information System (PIS), Scottish Index of Multiple Deprivation (Scottish Government), SAS Data Warehouse, Practice Team Information (PTI), Quality Outcomes Framework (QOF).</td>
</tr>
<tr>
<td>Date that data are acquired</td>
<td>October 2014</td>
</tr>
<tr>
<td>Release date</td>
<td>27th January 2015</td>
</tr>
<tr>
<td>Frequency</td>
<td>Annual</td>
</tr>
<tr>
<td>Timeframe of data and timeliness</td>
<td>10 years annual data up to 31-Mar-2014 (hospital activity, operations, prescribing, incidence, survival), 31-Dec-2013 (mortality). 5 years annual data up to 31-Mar-2014 (ambulance service).</td>
</tr>
</tbody>
</table>
  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 |
<table>
<thead>
<tr>
<th>Revisions statement</th>
<th>No revisions have occurred and there are no revisions planned.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revisions relevant to this publication</td>
<td>The 2013 European Standard Population (ESP2013) has been used to calculate the European Age Standardised Rates (EASRs) within this publication. The European Standard Population (ESP), which was first used in 1976, was revised in 2013. Previous reports used ESP1976 to calculate EASRs. EASRs calculated using ESP1976 cannot be compared with EASRs calculated using ESP2013. Therefore, findings from this publication are not comparable with previous ISD reports. Further detail regarding this change and a worked example of EASRs using both ESP1976 and ESP2013 is included in Appendix A1.</td>
</tr>
<tr>
<td>Concepts and definitions</td>
<td>See Glossary and Appendix A2 contained within this report.</td>
</tr>
</tbody>
</table>
| Relevance and key uses of the statistics | Uses of the data include:  
  To allow NHS Boards and the Scottish Government to compare activity levels nationally;  
  To provide health intelligence and performance information for NHS Boards and the Scottish Government;  
  To provide information to support answers to Parliamentary Questions;  
  To support the information requirements of voluntary sector organisations such as Chest, Heart and Stroke Scotland (CHSS), including research and media activity;  
  To allow members of the public to readily access information on cerebrovascular disease;  
  To respond to information requests for a variety of customers e.g. researchers, charities, public companies, Freedom of Information requests;  
  To assist students and universities conducting studies on topics such as cerebrovascular disease;  
  To assist private companies interested in cerebrovascular 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. 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 A2.

| 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 99% 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 cerebrovascular 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. In particular, the ICD-10 codes used to define cerebrovascular disease may vary between sources. Scotland includes code G45 (Transient Ischaemic Attack and related syndromes) while other areas may not include this code.

England: NHS Hospital Episode Statistics (HES)
Wales: Health and care statistics
Northern Ireland: Hospital Statistics & Research

Mortality: Deaths from specific causes, including heart disease, in England and Wales is available from the Office for National Statistics. The ICD-10 codes used to define cerebrovascular disease may vary between sources. Scotland includes code G45 (Transient Ischaemic Attack and related syndromes) while other areas may not include this code.

Accessibility
It is the policy of ISD Scotland to make its web sites and products accessible according to published guidelines.

Coherence and clarity
Relevant key statistics are presented on each Topic Area page. Statistics are presented within Excel spreadsheets. Geographical areas and national figures are presented using drop down menus. Further features to aid clarity: 1. Tables use drop down menus to display data by Age Band, Diagnostic and other Groupings. 2. Key data presented graphically. 3. Each Excel workbook contains a notes page.

Value type and unit of measurement
The number of deaths in a given year is based on the date of 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.

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A4 – Early Access details (including Pre-Release Access)

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD are 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 and, separately, those receiving extended Pre-Release Access.

Standard Pre-Release Access:

- Scottish Government Health Department
- NHS Board Chief Executives
- NHS Board Communication leads
A5 – 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 (i.e. assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (i.e. legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (i.e. 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.

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.