

National Assembly for Wales

In Figures: Strokes Research Paper

November 2009

This paper provides a statistical portrait of the incidence of strokes in Wales.

It includes figures on health conditions and health related lifestyles which often increase the risk of having a stroke. Statistics on the quality of stroke services in Wales are also provided.

Members'
Research
Service



The National Assembly for Wales is the democratically elected body that represents the interests of Wales and its people, makes laws for Wales and holds the Welsh Government to account.

The Members' Research Service is part of the National Assembly for Wales. We provide confidential and impartial research support to the Assembly's scrutiny and legislation committees, and to all 60 individual Assembly Members and their staff.

Members' Research Service briefings are compiled for the benefit of Assembly Members and their support staff. Authors are available to discuss the contents of these papers with Members and their staff but cannot advise members of the general public. We welcome comments on our briefings; please post or email to the addresses below.

An electronic version of this paper can be found on the National Assembly's website at:
www.assemblywales.org/bus-assembly-publications-research.htm

Further hard copies of this paper can be obtained from:

Members' Research Service
National Assembly for Wales
Cardiff Bay
CF99 1NA

Email: MembersLibrary@wales.gsi.gov.uk

Enquiry no: 09/3361

National Assembly for Wales

In Figures: Strokes Research Paper

Jenny King

November 2009

Paper Number: 09/033

© National Assembly for Wales Commission 2009

© Comisiwn Cynulliad Cenedlaethol Cymru 2009

Members'
Research
Service



Executive Summary

This paper is intended to support the National Assembly for Wales' **Health, Wellbeing and Local Government Committee's inquiry** into the provision of stroke services in Wales. The inquiry was initiated following a series of reports published by the Royal College of Physicians which raised serious concerns about the quality of stroke services in Wales.

This research paper focuses on the incidence and death rate due to strokes, the factors which are suggested to increase the risk of having a stroke and the quality of stroke services in Wales.

The rate of hospital admissions and the rate of deaths linked with strokes have decreased since 2001. The prevalence and mortality rate is considerably higher in men and those aged over 65.

Of the factors that have been suggested to increase the risk of stroke:

- The prevalence of high blood pressure increases with age as does the prevalence of diabetes.
- Over 50 per cent of Welsh adults are estimated to be obese or overweight, accounting for 62 per cent of men and 53 per cent of women.
- Around 24 per cent of Welsh adults smoke. The proportion of smokers peaks in the 25-34 age group and then decreases with age.
- 45 per cent of the Welsh adult population are estimated to drink over the suggested guidelines, with more than 50 per cent of men drinking above guidelines.
- It is estimated that 70 per cent of people in Wales do not meet the recommended guidelines for exercise of 30 minutes of moderate exercise five days of the week. The proportion meeting the guidelines decreases with age.

From the National Sentinel Audit of Stroke 2008 there has been an overall improvement in the quality of care for stroke patients in Wales since 2006, although the standard of care is still considerably lower than that for stroke patients in England and Northern Ireland.

Contents

1	Introduction.....	1
2	Incidence of strokes.....	2
	Welsh Health Survey	3
	Quality and Outcomes Framework.....	3
	Hospital admissions	5
	Mortality rate	6
	Younger people.....	7
3	Risk factors	8
	High blood pressure.....	9
	Diabetes.....	10
	Obesity or overweight	10
	Smoking.....	11
	Drinking excessive amounts of alcohol	12
	Lack of exercise	12
4	Stroke services	14
	Useful links and further information	16

In Figures: Strokes

1 Introduction

This paper is part of the Members' Research Service In Figures series, which provide statistical portraits of key social and economic issues. This particular issue focuses on statistics relating to strokes.

The paper has been split into three sections. The first section presents the prevalence of strokes in the Welsh population. The second section provides statistics on a number of health conditions and health related lifestyles that have been associated with increasing the risk of having a stroke. The final section is on the quality of stroke services in Wales in comparison with the rest of the UK.

An electronic version of this paper is available on the [Members' Research Service](#) pages of the National Assembly for Wales' website

2 Incidence of strokes

Strokes account for 11 per cent of all deaths in England and Wales, and affects between 174 and 216 people per 100,000 population in the UK each year¹.

In Wales, the prevalence of strokes can be measured in a number of different ways. Information is available on hospital admissions and mortality rates as a result of a stroke and the Welsh Health Survey includes a question about those that have ever been treated for a stroke. As an additional indicator, GP's are encouraged to complete the Quality and Outcomes Framework (QOF)², detailing practice achievement results against a series of service indicators. The information held includes the numbers of patients registered at GPs who have had strokes and transient ischaemic attacks (TIA) (sometimes called a 'mini stroke').

Key Statistics

- The percentage of those treated for a stroke is much higher in those aged 65 and over than in the total adult population.
- In 2008-09 there were over 63 thousand patients on the QOF stroke and ischaemic attack register in Wales, accounting for 2 per cent of all patients registered.
- There has been a decline in the rate of hospital admissions and the mortality rate as a result of a stroke since 2001-02.
- Prevalence rates in each of the last five years appear higher for men than women for those aged 65 and over.³
- An estimated 25 per cent of all strokes in Wales are in those under the age of 65.⁴

¹ Welsh Government: [*National Service Framework for Older People in Wales*](#) (March 2006) (page 95) [at 22 October 2009]

² QOF's is a voluntary system of financial incentives, rewarding contractors for good practice through participation in an annual quality improvement cycle.

³ As the results are based on a sample survey results are subject to sampling variability.

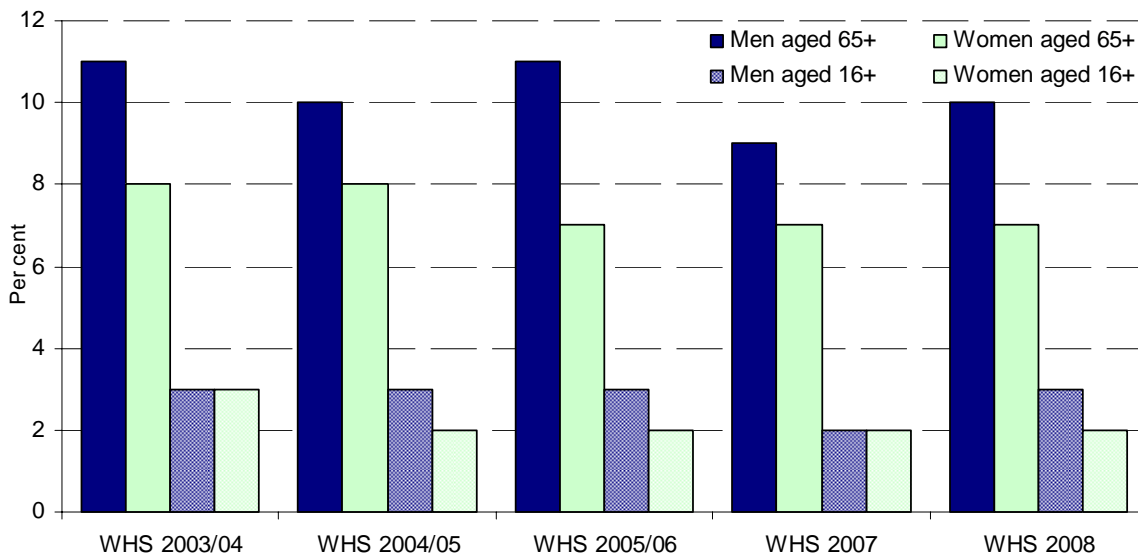
⁴ [Health, Wellbeing and Local Government Committee \(HWLG\(3\)-19-09-paper 21\) Inquiry: Stroke Services in Wales, 23 September 2009](#)

Welsh Health Survey

The **Welsh Health Survey** is a common measure for the prevalence of illnesses in Wales, as it surveys a proportion of the population on health and health related lifestyles. The survey has been carried out annually since 2004; the most recent publication is the **Welsh Health Survey 2008**. The survey includes a self completion section on illnesses the interviewee has been/or is currently being treated for, and included in this section are details of those that have **ever been treated** for stroke.

The following graph (figure 1) shows that there is no significant trend in the percentage of adults that have ever been treated for a stroke in Wales in the last five years, although the percentage of those treated aged 65 and over is much higher than all adults (note that this measure represents an individuals' accumulated experience over their lifetime).

Figure 1: Adults ever been treated for a stroke, by gender and age, 2003/04 to 2008



Source: **Welsh Health Survey**
From 2007 the survey was carried out by calendar year.

Quality and Outcomes Framework

Reported levels of stroke prevalence are also available from the **Quality and Outcomes Framework (QOF)**. The QOF is a voluntary system⁵ of financial incentives that rewards GPs for good practice through the General Medical Services contract. The QOF contains four main components, known as domains, and each domain contains a set of indicators. Practices score points according to their level of achievement against each indicator. One of the domains is the clinical domain, which contains 80 indicators in 19 areas; this includes an indicator on the prevalence of "Stroke and transient ischaemic attack". As a result of this, GPs record

the number of patients registered at their practice who have had a stroke or ischaemic attack. Table 1 lists the number of patients in each local authority which are on the “stroke or ischaemic attack” register in 2008-09 and as a percentage of the number of registered patients in each local authority.

Table 1 shows that there has been little change in the percentage of patients in Wales on the stroke register between 2006-07 and 2008-09 and there is little variation between each authority in 2008-09. As a proportion of the total number of patients registered in each authority, Cardiff had the smallest percentage, 1.6 per cent on the stroke register while Conwy had the largest, 2.5 per cent compared to the Wales average of 2.0 per cent.

Care should be made in making comparisons between authorities as there will be some **double counting** of patients on lists, for example when a patient moves they may temporarily be registered to more than one GP. This explains why the total number of patients registered in Wales exceeds the population of Wales

Table 1: Patients registered on the stroke and ischaemic attack register, 2008-09

	List Size	Number on Stroke Register	Per cent
Isle of Anglesey	66,270	1,501	2.26%
Gwynedd	125,634	2,341	1.86%
Conwy	116,450	2,931	2.52%
Denbighshire	100,416	2,320	2.31%
Flintshire	147,985	2,554	1.73%
Wrexham	142,781	2,472	1.73%
Powys	137,279	3,118	2.27%
Ceredigion	95,465	1,919	2.01%
Pembrokeshire	117,957	2,777	2.35%
Carmarthenshire	174,500	3,963	2.27%
Swansea	247,106	5,067	2.05%
Neath Port Talbot	138,284	3,189	2.31%
Bridgend	152,513	3,505	2.30%
The Vale of Glamorgan	123,328	2,461	2.00%
Cardiff	364,113	5,750	1.58%
Rhondda Cynon Taf	243,715	4,922	2.02%
Merthyr Tydfil	58,689	1,101	1.88%
Caerphilly	183,908	3,410	1.85%
Blaenau Gwent	74,810	1,353	1.81%
Torfaen	93,892	1,794	1.91%
Monmouthshire	96,679	2,069	2.14%
Newport	145,776	2,739	1.88%
North Wales Region	699,536	14,119	2.02%
Mid & West Wales Region	1,063,104	23,538	2.21%
South East Wales Region	1,384,910	25,599	1.85%
Wales - 2006-07	3,118,073	61,448	1.97%
Wales - 2007-08	3,137,864	62,264	1.98%
Wales - 2008-09	3,147,550	63,256	2.01%

Source: [StatsWales Table 4111](#) and Members' Research Service calculations

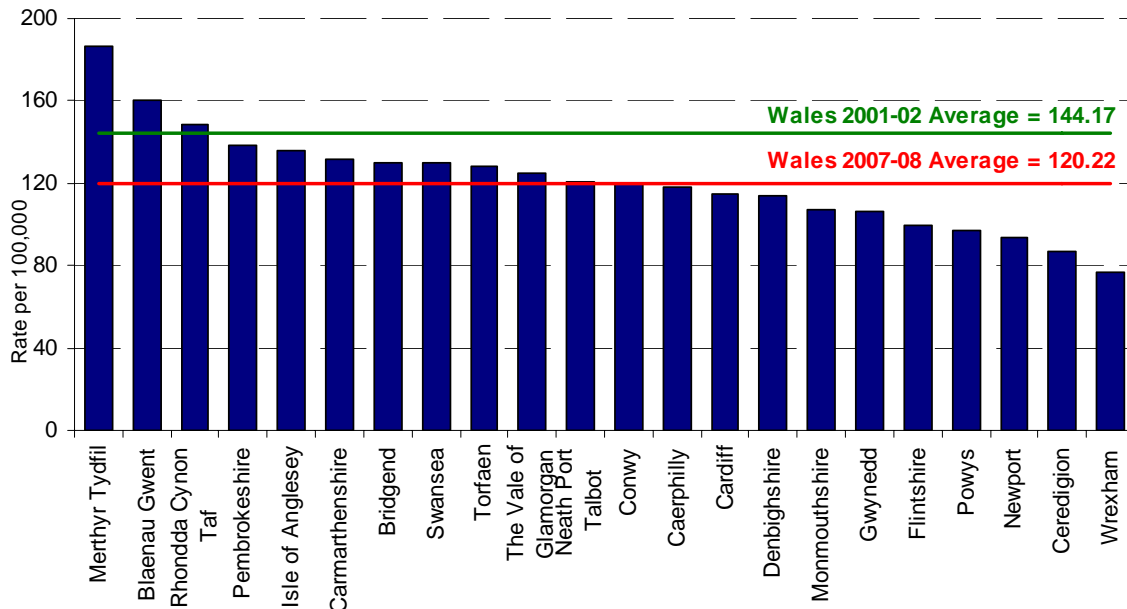
⁵ In 2008-09 all practices in Wales participated.

Hospital admissions

Health Solutions Wales⁶ publish information on the rate of hospital admissions for certain illnesses, for each local authority⁷. These include statistics on hospital admissions for strokes (cerebrovascular disease – ICD-10⁸ codes I60-I69). Figure 2 shows the number of hospital admissions, by local authority, with a stroke as the primary diagnosis per 100,000 population in 2007-08 and the all Wales averages for 2001-02 and 2007-08.

Figure 2 shows that the rate of hospital admissions due to strokes has declined significantly between 2001-02 and 2007-08. The highest rate of hospital admissions in 2007-08 were in the valley areas of Merthyr Tydfil, Blaenau Gwent and Rhondda Cynon Taf, whilst Ceredigion and Wrexham had the lowest rate.

Figure 2: Rate^a of hospital admissions due to strokes^b in 2007-08



Source: [Health Solutions Wales - Health Maps Wales](#)

a) Rate has been calculated using hospital admission figures and European Age-Standardised Rates.

b) Hospital admissions with a stroke as the primary diagnosis

⁶ Information on hospital admissions is available on the [Health Maps Wales](#) section of the Health Solutions Wales website.

⁷ All data provided by Health Solutions Wales is recorded by **residents** local authority area not the area in which the patient is treated.

⁸ World Health Organisation: [International Statistical Classification of Diseases and Related Health Problems \(10th Revision\) - Version for 2007](#) [at 22 October 2009]

Mortality rate

Health Solutions Wales also collates details of the number of deaths due to strokes by resident local authority⁷. The information is available as two year average mortality rates for specific age groups and as single year averages for local authority totals. Table 2 provides details of the **two year average** mortality rate due to strokes by gender and age, while figure 3 provides the stroke mortality rate by local authority in 2007 (**single year**) and the all Wales averages for 2001 and 2007.

Table 2: Two year average mortality rate^a due to stroke, by gender and age group

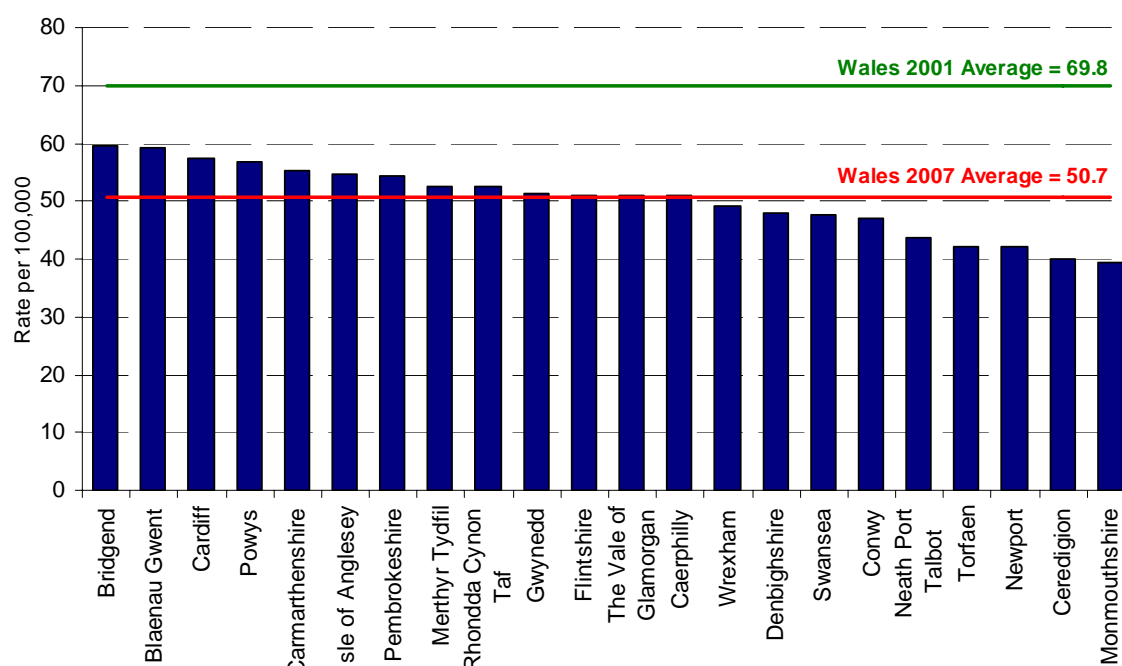
	2002-2003		2004-2005		2006-2007	
	All Ages	65 -74	All Ages	65 -74	All Ages	65 -74
Men	72.0	209.3	58.4	155.7	54.3	138.9
Women	66.1	159.0	56.3	126.5	49.3	106.8
All Persons	69.1	182.7	58.1	140.4	51.9	122.2

Source: [Health Solutions Wales - Health Maps Wales](#)

a) Rate is number of deaths per 100,000 population (European age standardised) over two calendar years.

From table 2 and figure 3, it can be seen that the stroke mortality rate has declined since 2001, however, as displayed in table 2 the stroke mortality rate is much higher in those aged between 65 and 74 and higher in men than women. This shows a similar trend to the Welsh Health Survey data presented in figure 1. The highest stroke mortality rates were in Bridgend and Blaenau Gwent, the lowest were in Ceredigion and Monmouthshire.

Figure 3: Stroke mortality rate^a, by local authority, 2007



Source: [Health Solutions Wales - Health Maps Wales](#)

a) Rate is number of deaths per 100,000 population (European age standardised)

Younger people

Although little statistical information is available on the prevalence of strokes in people under 65, evidence submitted to the Health, Wellbeing and Local Government Committee suggests that a considerable number are being affected by strokes.

Evidence provided by the College of Occupation Therapists states that:

A quarter of the 110,000 people who have a stroke in England are under 65 years of age (National Audit Office 2005). 10,000 people under the age of 55 suffer a stroke every year - 1,000 of these are under the age of 30⁹.

While evidence from two consultant clinical psychologists states that:

Eleven thousand people in Wales have a stroke each year and 25% of them are under the age of 65.¹⁰

⁹ Health, Wellbeing and Local Government Committee (HWLG(3)-22-09-paper 2) Inquiry: Stroke Services in Wales, 21 October 2009

¹⁰ Health, Wellbeing and Local Government Committee (HWLG(3)-19-09-paper 21) Inquiry: Stroke Services in Wales, 23 September 2009

3 Risk factors

There are a number of lifestyle factors which affect the likelihood of having a stroke. This chapter provides details on the prevalence of each factor within Wales, broken down by gender and age. This aims to highlight the Welsh demographic groups that are more likely to be affected by a stroke.

Key Statistics

From the respondents of the Welsh Health Survey 2008:

- For those aged 75 and over, 55 per cent were being treated for high blood pressure.
- Those being treated for diabetes increased with age.
- Overweight and obesity were high in all ages and were higher in men than women.
- Those that smoked decreased with age and was highest in those between 25 and 34.
- 45 per cent of all adults reported exceeding the daily guidelines for drinking alcohol in the week prior to completing the survey.
- 70 per cent of adults reported not meeting guidelines for physical activity during the past week.

Main risk factors

The [**NHS Direct Wales**](#) website highlights the following health conditions and health related lifestyles that are suggested to increase the risk of having a stroke:

- High blood pressure
- Diabetes
- Obesity or being overweight
- Smoking
- Drinking excessive amounts of alcohol
- High cholesterol
- Lack of exercise

The data on the prevalence of these risk factors are taken from the most recent **Welsh Health Survey (2008)** (WHS).¹¹ Information is not available on the prevalence of high cholesterol although it is often linked with obesity and being overweight.

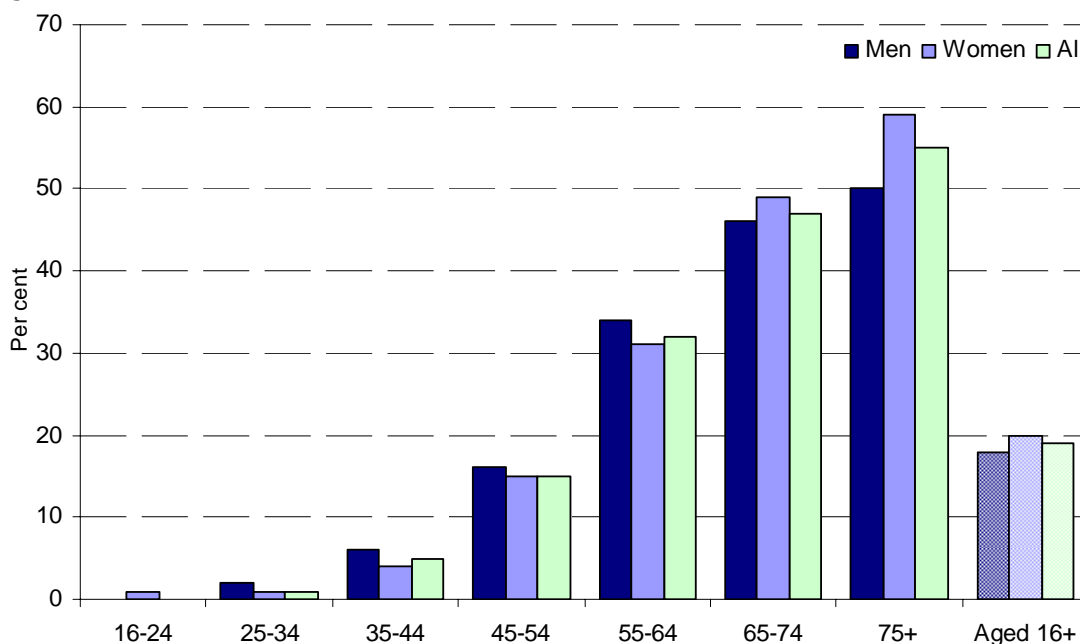
The findings are based on a sample of the general population living in Wales. As with any survey, results are estimates of the true population value and are likely to vary slightly from any results which would have been obtained if everyone living in Wales had completed the questions. This is known as the sampling error.

In some of the charts presented it may appear that there are significant differences between different groups of the population (e.g. men and women). However, care should be taken when interpreting results because these differences may be due to the sampling error rather than any true difference between the groups.

High blood pressure

Figure 4 provides information on the percentage of WHS respondents that reported currently being treated for high blood pressure. The graph breaks down the data by age groups and by gender. From figure 4 the percentage of adults who reported being treated for high blood pressure increased with age. For those aged 75 and over, 55 per cent of respondents reported being treated for high blood pressure. The prevalence rate for men appears to be higher for all age ranges between 25 and 64, but higher for women in the over 65 and 16-24 age ranges.¹²

Figure 4: Adults who reported currently being treated for high blood pressure, by age and gender



Source: **Welsh Health Survey 2008**

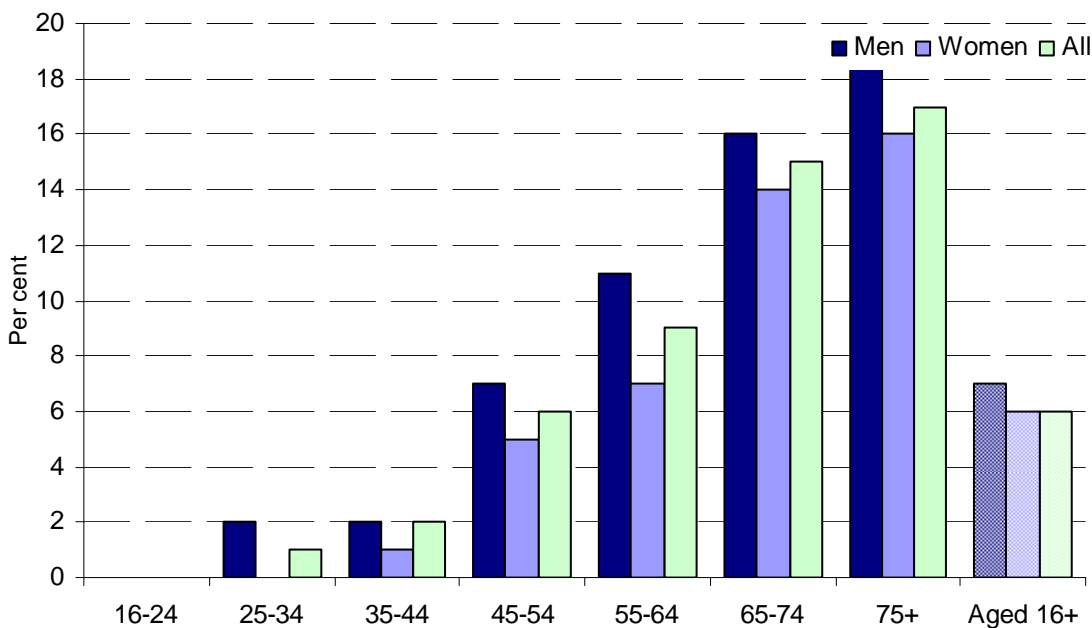
¹¹ It should be taken into consideration that the survey relies on a self-completion questionnaire. The results, therefore, reflect people's own understanding of their health rather than a clinical assessment of their medical condition.

¹² As the results are based on a sample survey results are subject to sampling variability.

Diabetes

Respondents were asked if they were currently being treated for diabetes, making no distinction between type 1 and type 2 diabetes. From these results figure 5 shows that the percentage of respondents who reported being treated for diabetes increased with age. The prevalence rate for men appears to be higher in all age ranges, except for 16-24 years old where there were less than 0.5 per cent of male or female respondents currently being treated for diabetes.¹³

Figure 5: Adults who reported currently being treated for diabetes, by age and gender



Source: [Welsh Health Survey 2008](#)

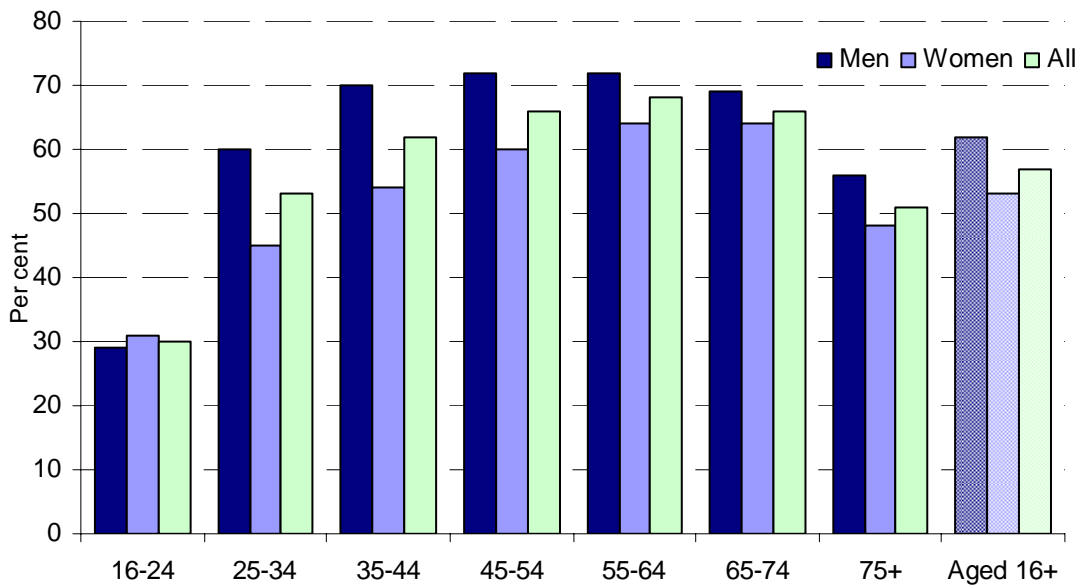
Obesity or overweight

In the Welsh Health Survey, respondents were recorded as obese or overweight if they had a body mass index (BMI) of 25 and over.¹⁴ The percentage of respondents that were either overweight or obese are provided by gender and age group in figure 6, which illustrates that this accounts for 57 per cent of respondents. The graph also shows that overweight or obesity are high in all age groups, with the highest levels in those aged between 45 and 74. The overall percentage of men overweight or obese is higher than the percentage of women.

¹³ As the results are based on a sample survey results are subject to sampling variability.

¹⁴ BMI was calculated from self-reported weights and heights provided by the respondents.

Figure 6: Adults that are overweight or obese, by gender and age

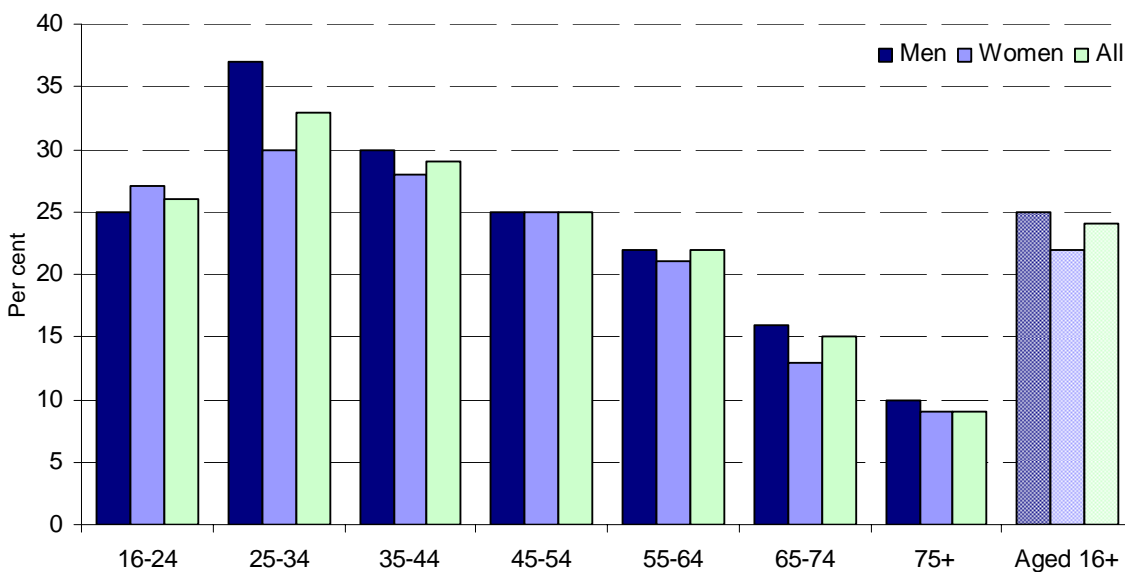


Source: [Welsh Health Survey 2008](#)

Smoking

Statistics on smoking in the Welsh Health Survey include those who report either smoking daily or occasionally. The data, in figure 7, shows that the percentage of respondents who reported smoking decreases with age, with the highest proportion aged between 25 and 34. Overall, the proportion of men and women who reported smoking is similar, with the prevalence in men appearing to be slightly higher in most age ranges.¹⁵

Figure 7: Adults who reported smoking, by age and gender

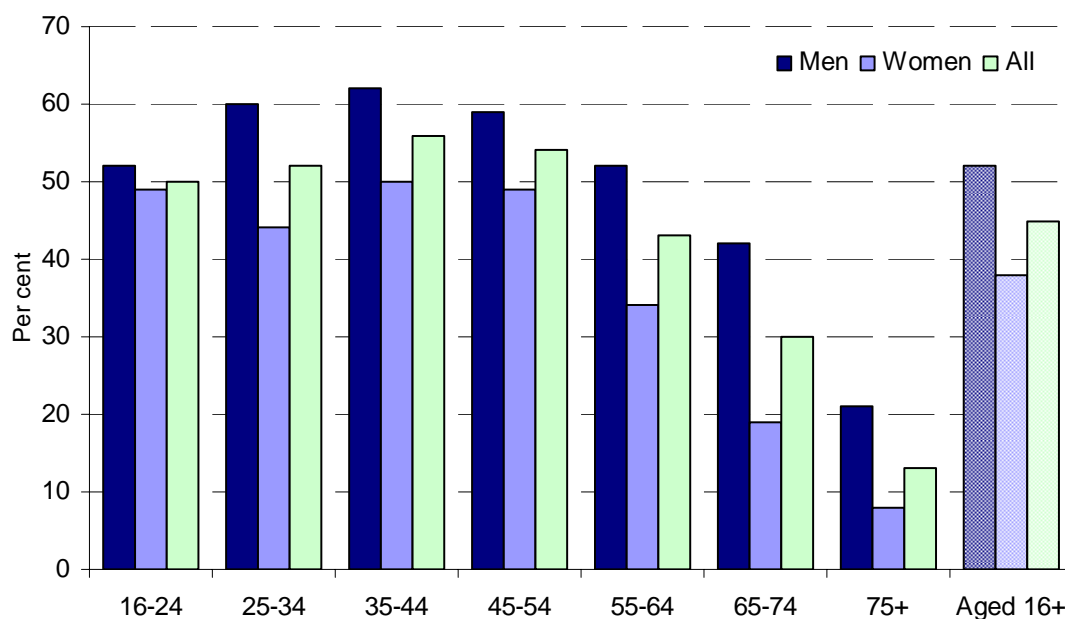


Source: [Welsh Health Survey 2008](#)

Drinking excessive amounts of alcohol

Figure 8 presents data on the percentage of adults who, on their heaviest drinking day in the past week, reported drinking above the Department of Health guidelines.¹⁶ The graph shows that drinking above the guidelines was less common in older people. Of all adults, 45 per cent exceeded the guidelines in the previous week. Men were more likely to report drinking above the guidelines on at least one day in the past week (52 per cent of men and 38 per cent of women).

Figure 8: Adults drinking alcohol above guidelines in week prior to interview, by age and gender



Source: [Welsh Health Survey 2008](#)

Lack of exercise

The Department of Health recommends that adults should do at least 30 minutes of moderate intensity physical exercise on five or more days a week.¹⁷ The Welsh Health Survey collects data on the number of days that each respondent has done at least 30 minutes of moderate exercise¹⁸. Figure 9 shows that 70 per cent of adults reported not meeting guidelines for physical activity during the past week. A higher proportion of women than men reported not meeting the guidelines. The proportion not meeting the guidelines increased with age.

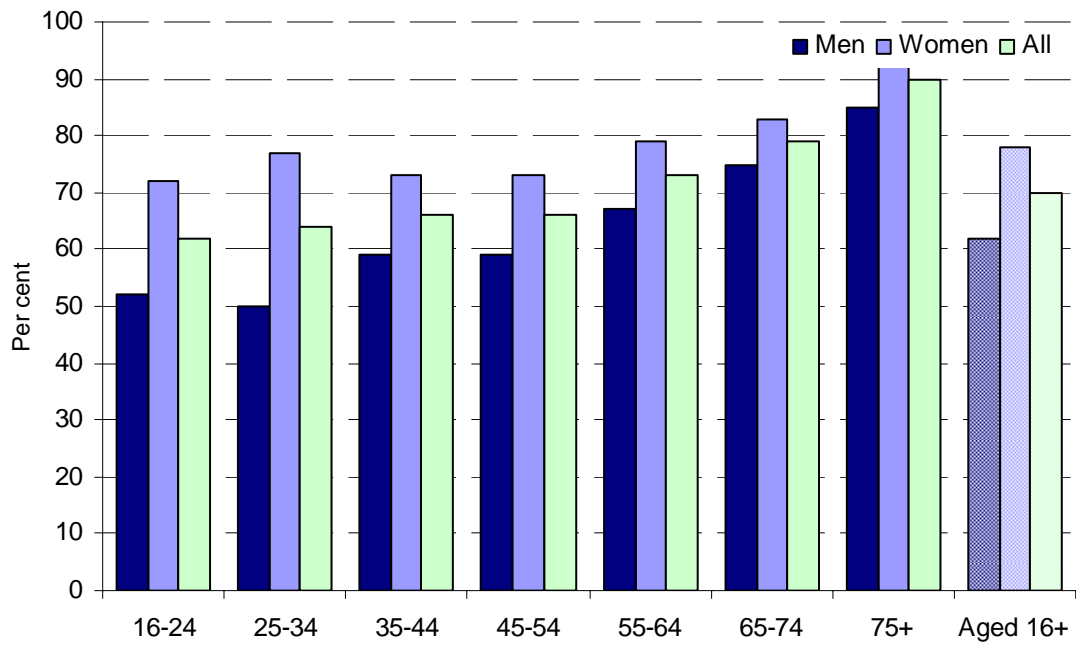
¹⁵ As the results are based on a sample survey results are subject to sampling variability.

¹⁶ Department of Health guidelines on [Alcohol Misuse](#) are that women should not regularly drink more than 2-3 units per day and men should not regularly drink more than 3-4 units.

¹⁷ Department of Health: [At least five a week: Evidence on the impact of physical activity and its relationship to health](#) (April 2004)

¹⁸ Respondents were asked to include physical activity which was part of their job, for example heavy gardening.

Figure 9: Adults who reported not meeting physical activity guidelines during the past week, by age and gender



Source: [Welsh Health Survey 2008](#)

4 Stroke services

In December 2007 the Minister for Health and Social Services, Edwina Hart, announced the improvement of stroke services was to be made a high priority by the Welsh Government¹⁹. This announcement followed the publication of the Royal College of Physicians **2006 audit** of stroke services in Wales, in May 2007, which stated explicitly that stroke services in Wales needed urgent attention. This chapter compares the results of the 2006 audit with the results of the recently published audit of 2008 services.

The **National Sentinel Audit of Stroke** is produced by the Royal College of Physicians and has collected data on the quality of stroke care in England, Wales and Northern Ireland in a two year cycle since 1998-99. The 2006 audit combined both phase 1 (organisational) and 2 (clinical) of the two year cycle while the 2008 audit only has results for phase 2. This section compares data from the two clinical audits.

The clinical audit measures the delivery of care against standards established from the National Institute for Clinical Excellence (NICE) and the National clinical guidelines for stroke²⁰. For both audits these were represented as nine key indicators which each patients' care was measured against in the audit.

Table 3 compares the standard of the delivery of care in Wales from 2004 to 2008 against the nine key indicators. This shows that in Wales, there has been an overall average **increase of 6 percentage points** in the standard of stroke care from 2006 to 2008²¹, with the **greatest improvement, of 16 percentage points**, in **'physiotherapy assessment within first 72 hours of admission'**. There was a **decrease** in the percentage of patients **'screened for swallowing disorders'** and **'mood assessed by discharge'**.

¹⁹ Welsh Government, Edwina Hart, **Stroke Services**, Cabinet Statement (7 December 2007)

²⁰ **The National clinical guidelines for stroke** have been published by the Intercollegiate Stroke Working Party (ICSWP) and are available on the Royal College of Physicians website.

²¹ The overall average can only be calculated from 2006 as some indicators were not measured in 2004.

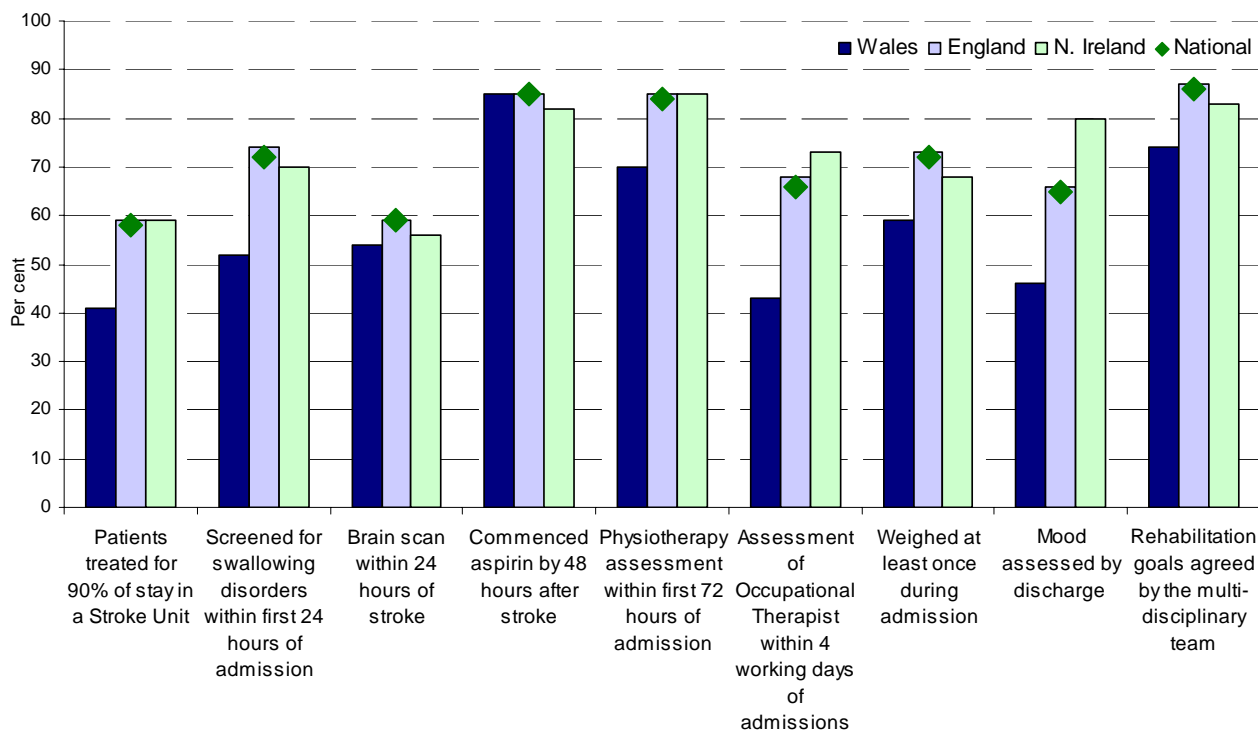
Table 3: Compliance with each indicator in Wales, 2004 to 2008

	<i>Per cent</i>		
	2004	2006	2008
	<i>Patients</i>		
	667	925	863
Patients treated for 90% of stay in a Stroke Unit	N/A	39	41
Screened for swallowing disorders within first 24 hours of admission	51	55	52
Brain scan within 24 hours of stroke	N/A	38	50
Commenced aspirin by 48 hours after stroke	73	76	85
Physiotherapy assessment within first 72 hours of admission	49	54	70
Assessment of Occupational Therapist within 4 working days of admissions	N/A	30	43
Weighed at least once during admission	51	54	59
Mood assessed by discharge	47	53	46
Rehabilitation goals agreed by the multi-disciplinary team	67	70	74
Average for 9 indicators	N/A	52	58

Source: **National Sentinel Audit of Stroke Phase 2 (clinical audit) 2008** (table 4.6)

Comparisons can also be made with the other nations included in the audit (England and Northern Ireland). Figure 10 shows that in the 2008 audit the **standards of the delivery of care remained lower in Wales in all indicators**, with the exception of ‘commenced aspirin within 48 hours’ which was at the same standard as England and higher than Northern Ireland.

Figure 10: Compliance with each indicator, by country, 2008



Source: **National Sentinel Audit of Stroke Phase 2 (clinical audit) 2008** (table 4.2)

Useful links and further information

The links below provide further information about the data sources used in this paper and also contain links to further information about the prevalence of strokes and other health conditions in Wales.

[Health, Wellbeing and Local Government Committee inquiry into Stroke Services in Wales](#)

[Welsh Health Survey](#) published by the Welsh Government

[Health Maps Wales](#) published by Health Solutions Wales

[National Sentinel Audit of Stroke Services](#) published by the Royal College of Physicians

[The Stroke Association](#)

