

Stroke statistics

Stroke is a sudden and devastating illness - however many people are unaware of its widespread impact. This resource sheet outlines some key statistics relating to stroke including incidence, mortality, morbidity, risk factors and stroke care.

Key messages about stroke

- There are approximately 152,000 strokes in the UK every year.¹ That is more than one every five minutes.
- There are approximately 1.1 million stroke survivors living in the UK.²
- Stroke is a leading cause of adult disability.³ More than half of all stroke survivors are left dependent on others for everyday activities.⁴
- High blood pressure is the most important risk factor for stroke, contributing to about 50% of all strokes.⁵
- One in five strokes are fatal. Stroke causes about 7% of deaths in men and 10% of deaths in women.⁶
- In 2010 stroke was the fourth largest cause of death in the UK after cancer, heart disease and respiratory disease, causing almost 50,000 deaths.⁷
- For every 1,000 patients who receive thrombolysis, a clot busting treatment, 80 will live more independently.⁸

- For every cancer patient living in the UK, £295 is spent each year on medical research, compared with just £22 a year for every stroke patient.⁹

Incidence of stroke

Incidence of stroke (per 100,000)¹⁰

	Men	Women
England	178	139
Scotland	202	160

Note: Figures not available for Northern Ireland and Wales.

Stroke incidence is approximately 25% higher in men than in women.¹¹

Note: Although stroke incidence is higher for men, there are more strokes in women because women generally live longer than men.

Stroke incidence decreased by about 18% in men and 24% in women between 1995/6 and 2003/4.¹²

African-Caribbean people are twice as likely to have a stroke compared with white people.¹³

80% of subarachnoid haemorrhages occur in women.¹⁴

About 5% of strokes occur in people already in hospital.¹⁵

Prevalence of stroke

The prevalence of stroke ¹⁶

	Men	Women
England	2.4%	2.2%
Northern Ireland	2%	1%
Scotland	3.3%	2.5%
Wales	3%	2%

Transient ischaemic attack (TIA)

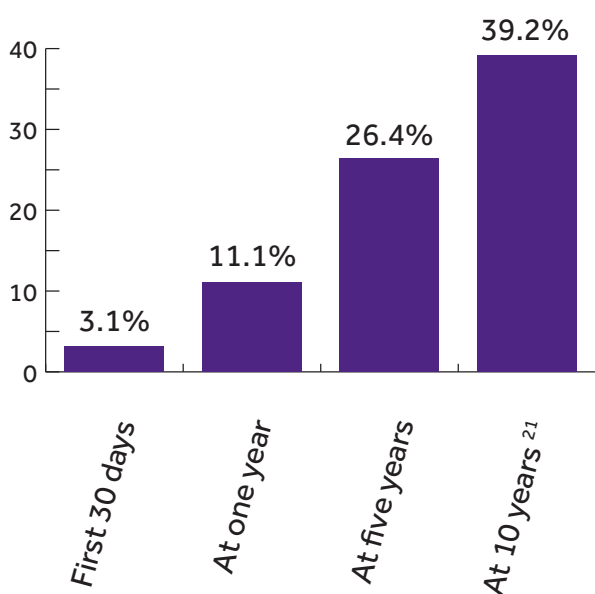
About 46,000 people in the UK each year have a first TIA.¹⁷

In 2004, one in 10 TIAs led to a stroke within a week.¹⁸ Treating TIAs urgently reduces the risk of stroke by 80%¹⁹ and in 2012, about one in 20 TIAs led to a stroke within a week.²⁰

Risk of further stroke

After a stroke the risk of a further one is significant and is highest in the first month.²¹

The cumulative risk of recurrent stroke is:²²



Types of stroke

Approximately:²³

85% of strokes are caused by a blockage (called ischaemic strokes).

15% of strokes are caused by bleeding in the brain (called haemorrhagic strokes) with

- 10% caused by a primary intercerebral haemorrhage, and
- 5% caused by a subarachnoid haemorrhage.

Causes of ischaemic stroke

Atherosclerosis in the large arteries - 50%.²⁴

A blood clot forming in the heart and travelling to the brain - 20%.²⁵

Lacunar strokes - 25%.²⁶

Rare causes including arterial dissection and patent foramen ovale - 5%.²⁷

Mortality

One in five strokes are fatal.²⁸

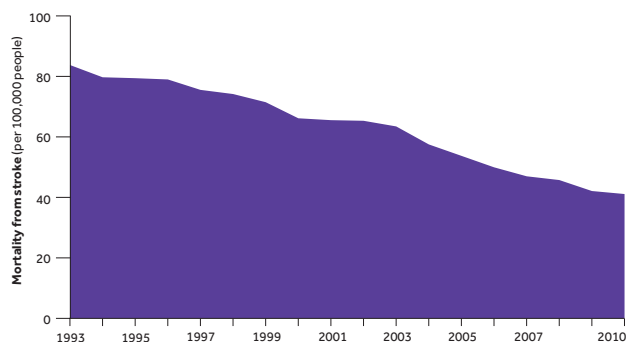
In 2010 stroke was the fourth largest cause of death in the UK after cancer, heart disease and respiratory disease.²⁹

In 2010 stroke caused almost 50,000 deaths in the UK.³⁰ This is approximately 7% of all deaths in men and 10% of all deaths in women.³¹

Breakdown of total number of deaths from stroke by UK country, 2010³²

	Males	Females	Total
UK	19,287	30,079	49,366
England	15,824	24,743	40,567
Northern Ireland	489	750	1,239
Scotland	1,889	2,875	4,764
Wales	1,085	1,711	2,796

Stroke mortality rates have halved over the last 20 years.³³



Data taken from the National Office of Statistics, Compendium of Population Health Indicators, Portal code P00680 (www.indicators.ic.nhs.uk).

Death rates from stroke vary across the UK with the highest rates in Scotland, the North of England, Wales and Northern Ireland. The lowest rates are in the South of England, particularly in London.³⁴

Deaths from subarachnoid haemorrhage

10-15% of people die before they reach hospital.³⁵

25% of people die within 24 hours.³⁶

Overall survival rates after a subarachnoid haemorrhage are 50%.³⁷

Premature mortality

Stroke is a major cause of premature mortality, responsible for over 8,500 deaths a year.³⁸

Premature death rates from stroke are around three times higher in the most deprived areas of the UK than in the least deprived.³⁹

Age

The incidence of stroke increases rapidly with age.⁴⁰

Breakdown of total number of deaths from stroke by age and sex in the UK 2010⁴¹

	Males	Females	Total
Under 35	91	62	153
35-44	224	131	355
45-54	515	425	949
55-64	1,126	813	1,939
65-74	2,883	2,326	5,209
75+	14,448	26,322	40,770
Total	19,287	30,079	49,366

Stroke in younger adults

Approximately 25% of strokes occur in people aged under 65 years.⁴²

Between 40% and 50% of strokes in younger adults are haemorrhagic.⁴³

In about a third of strokes in younger adults, a cause cannot be identified.⁴⁴

Childhood stroke

Five out of every 100,000 children each year have a stroke in the UK.⁴⁵

50% of childhood strokes are haemorrhagic, and 50% are ischaemic.⁴⁶

Heart disorders cause up to 25% of ischaemic strokes in children.⁴⁷

Morbidity

Stroke is a leading cause of adult disability.⁴⁸ More than half of all stroke survivors are left dependent on others for everyday activities.⁴⁹

Stroke causes a greater range of disabilities than any other condition.⁵⁰

Stroke has a greater disability impact than other chronic diseases.⁵¹

Stroke is the largest cause of complex disability in adults.⁵²

Of those who survive stroke, approximately:

- 42% will be independent
- 22% have mild disability
- 14% have moderate disability
- 10% have severe disability
- 12% have very severe disability.⁵³

At least a quarter of people in residential nursing care have had a stroke.⁵⁴

Approximately 11% of stroke patients are newly admitted to a care home after their stroke.⁵⁵

Stroke statistics

Specific effects of stroke

Difficulty	Percentage of people affected
General movement ⁵⁶	80%
Arm movement ⁵⁷	70%
Unable to use one arm in the long term ⁵⁸	40%
Spasticity ⁵⁹	19-38%
Altered sensation ⁶⁰	Up to 80%
Swallowing ⁶¹	40%
Aphasia ⁶²	33%
Visual problems ⁶³	Up to 66%
Depression ⁶⁴	29%
Emotionalism in the first six months ⁶⁵	20%
Ongoing emotionalism ⁶⁶	10%
Dementia six months post-stroke ⁶⁷	20%
Central post-stroke pain ⁶⁸	5-20%
Bladder control on being admitted to hospital ⁶⁹	50%
Bowel control on being admitted to hospital ⁷⁰	33%
Incontinence one year post-stroke ⁷¹	15%

European stroke statistics

Stroke is the second most common cause of death in Europe, causing 1.1 million deaths each year.⁷² This is 10% of all deaths in men and 15% of all deaths in women.⁷³

In people aged under 75, stroke causes over 370,000 deaths in Europe which is 8% of all deaths in men and 11% of all deaths in women.⁷⁴

In people aged under 65, stroke causes over 150,000 deaths in Europe, which is 6% of all deaths in men and 11% of all deaths in women.⁷⁵

Stroke costs the EU over 38 billion euros a year.⁷⁶

Worldwide stroke statistics

Approximately 15 million people worldwide have a stroke each year.⁷⁷

1 in 6 people around the world will have a stroke in their lifetime.^{78 79}

Two-thirds of stroke deaths occur in less developed countries.⁸⁰

Preventing stroke

Approximately 20,000 strokes in England alone could be avoided by preventative work on high blood pressure, irregular heartbeats, smoking cessation and wider statin use.⁸¹

Lifestyle factors

Smoking

Smoking doubles the risk of stroke.^{82, 83}

It is estimated that there are over 10.5 million adult smokers in the UK.⁸⁴ 20% of adults in Great Britain and 24% of adults in Northern Ireland smoke.⁸⁵

The more you smoke, the greater your risk.⁸⁶ A person smoking 20 cigarettes a day has six times the risk of stroke compared to a non-smoker.⁸⁷

Smoking is particularly dangerous if you have high blood pressure. You are five times more likely to have a stroke than smokers with normal blood pressure, and 20 times more likely to have a stroke than non-smokers with normal blood pressure.⁸⁸

Stroke statistics

It is estimated that 10% of deaths from stroke are due to smoking.⁸⁹

It is estimated that around 3,500 deaths from stroke each year are due to passive smoking.⁹⁰

Diet

Eating high amounts of fruit and vegetables can reduce your risk of stroke by up to 30% and the more you eat, the lower your risk.⁹¹ Every extra portion may reduce the risk by around another 5%.⁹²

Less than one third of people in Great Britain eat the recommended five or more portions of fruit and vegetables a day.⁹³

Higher salt intake is associated with a significantly greater incidence of stroke.⁹⁴ An increase of 5g of salt a day is associated with a 23% increased risk of stroke.⁹⁵

The average daily salt intake is 10g for men and 8g for women in Great Britain, much higher than recommended daily intake of 6g.⁹⁶

Overweight and obesity

Being overweight increases your risk of ischaemic stroke by 1.22.⁹⁷

Being obese increases your risk of ischaemic stroke by 1.64.⁹⁸

Rates of overweight in the UK

(latest figures available for each country)⁹⁹

Country	Men	Women
England	42%	32%
Northern Ireland	39%	30%
Scotland	39%	32%
Wales	41%	31%

Rates of obesity in the UK

(latest figures available for each country)¹⁰⁰

Country	Men	Women
England	26%	26%
Northern Ireland	25%	23%
Scotland	27%	28%
Wales	21%	21%

Exercise

Moderate physical activity can reduce the risk of stroke by up to 27%.¹⁰¹

Being physically inactive increases your risk of ischaemic stroke by 1.5.¹⁰²

Percentage of adults meeting the recommendations for physical activity¹⁰³

Country	Men	Women
England	42%	31%
Northern Ireland	44%	35%
Scotland	45%	33%
Wales	37%	24%

Around a third of adults in 2009 were inactive, doing less than one 30 minute session of exercise a week.¹⁰⁴

Stroke statistics

Alcohol

People regularly consuming a large amount of alcohol have a three fold increased risk of stroke.¹⁰⁵

In Great Britain (2010), 36% of men and 28% of women regularly consumed more than the recommended level of alcohol.¹⁰⁶

Medical conditions

High blood pressure

High blood pressure is the most important risk factor for stroke, contributing to about 50% of all strokes.¹⁰⁷

In England (2010) 31% of men and 29% of women had high blood pressure (a reading over 140/90mmHg or receiving treatment).¹⁰⁸

In Scotland (2010) 35% of men and 30% of women had high blood pressure.¹⁰⁹

Note: Comparable data from Wales and Northern Ireland is not available.¹¹⁰

53% of men and 41% of women with high blood pressure are not receiving treatment and of those being treated, around half still have high blood pressure.¹¹¹

Diabetes

People with diabetes are twice as likely to have a stroke compared to those without the condition.¹¹²

Prevalence of diagnosed diabetes in the UK (adults) 2010¹¹³

Country	Men	Women
England	6.3%	5.3%
Northern Ireland	4%	4%
Scotland	5.8%	4.3%
Wales	7%	6%

It is estimated that there are around 850,000 people in the UK who have undiagnosed diabetes.¹¹⁴

Type 2 diabetes is up to six times more common in people of South Asian descent and up to three times more common among people of African and African-Caribbean origin.¹¹⁵

Atrial fibrillation (irregular heart beat)

Atrial fibrillation increases your risk of stroke by up to five times.¹¹⁶

Approximately 12,500 strokes a year are directly attributed to atrial fibrillation.¹¹⁷

Appropriate treatment of atrial fibrillation could prevent 4,500 strokes and 3,000 deaths each year.¹¹⁸

Atrial fibrillation affects about 800,000 people in the UK.¹¹⁹

About a quarter of people admitted to hospital with stroke are in atrial fibrillation.¹²⁰

High cholesterol

High cholesterol is a contributory risk factor for stroke, having more of an effect on people who smoke or who are inactive. Reducing cholesterol levels with use of statins has been shown to reduce the risk of stroke by 21%.¹²¹

Approximately 58% of men and 61% women in England (2008) had cholesterol levels above the recommended level of 5.0mmol/l.¹²²

In Scotland 57% men and 58% women (aged up to 64) had cholesterol levels above the recommended level of 5.0mmol/l.¹²³

Stroke care

In 2010/11, 1% of all NHS inpatient episodes in England and 2% in Scotland were due to stroke.¹²⁴

For every 1,000 patients who receive thrombolysis, a clot busting treatment, 80 will live more independently.¹²⁵

In England, Wales and Northern Ireland only 5% of patients received thrombolysis treatment in 2010, though it could have benefited 14% of patients. But this is an improvement from 1.8% of patients who received thrombolysis in 2008.¹²⁶

In Scotland 6% of stroke patients received thrombolysis in 2010.¹²⁷

Patients cared for in a defined stroke unit with organised stroke services are more likely to survive, have fewer complications, and return home and regain independence quicker than patients on a general medical ward.¹²⁸

There are over 21,000 surgical procedures related to stroke every year in England.¹²⁹

Carotid endarterectomy reduces the risk of stroke by 16% in people with severe stenosis, and by 4.6% in people with moderate stenosis.¹³⁰

The mean length of stay in hospital for stroke patients has decreased significantly from 32 days in 2000, to 20 days in 2010.¹³¹

Community based specialist rehabilitation such as Early Supported Discharge can provide better and potentially more cost effective outcomes for people with moderate disabilities but only 36% of hospitals have these teams.¹³²

For every 100 patients receiving Early Supported Discharge, six fewer will die or live dependent on daily support from carers.¹³³

81% of patients admitted to hospital with stroke have a history of known vascular risk factors, about 29% have had a previous stroke or TIA and 57% have high blood pressure.¹³⁴

Financial impact of stroke

The costs of stroke are estimated to be between £3.7 billion¹³⁵ and £8 billion.¹³⁶

These estimated costs include direct health care costs, productivity losses due to mortality and morbidity, and informal care costs.

References

- ¹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P57
- ² Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P58
- ³ Adamson, J., Beswick, A. and Ebrahim, S. Stroke and Disability *Journal of Stroke and Cerebrovascular Diseases* 2004 vol 13, No. 4 2004 P171-177
- ⁴ Royal College of Physicians National Sentinel Stroke Clinical Audit 2010 Round 7 Public report for England, Wales and Northern Ireland. Prepared on behalf of the Intercollegiate Stroke Working Party May 2011 P43.
- ⁵ Lawes CM, Vander Hoorn S, Rodgers A. International Society of Hypertension. Global burden of blood pressure related disease, 2001. *Lancet* 2008; 371: 1513-8.
- ⁶ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P72
- ⁷ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P21
- ⁸ Sandercock, P on behalf of the IST-3 investigators (2012) IST-3 main results I Primary and secondary outcomes among 3,035 patients randomised in European Stroke Conference Abstracts, Lisbon, Portugal May 2012
- ⁹ Luengo-Fernandez, R, Leal, J and Gray, A (2012) UK research expenditure on dementia, heart disease, stroke and cancer: Are levels of spending related to disease burden? *European journal of Neurology* 19: P149-154
- ¹⁰ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P65
- ¹¹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P57
- ¹² Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P57
- ¹³ Dept of Health (2005) Reducing Brain Damage: Faster access to better stroke care, P5 National Audit Office Nov 2005
- ¹⁴ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P41-48
- ¹⁵ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P37
- ¹⁶ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P73-76
- ¹⁷ Rothwell, P., et al (2005). Population-based study of event-rate, incidence, case fatality, and mortality for all acute vascular events in all arterial territories (Oxford Vascular Study). *Lancet* 366; P1773-1783 in Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P41-48
- ¹⁸ Lovett, J, Dennis, M et al (2003) The very early risk of stroke following a TIA *Stroke* 34: P138-140
- ¹⁹ Rothwell, P (2007) Major reduction in risk of early recurrent stroke by urgent treatment of TIA and minor stroke: EXPRESS Study *Lancet* 370: P1432-1443
- ²⁰ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P39
- ²¹ Mohan, KM., Wolfe, CDA, Rudd, AG et al Risk and cumulative risk of stroke recurrence: A systemic review and meta analysis *Stroke* 2011 May; 42 (5) P1489-94
- ²² Mohan, KM., Wolfe, CDA, Rudd, AG et al Risk and cumulative risk of stroke recurrence: A systemic review and meta analysis *Stroke* 2011 May; 42 (5) P1489-94
- ²³ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P4
- ²⁴ Warlow, C., Gijn, J.V., Dennis, M et al. (2008). *Stroke practical management*. 3rd Edn. Blackwell Publishing; Oxford. P262
- ²⁵ Warlow, C., Gijn, J.V., Dennis, M et al. (2008). *Stroke practical management*. 3rd Edn. Blackwell Publishing; Oxford. P260
- ²⁶ Warlow, C., Gijn, J.V., Dennis, M et al. (2008). *Stroke practical management*. 3rd Edn. Blackwell Publishing; Oxford. P270
- ²⁷ Warlow, C., Gijn, J.V., Dennis, M et al. (2008). *Stroke practical management*. 3rd Edn. Blackwell Publishing; Oxford. P355-358
- ²⁸ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P72
- ²⁹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P21
- ³⁰ Townsend N, Wickramasinghe K, Bhatnagar P,

Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P19

³¹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P21

³² Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P20

³³ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P12 & 21

³⁴ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P13

³⁵ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P48

³⁶ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P48

³⁷ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P48

³⁸ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P20

³⁹ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P9 & 33

⁴⁰ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P44

⁴¹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P19

⁴² Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P25

⁴³ Love, B. B. & Biller, J. (2009) Stroke in Children and Young Adults: Overview, Risk Factors, and Prognosis. In: Biller, J. (Ed.) Stroke in Children and Young Adults (2nd edition). Saunders Elsevier: Philadelphia. P4

⁴⁴ Love, B. B. & Biller, J. (2009) Stroke in Children and Young Adults: Overview, Risk Factors, and Prognosis. In: Biller, J. (Ed.) Stroke in Children and Young Adults (2nd edition). Saunders Elsevier: Philadelphia. P8

⁴⁵ Royal College of Physicians. (2004) Care after stroke in childhood. Information for parents and families of children affected by stroke. Lavenham Press Ltd; Suffolk. P5

⁴⁶ Biller, J (2009). Stroke in Children and Young Adults. 2nd Edition. Saunders Elsevier; Philadelphia. P261-262

⁴⁷ Biller, J (2009). Stroke in Children and Young Adults. 2nd Edition. Saunders Elsevier; Philadelphia. P135

⁴⁸ Adamson, J., Beswick, A. and Ebrahim, S. Stroke and Disability Journal of Stroke and Cerebrovascular Diseases vol 13, No. 4 2004

⁴⁹ Royal College of Physicians National Sentinel Stroke Clinical Audit 2010 Round 7 Public report for England, Wales and Northern Ireland. Prepared on behalf of the Intercollegiate Stroke Working Party May 2011 P43.

⁵⁰ Adamson, J., Beswick, A. and Ebrahim, S. Stroke and Disability Journal of Stroke and Cerebrovascular Diseases 2004 vol 13, No. 4 2004 P171-177

⁵¹ Adamson, J., Beswick, A. and Ebrahim, S. Stroke and Disability Journal of Stroke and Cerebrovascular Diseases 2004 vol 13, No. 4 2004 P171-177

⁵² Adamson, J., Beswick, A. and Ebrahim, S. Stroke and Disability Journal of Stroke and Cerebrovascular Diseases 2004 vol 13, No. 4 2004 P171-177

⁵³ Royal College of Physicians National Sentinel Stroke Clinical Audit 2010 Round 7 Public report for England, Wales and Northern Ireland. Prepared on behalf of the Intercollegiate Stroke Working Party May 2011 P43

⁵⁴ Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P8

⁵⁵ Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P38

⁵⁶ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P81

⁵⁷ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P83

⁵⁸ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P87

⁵⁹ Royal College of Physicians and the Clinical Effectiveness & Evaluation Unit (2008) National Clinical Guidelines for Stroke (3rd Edn). Lavenham Press Ltd; Suffolk. P59

⁶⁰ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P81

⁶¹ Royal College of Physicians and the Clinical Effectiveness & Evaluation Unit (2008) National Clinical Guidelines for Stroke (3rd Edn). Lavenham Press Ltd; Suffolk. P59

⁶² Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P97

⁶³ MacIntosh C. Stroke re-visited: visual problems following stroke and their effect on rehabilitation in British Orthoptic Journal. 2003; 60: P1-14

⁶⁴ Ayerbe L, Ayis S, Wolfe CD, and Rudd AG. Natural history, predictors and outcomes of depression after stroke: systematic review and meta-analysis. Br J

Psychiatry. 2013 Jan; 202:14-21

⁶⁵ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P115

⁶⁶ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P115

⁶⁷ Royal College of Physicians and the Clinical Effectiveness & Evaluation Unit. (2008) National Clinical Guidelines for Stroke. 3rd Edn. Lavenham Press Ltd; Suffolk. P88: 6.30.

⁶⁸ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P95

⁶⁹ Harwood, Huwez and Good (2nd edition, 2010) Stroke Care Oxford Care Manuals, OUP P202-205

⁷⁰ Harwood, Huwez and Good (2nd edition, 2010) Stroke Care Oxford Care Manuals, OUP P202-205

⁷¹ Barrett JA (2001) Bladder and bowel problems after a stroke. Review of Clinical Gerontology 12: P253-67

⁷² Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P10

⁷³ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P10

⁷⁴ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P10

⁷⁵ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P10

⁷⁶ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P116

⁷⁷ WHO The Atlas of heart disease and stroke section 15: Global burden of stroke http://www.who.int/cardiovascular_diseases/en/cvd_atlas_15_burden_stroke.pdf Mackay, J and Mensah, G 2004 (accessed 31/10/12)

⁷⁸ World Stroke Organization Facts and figures about stroke <http://www.world-stroke.org/for-patients/facts-and-figures-about-stroke> (accessed 31/10/12)

⁷⁹ Seshadri, S. and Wolf, P.A. Lifetime risk of stroke and dementia: current concepts, and estimates from the Framingham Study Lancet Neurology vol 6, issue 12 P1106-1114 December 2007

⁸⁰ Warlow C, Sudlow C, Dennis M, Wardlaw J, Sandercock P. Stroke The Lancet Vol. 362, Issue

9391, 11 October 2003 P1211-1224

⁸¹ Department of Health, 2006, ASSET 2 – Action on stroke services: An evaluation toolkit for commissioners London, DH.

⁸² American Heart Association Scientific Statement: Primary prevention of ischaemic stroke. Stroke 2001 P32-280

⁸³ Bonita, R. et al Passive smoking s well as active smoking increases the risk of acute stroke Tobacco Control (1999) 8: P156-160

⁸⁴ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P65

⁸⁵ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P106

⁸⁶ Smoking and stroke: a causative role. Munther I. Aldoori and Sakhawat H. Rahman. BMJ, Vol. 317, No. 7164. (10 October 1998), P962-963

⁸⁷ Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P65

⁸⁸ Smoking and stroke: a causative role. Munther I. Aldoori and Sakhawat H. Rahman. BMJ, Vol. 317, No. 7164. (10 October 1998), P962-963

⁸⁹ Health Committee second report 2000 The Tobacco Industry and the health risks of smoking Published by authority of the House of Commons London The Stationary Office Ltd. P3

⁹⁰ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P61

⁹¹ Pubmed, Is a high intake of fruits and vegetables related to a lowered risk of cerebrovascular disease?, June 2005, Ovesen LF, <http://www.ncbi.nlm.nih.gov/pubmed/16014257> (accessed 22/10/12)

⁹² Pubmed, Fruit and vegetable consumption and risk of stroke: a meta-analysis of cohort studies, October 2005, Dauchet L, Amouyel P, Dallongeville J., <http://www.ncbi.nlm.nih.gov/pubmed/16247045> (accessed 22/10/12)

⁹³ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P107

⁹⁴ Strazzullo, P, D'Elia, L., Kandala, N., and Cappuccio, F.P. Salt intake, stroke and cardiovascular disease: meta analysis of prospective studies BMJ 2009; 339:b4567

⁹⁵ Strazzullo, P, D'Elia, L., Kandala, N., and Cappuccio, F.P. Salt intake, stroke and cardiovascular disease: meta analysis of prospective studies BMJ 2009; 339:b4567

⁹⁶ Townsend N, Wickramasinghe K, Bhatnagar P,

Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P107 & 129

⁹⁷ Strazzullo, P D'Elia, L Cairella, G et al Excess body weight and incidence of stroke: Meta-analysis of prospective studies with 2 million participants Stroke 2010; 41 e418-e426

⁹⁸ Strazzullo, P D'Elia, L Cairella, G et al Excess body weight and incidence of stroke: Meta-analysis of prospective studies with 2 million participants Stroke 2010; 41 e418-e426

⁹⁹ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P104

¹⁰⁰ Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis P104

¹⁰¹ Lee, C.D. et al (2003) Physical activity and stroke risk: A meta-analysis Stroke 34 P2475-2481

¹⁰² WHO The Atlas of heart disease and stroke part 2: Risk factors http://www.who.int/cardiovascular_diseases/en/cvd_atlas_08_physical_inactivity.pdf Mackay, J and Mensah, G 2004 (accessed 31/10/12)

¹⁰³ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P135

¹⁰⁴ Scarborough P, Bhatnagar P, Wickramasinghe K, Smolina K, Mitchell C, Rayner M (2010). Coronary heart disease statistics 2010 edition. British Heart Foundation: London. P99

¹⁰⁵ Leatherman, S Sunderland, K and Airoidi, M Bridging the quality gap (2008). The Health Foundation London in Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P 67

¹⁰⁶ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P108

¹⁰⁷ Lawes CM, Vander Hoorn S, Rodgers A. International Society of Hypertension. Global burden of blood pressure related disease, 2001. Lancet 2008; 371: 1513-8.

¹⁰⁸ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P160

¹⁰⁹ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P160

¹¹⁰ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P160

¹¹¹ Scarborough P, Bhatnagar P, Wickramasinghe K, Smolina K, Mitchell C, Rayner M (2010). Coronary heart disease statistics 2010 edition. British Heart Foundation: London. P116

¹¹² The Emerging Risk factors Collaboration. Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies: The Lancet 26 June 2010 Volume 375, Issue 9733, P2215-2222

¹¹³ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P195

¹¹⁴ Diabetes UK (2012) Diabetes in the UK 2012: Key statistics on diabetes P4

¹¹⁵ Diabetes UK (2012) Diabetes in the UK 2012: Key statistics on diabetes P8

¹¹⁶ Wolf, P.A., Abbott R.A. and Kannel.W.B. (1991) Atrial fibrillation as an independent risk factor for stroke: The Framingham study. Stroke 22 (8) P983-88

¹¹⁷ Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P40

¹¹⁸ Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P9

¹¹⁹ British Heart Foundation Types of heart condition: Atrial fibrillation <http://www.bhf.org.uk/living-with-a-heart-condition/understanding-heart-conditions/types-of-heart-conditions/heart-rhythms/atrial-fibrillation.aspx> (accessed 31/10/12)

¹²⁰ Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P50

¹²¹ Amerenco et al Statins in stroke prevention and carotid atherosclerosis: systematic review and up to date meta analysis Stroke 2004, 35 (12) 2902-9 in Biller, J and Ferro, J, Evidence-based management of stroke (2011) Gutenberg Press Ltd. P31

¹²² Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P161

¹²³ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P161

¹²⁴ Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P95-6

¹²⁵ Sandercock, P on behalf of the IST-3 investigators (2012) IST-3 main results I Primary and secondary outcomes among 3,035 patients randomised" in

Stroke statistics

European Stroke Conference Abstracts, Lisbon, Portugal May 2012

¹²⁶Royal College of Physicians (2011) National sentinel stroke clinical audit 2010 round 7. Public report for England, Wales and Northern Ireland. P34

¹²⁷NHS National Services Scotland Scottish Stroke Care Audit 2011 National Report ISD Scotland P31

¹²⁸Reducing brain damage: Faster access to better stroke care. National Audit Office Report Department of Health 2005

¹²⁹Scarborough, P Peto, V Bhatnagar, P, Kaur, A Leal J, Luengo-Fernandez R, Gray A, Rayner M, Allender S (2009) Stroke statistics. British Heart Foundation and Stroke Association: London. P54

¹³⁰Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians 2012 P72

¹³¹Royal College of Physicians National Sentinel Stroke Clinical Audit 2010 Round 7 Public report for England, Wales and Northern Ireland. Prepared on behalf of the Intercollegiate Stroke Working Party May 2011 P43

¹³²Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P8

¹³³Langhorne, P Early Supported Discharge services for stroke patients: a meta-analysis of individual patients' data Lancet 365 P501-6

¹³⁴Royal College of Physicians National Sentinel Stroke Clinical Audit 2010 Round 7 Public report for England, Wales and Northern Ireland. Prepared on behalf of the Intercollegiate Stroke Working Party May 2011 P27

¹³⁵Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, Luengo-Fernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London. P206

¹³⁶Department of Health National Audit Office (2010) Progress in improving stroke care London: The Stationary Office P13

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Resource sheet 11, version 1, published January 2013, next review due December 2014

Item code: **A01R11**



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