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.
Introduction

The Heart Disease and Stroke Programme aims to provide a "patient-centred" data and information service to support the drive for improvements in care and services for patients with heart disease or stroke.

This publication relates to the annual update of Stroke statistics including information at NHS Board, Local Council and Community Health Partnership level. Hospital activity, operations, incidence, and prescribing data to 31 March 2010 and mortality data to 31 December 2009 are included in this release.

Cerebrovascular Disease, which includes cerebrovascular accident/stroke and transient ischaemic attack (TIA), is responsible for the deaths of more than 5,000 people in Scotland every year. A stroke or TIA happens when the blood supply to part of the brain is interrupted and the brain cells are starved of oxygen. This usually occurs because a blood vessel becomes blocked. Stroke is more common in people over the age of 65.

Cerebrovascular disease is largely preventable. Reducing cerebrovascular disease is a priority in Scotland where prevalence of risk factors, such as smoking, high blood pressure, and alcohol consumption above recommended limits is high. Around 3% of men and 2% of women are living with stroke (Scottish Health Survey 2009, table 9.1).

The Scottish Government published their strategy document Better Heart Disease and Stroke Care Action Plan in June 2009 which confirmed that Stroke would continue to be a national clinical priority for NHSScotland.
Key points

- Age-standardised mortality rates for CVD (for those under 75) fell from 19.6 per 100,000 population in 2008 to 17.2 per 100,000 population in 2009, a decrease of 12.4%. They have fallen by 54.4% over the period 1995-2009, meeting the Scottish Government target of a 50% reduction in premature stroke mortality over the period 1995-2010.

- Between 2000/01 and 2009/10 the incidence rate for CVD (total number of people diagnosed with CVD per 100,000 population, standardised by age and sex) decreased by 21.3% (from 209.8 cases per 100,000 population in 2000/01 to 165.1 cases per 100,000 population in 2009/10).

- The number of prescriptions for cardiovascular disease (both coronary heart disease and cerebrovascular disease) increased by 61% in the last decade (from 15 million in 2000/01 to 25 million in 2009/10). The associated costs over the same period rose by a fifth, from £150 million to £187 million, and reached a peak of £230 million in 2004/05 before reducing to £187 million in 2009/10.

- There is a positive relationship between deprivation and mortality rates for Cerebrovascular Disease. The relationship is stronger in the under 65s where the Standardised Mortality Ratio (SMR) is almost 4 times higher for the most deprived 10% of the population compared to the least deprived 10%.

- The number of carotid endarterectomy operations performed increased between 2008/09 and 2009/10, from 468 to 518. The age-sex standardised rates for Scotland have remained fairly consistent over the last 5 years at around 7-8 per 100,000 population.
Results and Commentary
Data for year ending 31 Mar 2010 based on hospital discharges is provisional but we estimate that we have over 99% of all acute hospital discharge records.

Mortality
Age-standardised mortality rates for CVD (for those under 75) fell from 19.6 per 100,000 population in 2008 to 17.2 per 100,000 population in 2009, a decrease of 12.4% and have fallen by 54.4% over the period 1995-2009, meeting the Scottish Government target of a 50% reduction in premature stroke mortality over the period 1995-2010 (see Table MS2).

The long term decline in death rates for all ages from CVD in Scotland has continued with an overall fall (standardised by age and sex) of 38% (from 85.9 deaths per 100,000 population for year ending 31 December 2000 to 53.3 deaths per 100,000 population for year ending 31 December 2009) (see Table MS1).

The number of all ages stroke deaths has decreased by 34.6% between 2000 (4,176) and 2009 (2,732) (see Table MS1).

Deprivation
There is a positive relationship between deprivation and mortality rates for Cerebrovascular Disease. The relationship is stronger in the under 65s where the Standardised Mortality Ratio (SMR) is almost 4 times higher for the most deprived 10% of the population compared to the least deprived 10% (see Table DS1).

Survival
30 day survival for patients admitted as emergencies with a stroke has improved for those aged 75 and over from 73.7% in 2000/01 to 77.3% in 2009/10 (see Table S2).

Incidence
Between 2000/01 and 2009/10 the incidence rate for CVD (total number of people diagnosed with CVD per 100,000 population, standardised by age and sex) decreased by 21.3% (from 209.8 cases per 100,000 population in 2000/01 to 165.1 cases per 100,000 population in 2009/10) (see Table IS1 and Table IS3).

The incidence rate for CVD (standardised by age and sex) for over 75s has decreased from 1767.1 per 100,000 population in 2008/09 to 1701.1 per 100,000 population in 2009/10, a decrease of 3.7% (see Table IS1 and Table IS3).

Incidence is closely related to age - the rate for under 75s in 2009/10 was 101.1 per 100,000 population and for over 75s for the same period was 1701.1 per 100,000 population (see Table IS1 and Table IS3).

Incidence rates are consistently higher for males than females across all age groups (see Table IS1 and Table IS3).
Operations

The number of carotid endarterectomy operations performed increased between 2008/09 and 2009/10, from 468 to 518. The age-sex standardised rates for Scotland have remained fairly consistent over the last 5 years at around 7-8 per 100,000 population (see Table OS1).

![Carotid Endarterectomies; All Ages; Scotland; Age-Sex Standardised (European Standard Population) discharge rate per 100,000 population](image)

Data Sources
Registrar General for Scotland - Populations
ISD SMR01
P – Provisional

Hospital Activity

The male age-sex standardised hospital discharge rate for stroke has decreased from 269.1 per 100,000 in 2000/01 to 257.7 per 100,000 in 2009/10, a decrease of 4.2% and for females from 190.8 per 100,000 in 2000/01 to 183.7 per 100,000 in 2009/10, a decrease of 3.7% (see Tables AS1, AS2 and AS4).

Although there are more cerebrovascular disease discharges for women than men, the standardised discharge rates for men are higher - this is because cerebrovascular disease is a disease of old age and there are more women in the older population. At any given age men have a higher risk of stroke or cerebrovascular disease (see Table AS1).

Cerebrovascular disease age-sex standardised discharge rate for males has decreased by 4.0% between 2000/01 and 2009/10 (see Tables AS1, AS2 and AS4).

The female age-sex standardised discharge rate for subarachnoid haemorrhage continues to be higher than that for males (see Tables AS1, AS2 and AS4).
GP Prescribing

Over the decade 2000/01 - 2009/10 the numbers of prescriptions dispensed for cardiovascular related drugs continued to rise although the overall costs fell following a peak in the middle of the decade. For 2009/10 the cost of these medicines declined by a smaller proportion than in previous years, falling by under 1% from the preceding year compared to previous annual reductions of around 4% to 6%. Costs often reduce as medicines become available in generic form once drug patents expire (see Table G1).

The number of prescriptions for cardiovascular disease (both coronary heart disease and cerebrovascular disease) increased by 61% in the last decade (from 15 million in 2000/01 to 25 million in 2009/10). The associated costs over the same period rose by a fifth, from £150 million to £187 million, and reached a peak of £230 million in 2004/05 before reducing to £187 million in 2009/10 (see Table G1).

The full range of data tables for stroke are available at the following link: File Listings – a full listing
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Carotid Endarterectomy</td>
<td>an operation to either remove a blockage in the carotid artery in the neck, or to help keep the artery open by the insertion of a stent (a short stainless steel mesh tube).</td>
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<td>CVD</td>
<td>Cerebrovascular Disease. Includes subarachnoid haemorrhage, stroke (non-traumatic intracerebral haemorrhage and cerebral infarction) and transient ischaemic attacks (TIAs).</td>
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<tr>
<td>Stroke</td>
<td>occurs when an area of the brain is deprived of its blood supply - usually because of a blockage or burst blood vessel. ‘Stroke’ is commonly used to describe all cerebrovascular diseases and includes non-traumatic intracerebral haemorrhage and cerebral infarction</td>
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<tr>
<td>TIA</td>
<td>transient ischaemic attack.</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>class of diseases of the blood vessels in the brain, including strokes.</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>
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### List of Tables

<table>
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<td>DS1</td>
<td>Deprivation Table</td>
<td>2005-2009</td>
<td>Excel [145KB]</td>
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<td>GP Prescribing Tables</td>
<td>2000/01 - 2009/10</td>
<td>Excel [various]</td>
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<td>IS1, IS3</td>
<td>Incidence Tables</td>
<td>2000/01 - 2009/10</td>
<td>Excel [various]</td>
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<td>Mortality Tables</td>
<td>2000 - 2009</td>
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<td>OS1, OS2</td>
<td>Operations Tables</td>
<td>2000/01 - 2009/10</td>
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<td>S2</td>
<td>Survival Table</td>
<td>2000/01 - 2009/10</td>
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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.
Appendix

A1 – Background Information

Heart Disease & Stroke

Coronary heart disease (CHD) is a disease of the heart and coronary arteries caused by the build up of fatty materials in the blood vessels that supply the heart with oxygen. This can cause a heart attack, chest pain or angina. Cerebrovascular Disease, which includes cerebrovascular accident/stroke and transient ischaemic attack (TIA), is responsible for the deaths of more than 5,000 people in Scotland every year. A stroke or TIA happens when the blood supply to part of the brain is interrupted and the brain cells are starved of oxygen. This usually occurs because a blood vessel becomes blocked. Stroke is more common in people over the age of 65.

Risk factors associated with CHD & stroke

The main preventable risk factors for coronary heart disease and stroke are smoking, 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 2008. The 2003 survey included a specific report on Cardiovascular Diseases. You may also wish to refer to previous Scottish Health Survey reports from 1995 and 1998. Currently the Scottish Health Survey is running continuously from 2008-2011.

Scottish Health Survey 2009
Scottish Health Survey 2008
Scottish Health Survey 2003
Scottish Health Survey 2003 Cardiovascular Disease Report
Scottish Health Survey 1998
Scottish Health Survey 1995

Policy Context

NHSScotland service provision for patients with coronary heart disease and stroke operates within the framework of policy devised by the Scottish Government. A chronology of policy documents that steer service provision for CHD & 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)

The Scottish Government, in their 2009 action plan, reiterate their target of reducing premature mortality from coronary heart disease by 60% between 1995 and 2010. Our latest published information on the trend in CHD mortality among under 75s (Table MC2) indicates the mortality rate fell from 124.6 per 100,000 in 1995 to 50.4 per 100,000 in 2009, achieving a 60% reduction a year in advance of the target.

Data Quality

ISD's Data Quality Assurance team was established in 1990. The team is experienced in clinical coding and in other aspects of medical records and information work. Its main remit is the routine assessment of the quality of data held on the national SMR database.

The most recent report "Towards Better Data from Scottish Hospitals: An Assessment of SMR01 and Associated Data 2004 - 2006" [1.77Mb] was published in September 2007 and may be viewed or downloaded.

The report contains sub-sections on specific conditions and interventions, including some related to coronary heart disease.

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

For ICD10 codes, see http://www.who.int/classifications/icd/en/ (WHO) and for OPCS4 codes see http://www.connectingforhealth.nhs.uk/systemsandservices/data/clinicalcoding/codingstandards/opcs4 (CfH). For an extract of OPCS4 codes related to the heart see the file below.

See the Extract from 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 NHS Connecting for Health document Summary of Changes from OPCS-4.4 to OPCS-4.5 [118kb] for details of the latest updates to the coding classification.

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, 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/
Further Information

Our "Links to other sources" section offers a few examples of other information sources.
## A2 – Publication Metadata (including revisions details)

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<td>Stroke Statistics</td>
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<tr>
<td>Description</td>
<td>Annual update of stroke statistics. A full update including mortality, hospital activity and operations, incidence and prescribing.</td>
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<td>Format</td>
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<td>Data source(s)</td>
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<td>Date that data is acquired</td>
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<td>Release date</td>
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<td>Frequency</td>
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<td>Timeframe of data and timeliness</td>
<td>10 years annual data up to 31-Mar-2010.</td>
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<td>Continuity of data</td>
<td>The increase in numbers of stroke units has meant that it has become more likely, over recent years, for stroke victims to be admitted to hospital.</td>
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<td>Revisions statement</td>
<td>No revisions have occurred and there are no revisions planned.</td>
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<td>Concepts and definitions</td>
<td>See Glossary and A1 (Appendix 1) contained within this report.</td>
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<td>Relevance and key uses of the statistics</td>
<td>Monitoring of Scottish Government target to reduce premature mortality due to CVD between 1995 and 2010. Other uses of the data include information requests for a variety of customers, e.g. research charities; public companies; freedom of Information requests; information support to Boards; health intelligence work; parliamentary questions.</td>
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<td>Accuracy</td>
<td>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 occasionally assessed for accuracy by ISD's Data Quality Assurance – see <a href="http://www.isdscotland.scot.nhs.uk/Products-and-Services/Data-Quality/Previous-Projects/">http://www.isdscotland.scot.nhs.uk/Products-and-Services/Data-Quality/Previous-Projects/</a> .</td>
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<td>SMR01 data for year ending 31 Mar 2010 based on hospital discharges is provisional but we estimate that we have over 99% of all acute hospital discharge records.</td>
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<td>Comparability</td>
<td>Data relating to CVD activity in English</td>
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<td><strong>Accessibility</strong></td>
<td>It is the policy of ISD Scotland to make its web sites and products accessible according to published guidelines.</td>
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<td><strong>Coherence and clarity</strong></td>
<td>Relevant key statistics are presented on each <a href="#">Topic Area</a> 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, Procedure and other Groupings. 2. Key data presented graphically. 3. Each Excel workbook contains a notes page.</td>
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A3 – 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

Extended Pre-Release Access
Extended Pre-Release Access of 8 working days is given to a small number of named individuals in the Scottish Government Health Department (Analytical Services Division). This Pre-Release Access is for the sole purpose of enabling that department to gain an understanding of the statistics prior to briefing others in Scottish Government (during the period of standard Pre-Release Access).

  - Scottish Government Health Department (Analytical Services Division)