

Welsh population mortality indicators

PHW Analysis

Updated June 2016

This document has been produced with the support of Public Health Wales, and should be read alongside the health Board's quarterly mortality publication.

A range of other population mortality indicators are measured in Wales. This document gives a snapshot of some of these. Some of the same factors (e.g. material deprivation) which impact on hospital mortality indicators also influence these mortality measures.

Updates

Since the last quarterly publication, the following indicators have been updated in this document:

- Perinatal mortality

Life Expectancy at Birth

The following table shows the life expectancy at birth¹ for males and females born between 2012 and 2014. Life expectancy for males and females in Denbighshire, and females in Wrexham are below the Welsh average.

Life Expectancy at birth 2012-14

	Male	Female
Isle of Anglesey	78.7	83.0
Gwynedd	80.0	83.5
Conwy	79.1	82.9
Denbighshire	77.8	81.3
Flintshire	79.0	82.5
Wrexham	78.5	81.8
Wales	78.5	82.3

Source: Office for National Statistics

Figure 1: Life Expectancy

Stillbirths and Perinatal Mortality²

¹ <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-418735>

² Public Health Wales Observatory. 2013 *Health of Children & Young People in Wales*. Available at: <http://www.wales.nhs.uk/sitesplus/922/page/69312>

Stillbirths are defined as late fetal deaths i.e. from 24 weeks of gestation; perinatal mortality is defined as stillbirths plus deaths in the first week of life. Perinatal mortality can be used as a proxy for the quality of antenatal and perinatal care given to the mother and fetus/baby. Perinatal, stillbirth, neonatal and infant mortality rates in Wales have remained largely unchanged in recent years. Smoking and/or obesity during pregnancy and having a baby at an older age are major risk factors for stillbirth.

In 2014 there were 177 stillbirths and 236 perinatal deaths in Wales. The stillbirth rate for Wales in 2014 was 5.2 per 1,000 births. The 2014 perinatal mortality rate for Wales was 7.0 per 1,000 births.

Live births, stillbirths and infant mortality statistics, 2014

Area of usual residence	Numbers						Mortality Rates ¹			
	Births		Deaths				Perinatal	Neonatal	Post-neonatal	Infant
	Live births	Stillbirths	Perinatal	Neonatal	Post-neonatal	Infant				
WALES	33,544	177	236	72	36	108	7.0	2.1	1.1	3.2
Betsi Cadwaladr University	7,365	40	54	17	6	23	7.3	2.3 <i>u</i>	0.8 <i>u</i>	3.1
Powys Teaching	1,149	5	5	1	1	2	4.3 <i>u</i>	<i>u</i>	<i>u</i>	<i>u</i>
Hywel Dda	3,639	11	20	9	3	12	5.5 <i>u</i>	2.5 <i>u</i>	0.8 <i>u</i>	3.3 <i>u</i>
Abertawe Bro Morgannwg University	5,492	38	47	11	7	18	8.5	2.0 <i>u</i>	1.3 <i>u</i>	3.3 <i>u</i>
Cwm Taf	3,465	20	27	8	5	13	7.7	2.3 <i>u</i>	1.4 <i>u</i>	3.8 <i>u</i>
Aneurin Bevan	6,563	28	36	11	4	15	5.5	1.7 <i>u</i>	0.6 <i>u</i>	2.3 <i>u</i>
Cardiff and Vale University	5,871	35	47	15	10	25	8.0	2.6 <i>u</i>	1.7 <i>u</i>	4.3

Note: Rates are not calculated where there are fewer than 3 deaths in a cell, denoted by (u). It is ONS practice not to calculate rates where there are fewer than 3 deaths in a cell, as rates based on such low numbers are susceptible to inaccurate interpretation. Rates which are based on between 3 and 19 deaths are displayed in tables but are denoted by (u) as a warning to the user that their reliability as a measure may be affected by the small number of events

¹ Perinatal deaths per 1,000 live births and stillbirths. Neonatal, postneonatal and infant deaths per 1,000 live births.

Source: Office for National Statistics

<http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/childhoodinfantandperinatalmortalityinenglandandwales/2014>

Next Update: Jan - Feb 2017

Figure 2: Stillbirth and perinatal mortality

Figure 2 shows the 2014 infant mortality rates for Wales and each Health Board.

For perinatal mortality, the all Wales figure was 7.0 per 1,000 live births and stillbirths. Health Board rates ranged from 4.3 (noting the low numbers statistically) in Powys to 8.5 in Abertawe Bro Morgannwg. The BCUHB rate was 7.3 per 1,000.

Neonatal and Infant Mortality Rates³

Neonatal deaths are defined as deaths in the first month of life (<28 days); infant deaths are defined as occurring within the first year of life. The majority of childhood deaths occur in the first year of life, with the main causes being prematurity and congenital anomalies.

In 2014, there were 72 neonatal and 108 infant deaths in Wales. The neonatal mortality rate for Wales

³ Public Health Wales Observatory. 2013 *Health of Children & Young People in Wales*. Available at: <http://www.wales.nhs.uk/sitesplus/922/page/69312> (last accessed 27/11/14)

in 2014 was 2.1 per 1,000 live births. The 2014 infant mortality rate for Wales was 3.2 per 1,000 births.

For BCUHB, there were 17 neonatal, and 24 infant deaths. The neonatal mortality rate was 2.3 per 1,000 live births. The infant mortality rate was 3.1 per 1,000 births.

Age standardised mortality rates: all causes of death

The all-cause, all-age mortality rate is a measure of the rate at which people are dying in the North Wales population. Age standardized mortality rates (ASMRs) adjust for differences in population age distribution by applying the observed age-specific mortality rates for each population to a standard population. However, these rates can be influenced by the same factors that impact on hospital mortality rates, namely material deprivation and lifestyle factors. This data has been updated since last publication using the 2013 European Population Standard.

Figure 2 shows the ASMR for each local authority in Wales (2013). The 6 North Wales local authorities are highlighted in red. It can be seen that only Denbighshire (1143.5 per 100,000) has an ASMR higher than the Welsh average (1059.9 per 100,000). Please note that Confidence Intervals (CIs) are not displayed.

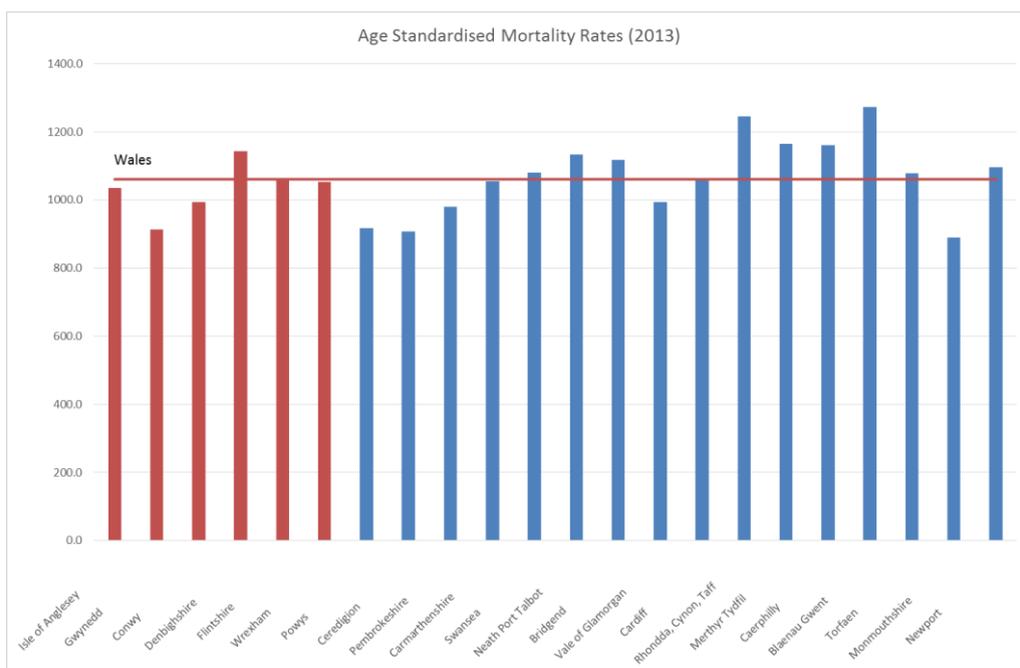


Figure 3: Age Standardised Mortality rates

Source: ONS

Avoidable Mortality

The basic concept of avoidable mortality is that deaths caused by certain conditions, for which effective public health and medical interventions are available, should be rare and ideally should not occur. While a particular condition can be considered to be avoidable, this does not mean that every death caused by

this condition could be prevented. In producing an indicator of avoidable mortality, the precise nature of each death, such as the age of the patient, the extent of disease progression at diagnosis, or the existence of other medical conditions, is not taken into account. There are three types of avoidable mortality defined⁴:

- **Amenable mortality:** A death is amenable (treatable) if, in the light of medical knowledge and technology at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided through good quality healthcare.
- **Preventable mortality:** A death is preventable if, in the light of understanding of the determinants of health at time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided by public health interventions in the broadest sense.
- **Avoidable mortality:** Avoidable deaths are all those defined as preventable, amenable or both, where each death is counted only once. Where a cause of death is both preventable and amenable, all deaths from that cause are counted in both categories when they are presented separately.

Figures 3 and 4 show causes considered avoidable, amenable and preventable, age standardised, per 100,000 persons for Wales and BCUHB respectively.

Avoidable mortality rates fell in Wales from 327.3 per 100,000 in 2003 to 238.1 per 100,000 in 2014. While this represents a significant improvement, this is a smaller decrease than that observed in England. Figures for BCUHB were 268.8 in 2003 and 220.7 in 2014..

Figure 3

Causes of death considered avoidable, amenable & preventable, European age-standardised rate (EASR) per 100,000, persons, Wales, 2003-2014

	Avoidable		Amenable		Preventable	
	Count	EASR (95% Confidence Intervals)	Count	EASR (95% Confidence Intervals)	Count	EASR (95% Confidence Intervals)
2003	8,749	327.3 (320.4-334.2)	4,844	182.0 (176.9-187.2)	7,099	265.3 (259.1-271.6)
2004	8,293	307.1 (300.5-313.8)	4,460	165.7 (160.8-170.6)	6,770	250.6 (244.6-256.6)
2005	8,233	301.7 (295.2-308.3)	4,404	162.3 (157.6-167.2)	6,738	246.5 (240.7-252.5)
2006	8,003	289.7 (283.4-296.2)	4,133	150.2 (145.6-154.8)	6,621	239.5 (233.7-245.4)
2007	8,197	292.2 (285.9-298.7)	4,111	146.9 (142.4-151.4)	6,738	240.1 (234.4-246.0)
2008	8,028	281.9 (275.8-288.2)	3,880	136.6 (132.3-141.0)	6,630	232.6 (227.0-238.3)
2009	7,854	271.4 (265.4-277.5)	3,819	132.4 (128.2-136.7)	6,550	226.2 (220.7-231.7)
2010	7,657	261.5 (255.7-267.5)	3,671	125.6 (121.6-129.7)	6,358	217.0 (211.7-222.4)
2011	7,470	252.7 (247.0-258.5)	3,595	121.7 (117.7-125.8)	6,171	208.7 (203.5-214.0)
2012	7,485	249.4 (243.7-255.1)	3,596	120.0 (116.1-124.0)	6,189	206.1 (201.0-211.4)
2013	7,599	249.4 (243.8-255.0)	3,567	117.0 (113.2-120.9)	6,333	207.9 (202.8-213.1)
2014	7,366	238.1 (232.7-243.6)	3,421	110.4 (106.7-114.1)	6,108	197.4 (192.5-202.4)

Produced by Public Health Wales Observatory, using PHM (ONS) and MYE (ONS)

Figure 4

Causes of death considered avoidable, amenable & preventable, European age-standardised rate (EASR) per 100,000, persons, Betsi Cadwaladr UHB, 2003-2014

	Avoidable		Amenable		Preventable	
	Count	EASR (95% Confidence Intervals)	Count	EASR (95% Confidence Intervals)	Count	EASR (95% Confidence Intervals)
2003	1,972	308.8 (295.3-322.8)	1,073	168.1 (158.2-178.5)	1,623	254.2 (242.0-266.9)
2004	1,915	296.8 (283.6-310.4)	940	146.2 (136.9-155.8)	1,616	250.1 (238.0-262.6)
2005	1,995	305.8 (292.5-319.6)	1,027	158.0 (148.4-168.0)	1,651	252.5 (240.4-265.0)
2006	1,903	289.1 (276.2-302.4)	970	147.6 (138.4-157.2)	1,574	239.0 (227.3-251.1)
2007	1,905	284.6 (271.9-297.8)	956	143.4 (134.4-152.8)	1,566	233.3 (221.9-245.2)
2008	1,956	287.1 (274.5-300.2)	929	136.1 (127.5-145.2)	1,617	236.9 (225.5-248.8)
2009	1,927	277.2 (264.9-290.0)	914	131.9 (123.4-140.7)	1,617	232.2 (221.0-243.9)
2010	1,817	259.2 (247.4-271.5)	870	123.9 (115.7-132.4)	1,500	213.9 (203.2-225.1)
2011	1,688	238.9 (227.6-250.6)	792	112.0 (104.3-120.1)	1,370	193.8 (183.6-204.4)
2012	1,765	246.2 (234.8-258.0)	819	114.3 (106.5-122.4)	1,472	205.2 (194.8-216.0)
2013	1,757	241.4 (230.2-253.0)	841	115.0 (107.3-123.1)	1,459	200.5 (190.3-211.1)
2014	1,780	241.7 (230.5-253.2)	814	109.9 (102.5-117.8)	1,457	197.7 (187.7-208.2)

Produced by Public Health Wales Observatory, using PHM (ONS) and MYE (ONS)

Excess Winter Mortality

Winter weather has a direct effect on the incidence of a number of conditions including myocardial infarction, stroke, respiratory disease, flu, falls and injuries and hypothermia.⁵ The strongest link is between respiratory deaths and the cold but as more people in general die from cardiovascular disease, this has the greatest winter mortality burden. Housing conditions are a very important factor in driving excess winter mortality.

Overall, the death rate is higher during winter months and these deaths are referred to as 'excess winter deaths'. The majority of excess winter deaths occur among those aged 75 and over. The Office for national Statistics (ONS) standard method defines the winter period as December to March, and compares the number of deaths that occurred in this winter period with the average number of deaths occurring in the preceding August to November and the following April to July.

The EWM index (EWMI) is calculated so that comparisons can be made between sexes, age groups and regions, and is calculated as the number of excess winter deaths divided by the average non-winter deaths:

⁵NICE. 2014. *Excess winter deaths and morbidity and the health risks associated with cold homes (draft guideline)*. Available at: <http://www.nice.org.uk/guidance/gid-phg70/documents/excess-winter-deaths-and-illnesses-guideline-consultation-draft-guideline-2> (last accessed 27/11/14)

$$EWM \text{ Index} = (EWM / \text{average non-winter deaths}) \times 100$$

A major limitation for EWM statistics is that it assumes April of year X is identical in climatic conditions to April of year Y. Clearly this is not the case, and comparing on the basis of seasonality is flawed because our seasons are highly variable. The ONS is trying to address this limitation by developing a temperature based model.⁶

In 2011/12 Wales had the second lowest EWMI when compared to 9 regional areas in England. However, such outcomes tend to fluctuate year on year across areas – e.g. in 2010/11 Wales had the highest EWMI.

Figure 5 shows the Excess Winter Mortality Index for Wales, and the 6 North Wales local authorities for the 4 years to 2013-14. Only Gwynedd and Conwy had an Excess Winter Mortality Index less than the Welsh average of 10.3. In keeping with national trends, the EWMI at regional level tends to fluctuate year on year.

Figure 5: Excess Winter Mortality

Excess Winter Mortality Index (EWMI)

Area Name	2010-11	2011-12	2012-13	2013-14
Wales	20.4	12.8	18.1	10.3
Isle of Anglesey	34.9	:	13.1	17.2
Gwynedd	11.2	23.8	23.7	5.7
Conwy	15.1	4.6	15.5	3.3
Denbighshire	19.4	16.0	13.2	22.3
Flintshire	21.4	16.4	28.0	14.6
Wrexham	33.5	12.2	27.5	19.0

Source: Office for National Statistics

: The EWM index cannot be calculated where the number of EWD's is equal to zero or where there are a negative number of excess winter deaths.

Provisional 2014-15 Unitary Authority data not available from ONS

Mortality by place of occurrence

RAMI is heavily influenced by the proportion of deaths in a community that occur in hospital.

The following table shows the percentage mortality by place of occurrence⁷ for 2014. A total of 7,550 (2013 = 7,608) deaths were recorded for the 6 North Wales Local Authority areas covered by Betsi Cadwaladr University Health Board. Of these, 54.2% (2013 = 54.4%) occurred in an NHS hospital in our area. This is lower than the Wales average of 55.9% (2013 = 56.4%). The percentage of people dying in their own home is slightly lower than the Welsh average, while the percentage dying in a non NHS hospice is higher.

⁶ Walsh, H. Public Health Wales Observatory. *Personal Communication*

⁷ <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-327590>

Percentage of deaths by place of occurrence 2014

LHB Area	Home	Care Home		Hospices		Hospitals (acute or community not psychiatric)		Other communal establishments	Elsewhere
		Local Authority	Non-Local Authority	NHS	Non-NHS	NHS	Non-NHS		
Betsi Cadwaladr University	21.5%	0.8%	16.2%	0.0%	4.7%	54.2%	0.3%	0.1%	2.2%
Powys Teaching	24.7%	1.3%	15.5%	0.0%	4.1%	51.3%	0.1%	0.7%	2.3%
Hywel Dda	26.4%	1.9%	17.5%	0.0%	1.2%	50.7%	0.0%	0.1%	2.2%
Abertawe Bro Morgannwg University	22.7%	1.2%	14.5%	0.0%	0.0%	58.2%	0.0%	1.3%	2.1%
Cwm Taf	20.6%	0.8%	9.2%	1.9%	0.1%	65.8%	0.0%	0.0%	1.6%
Aneurin Bevan	24.3%	0.8%	14.2%	0.0%	2.1%	56.4%	0.0%	0.2%	2.0%
Cardiff and Vale University	20.6%	0.5%	14.5%	0.0%	7.7%	54.5%	0.0%	0.0%	2.0%
WALES	22.8%	1.0%	14.8%	0.2%	2.8%	55.9%	0.1%	0.3%	2.1%

Source: ONS

<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcn%3A77-378961>