

Children and Young People Committee Inquiry into Neonatal Care

Additional information from Aneurin Bevan Local Health Board

During the meeting on 17 May, Aneurin Bevan Local Health Board were asked to comment on transfers in and out of their area. Their response is below:

1. Whether any babies condition has deteriorated whilst being transferred by an ambulance from Powys?

I can confirm that from 1 January 2011 we have had no babies transferred from Powys to Aneurin Bevan Health Board.

2. Number of unplanned transfers out of the South East Wales Community

The number of unplanned or acute transfers out of the South East Wales Community was taken from data on the Badgernet transfer entries for 2011. There were 14 transfers to University Hospital of Wales, 2 to St Michaels Hospital in Bristol and 1 to Singleton Hospital in Swansea. For 2012 (up to 31st May 2012) there have been the following transfers: 9 to University Hospital of Wales, 1 to Royal Glamorgan Hospital, 1 to West Wales and 1 to St Michaels Hospital in Bristol.

Judith Paget

Director of Planning and Operations/Deputy Chief Executive
Aneurin Bevan Local Health Board



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Ty Matthew/Matthew House
Llys Edmund Prys,
Parc Busses Llanelwy/St Asaph Business Park,
Llanelwy, St Asaph,
Sir Dinbych/Denbighshire, LL17 0JA

Claire Griffiths
Deputy Clerk
Legislation Office
National Assembly for Wales

Claire.Griffiths@Wales.gov.uk

Ein cyf / Our ref: GL/yel

Eich cyf / Your ref:

☎: 01745 586423

Gofynnwch am / Ask for Geoff Lang

Ffacs / Fax: 01745 584606

Geoff.Lang@wales.nhs.uk

Dyddiad/Date: 02 July 2012

Dear Claire

Children and Young People Committee – 17th May 2012

I am pleased to be able to provide the supplementary information requested as part of the evidence session Dr Harrington and I attended on 17th May. I would wish to express my thanks for the extension granted for submitting this data due to my personal circumstances. This has been extremely helpful.

In response to the request made in your email of 17th May the following information is provided:

- 1) **Mortality Rates** – The latest published data for mortality, which Dr Harrington referred to whilst giving evidence is contained in the follow report:

All Wales Perinatal Survey – Annual Report 2010. A copy is attached for information.

This summarised the position by stating on Page 3 that “there were no significant differences in Perinatal and infant mortality rates between Health Boards or NHS Regions (Table 18)”

- 2) **Outcomes** – I believe that the information above also addresses the Committee’s wish to determine whether outcomes in the Units in North Wales were different to other areas. The data shows no statistically significant differences in outcome. The Table on Page 13 and Chart on Page 14 showing Perinatal mortality rates by Local Authority Area may be helpful here.
- 3) **Audit of Low Dependency Activity** – In the evidence session we were asked whether this work was underway and when its findings would be known. I am pleased to report that this work is ongoing and the initial findings will be available in August. As a result of the findings of the Capacity Review and our local work we will instigate a number of strands of work to increase the appropriate use of low dependency cots thereby optimising the capacity of our skilled nursing staff to care for the most ill infants.



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These workstreams include:

Reviewing Admission and Discharge criteria; Transitional Care; Outreach Services; Discharge Planning.

- 4) **Ambulance Delay Incidents** – We have reviewed the incident reports made at the time and the following factors have been identified as contributing to the delays:
 - a) On three occasions there were difficulties arising as a result of vehicles being dispatched which were not compatible with the security clamps on the newer models of transport incubator. Therefore a delay was incurred waiting for a replacement vehicle. We understand that fleet changes ongoing will remove this problem as all vehicles will be compatible with the newer incubators.
 - b) On one occasion there was a delay in providing an ambulance for transfer within North Wales.
 - c) On one occasion there was a delay in providing transport for an infant to attend a routine cardiac appointment in Liverpool. This was not an emergency or urgent clinical situation.

- 5) **Ambulance Transfer Times** – We have been advised by colleagues from WAST that the average journey times from various locations around Welshpool and Newtown in 2011/12 was approximately 45 minutes. These times are for emergency journeys to the Wrexham Maelor Hospital.

I trust that the above provides all the information required. Should you require any further clarification please do not hesitate to contact me.

Yours sincerely

Geoff Lang
Director Primary Care, Community & Mental Health

Enc – All Wales Perinatal Survey - Annual Report 2010

All Wales Perinatal Survey

Annual Report 2010

Available online as a pdf, addendum containing additional data also available at:

<http://www.cf.ac.uk/medic/awps/>

Dr S Paranjothy

Senior Clinical Lecturer in Public
Health Medicine

Mrs K Rolfe

Data Manager

Mrs JM Hopkins

Project Administrator

Dr R Adappa

Consultant in Neonatal Medicine

Dr W John Watkins

Statistician

Professor Frank Dunstan

Professor of Medical Statistics

Professor S Kotecha

Head of Department of Child Health
Director of the AWPS

© All Wales Perinatal Survey
Perinatal Survey Office
Department of Child Health
School of Medicine, Cardiff University
Heath Park, Cardiff, CF14 4XN
Telephone: 029 2074 4499 Fax: 029 2074 4302
Email: rolfek@cardiff.ac.uk

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Foreword

We present the eighteenth annual report of the All Wales Perinatal Survey (AWPS). The Survey has been running since 1993 and is well established as an accurate and complete surveillance of perinatal and infant mortality in Wales.

In this report we present data by Welsh NHS Region, the seven Health Boards and 22 Local Authorities in Wales and individual hospitals. The mortality rates presented are not adjusted for variables known to influence mortality rate such as social deprivation and case mix, therefore we urge readers to exercise caution when interpreting the data. Any increase noted in mortality rates either at Health Board level or at hospital level may be explored further locally. It is not intended that the results of these reports are considered to be evidence of poor performance in any specific instance but rather that they are taken as suggesting that further exploration is needed at a local level. We have not presented numbers in the data for Health Boards, hospitals or birth units to preserve confidentiality, but hospitals and birth units can be provided with their own data upon request.

In order to provide timely surveillance of perinatal mortality, AWPS ideally requires notification and completed proformas within 8 weeks of death. We carried out an audit of reporting times for 2008, 2009 and 2010 and found that only 7 out of 14 units had returned at least 50% of proformas within 8 weeks. It is important for AWPS to receive data in a timely manner in order to be able to produce a report and to report on trends contemporaneously. This year we will again be contacting maternity and neonatal units to identify reasons for delays in reporting in order to try to improve the timeliness of data collection.

This year we welcome Cate Langley, Acting Head of Midwifery, to the executive steering group of the survey.

We are extremely grateful for the continued support of the unit coordinators, paediatricians, obstetricians, midwives, other health professionals and administrative staff throughout Wales who are involved with data collection for the survey.

Dr Shantini Paranjothy

Dr Roshan Adappa

Professor Sailesh Kotecha

30th October 2011

Summary findings of the 2010 Annual Report

Key Messages

- Data on stillbirths and infant mortality rates are presented in Table 1 below. Perinatal, stillbirth, neonatal, post neonatal and infant mortality rates in Wales have changed little since 2006. There have been slight reductions in late neonatal deaths and post neonatal deaths in 2010. These rates include all gestations, birthweights, and lethal congenital anomalies, but exclude late terminations.
- There were no significant differences in perinatal and infant mortality rates between Health Boards or NHS Regions (Table 18). Annual stillbirth and infant mortality rates for the period 1993 – 2010 by Welsh NHS Region, Health Boards and individual hospitals are available from <http://www.cf.ac.uk/medic/awps/>.
- Maternal cigarette smoking, obesity and advancing maternal age are major risk factors for stillbirth, and public health initiatives to address these should be a priority.
- For 41.7% of stillbirths the cause is unexplained. This represents a large proportion and warrants research into the risk factors and causes of stillbirth.
- Autopsies are important in order to understand cause of death. Autopsy rates for stillbirths continue to decline and require urgent attention.
- Neonatal and post neonatal mortality rates are persistently higher in the most deprived fifth of the population compared with the least deprived fifth, although there is some evidence that this gap is narrowing.
- The main causes of infant mortality remain prematurity and congenital anomaly.

Table 1 Mortality statistics in Wales, numbers and rates per 1,000 with 95% confidence intervals

EXCLUDING TERMINATIONS 24 weeks and over

		Wales			
		2006-2008	2007-2009	2008-2010	2010
Births					
	Registrable	104431	105622	107194	36217
	Live	103911	105092	106652	36028
Stillbirths					
	Number	470	474	488	167*
	Rate (/1000 registrable births)	4.5	4.5	4.6	4.6
	95% CI	(4.1, 4.9)	(4.1, 4.9)	(4.2, 5.0)	(4.0, 5.4)
Perinatal deaths					
	Number	689	714	721	245**
	Rate (/1000 registrable births)	6.6	6.8	6.7	6.8
	95% CI	(6.1, 7.1)	(6.3, 7.3)	(6.3, 7.2)	(6.0, 7.7)
Early neonatal deaths					
	Number	219	240	233	78***
	Rate (/1000 live births)	2.1	2.3	2.2	2.2
	95% CI	(1.8, 2.4)	(2.0, 2.6)	(1.9, 2.5)	(1.7, 2.7)
Late neonatal deaths					
	Number	96	89	77	19
	Rate (/1000 live births)	0.9	0.8	0.7	0.5
	95% CI	(0.8, 1.1)	(0.7, 1.0)	(0.6, 0.9)	(0.3, 0.8)
Neonatal deaths					
	Number	315	329	310	97***
	Rate (/1000 live births)	3.0	3.1	2.9	2.7
	95% CI	(2.7, 3.4)	(2.8, 3.5)	(2.6, 3.2)	(2.2, 3.3)
Post neonatal deaths****					
	Number	154	154	153	48
	Rate (/1000 live births)	1.5	1.5	1.4	1.3
	95% CI	(1.3, 1.7)	(1.3, 1.7)	(1.2, 1.7)	(1.0, 1.8)
Infant deaths****					
	Number	469	483	463	145***
	Rate (/1000 live births)	4.5	4.6	4.3	4.0
	95% CI	(4.1, 4.9)	(4.2, 5.0)	(4.0, 4.8)	(3.4, 4.7)

Source: NCCHD & AWPS

Data on late fetal losses, stillbirths and neonatal deaths relate to the date of birth, while data on post neonatal deaths relate to the date of death in 2010.

*Excludes 22 late terminations in 2010

**Excludes 26 late terminations in 2010

***Excludes 4 late terminations in 2010

****The post neonatal and infant death rates for 2010 are based on babies who died in 2010; these will be approximate measures. They will be updated in the Annual report 2011, when post neonatal deaths in 2010 will be presented by date of birth. Likewise rates for post neonatal deaths pre 2010 are based on date of birth.

Definitions/Glossary of terms

Registrable Births	stillbirths and livebirths
Spontaneous miscarriage spontaneous late fetal deaths before 24 weeks of gestation	rates per thousand live and stillbirths plus spontaneous miscarriages
Therapeutic abortion therapeutic late fetal deaths before 24 weeks of gestation	rates per thousand live and stillbirths plus therapeutic abortions
Stillbirths late fetal deaths from 24 weeks of gestation	rates per thousand live and stillbirths
Perinatal deaths stillbirths, and deaths in the first week of life	
Early neonatal deaths deaths in the first 6 days of life	
Late neonatal deaths deaths at ages 7-27 completed days of life	rates per thousand livebirths
Neonatal deaths deaths in the first 27 completed days of life	
Post neonatal deaths deaths at ages 28 days and over but under one year	
Infant deaths deaths at ages under one year	
Late terminations (registered as stillbirth or live birth) therapeutic late fetal deaths from 24 weeks of gestation, registered as stillbirth or live birth	
LSOA Lower-Layer Super Output Areas	Wales is divided into 1,896 Lower-Layer Super Output Areas (LSOA) each having about 1,500 people.
WIMD The Welsh Index of Multiple Deprivation	The official measure of deprivation in small areas in Wales. It is a relative measure of concentrations of deprivation at the small area level.
http://wales.gov.uk/topics/statistics/home/wimd/?lang=en	We use an index prepared in 2008 (WIMD_2008)
Quintile of deprivation	WIMD_2008 categorises each LSOA into 5 relative levels of deprivation graded 1 to 5. 1=least deprived to 5=most deprived

All Wales Perinatal Survey

Background

Wales has a population of around 3 million. It has large rural areas in Mid, West and North Wales in addition to the densely populated urban areas of South East Wales, and in total has an area of 8,016 square miles. The annual number of births in Wales over the last 18 years has ranged between 29,943 (in 2002) and 36,771 (in 1993). In 2010 there were 36,217 births to women who were Welsh residents.

Stillbirth and infant mortality rates are globally used as indicators of population health. Perinatal mortality (stillbirth and early neonatal deaths) is an indicator of quality of antenatal and perinatal care, while infant mortality is an indicator of child health. Infant mortality is usually examined according to timing of death in relation to the neonatal period: early (death in the first 6 days of life), late (between 7-27 days) and post-neonatal (28 days – <1 year). In developed countries infant mortality rates have declined substantially over time, although socio-economic inequalities have been shown to persist in Wales and elsewhere in the UK¹. The Welsh Government is committed to eradicating child poverty in Wales and giving every child a healthy start^{2,3}.

The All Wales Perinatal Survey is a continuous survey of stillbirths and infant mortality in Wales. The survey aims to collect accurate, complete, and comparable data on stillbirths and infant mortality to identify any important geographical differences or unrecognised variations in the cause of death. These form the basis for a review of local policies aimed at reducing excess mortality.

The report is based on the deaths of babies from 20 weeks gestation to one year of age and includes:

- **fetal losses of 20 completed weeks of gestation or more (including therapeutic abortions),**
- **stillbirths,**
- **early and late neonatal deaths and**
- **post neonatal deaths.**

In this report we present data on stillbirth, early, late and post neonatal mortality rates by Welsh NHS regions, Health Boards, Local Authorities, individual hospitals and midwifery led units.

Survey Methods

The survey includes all babies who died in Welsh hospitals and deaths of babies whose mother is usually resident in Wales regardless of their place of birth or death.

Notification of relevant deaths to the perinatal survey office is dependent on a network of unit coordinators. Coordinators are responsible for completion of the form along with the clinical staff. The form is sent to the perinatal survey office along with a clinical summary and post mortem report if applicable.

The Office of National Statistics (ONS) is used to ascertain deaths which have not been reported through the

perinatal survey system. In addition, a small number of deaths are notified directly by the regional paediatric pathologist or other regional managers for CMACE (Centre for Maternal and Child Enquiries).

The perinatal survey team checks that the form is complete and resolves any ambiguities, with particular attention to gestational age. Gestational age is calculated using an algorithm (see Appendix D). The address and postcode are checked to identify the Local Authority, Health Board, Welsh NHS Region before the appropriate lower super output codes (LSOA) are assigned. Live births with birthweight <1000g or gestational age <28 weeks are also checked with unit coordinators to ensure accuracy of these data and survival status.

Each death is classified using the Aberdeen (Obstetric) and the modified and extended Clinico-Pathological (Wigglesworth) systems, by a senior midwife and/or neonatologist (see Appendix E). These are also coded according to the CMACE coding system⁴.

For each current year the data are analysed by calendar year of birth, except for post neonatal deaths which are by year of death. Exceptions are birthweight and gestation specific mortality data, which relate to the date of birth. Therefore, an annual cohort will include:

- Babies born in that year who die before the 28th January of the following year (neonatal deaths only);
- Babies who die in that year who were born the previous year (post neonatal deaths only).

The residential address, marital status, employment and occupational details are those current at the date of birth of the baby, except post neonatal deaths which relate to the date of death.

Denominator data for Wales are provided by the National Community Child Health Database (NCCHD) held by NHS Wales Informatics Service (NWIS). This database has been established as a centrally held extract from Child Health Systems in Health Boards throughout Wales. The births denominator data provided by NCCHD includes all births in Welsh hospitals and births to women who are usually resident in Wales, regardless of the place of birth.

In addition, unit coordinators return the total number of births, mode of delivery and homebirths in their unit for the calendar year, irrespective of a woman's usual place of residence (see Appendix G).

The presentation of epidemiological data in this report follows a similar format to that used in previous reports. We present annual rates for the combined 3 years rolling and for the combined 5 years, by Welsh NHS Region, Health Board and Local Authority. This format was chosen to reduce random variation and hence increase reliability of data. We also provide 95% confidence intervals for rates to facilitate interpretation. These confidence intervals were calculated using the Wilson score interval method^{5, 6}.

In this report we have excluded terminations 24 weeks and over to enable more meaningful analysis of the data.

We compare mortality rates between hospitals and between Local Authorities using funnel plots. These funnel plots show the mortality rate for each hospital or Local Authority plotted against the number of births in each. The average mortality rate in Wales is indicated by the solid horizontal line. The curved lines represent limits within

which 95% of results should lie if the average rate in Wales applied to all. Rates above or below these dashed lines are considered to be statistically significantly different from the average rate. The plots are calculated using the Wilson score interval. This method is generally regarded as an improvement over the normal approximation interval^{7, 8} and has the advantage that the lower line of the funnel plot cannot reach implausible values i.e. below zero. These funnel plots are calculated assuming that the populations of women giving birth are directly comparable between units. Therefore they do not allow for any heterogeneity (for example differences in case mix) between units. Hence there may be plausible reasons for the significantly higher or lower rates in the units that are identified as outliers.

Data from the Office for National Statistics (ONS) are available on our website when they are published, to facilitate comparisons between England and Wales. <http://www.cf.ac.uk/medic/awps/>

References

1. Oakley L, Maconochie N, Doyle P, Dattani N, Moser K. Multivariate analysis of infant death in England and Wales in 2005-06, with focus on socio-economic status and deprivation. *Health statistics quarterly / Office for National Statistics* 2009(42):22-39
2. Welsh Government. Child Poverty Strategy for Wales and Delivery Plan 'Available at:' <http://wales.gov.uk/consultations/childrenandyoungpeople/cpstrategy/?lang=en>. Accessed August 2011.
3. Welsh Government. Our Healthy Future 'Available at:' <http://wales.gov.uk/topics/health/ocmo/healthy/?lang=en>. Accessed August 2011.
4. Centre for Maternal and Child health Enquiries (CMACE). Perinatal Mortality 2008. United Kingdom. CMACE. London; 2010.
5. Wilson EB. Probable inference, the law of succession, and statistical inference. *Journal of the American Statistical Association* 1927;22:209-12
6. Newcombe RG. Two-sided confidence intervals for the single proportion: comparison of seven methods. *Statistics in Medicine* 1998;17(8):857-72
7. Agresti A, Caffo B. Simple and effective confidence intervals for proportions and differences of proportions result from adding two successes and two failures. *The American Statistician* 2000;54: 280-8
8. Agresti A, Coull BA. Approximate is better than "exact" for interval estimation of binomial proportions. *The American Statistician* 1998;52:119-26



AWPS Annual Report 2010

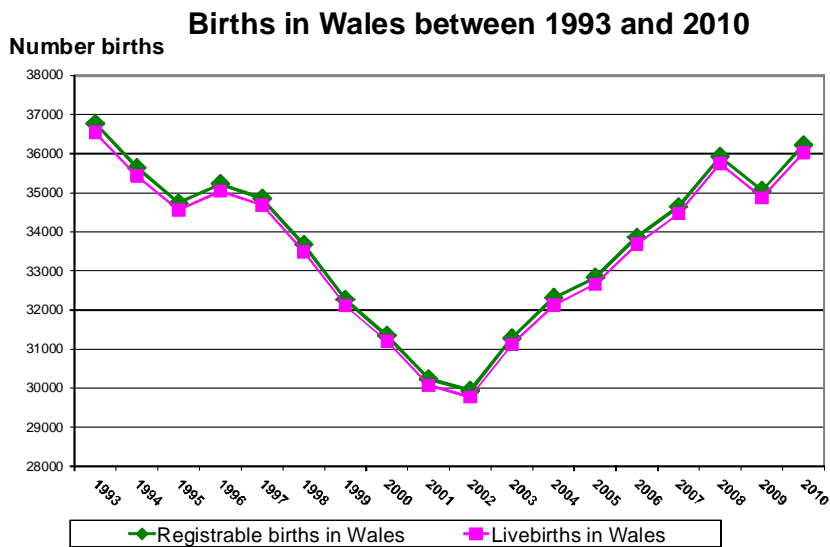
Section A: Birth statistics in Wales

In this section we present birth statistics in Wales including data provided by unit coordinators.

Section A: Birth statistics in Wales

Birth statistics in Wales (1993-2010)

Figure 1



Source: NCCHD & AWPS

- There were 36,217 registrable births (livebirths and stillbirths) in 2010, to mothers resident in Wales at the time of birth (Figure 1). This represents an increase of 21% since 2002, and an increase of 3% since 2009. The observed trend in number of births follows a similar pattern in Scotland and England.
- Not all women who are resident in Wales have their baby in Wales and similarly some babies whose mothers are not resident in Wales are born in Wales.
- In total there were 35,274 births in Welsh Health Boards, 96% of births occurred in Hospitals & Midwifery Led units, 3.7% of births were homebirths and 0.3% births occurred elsewhere (e.g. in transit).
- The overall caesarean section rate has been increasing steadily from 16% in 1993 to 25.1% in 2006. (Figure 2) There was a slight reduction in this rate in 2010 to 24.3%. Over half of these were emergency caesarean sections (12.7%). The elective caesarean section rate was 11.6%. In 2010, where known*, 11.5% of babies had an instrumental birth (6.3% by ventouse and 5.2% by forceps); the induction of labour rate was 14.1%.
- Following a steady increase in the rate of planned homebirths between 1993 and 2005, the rate has remained at around 3% for the last 5 years. (Figure 3)

*Data unavailable in 2/17 hospitals

Figure 2

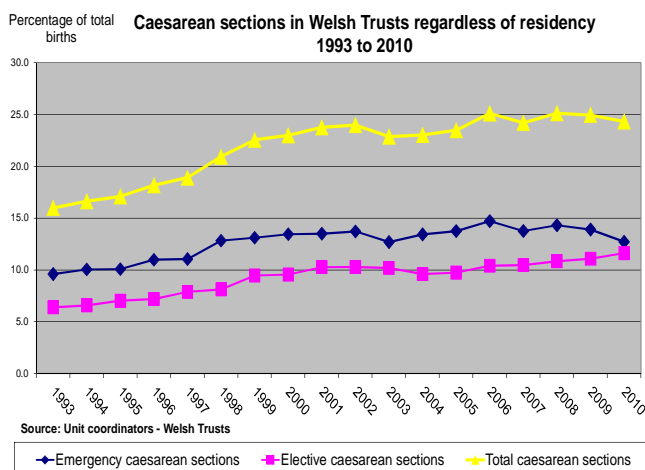
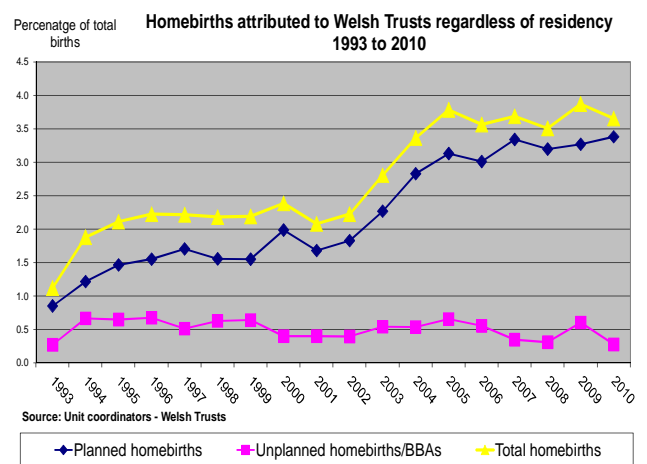


Figure 3





Section B: Mortality Statistics in Wales

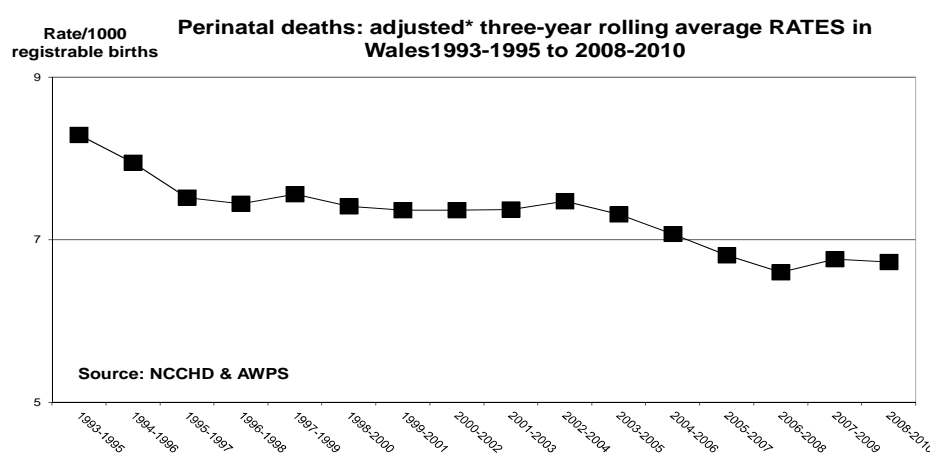
In this section we present AWPS data on babies born to women who are usually resident in Wales. This year we present adjusted rates for Local Authority, Health Board and Welsh NHS region, where late terminations (gestations of 24 weeks and over) are removed from the rates. Denominator data are provided by the NCCHD.

Perinatal mortality in Wales

Perinatal mortality includes stillbirths and early neonatal deaths. The perinatal mortality rate in 2010 was 7.5 per 1,000 registrable births, similar to the annual rate for the combined three years 2007-2009 (7.3 per 1,000 registrable births). These rates include late terminations. The perinatal mortality rate in Wales excluding late terminations in 2010 was 6.8 per 1,000 registrable births. There has been little change in the perinatal mortality rate in Wales since 1996 (Figure 4).

Perinatal mortality rates for 2010 are as yet unpublished for England and Scotland. In 2009 the perinatal mortality rates were 7.5 per 1,000 registrable births in England, (ONS), 7.4 per 1,000 registrable births in Scotland¹, and 7.6 per 1,000 registrable births in Wales (these rates include late terminations).

Figure 4



Adjusted perinatal mortality rates (excluding late terminations) for 2010 and 3 year rolling average rates between 1999 and 2009 were similar between NHS regions (Table 2). Between Health Boards adjusted perinatal mortality rates for 2010 ranged from 4.8 (95% CI 3.0, 7.4) in Hywel Dda and 9.3 (95% CI 7.2, 12.1) in Abertawe Bro Morgannwg (Table 2).

Table 2 Perinatal deaths: adjusted* three-year rolling average RATES by Heath Board and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

Health Board and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg												
University Health Board	7.91	7.70	7.21	6.80	6.72	7.36	7.50	7.04	6.53	7.23	9.3	(7.2, 12.1)
Hywel Dda Health Board	6.93	6.27	5.48	6.20	6.56	6.59	7.14	7.05	7.27	6.09	4.8	(3.0, 7.4)
Powys Teaching Health Board	7.79	6.39	7.56	8.39	9.00	8.27	7.25	5.32	7.09	7.28	5.9	(2.8, 12.1)
Mid and West Wales	7.55	7.04	6.64	6.77	6.93	7.19	7.34	6.84	6.86	6.84	7.4	(5.9, 9.1)
Betsi Cadwaladr												
University Health Board	7.25	7.51	7.45	7.00	6.97	6.79	6.71	6.05	6.68	6.28	6.0	(4.5, 8.0)
North Wales	7.25	7.51	7.45	7.00	6.97	6.79	6.71	6.05	6.68	6.28	6.0	(4.5, 8.0)
Aneurin Bevan Health Board	6.26	6.92	7.71	8.32	7.50	7.51	6.79	7.02	6.64	6.67	6.7	(5.0, 8.9)
Cardiff and Vale												
University Health Board	8.35	8.49	7.88	8.01	8.05	7.08	6.70	7.02	7.53	7.98	7.7	(5.8, 10.2)
Cwm Taf Health Board	7.75	7.24	7.98	8.14	7.90	6.93	6.34	6.34	6.34	5.99	5.7	(3.7, 8.6)
South East Wales	7.29	7.52	7.83	8.17	7.78	7.23	6.66	6.87	6.90	7.00	6.8	(5.7, 8.2)
WALES	7.36	7.36	7.37	7.47	7.31	7.07	6.81	6.60	6.76	6.73	6.8	(6.0, 7.7)

*excludes terminations 24 weeks and over

Table 3 Perinatal deaths: adjusted* three-year rolling average RATES by Local Authority and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

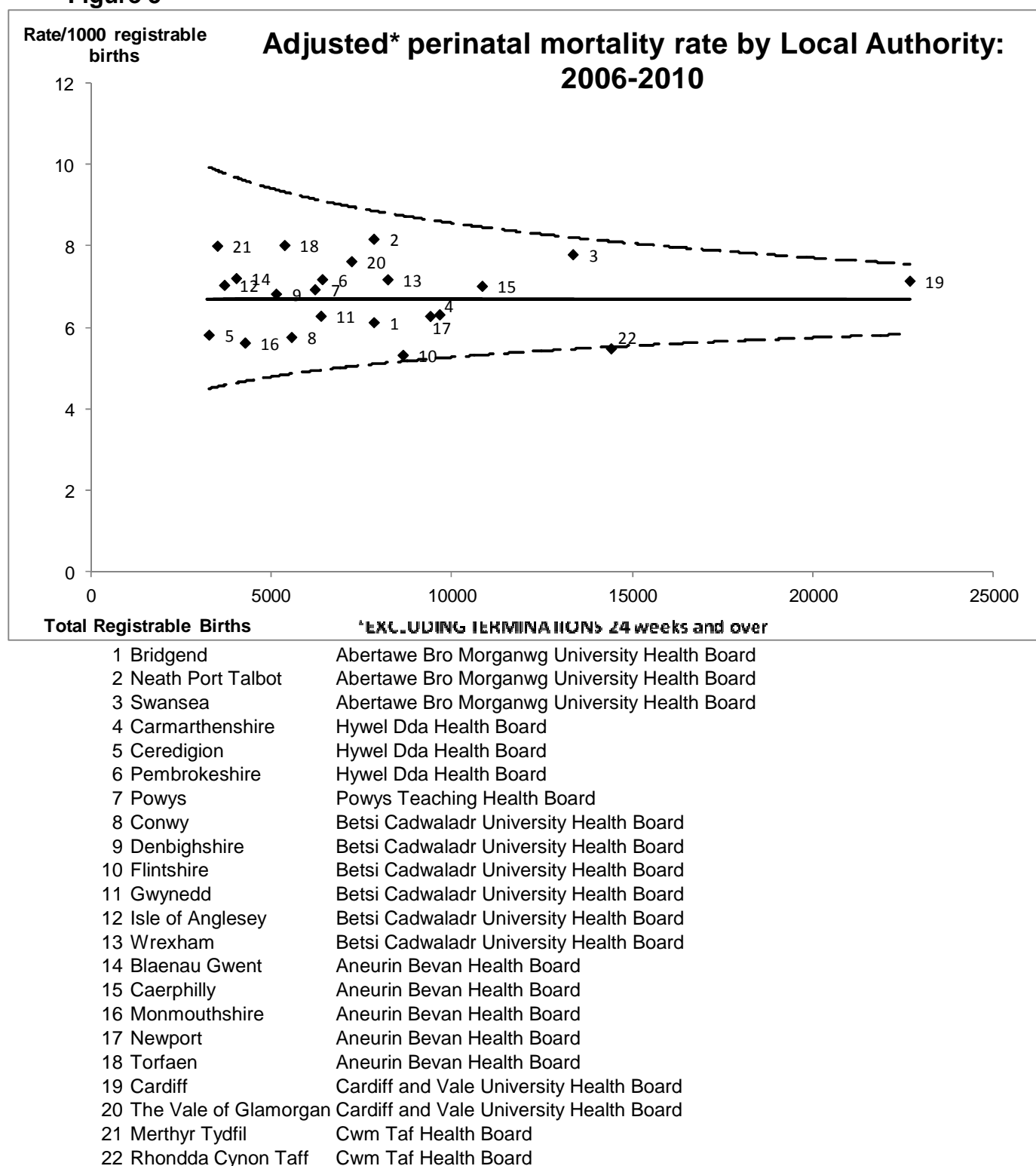
Health Board	Local Authority and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg	Bridgend	6.28	5.80	7.23	8.25	9.34	7.95	6.32	4.74	3.64	6.92	12.7	(8.3 19.3)
University Health Board	Neath Port Talbot	7.79	8.47	8.29	6.78	5.99	7.55	8.33	8.01	7.06	7.76	9.2	(5.6 15.2)
	Swansea	8.96	8.44	6.59	5.93	5.54	6.89	7.71	7.82	7.92	7.11	7.5	(4.9 11.4)
Hywel Dda Health Board	Carmarthenshire	5.42	5.29	3.95	4.95	6.23	6.61	7.88	6.55	7.07	5.85	4.6	(2.4 8.7)
	Ceredigion	8.96	7.50	5.83	7.27	7.17	5.55	4.82	5.85	8.21	6.52	4.1	(1.4 12.0)
	Pembrokeshire	8.14	7.13	7.57	7.54	6.76	7.07	7.18	8.39	7.08	6.23	5.4	(2.6 11.1)
Powys Teaching Health Board	Powys	7.79	6.39	7.56	8.39	9.00	8.27	7.25	5.32	7.09	7.28	5.9	(2.8 12.1)
Mid and West Wales		7.55	7.04	6.64	6.77	6.93	7.19	7.34	6.84	6.86	6.84	7.4	(5.9 9.1)
Betsi Cadwaladr University Health Board	Conwy	6.50	8.30	7.19	5.83	5.48	5.29	7.80	6.64	7.58	4.46	2.7	(0.9 7.8)
	Denbighshire	8.99	8.41	10.44	9.85	8.96	7.19	4.41	4.57	6.47	8.62	10.5	(5.9 18.7)
	Flintshire	7.36	8.00	7.45	6.78	6.27	6.53	6.30	5.43	5.38	4.61	3.4	(1.6 7.4)
	Gwynedd	4.67	4.01	6.47	6.96	7.24	5.31	5.26	6.30	7.12	7.34	7.2	(3.8 13.6)
	Isle of Anglesey	6.49	7.04	6.56	6.33	5.61	7.55	6.72	5.60	6.31	7.49	7.6	(3.5 16.4)
	Wrexham	9.17	8.97	6.79	6.50	7.85	8.73	9.06	7.23	7.40	6.43	6.5	(3.6 11.6)
North Wales		7.25	7.51	7.45	7.00	6.97	6.79	6.71	6.05	6.68	6.28	6.0	(4.5 8.0)
Aneurin Bevan Health Board	Blaenau Gwent	9.38	7.60	7.60	9.45	10.07	9.25	8.72	7.05	7.00	6.86	9.8	(5.0 19.2)
	Caerphilly	6.91	6.97	7.26	7.97	7.23	7.63	6.89	6.85	6.86	6.65	6.2	(3.7 10.3)
	Monmouthshire	3.88	4.26	4.10	5.46	4.26	5.14	5.25	6.96	6.65	5.37	3.4	(1.2 10.1)
	Newport	6.06	8.22	9.40	9.06	8.30	8.16	6.72	6.38	5.23	6.62	7.6	(4.6 12.5)
	Torfaen	4.77	6.12	8.97	9.45	7.61	6.90	6.53	8.51	8.45	7.70	6.4	(3.1 13.1)
Cardiff and Vale University Health Board	Cardiff	9.15	8.56	6.97	7.32	7.81	7.56	7.05	7.11	6.73	7.48	8.5	(6.3 11.6)
	The Vale of Glamorgan	6.41	8.29	10.53	9.99	8.77	5.61	5.62	6.75	9.99	9.56	4.9	(2.4 10.0)
Cwm Taf Health Board	Merthyr Tydfil	6.85	8.22	8.16	9.05	5.71	6.61	5.92	8.35	9.01	8.56	7.1	(3.0 16.5)
	Rhondda Cynon Taff	7.97	7.01	7.94	7.92	8.41	7.00	6.44	5.83	5.69	5.38	5.3	(3.3 8.6)
South East Wales		7.29	7.52	7.83	8.17	7.78	7.23	6.66	6.87	6.90	7.00	6.8	(5.7 8.2)
WALES		7.36	7.36	7.37	7.47	7.31	7.07	6.81	6.60	6.76	6.73	6.8	(6.0 7.7)

*excludes terminations 24 weeks and over

Between Local Authorities adjusted perinatal mortality rates for 2010 ranged from 2.7 per 1,000 (95% CI 0.9,7.8) in Conwy Local Authority to 12.7 per 1,000 (95% CI 8.3,19.3) in Bridgend Local Authority (Table 3).

The funnel plot shows the perinatal mortality rates over a 5 year period for Local Authorities (Figure 5).

Figure 5



References

- Information Services Division NHSScotland. Scottish Perinatal & Infant Mortality & Morbidity Report (SPIMMR) 2009 'Available at:' http://www.healthcareimprovementscotland.org/programmes/reproductive_maternal_child/programme_resource/spimmr_2009.aspx. Accessed August 2011.

Stillbirths in Wales

In the UK stillbirth is defined as late fetal death from 24 weeks gestation. The stillbirth rate in Wales in 2010 was 5.2 per 1000 births, which is similar to the 2009 rate and to the annual rate for the combined 3 years 2007-2009. Data on stillbirths in other parts of the UK are at present unavailable for 2010. The stillbirth rate in 2009 was 5.2 per 1,000 registrable births in England (ONS), 5.3 per 1,000 registrable births in Scotland, 4.8 per 1,000 registrable births in Northern Ireland¹ and 5.2 per 1,000 in Wales. These rates include late terminations. The stillbirth rate in Wales excluding late terminations in 2010 was 4.6 per 1,000 registrable births.

The declining trend of recent years seems to have reached a plateau (Figure 6). Similar trends are observed for stillbirth rates in Welsh NHS regions and Health Boards (Table 3).

Within Europe data on stillbirths are available for 2004, collated in the European Perinatal Health Report². Stillbirth rates (from 28 weeks gestation) ranged from 1.7 per 1,000 births in the Slovak Republic to 4.9 per 1,000 births in Latvia and France. However, differences in ascertainment and registration may contribute to some of this observed variation such that direct comparisons between countries may be inaccurate³. Within the UK the rate for stillbirths (from 28 weeks gestation) was 4.6 per 1,000 births in Scotland, 3.8 per 1,000 births in Northern Ireland and 4.1 per 1,000 births in Wales in 2004. Data on stillbirths using this definition were not available for England.

A report on stillbirth rates published earlier this year⁴ estimated there were 2.6 million stillbirths (at least 1000g birthweight or at least 28 completed weeks gestation) globally in 2009. Globally the stillbirth rate has declined by 14.5% from 22.1 per 1,000 births in 1995 to 18.9 per 1,000 births in 2009. The estimated rate for the UK using this definition was 3.4 per 1,000 total births. The rate for Wales using this definition was 3.9 per 1,000 births in 2009 and 4.0 per 1,000 births in 2010.

Figure 6

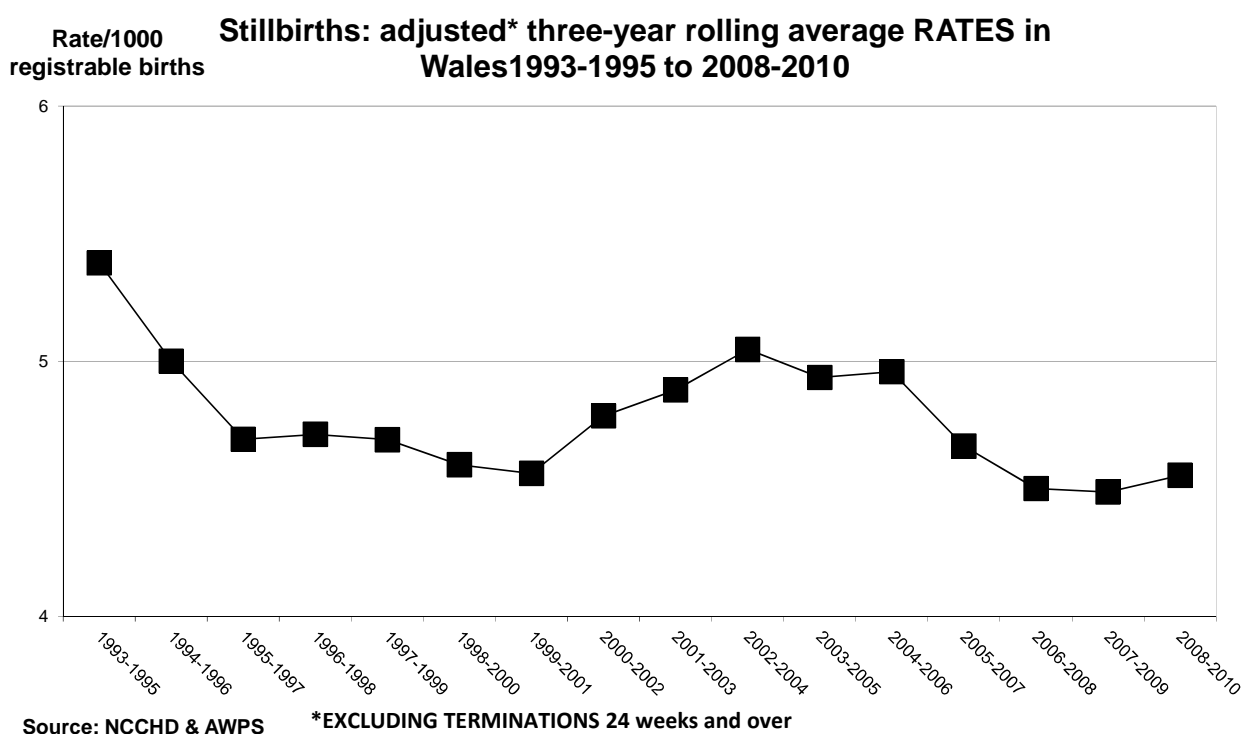


Table 4 Stillbirths: adjusted* three-year rolling average RATES by Health Board and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

Health Board and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg University Health Board	4.66	4.77	4.68	4.32	4.31	5.19	5.65	5.29	4.74	5.20	6.9	(5.1, 9.3)
Hywel Dda Health Board	3.85	3.63	3.33	4.10	4.31	4.21	4.37	4.35	4.76	3.77	2.3	(1.2, 4.3)
Powys Teaching Health Board	4.67	4.73	5.81	6.65	6.47	6.06	4.30	3.72	5.25	5.66	3.4	(1.3, 8.6)
Mid and West Wales	4.38	4.36	4.34	4.51	4.56	4.95	5.04	4.78	4.81	4.75	4.9	(3.7, 6.3)
Betsi Cadwaladr University Health Board	4.74	5.31	4.91	4.53	4.29	4.41	4.37	3.85	4.03	3.75	3.7	(2.5, 5.3)
North Wales	4.74	5.31	4.91	4.53	4.29	4.41	4.37	3.85	4.03	3.75	3.7	(2.5, 5.3)
Aneurin Bevan Health Board	3.96	4.36	5.14	5.90	5.78	5.87	5.04	4.83	4.38	4.75	5.3	(3.8, 7.2)
Cardiff and Vale University Health Board	5.38	5.19	4.70	5.02	5.24	4.93	4.61	4.91	5.26	5.43	4.8	(3.4, 6.9)
Cwm Taf Health Board	4.71	5.22	6.30	6.10	5.46	4.81	4.07	4.29	3.92	4.24	4.6	(2.9, 7.3)
South East Wales	4.60	4.83	5.25	5.65	5.52	5.30	4.67	4.74	4.60	4.89	5.0	(4.0, 6.1)
WALES	4.56	4.79	4.89	5.05	4.94	4.96	4.67	4.50	4.49	4.55	4.6	(4.0, 5.4)

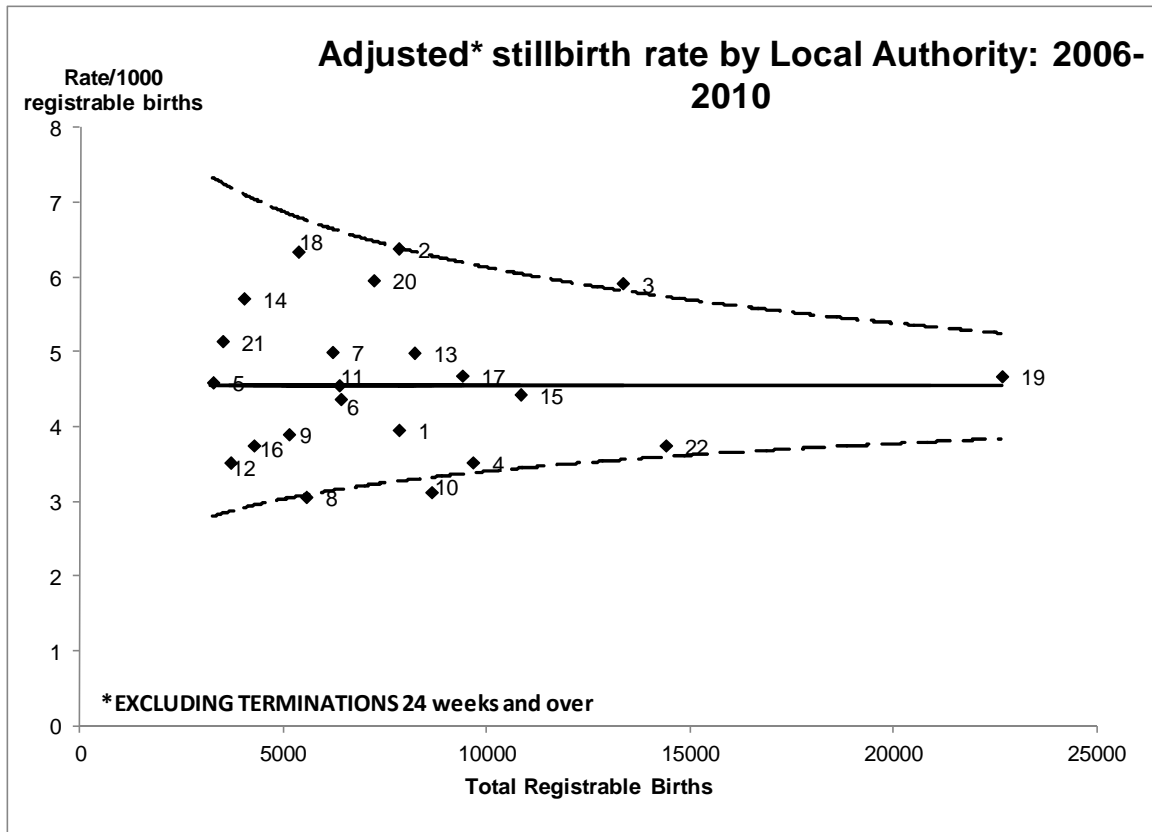
*excludes terminations 24 weeks and over

Table 5 Stillbirths: adjusted* three-year rolling average RATES by Local Authority and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

Health Board	Local Authority and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg University Health Board	Bridgend	4.71	4.41	4.67	4.81	5.56	5.30	4.14	3.02	1.93	4.62	9.0	(5.5 14.9)
	Neath Port Talbot	3.38	3.85	5.02	4.12	3.69	4.66	6.36	6.49	5.78	5.87	6.8	(3.8 12.1)
	Swansea	5.29	5.49	4.49	4.14	3.92	5.43	6.14	5.93	5.78	5.15	5.7	(3.5 9.2)
Hywel Dda Health Board	Carmarthenshire	3.29	3.53	2.77	3.43	4.15	4.59	5.01	4.14	4.14	3.10	1.5	(0.5 4.5)
	Ceredigion	5.60	5.19	3.50	4.48	3.86	3.33	3.21	3.73	6.15	5.51	4.1	(1.4 12.0)
	Pembrokeshire	3.78	2.97	4.08	4.93	4.79	4.08	3.99	4.98	4.98	3.90	2.3	(0.8 6.8)
Powys Teaching Health Board	Powys	4.67	4.73	5.81	6.65	6.47	6.06	4.30	3.72	5.25	5.66	3.4	(1.3 8.6)
Mid and West Wales		4.38	4.36	4.34	4.51	4.56	4.95	5.04	4.78	4.81	4.75	4.9	(3.7 6.3)
Betsi Cadwaladr University Health Board	Conwy	3.71	5.42	4.58	3.89	2.90	3.11	3.74	3.62	3.64	2.38	1.8	(0.5 6.4)
	Denbighshire	5.03	5.12	6.12	6.69	6.20	5.14	3.05	2.61	2.91	4.79	8.6	(4.5 16.2)
	Flintshire	4.91	5.89	4.47	3.91	3.03	3.56	4.13	3.49	3.46	2.31	1.1	(0.3 4.2)
	Gwynedd	3.02	2.86	4.12	4.35	4.73	3.72	3.42	3.94	4.75	5.77	6.4	(3.2 12.6)
	Isle of Anglesey	4.99	5.41	5.46	5.28	4.59	5.04	3.84	3.26	3.60	3.52	2.5	(0.7 9.1)
	Wrexham	6.52	6.73	5.28	4.09	4.93	6.11	6.90	5.37	5.20	4.09	3.0	(1.3 6.9)
North Wales		4.74	5.31	4.91	4.53	4.29	4.41	4.37	3.85	4.03	3.75	3.7	(2.5 5.3)
Aneurin Bevan Health Board	Blaenau Gwent	4.92	5.22	4.28	6.61	7.78	8.37	7.41	4.97	4.94	5.25	8.6	(4.2 17.6)
	Caerphilly	4.44	4.70	5.21	5.74	5.62	5.40	5.13	4.36	4.05	4.08	4.4	(2.4 8.1)
	Monmouthshire	2.16	2.56	3.28	4.29	3.87	3.95	3.23	3.86	4.30	4.22	3.4	(1.2 10.1)
	Newport	3.92	4.59	6.13	6.50	6.37	6.22	4.80	5.10	3.66	4.58	5.1	(2.8 9.3)
	Torfaen	3.75	4.08	5.52	6.07	5.29	5.96	4.97	5.99	5.95	6.47	6.4	(3.1 13.1)
Cardiff and Vale University Health Board	Cardiff	5.64	5.10	4.00	4.66	5.27	5.38	4.83	4.84	4.39	4.77	5.2	(3.5 7.7)
	The Vale of Glamorgan	4.75	5.44	6.75	6.05	5.16	3.57	3.91	5.12	7.95	7.51	3.5	(1.5 8.1)
Cwm Taf Health Board	Merthyr Tydfil	4.21	7.12	7.07	6.92	4.15	5.08	4.44	5.10	5.22	5.23	5.7	(2.2 14.5)
	Rhondda Cynon Taff	4.83	4.76	6.11	5.91	5.77	4.75	3.98	4.08	3.60	4.00	4.3	(2.5 7.4)
South East Wales		4.60	4.83	5.25	5.65	5.52	5.30	4.67	4.74	4.60	4.89	5.0	(4.0 6.1)
WALES		4.56	4.79	4.89	5.05	4.94	4.96	4.67	4.50	4.49	4.55	4.6	(4.0 5.4)

*excludes terminations 24 weeks and over

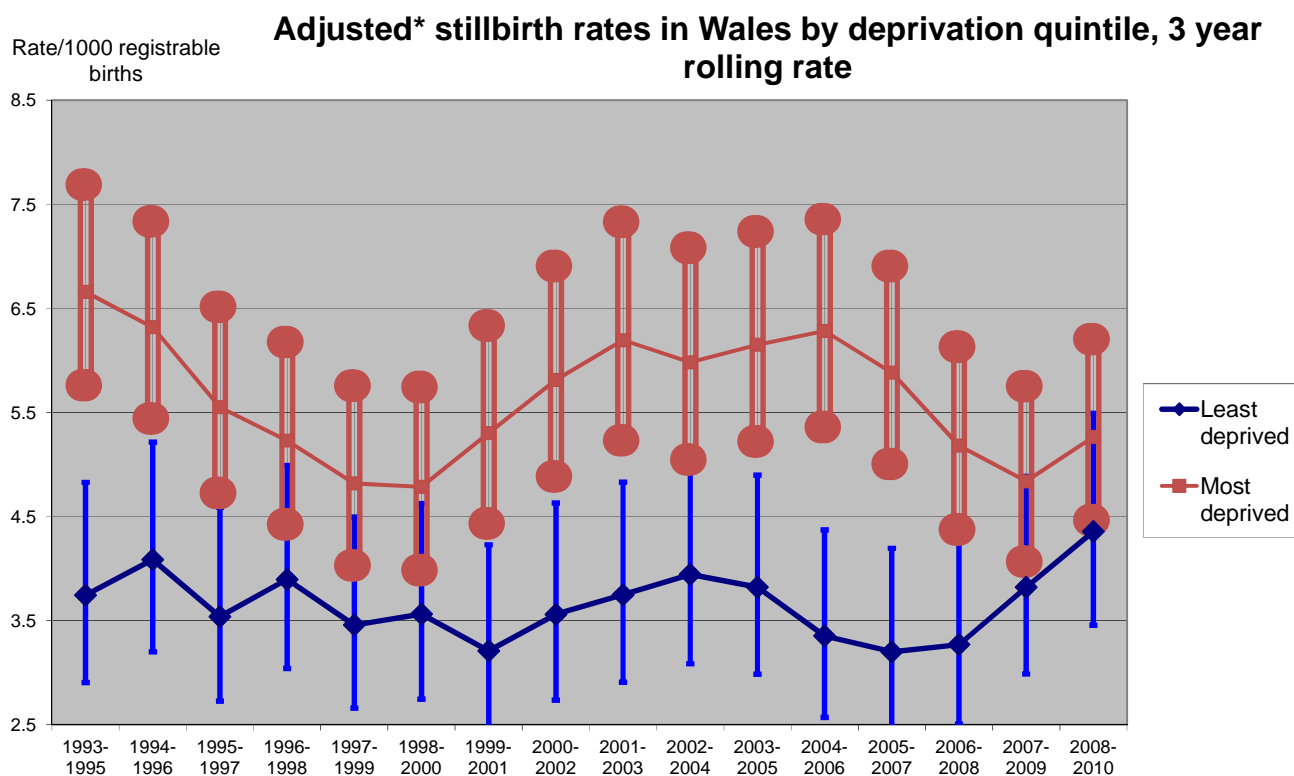
Figure 7



- | | |
|--------------------------|---|
| 1 Bridgend | Abertawe Bro Morganwg University Health Board |
| 2 Neath Port Talbot | Abertawe Bro Morganwg University Health Board |
| 3 Swansea | Abertawe Bro Morganwg University Health Board |
| 4 Carmarthenshire | Hywel Dda Health Board |
| 5 Ceredigion | Hywel Dda Health Board |
| 6 Pembrokeshire | Hywel Dda Health Board |
| 7 Powys | Powys Teaching Health Board |
| 8 Conwy | Betsi Cadwaladr University Health Board |
| 9 Denbighshire | Betsi Cadwaladr University Health Board |
| 10 Flintshire | Betsi Cadwaladr University Health Board |
| 11 Gwynedd | Betsi Cadwaladr University Health Board |
| 12 Isle of Anglesey | Betsi Cadwaladr University Health Board |
| 13 Wrexham | Betsi Cadwaladr University Health Board |
| 14 Blaenau Gwent | Aneurin Bevan Health Board |
| 15 Caerphilly | Aneurin Bevan Health Board |
| 16 Monmouthshire | Aneurin Bevan Health Board |
| 17 Newport | Aneurin Bevan Health Board |
| 18 Torfaen | Aneurin Bevan Health Board |
| 19 Cardiff | Cardiff and Vale University Health Board |
| 20 The Vale of Glamorgan | Cardiff and Vale University Health Board |
| 21 Merthyr Tydfil | Cwm Taf Health Board |
| 22 Rhondda Cynon Taff | Cwm Taf Health Board |

Within Wales, stillbirth rates are persistently higher in the most deprived quintile of social deprivation measured using the Welsh Index of Multiple Deprivation (WIMD_2008), although rates over the last decade suggest a slight narrowing of the gap between the most deprived and least deprived quintiles (Figure 8). Similar trends have been observed in England⁵.

Figure 8



The chart shows the rates in the highest and lowest quintiles of the population as given by the Welsh Index of Multiple Deprivation (WIMD_2008). The vertical lines show the 95% CI at each point. Cases were allocated to the appropriate quintile of deprivation based on mother's residence and LSOA. These scores were based on the mothers, not babies, and for multiple pregnancies only the first born babies were assigned a deprivation score, to avoid double counting.

References

1. Northern Ireland Statistics and Research Agency. Registrar General Annual Reports 'Available at:' <http://www.nisra.gov.uk/demography/default.asp99.htm>. Accessed November.
2. Euro-Peristat PROJECT. The European Perinatal Health Report 'Available at:' <http://www.europeristat.com/bm.doc/european-perinatal-health-report.pdf>. Accessed August 2011.
3. Draper ES. Evaluating and comparing neonatal outcomes. *Archives of disease in childhood. Fetal and neonatal edition* 2010;95(3):F158-9
4. Cousens S, Blencowe H, Stanton C, Chou D, Ahmed S, Steinhardt L, et al. National, regional, and worldwide estimates of stillbirth rates in 2009 with trends since 1995: a systematic analysis. *Lancet* 2011;377(9774):1319-30
5. Seaton SE, Smith LK, Draper ES, Mankelov BN, Springett A, Field DJ. Socio-economic inequalities in the rate of stillbirths: A population based study. *Arch Dis Child Fetal Neonatal Ed* 2011;96(Suppl 1):Fa17-Fa53

Risk factors for stillbirth

A systematic review of major risk factors for stillbirth in high income countries has identified maternal overweight and obesity (body-mass index $>25 \text{ kg/m}^2$), advanced maternal age and maternal smoking as the highest ranking modifiable risk factors¹. In the UK smoking accounts for 7% of all stillbirths but it is estimated that in disadvantaged populations maternal smoking contributes to up to 20% of stillbirths. These findings highlight the importance of public health initiatives to tackle smoking and obesity in women of reproductive age. Data from the Infant Feeding Survey for Wales 2005² show that 22% of pregnant women smoke throughout pregnancy. Data published in the CMACE report on maternal obesity shows that Wales has the highest prevalence of obesity in pregnancy in the UK at 6.5%, compared with 5.5% in Scotland, 4.9% in England and 5.3% in Northern Ireland³.

Cause of death in stillbirths

Classification systems for stillbirths are used to give as much insight as possible into the underlying cause of death or events leading up to death, in order to explore any trends or variation in causes of death and identify areas that can be addressed.

We present stillbirths (excluding late terminations) by the Aberdeen classification (also known as the 'Obstetric' classification) (Table 4). These systems allow for the classification of deaths according to the clinical factors that preceded death, for example preterm labour, congenital abnormalities and fetal growth restriction. However the limitation of this system is that a large proportion of stillbirths are classified as 'unexplained', 61.7% of stillbirths in 2010. A new classification that takes account of both obstetric and fetal factors was proposed and adapted for use by CMACE in 2008⁴. This year we also present data on cause of death in stillbirths using this CMACE classification (Figure 9). Using the CMACE classification only 41.7% of stillbirths were 'unexplained'.

Ante-partum haemorrhage and congenital anomalies remain leading causes of stillbirth. Screening and monitoring in pregnancy are used to identify high risk pregnancies to provide appropriate clinical management. However a recent systematic review of screening and monitoring interventions in pregnancy has reported there is limited evidence for the impact of these interventions on stillbirth⁵. Screening and interventions to reduce antepartum stillbirth as a result of placental dysfunction has been identified as a priority for future research⁶⁻⁸.

References

1. Flenady V, Koopmans L, Middleton P, Froen JF, Smith GC, Gibbons K, et al. Major risk factors for stillbirth in high-income countries: a systematic review and meta-analysis. *Lancet* 2011;377(9774):1331-40
2. NHS Information Centre for Health and Social Care. Infant feeding survey 'Available at:' <http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/infant-feeding-survey/infant-feeding-survey-2005>. Accessed November.
3. Royal College of Obstetricians and Gynaecologists. CMACE release: National enquiry into maternal obesity – Implications for women, babies and the NHS 'Available at:' <http://www.rcog.org.uk/news/cmace-release-national-enquiry-maternal-obesity-%E2%80%93-implications-women-babies-and-nhs>. Accessed August.
4. Centre for Maternal and Child health Enquiries (CMACE). Perinatal Mortality 2008. United Kingdom. CMACE. London; 2010.
5. Haws RA, Yakoob MY, Soomro T, Menezes EV, Darmstadt GL, Bhutta ZA. Reducing stillbirths: screening and monitoring during pregnancy and labour. *BMC pregnancy and childbirth* 2009;9 Suppl 1:S5
6. Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. *Lancet* 2008;371(9606):75-84
7. Iams JD, Romero R, Culhane JF, Goldenberg RL. Primary, secondary, and tertiary interventions to reduce the morbidity and mortality of preterm birth. *Lancet* 2008;371(9607):164-75
8. Saigal S, Doyle LW. An overview of mortality and sequelae of preterm birth from infancy to adulthood. *Lancet* 2008;371(9608):261-9

Table 6 Aberdeen Classification* by Welsh NHS Region 2006-2010 – Stillbirths**

Aberdeen Classification 2006-2010	MW n=268	N n=147	SE n=386	WALES n=801
Antepartum haemorrhage (APH)	9.7%	10.9%	10.4%	10.2%
Congenital anomaly	7.1%	3.4%	6.7%	6.2%
Maternal Disorder	8.6%	7.5%	6.0%	7.1%
Mechanical	9.3%	4.1%	4.4%	6.0%
Miscellaneous	4.1%	6.1%	6.5%	5.6%
Pre-eclampsia	1.9%	4.1%	2.1%	2.4%
Unclassifiable	0.4%	2.0%	0.5%	0.7%
Unexplained	59.0%	61.9%	63.5%	61.7%

*For definitions see Appendix E

**excludes 91 terminations of pregnancy from 24 weeks gestation (87 congenital anomalies, 2 maternal disorder, 2 miscellaneous)

Table 7 Aberdeen Classification* 3 year rolling rates – Stillbirths**

	1993-1995	1994-1996	1995-1997	1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Antepartum haemorrhage	17.5	17.4	19.7	20.0	20.7	17.0	15.9	14.4	15.7	17.6	16.8	16.3	12.1	9.6	7.0	9.0
Congenital anomaly	3.1	3.0	3.7	4.7	6.3	7.4	10.0	9.1	8.9	6.8	7.1	6.5	7.0	6.2	6.3	6.1
Iso-immunisation	0.3	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maternal Disorder	7.3	7.6	9.6	9.6	8.7	8.1	6.3	6.4	6.3	8.9	8.2	7.1	5.9	6.8	7.4	7.4
Mechanical	3.1	4.0	4.3	4.1	2.3	2.0	2.1	3.2	3.6	3.2	2.5	4.1	5.5	6.4	5.1	5.3
Miscellaneous	4.7	4.0	4.9	4.9	5.3	5.1	4.0	2.5	2.9	2.5	2.9	1.6	2.1	3.0	6.3	8.0
Pre-eclampsia	5.5	6.4	7.7	8.0	6.6	4.5	3.5	4.8	5.6	6.4	5.5	4.9	4.7	3.4	2.5	1.2
Unclassifiable	0.2	0.0	0.0	0.0	0.4	0.7	0.9	0.7	0.4	0.4	0.4	0.4	0.4	0.6	1.3	1.0
Unexplained	58.2	57.4	50.0	48.7	49.7	55.3	57.0	58.7	56.4	54.2	56.5	59.1	62.4	64.0	64.1	61.9
	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
Total	577	528	492	489	473	447	428	438	447	472	476	491	473	470	474	488

*For definitions see Appendix E

**excludes terminations of pregnancy from 24 weeks gestation

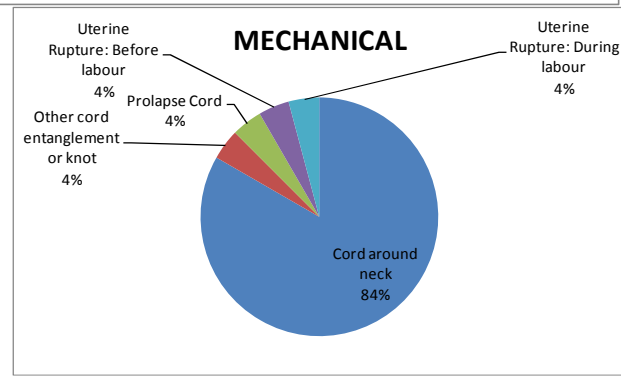
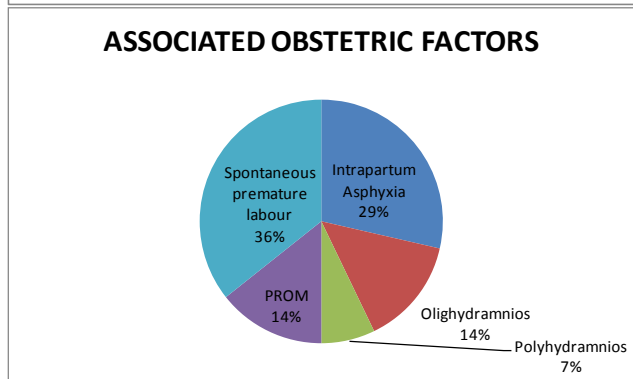
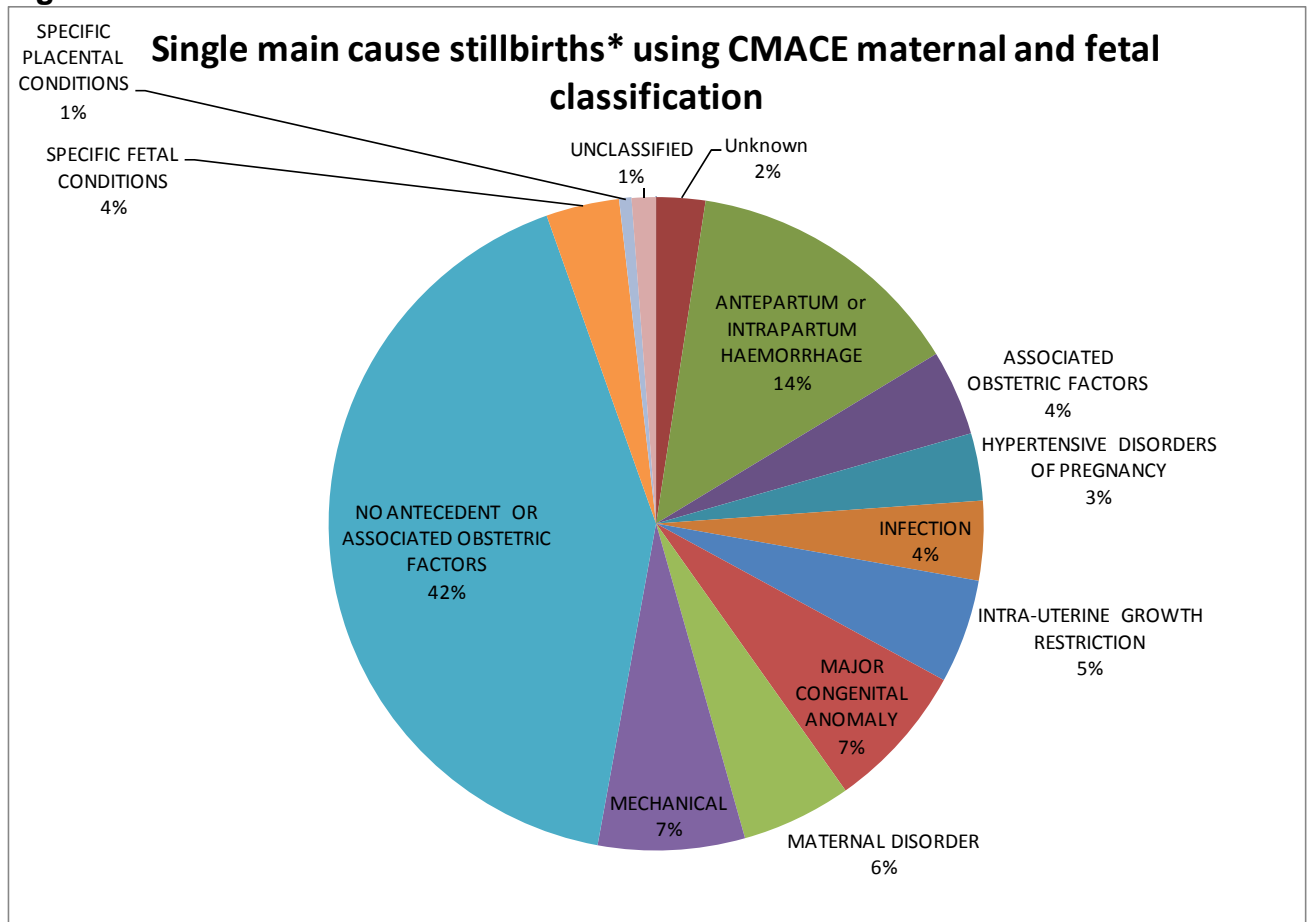
Table 8 CMACE classifications* for stillbirths** by Welsh NHS Region 2009-2010

Single main cause stillbirths using CMACE maternal and fetal classification 2009-2010	MW n=113	N n=61	SE n=157	WALES n=331
Unknown	2.7%	1.6%	2.5%	2.4%
ANTEPARTUM or INTRAPARTUM HAEMORRHAGE	15.0%	14.8%	12.7%	13.9%
ASSOCIATED OBSTETRIC FACTORS	6.2%	0.0%	4.5%	4.2%
HYPERTENSIVE DISORDERS OF PREGNANCY	2.7%	4.9%	3.2%	3.3%
INFECTION	3.5%	9.8%	1.9%	3.9%
INTRA-UTERINE GROWTH RESTRICTION	4.4%	3.3%	6.4%	5.1%
MAJOR CONGENITAL ANOMALY	8.0%	6.6%	7.0%	7.3%
MATERNAL DISORDER	4.4%	0.0%	8.3%	5.4%
MECHANICAL	10.6%	8.2%	4.5%	7.3%
NO ANTECEDENT OR ASSOCIATED OBSTETRIC FACTORS	38.1%	42.6%	43.9%	41.7%
SPECIFIC FETAL CONDITIONS	2.7%	4.9%	3.8%	3.6%
SPECIFIC PLACENTAL CONDITIONS	0.9%	0.0%	0.6%	0.6%
UNCLASSIFIED	0.9%	3.3%	0.6%	1.2%

*For definitions see Appendix E

**excludes 41 terminations of pregnancy from 24 weeks gestation, all congenital anomalies (6 Cardiovascular System, 13 Central Nervous System, 8 Chromosomal Disorders, 8 Multiple Anomalies, 3 Musculo-Skeletal System, 1 Other major congenital anomaly, 2 Urinary Tract)

Figure 9



*excludes 41 terminations of pregnancy from 24 weeks gestation, all congenital anomalies (6 Cardiovascular System, 13 Central Nervous System, 8 Chromosomal Disorders, 8 Multiple Anomalies, 3 Musculo-Skeletal System, 1 Other major congenital anomaly, 2 Urinary Tract)

Neonatal mortality in Wales (deaths after livebirth to 27 completed days)

The neonatal mortality rate in Wales in 2010 was 2.8 per 1000 live births, which is similar to the annual rate for the combined 3 years 2007-2009. There has been little change in neonatal mortality rates since 2004 (Figure 10). These rates include late terminations. The neonatal mortality rate in Wales excluding late terminations in 2010 was 2.7 per 1,000 live births. Similar trends are observed for neonatal mortality rates in the Welsh NHS regions and Health Boards (Table 7).

Data on neonatal mortality in other parts of the UK are at present unavailable for 2010. The neonatal mortality rate in 2009 was 3.1 per 1,000 live births in England (ONS), 2.8 per 1,000 live births in Scotland¹, 3.8 per 1,000 live births in Northern Ireland² and 3.2 per 1,000 in Wales.

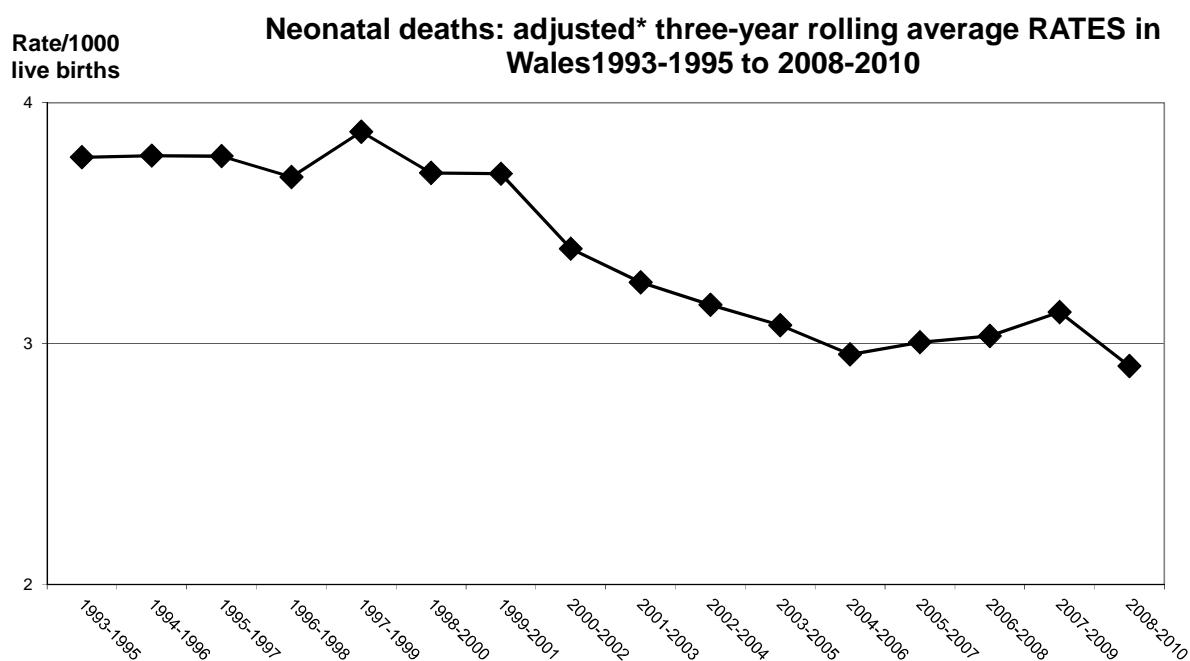
Within Europe, data on neonatal mortality are available for 2004, collated in the European Perinatal Health Report³. Neonatal mortality rates ranged from 1.6 per 1,000 live births in Cyprus to 5.7 per 1,000 live births in Latvia. The neonatal death rate was 3.0 per 1,000 live births in Scotland, 3.0 per 1,000 births in Northern Ireland and 3.2 per 1,000 births in Wales in 2004 and 3.2 per 1,000 live births in England and Wales. However, differences in ascertainment and registration may contribute to some of this observed variation such that direct comparisons between countries may be inaccurate⁴.

Neonatal mortality has been studied extensively in the UK, where the focus has been on addressing socio-economic inequalities. A Public Service Agreement target was set in 2003 to reduce the relative deprivation gap in England and Wales by 10%, by 2010. Recent analysis of trends in the neonatal mortality rate in England up to and including the year 2007 showed that substantial inequalities still persist, and much of this gap is explained by premature births and congenital anomalies⁵. Although this analysis did not distinguish between early and late neonatal deaths, previous work in Wales has shown that the association with deprivation is stronger in the late neonatal period⁶. Preterm birth is a major cause of neonatal mortality but there is little socio-economic variation in survival following preterm birth, indicating good access to high quality perinatal and neonatal services. However, the incidence of pre-term birth is higher in more deprived areas, driving the observed socio-economic inequalities in neonatal mortality rates⁷.

References

1. Information Services Division NHSScotland. Scottish Perinatal & Infant Mortality & Morbidity Report (SPIMMR) 2009 'Available at:' http://www.healthcareimprovementscotland.org/programmes/reproductive_maternal_child/programme_resources/spimmr_2009.aspx. Accessed August 2011.
2. Northern Ireland Statistics and Research Agency. Registrar General Annual Reports 'Available at:' <http://www.nisra.gov.uk/demography/default.asp99.htm>. Accessed November.
3. Euro-Peristat PROJECT. The European Perinatal Health Report 'Available at:' <http://www.europeristat.com/bm.doc/european-perinatal-health-report.pdf>. Accessed August 2011.
4. Draper ES. Evaluating and comparing neonatal outcomes. *Archives of disease in childhood. Fetal and neonatal edition* 2010;95(3):F158-9
5. Smith LK, Manktelow BN, Draper ES, Springett A, Field DJ. Nature of socioeconomic inequalities in neonatal mortality: population based study. *BMJ* 2010;341:c6654
6. Guildea ZE, Fone DL, Dunstan FD, Sibert JR, Cartlidge PH. Social deprivation and the causes of stillbirth and infant mortality. *Archives of Disease in Childhood* 2001;84(4):307-10
7. Smith LK, Draper ES, Manktelow BN, Dorling JS, Field DJ. Socioeconomic inequalities in very preterm birth rates. *Archives of disease in childhood. Fetal and neonatal edition* 2007;92(1):F11-4

Figure 10



Source: NCCHD & AWPS

Table 9 Neonatal deaths: adjusted* three-year rolling average RATES by Health Board and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

Health Board and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg University Health Board	4.36	4.00	3.66	3.57	3.03	3.09	2.63	2.75	2.56	2.67	3.0	(1.9, 4.7)
Hywel Dda Health Board	3.86	3.15	2.85	2.78	3.01	3.22	3.49	3.23	3.04	2.84	2.8	(1.5, 4.9)
Powys Teaching Health Board	3.91	2.23	2.63	2.04	3.12	3.05	3.78	2.14	1.85	1.90	3.4	(1.3, 8.6)
Mid and West Wales	4.13	3.49	3.25	3.12	3.04	3.13	3.07	2.85	2.65	2.65	2.9	(2.1, 4.1)
Betsi Cadwaladr University Health Board	3.06	2.77	3.31	3.07	3.36	3.13	3.42	3.28	3.56	3.33	3.1	(2.1, 4.7)
North Wales	3.06	2.77	3.31	3.07	3.36	3.13	3.42	3.28	3.56	3.33	3.1	(2.1, 4.7)
Aneurin Bevan Health Board	2.78	3.05	3.07	3.23	2.52	2.59	2.38	2.90	3.02	2.51	1.4	(0.8, 2.6)
Cardiff and Vale University Health Board	4.44	4.66	3.82	3.75	3.75	3.24	3.07	3.21	3.39	3.60	3.7	(2.5, 5.6)
Cwm Taf Health Board	4.52	3.21	2.64	2.46	2.75	2.51	3.33	3.37	3.84	2.69	1.9	(0.9, 3.9)
South East Wales	3.72	3.62	3.23	3.23	2.99	2.80	2.84	3.12	3.34	2.95	2.4	(1.7, 3.2)
WALES	3.70	3.39	3.25	3.16	3.08	2.95	3.01	3.03	3.13	2.91	2.7	(2.2, 3.3)

*excludes terminations 24 weeks and over

Table 10 Neonatal deaths: adjusted* three-year rolling average RATES by Local Authority and NHS Region 1999-2001 to 2008-2010 and 2010 with 95% CI

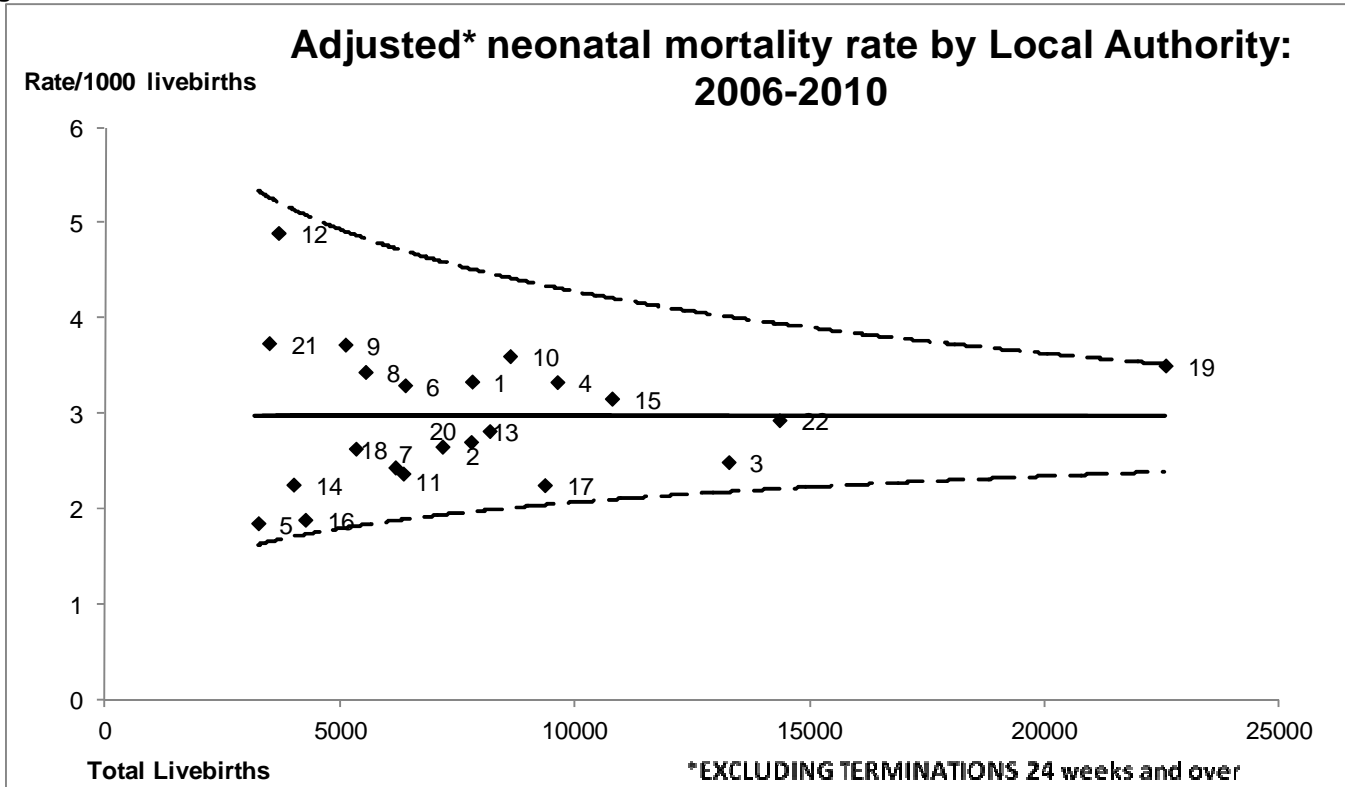
Health Board	Local Authority and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010	2010	95% CI
Abertawe Bro Morgannwg	Bridgend	1.80	1.63	2.82	3.92	4.03	2.89	3.06	2.59	3.22	3.37	4.9	(2.5 9.6)
	Neath Port Talbot	5.74	5.41	4.80	4.14	3.47	4.02	2.65	2.83	1.94	2.74	3.1	(1.3 7.2)
University Health Board	Swansea	5.18	4.67	3.53	3.05	2.17	2.67	2.37	2.79	2.53	2.22	1.8	(0.8 4.2)
	Carmarthenshire	3.11	1.97	1.39	1.72	2.65	3.14	3.96	3.12	3.29	2.93	3.1	(1.4 6.7)
Hywel Dda Health Board	Ceredigion	3.38	3.48	4.10	4.50	3.87	2.23	1.61	2.67	3.10	2.02	0.0	(0.0 5.3)
	Pembrokeshire	5.26	4.77	4.39	3.50	3.11	3.82	3.74	3.69	2.64	3.13	3.9	(1.7 9.0)
Powys Teaching Health Board	Powys	3.91	2.23	2.63	2.04	3.12	3.05	3.78	2.14	1.85	1.90	3.4	(1.3 8.6)
Mid and West Wales		4.13	3.49	3.25	3.12	3.04	3.13	3.07	2.85	2.65	2.65	2.9	(2.1 4.1)
Betsi Cadwaladr University Health Board	Conwy	2.80	3.21	3.28	2.60	2.91	2.50	5.01	4.25	4.87	2.39	0.9	(0.2 5.0)
	Denbighshire	5.42	4.05	5.08	3.54	3.82	3.10	2.38	2.62	3.89	4.81	3.8	(1.5 9.8)
	Flintshire	2.88	2.54	3.64	3.10	3.45	3.57	3.56	3.89	3.48	3.28	2.9	(1.2 6.7)
	Gwynedd	1.93	1.72	3.25	3.79	3.64	2.67	2.64	2.90	2.92	2.37	1.6	(0.4 5.8)
	Isle of Anglesey	1.51	2.18	2.20	2.12	1.54	3.54	4.34	4.22	3.62	4.87	6.3	(2.7 14.7)
	Wrexham	3.64	3.01	2.28	2.90	3.83	3.30	3.04	2.28	3.02	3.13	4.2	(2.0 8.6)
North Wales		3.06	2.77	3.31	3.07	3.36	3.13	3.42	3.28	3.56	3.33	3.1	(2.1 4.7)
Aneurin Bevan Health Board	Blaenau Gwent	5.84	3.35	4.30	3.81	3.23	2.22	2.20	3.33	2.49	2.03	1.2	(0.2 7.0)
	Caerphilly	2.65	2.61	2.38	2.57	1.94	2.56	2.26	2.97	3.76	3.19	1.8	(0.7 4.6)
	Monmouthshire	2.60	2.99	1.64	1.96	0.78	1.59	2.03	3.10	2.36	1.16	0.0	(0.0 4.4)
	Newport	2.68	3.65	3.29	3.57	3.50	4.11	3.09	2.20	2.10	2.56	2.5	(1.1 5.9)
	Torfaen	1.03	2.73	4.52	4.76	3.00	1.26	1.88	3.49	4.10	2.48	0.0	(0.0 3.5)
Cardiff and Vale University Health Board	Cardiff	4.89	4.84	3.64	3.13	3.09	2.87	3.11	3.35	3.53	3.80	4.2	(2.7 6.5)
	The Vale of Glamorgan	3.34	4.17	4.35	5.56	5.70	4.35	2.95	2.81	2.98	2.98	2.1	(0.7 6.1)
Cwm Taf Health Board	Merthyr Tydfil	3.17	2.21	2.74	3.75	2.61	2.04	2.48	4.20	5.25	3.82	1.4	(0.3 8.0)
	Rhondda Cynon Taff	4.86	3.45	2.62	2.15	2.78	2.62	3.53	3.16	3.50	2.41	2.0	(0.9 4.4)
	South East Wales		3.72	3.62	3.23	3.23	2.99	2.80	2.84	3.12	3.34	2.95	2.4
WALES		3.70	3.39	3.25	3.16	3.08	2.95	3.01	3.03	3.13	2.91	2.7	(2.2 3.3)

*excludes terminations 24 weeks and over

Between Local Authorities the neonatal mortality rates for 2010 ranged from 0.0 (95% CI 0.0,5.3) in Ceredigion Local Authority to 6.3 per 1,000 (95% CI 2.7,14.7) in Isle of Anglesey (Table 16).

The funnel plot shows the neonatal mortality rates over a 5 year period for Local Authorities (Figure 11). Although Isle of Anglesey has a neonatal mortality rate that is just outside the envelope of the funnel plot, these rates are not adjusted for case mix and the majority of the neonatal deaths in Isle of Anglesey are < 25 weeks gestation.

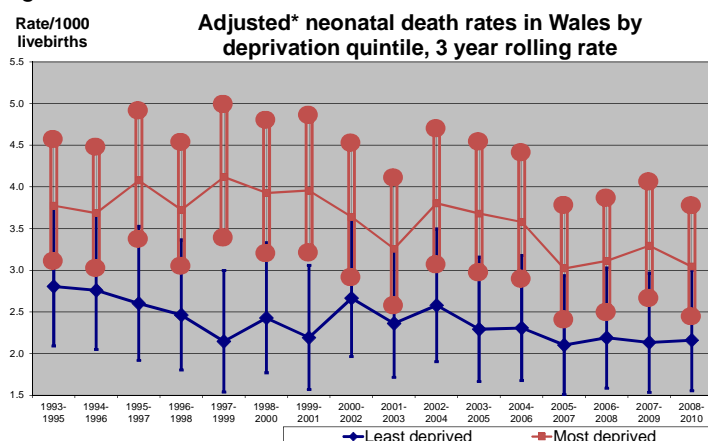
Figure 11



- | | |
|--------------------------|--|
| 1 Bridgend | Abertawe Bro Morgannwg University Health Board |
| 2 Neath Port Talbot | Abertawe Bro Morgannwg University Health Board |
| 3 Swansea | Abertawe Bro Morgannwg University Health Board |
| 4 Carmarthenshire | Hywel Dda Health Board |
| 5 Ceredigion | Hywel Dda Health Board |
| 6 Pembrokeshire | Hywel Dda Health Board |
| 7 Powys | Powys Teaching Health Board |
| 8 Conwy | Betsi Cadwaladr University Health Board |
| 9 Denbighshire | Betsi Cadwaladr University Health Board |
| 10 Flintshire | Betsi Cadwaladr University Health Board |
| 11 Gwynedd | Betsi Cadwaladr University Health Board |
| 12 Isle of Anglesey | Betsi Cadwaladr University Health Board |
| 13 Wrexham | Betsi Cadwaladr University Health Board |
| 14 Blaenau Gwent | Aneurin Bevan Health Board |
| 15 Caerphilly | Aneurin Bevan Health Board |
| 16 Monmouthshire | Aneurin Bevan Health Board |
| 17 Newport | Aneurin Bevan Health Board |
| 18 Torfaen | Aneurin Bevan Health Board |
| 19 Cardiff | Cardiff and Vale University Health Board |
| 20 The Vale of Glamorgan | Cardiff and Vale University Health Board |
| 21 Merthyr Tydfil | Cwm Taf Health Board |
| 22 Rhondda Cynon Taff | Cwm Taf Health Board |

Within Wales, neonatal death rates are higher in the most deprived quintile of social deprivation compared to the least deprived quintile, however there is evidence that this gap has narrowed since 2002 (Figure 12).

Figure 12



The chart shows the rates in the highest and lowest quintiles of the population as given by the Welsh Index of Multiple Deprivation (WIMD 2008). The vertical lines show the 95% CI at each point. Cases were allocated to the appropriate quintile of deprivation based on mother’s residence and LSOA. These scores were based on the mothers, not babies, and for multiple pregnancies only the first born babies were assigned a deprivation score, to avoid double counting.

Cause of neonatal death in Wales

We use a classification system for neonatal deaths to give as much insight as possible into the underlying cause of death or events leading up to death. This helps us explore any trends or variation in causes of death and identify areas that can be addressed. Deaths after livebirth are presented by Clinico-Pathological (extended Wigglesworth) Classification. Unlike the Aberdeen classification, this classification system focuses more on cause of death, rather than the events leading up to it.

Preterm birth remains the leading cause of neonatal death, followed by congenital anomaly and infection. Examination of three year rolling average proportions by cause of death show a declining trend for preterm birth and small increases in the rate for infection. About 12% of neonatal deaths were attributed to intrapartum events. There has been little change in the proportion of neonatal deaths attributed to sudden unexpected death since 2005.

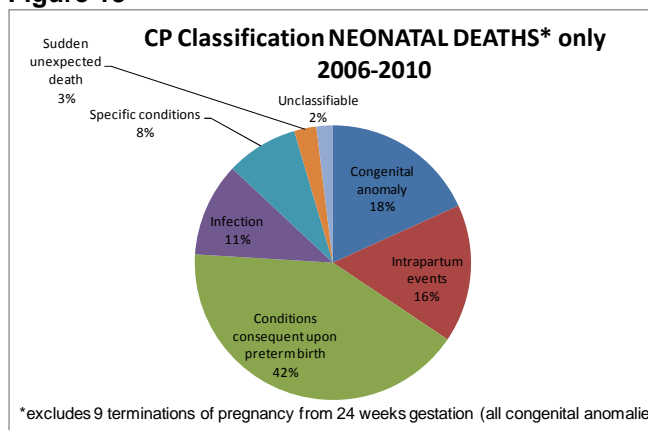
Table 11 Clinico-Pathological Classification* of deaths (after livebirth) – Neonatal Deaths to <28 days by Welsh NHS Region 2006-2010**

CP Classification NEONATAL DEATHS only 2006-2010	MW n=154	N n=125	SE n=239	WALES n=518
Congenital anomaly	18.2%	15.2%	23.0%	19.7%
Intrapartum events	16.2%	9.6%	10.5%	12.0%
Conditions consequent upon preterm birth	41.6%	49.6%	40.6%	43.1%
Infection	11.0%	12.0%	11.7%	11.6%
Specific conditions	8.4%	8.8%	9.2%	8.9%
Sudden unexpected death	2.6%	0.8%	2.9%	2.3%
Unclassifiable	1.9%	4.0%	2.1%	2.5%

*For definitions see Appendix E

**excludes 9 terminations of pregnancy from 24 weeks gestation (all congenital anomalies)

Figure 13



*excludes 9 terminations of pregnancy from 24 weeks gestation (all congenital anomalies)

Table 12 Clinico-Pathological Classification* of deaths (after livebirth) – Neonatal Deaths to <28 days – 3 year rolling rates**

	1993-1995	1994-1996	1995-1997	1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2008-2010
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Congenital anomaly	24.1%	23.9%	22.8%	21.8%	19.5%	18.7%	21.7%	22.3%	22.0%	17.7%	15.9%	16.5%	19.1%	21.0%	19.8%	19.0%
Intrapartum events	11.4%	11.3%	10.4%	10.2%	8.7%	10.3%	9.5%	12.3%	9.8%	10.9%	10.2%	13.4%	15.5%	14.3%	12.2%	8.4%
Conditions consequent upon preterm birth	53.0%	53.4%	53.6%	53.8%	54.5%	55.2%	52.9%	51.5%	51.4%	47.6%	50.8%	46.4%	49.2%	43.5%	44.7%	41.3%
Infection	4.7%	3.8%	4.6%	6.3%	8.0%	8.6%	7.2%	6.8%	6.1%	8.5%	7.8%	8.6%	6.6%	9.8%	12.2%	14.8%
Specific conditions	5.0%	5.5%	6.1%	5.8%	6.4%	4.7%	5.5%	3.9%	6.1%	9.5%	9.5%	8.9%	4.6%	7.0%	7.0%	11.6%
Accidental death	0.5%	0.3%	0.0%	0.0%	0.3%	0.3%	0.6%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sudden unexpected death	1.2%	1.8%	2.5%	2.1%	2.6%	2.2%	2.6%	2.6%	3.7%	5.1%	4.7%	4.1%	2.6%	2.5%	2.4%	2.3%
Unclassifiable	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.7%	0.7%	1.0%	2.1%	2.3%	1.9%	1.8%	2.6%
Total	402	397	394	381	389	359	346	309	296	294	295	291	303	315	329	310

*For definitions see Appendix E

**excludes terminations of pregnancy from 24 weeks gestation

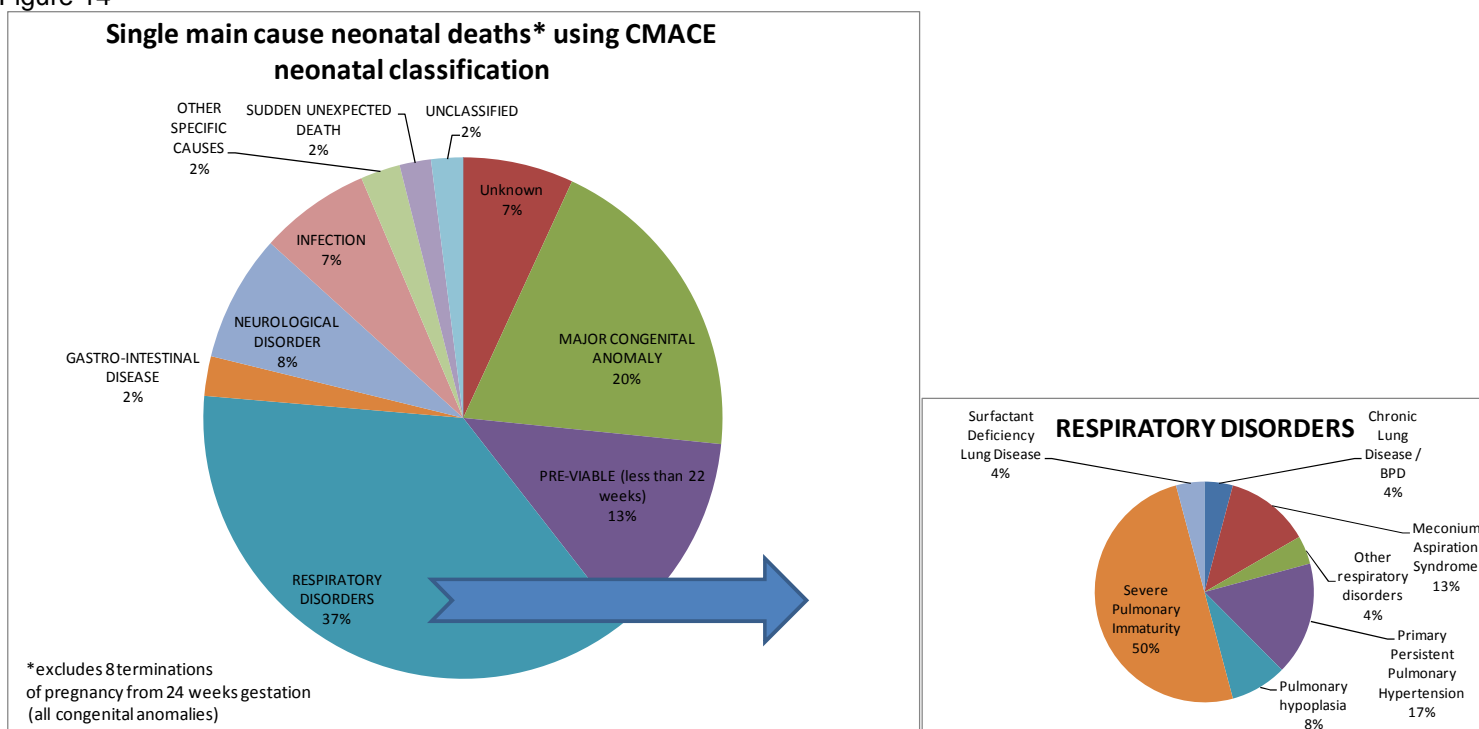
Table 13 CMACE classifications* for neonatal deaths by Welsh NHS Region 2009-2010**

Single main cause neonatal deaths using CMACE neonatal classification 2009-2010	MW n=62	N n=52	SE n=89	WALES n=203
Unknown	4.8%	9.6%	6.7%	6.9%
MAJOR CONGENITAL ANOMALY	24.2%	11.5%	21.3%	19.7%
PRE-VIABLE (less than 22 weeks)	8.1%	11.5%	16.9%	12.8%
RESPIRATORY DISORDERS	38.7%	38.5%	34.8%	36.9%
GASTRO-INTESTINAL DISEASE	3.2%	1.9%	2.2%	2.5%
NEUROLOGICAL DISORDER	12.9%	1.9%	7.9%	7.9%
INFECTION	4.8%	15.4%	3.4%	6.9%
OTHER SPECIFIC CAUSES	0.0%	3.8%	3.4%	2.5%
SUDDEN UNEXPECTED DEATH	3.2%	0.0%	2.2%	2.0%
UNCLASSIFIED	0.0%	5.8%	1.1%	2.0%
TOTAL	0.0%	0.0%	0.0%	0.0%

*For definitions see Appendix E

**excludes 8 terminations of pregnancy from 24 weeks gestation (all congenital anomalies)

Figure 14



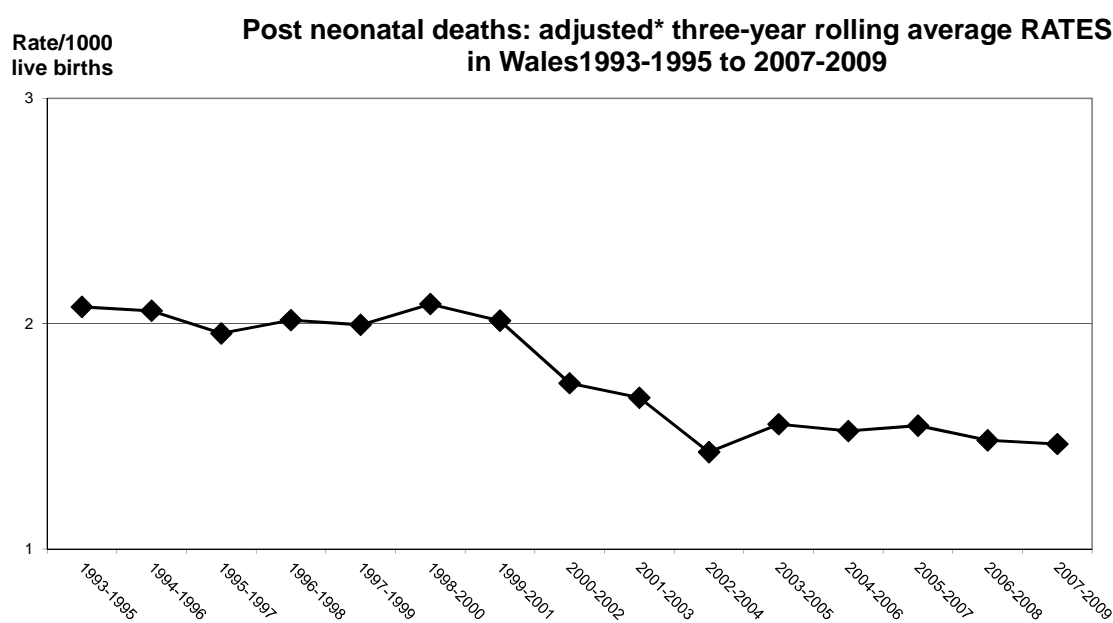
Post Neonatal mortality in Wales (deaths from 28 days to 1 year of age)

The greatest effect of deprivation in infant mortality is in the post-neonatal period^{1,2}. The post neonatal mortality rate in Wales in 2010 was 1.3 per 1000 births, which is similar to the annual rate for the combined 3 years 2007-2009. There has been little change in post neonatal mortality rates since 2002. (Figure 15) Post neonatal mortality rates in 2010 were similar in South East Wales (1.3 per 1,000 livebirths (95% CI 0.9, 2.0)) and Mid and West Wales (1.2 per 1,000 live births (95% CI 0.7, 2.0)), but higher in North Wales (1.7 per 1,000 live births (95% CI 1.0, 2.9)) (Table 14).

Sudden unexpected death remains a leading cause of post neonatal mortality. However examination of trends in cause of post neonatal deaths shows steady reductions in the proportions of deaths due to Sudden unexpected death (SUDI/SIDS), accidents and prematurity. This is accompanied by small increases in the proportions of deaths due to infection and specific causes (Table 16).

About 10% of post neonatal deaths were attributed to prematurity, and all of these babies died in hospital suggesting that they had not been discharged since birth.

Figure 15



Source: NCCHD & AWPS

Table 14 Post neonatal deaths: three-year rolling average RATES by Health Board and NHS Region 1998-2000 to 2007-2009 and 2010 with 95% CI

Health Board and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2010	95% CI
Abertawe Bro Morgannwg University Health Board	1.99	1.71	1.37	0.96	1.18	1.39	1.62	1.17	0.93	1.5	(0.8, 2.8)
Hywel Dda Health Board	1.84	1.38	1.57	1.15	1.70	1.47	1.43	1.05	0.96	0.8	(0.3, 2.2)
Powys Teaching Health Board	1.83	1.68	0.58	1.17	1.70	3.33	2.97	2.94	1.06	0.8	(0.1, 4.8)
Mid and West Wales	1.91	1.59	1.35	1.05	1.42	1.65	1.71	1.33	0.95	1.2	(0.7, 2.0)
Betsi Cadwaladr University Health Board	1.85	1.41	1.48	1.14	1.34	1.49	1.39	1.17	1.33	1.7	(1.0, 2.9)
North Wales	1.85	1.41	1.48	1.14	1.34	1.49	1.39	1.17	1.33	1.7	(1.0, 2.9)
Aneurin Bevan Health Board	2.30	1.93	1.78	1.80	1.89	1.55	1.76	2.05	2.13	1.0	(0.5, 2.1)
Cardiff and Vale University Health Board	2.57	2.47	2.50	2.11	1.71	1.21	1.14	1.38	1.67	1.3	(0.7, 2.5)
Cwm Taf Health Board	1.26	1.39	1.59	1.43	1.57	1.74	1.81	1.78	1.78	1.9	(0.9, 3.9)
South East Wales	2.16	1.99	1.98	1.82	1.75	1.48	1.55	1.75	1.88	1.3	(0.9, 2.0)
WALES	2.01	1.74	1.67	1.43	1.55	1.52	1.55	1.48	1.47	1.3	(1.0, 1.8)

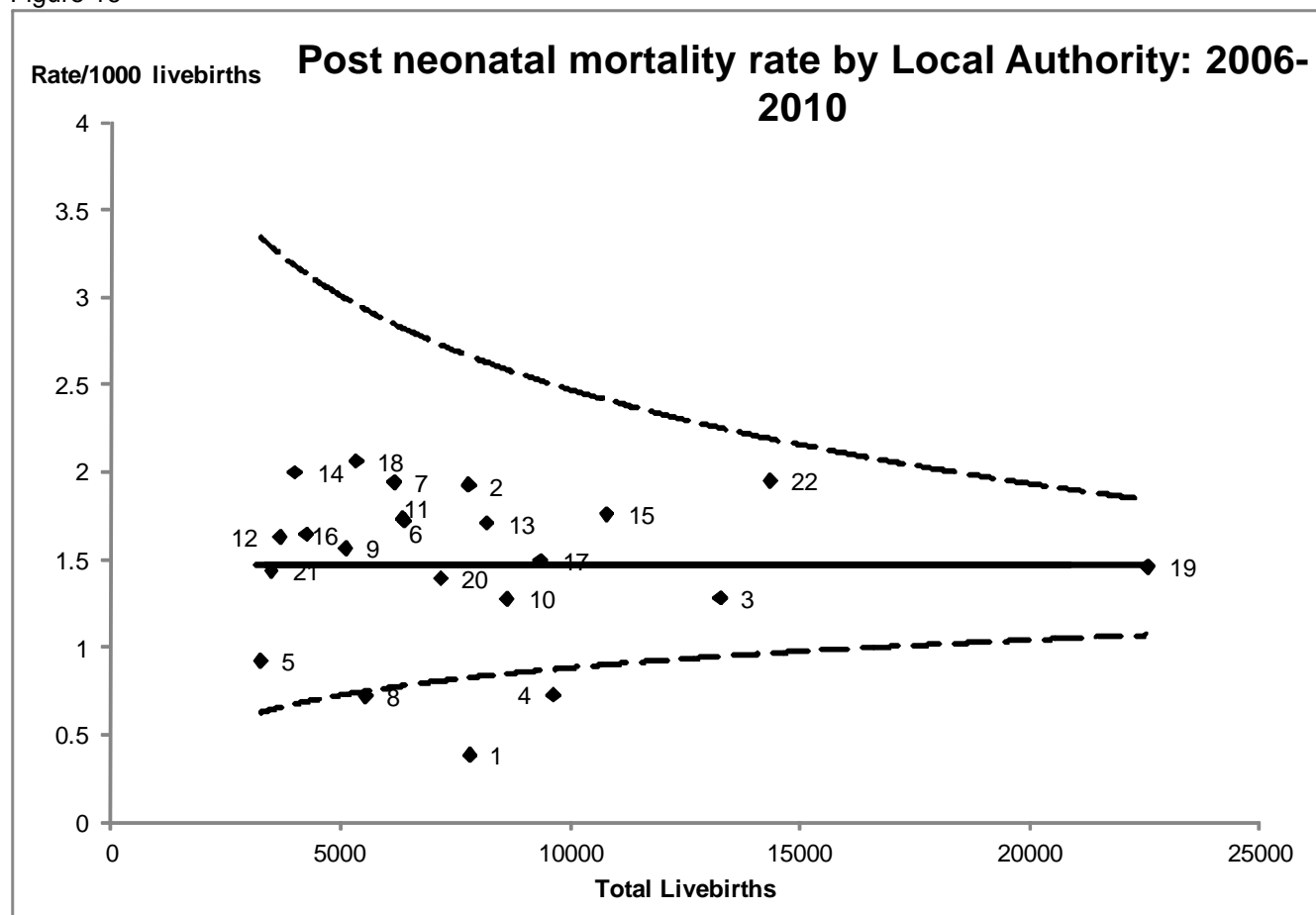
Data on post neonatal deaths relate to the date of death in 2010

Table 15 Post neonatal deaths: three-year rolling average RATES by Local Authority and NHS Region 1998-2000 to 2007-2009 and 2010 with 95% CI

Health Board	Local Authority and NHS Region	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009	2010	95% CI
Abertawe Bro Morgannwg University Health Board	Bridgend	2.03	1.86	1.41	0.69	0.90	1.11	1.09	0.43	0.21	0.0	(0.0 2.3)
	Neath Port Talbot	1.30	1.03	1.01	1.46	1.39	2.01	1.77	1.96	1.08	2.5	(1.0 6.4)
	Swansea	2.32	1.98	1.55	0.83	1.22	1.20	1.84	1.14	1.26	1.8	(0.8 4.2)
Hywel Dda Health Board	Carmarthenshire	1.94	1.38	1.19	0.96	1.33	1.11	0.90	0.87	0.87	0.0	(0.0 2.0)
	Ceredigion	1.69	1.74	2.93	1.69	1.66	1.11	1.07	1.07	0.00	1.4	(0.2 7.8)
	Pembrokeshire	1.75	1.19	1.46	1.17	2.26	2.18	2.40	1.32	1.58	1.5	(0.4 5.6)
Powys Teaching Health Board	Powys	1.83	1.68	0.58	1.17	1.70	3.33	2.97	2.94	1.06	0.8	(0.1 4.8)
Mid and West Wales		1.91	1.59	1.35	1.05	1.42	1.65	1.71	1.33	0.95	1.2	(0.7 2.0)
Betsi Cadwaladr University Health Board	Conwy	2.18	1.28	2.30	2.28	2.91	1.87	1.88	0.91	0.91	0.0	(0.0 3.4)
	Denbighshire	1.45	1.10	0.73	1.06	1.39	1.72	1.70	1.64	2.27	0.0	(0.0 3.7)
	Flintshire	2.47	2.33	2.14	1.03	1.01	1.19	1.19	0.97	1.16	1.7	(0.6 5.0)
	Gwynedd	1.10	0.86	0.59	0.87	1.40	2.14	1.58	1.06	1.06	3.2	(1.3 8.2)
	Isle of Anglesey	2.01	2.18	2.20	1.59	1.02	1.01	1.45	2.34	2.26	0.0	(0.0 4.8)
	Wrexham	1.70	0.75	1.01	0.48	0.68	1.10	0.87	0.83	1.01	3.6	(1.6 7.8)
North Wales		1.85	1.41	1.48	1.14	1.34	1.49	1.39	1.17	1.33	1.7	(1.0 2.9)
Aneurin Bevan Health Board	Blaenau Gwent	1.35	1.43	0.96	0.95	0.92	1.33	2.20	2.50	2.90	0.0	(0.0 4.7)
	Caerphilly	2.15	1.79	1.74	2.08	2.59	1.92	1.77	1.88	2.04	1.3	(0.5 3.9)
	Monmouthshire	1.30	0.43	1.23	0.78	1.17	0.79	2.03	1.94	1.96	1.2	(0.2 6.5)
	Newport	2.86	3.07	2.67	2.58	2.33	1.76	1.74	1.83	1.75	1.0	(0.3 3.7)
	Torfaen	3.08	1.71	1.39	1.36	1.00	1.26	1.25	2.54	2.52	0.9	(0.2 5.2)
Cardiff and Vale University Health Board	Cardiff	3.23	2.90	2.61	2.02	1.59	1.01	1.04	1.22	1.62	1.7	(0.9 3.3)
	Glamorgan	0.95	1.30	2.17	2.38	2.07	1.79	1.47	1.87	1.83	0.0	(0.0 2.7)
Cwm Taf Health Board	Merthyr Tydfil	1.06	0.55	1.10	0.54	0.52	1.02	0.99	1.86	1.43	0.0	(0.0 5.5)
	Rhondda Cynon Taff	1.31	1.59	1.70	1.64	1.81	1.91	2.00	1.76	1.87	2.3	(1.1 4.8)
South East Wales		2.16	1.99	1.98	1.82	1.75	1.48	1.55	1.75	1.88	1.3	(0.9 2.0)
WALES		2.01	1.74	1.67	1.43	1.55	1.52	1.55	1.48	1.47	1.3	(1.0 1.8)

Data on post neonatal deaths relate to the date of death in 2010

Figure 16



Data on post neonatal deaths relate to the date of death in 2010

- | | |
|--------------------------|--|
| 1 Bridgend | Abertawe Bro Morgnwg University Health Board |
| 2 Neath Port Talbot | Abertawe Bro Morgnwg University Health Board |
| 3 Swansea | Abertawe Bro Morgnwg University Health Board |
| 4 Carmarthenshire | Hywel Dda Health Board |
| 5 Ceredigion | Hywel Dda Health Board |
| 6 Pembrokeshire | Hywel Dda Health Board |
| 7 Powys | Powys Teaching Health Board |
| 8 Conwy | Betsi Cadwaladr University Health Board |
| 9 Denbighshire | Betsi Cadwaladr University Health Board |
| 10 Flintshire | Betsi Cadwaladr University Health Board |
| 11 Gwynedd | Betsi Cadwaladr University Health Board |
| 12 Isle of Anglesey | Betsi Cadwaladr University Health Board |
| 13 Wrexham | Betsi Cadwaladr University Health Board |
| 14 Blaenau Gwent | Aneurin Bevan Health Board |
| 15 Caerphilly | Aneurin Bevan Health Board |
| 16 Monmouthshire | Aneurin Bevan Health Board |
| 17 Newport | Aneurin Bevan Health Board |
| 18 Torfaen | Aneurin Bevan Health Board |
| 19 Cardiff | Cardiff and Vale University Health Board |
| 20 The Vale of Glamorgan | Cardiff and Vale University Health Board |
| 21 Merthyr Tydfil | Cwm Taf Health Board |
| 22 Rhondda Cynon Taff | Cwm Taf Health Board |

Table 16 Clinico-Pathological Classification* of deaths (after livebirth) – POST Neonatal Deaths from 28 days to < 1 year by Welsh NHS Region 2006-2010

CP Classification POST neonatal deaths only 2006-2010	MW n=64	N n=47	SE n=125	UNK n=1	WALES n=237
Congenital anomaly	18.8%	34.0%	18.4%	0.0%	21.5%
Intrapartum events	3.1%	0.0%	2.4%	0.0%	2.1%
Conditions consequent upon preterm birth	7.8%	10.6%	10.4%	0.0%	9.7%
Infection	14.1%	17.0%	12.8%	0.0%	13.9%
Specific conditions	6.3%	6.4%	8.0%	0.0%	7.2%
Accidental death	3.1%	4.3%	0.8%	0.0%	2.1%
Sudden unexpected death	31.3%	17.0%	24.8%	0.0%	24.9%
Unclassifiable	15.6%	10.6%	22.4%	100.0%	18.6%

*For definitions see Appendix C

Data on post neonatal deaths relate to the date of death in 2010

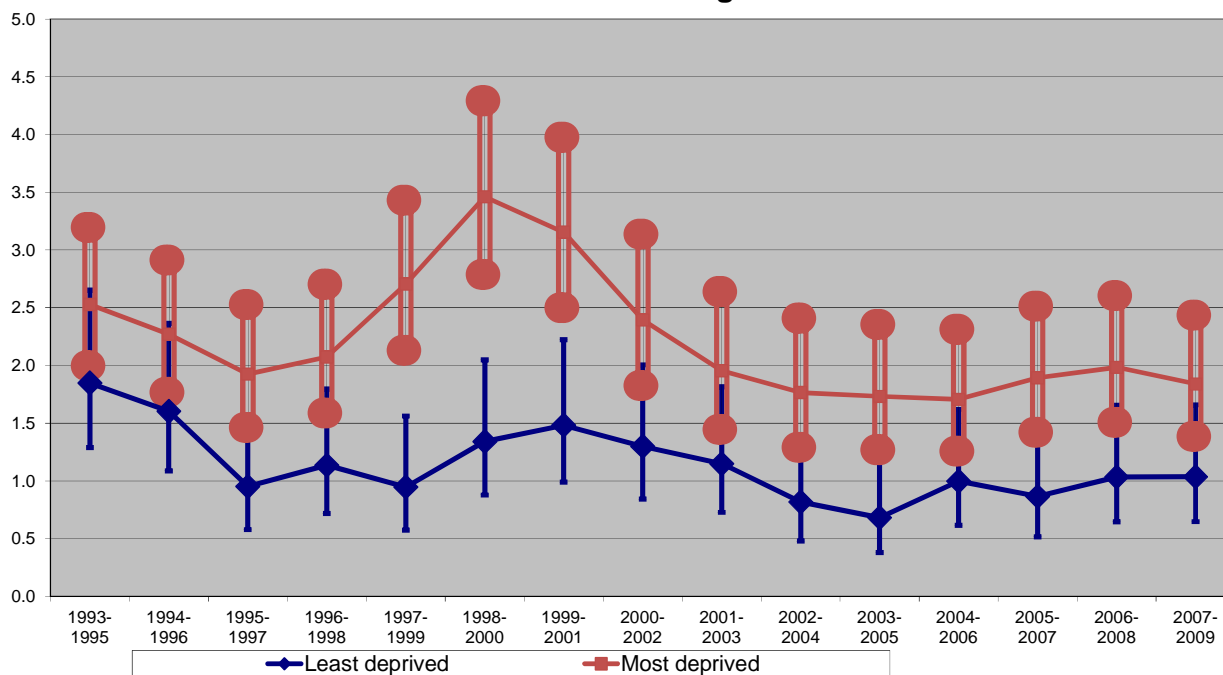
Table 17 Clinico-Pathological Classification* of deaths (after livebirth) – POST Neonatal Deaths from 28 days to < 1 year

	1993-1995	1994-1996	1995-1997	1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007	2006-2008	2007-2009
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Congenital anomaly	24.9%	25.0%	20.6%	20.2%	21.0%	23.3%	24.5%	26.6%	28.3%	25.6%	23.5%	20.7%	19.2%	20.8%	23.4%
Intrapartum events	1.4%	1.4%	2.5%	4.3%	5.0%	4.0%	1.6%	0.0%	0.7%	1.5%	1.3%	2.0%	1.9%	3.2%	1.9%
Conditions consequent upon preterm birth	12.2%	14.4%	16.2%	16.8%	17.5%	15.8%	16.0%	12.7%	11.8%	14.3%	14.8%	16.0%	12.8%	11.7%	9.7%
Infection	12.7%	12.0%	12.3%	9.6%	9.0%	9.4%	10.1%	10.1%	8.6%	6.8%	9.4%	12.7%	14.1%	13.0%	13.0%
Specific conditions	10.9%	12.0%	8.3%	7.7%	7.5%	7.9%	6.9%	8.2%	9.9%	10.5%	8.1%	5.3%	7.7%	6.5%	6.5%
Accidental death	4.1%	3.7%	4.4%	4.8%	6.0%	4.5%	5.3%	7.0%	7.2%	9.0%	4.7%	4.7%	1.9%	3.2%	1.9%
Sudden unexpected death	33.9%	31.5%	35.8%	36.5%	33.5%	34.7%	34.6%	34.8%	32.9%	31.6%	34.9%	33.3%	33.3%	29.9%	24.7%
Unclassifiable	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%	1.1%	0.6%	0.7%	0.8%	3.4%	5.3%	9.0%	11.7%	18.8%
Total	221	216	204	208	200	202	188	158	152	133	149	150	156	154	154

Within Wales, post neonatal death rates are higher in the most deprived quintile of social deprivation compared to the least deprived quintile; however the gap has narrowed since 2000 (Figure 17). Sudden Infant Deaths, specific conditions and accidental death and infection were causes of death that were strongly associated with deprivation¹.

Figure 17

Rate/1000 livebirths **Post Neonatal death rates in Wales by deprivation quintile, 3 year rolling rate**



The chart shows the rates in the highest and lowest quintiles of the population as given by the Welsh Index of Multiple Deprivation (WIMD 2008). The vertical lines show the 95% CI at each point. Cases were allocated to the appropriate quintile of deprivation based on mother's residence and LSOA. These scores were based on the mothers, not babies, and for multiple pregnancies only the first born babies were assigned a deprivation score, to avoid double counting.

References

1. Guildea ZE, Fone DL, Dunstan FD, Sibert JR, Cartledge PH. Social deprivation and the causes of stillbirth and infant mortality. *Archives of Disease in Childhood* 2001;84(4):307-10
2. Oakley L, Maconochie N, Doyle P, Dattani N, Moser K. Multivariate analysis of infant death in England and Wales in 2005-06, with focus on socio-economic status and deprivation. *Health statistics quarterly / Office for National Statistics* 2009(42):22-39

Table 18 Adjusted* mortality rates by Health Board and Welsh NHS Regions in 2010 – RATES per 1,000 with 95% confidence intervals

Health Board and NHS Region	Registrable Births	Livebirths	Therapeutic abortion rate [20-23 wks]	Spontaneous miscarriage rate [20-23 wks]	Stillbirth rate*	Perinatal mortality rate*	Early neonatal mortality rate*	Late neonatal mortality rate	Neonatal mortality rate	Post neonatal mortality rate	Infant mortality rate
Abertawe Bro Morgannwg University Health Board	6104	6058	1.0 (0.5, 2.1)	1.8 (1.0, 3.2)	6.9 (5.1, 9.3)	9.3 (7.2, 12.1)	2.5 (1.5, 4.1)	0.5 (0.2, 1.5)	3.0 (1.9, 4.7)	1.5 (0.8, 2.8)	4.5 (3.1, 6.5)
Hywel Dda Health Board	3994	3978	1.7 (0.8, 3.6)	1.3 (0.5, 2.9)	2.3 (1.2, 4.3)	4.8 (3.0, 7.4)	2.5 (1.4, 4.6)	0.3 (0.0, 1.4)	2.8 (1.5, 4.9)	0.8 (0.3, 2.2)	3.5 (2.1, 5.9)
Powys Teaching Health Board	1192	1188	1.7 (0.5, 6.1)	0.0 (0.0, 3.2)	3.4 (1.3, 8.6)	5.9 (2.8, 12.1)	2.5 (0.9, 7.4)	0.8 (0.1, 4.8)	3.4 (1.3, 8.6)	0.8 (0.1, 4.8)	4.2 (1.8, 9.8)
Mid and West Wales	11290	11224	1.3 (0.8, 2.2)	1.4 (0.9, 2.3)	4.9 (3.7, 6.3)	7.4 (5.9, 9.1)	2.5 (1.7, 3.6)	0.4 (0.2, 1.0)	2.9 (2.1, 4.1)	1.2 (0.7, 2.0)	4.1 (3.1, 5.5)
Betsi Cadwaladr University Health Board	7665	7635	1.8 (1.1, 3.1)	1.7 (1.0, 2.9)	3.7 (2.5, 5.3)	6.0 (4.5, 8.0)	2.4 (1.5, 3.7)	0.8 (0.4, 1.7)	3.1 (2.1, 4.7)	1.7 (1.0, 2.9)	4.8 (3.5, 6.7)
North Wales	7665	7635	1.8 (1.1, 3.1)	1.7 (1.0, 2.9)	3.7 (2.5, 5.3)	6.0 (4.5, 8.0)	2.4 (1.5, 3.7)	0.8 (0.4, 1.7)	3.1 (2.1, 4.7)	1.7 (1.0, 2.9)	4.8 (3.5, 6.7)
Aneurin Bevan Health Board	7027	6987	1.4 (0.8, 2.6)	1.8 (1.1, 3.2)	5.3 (3.8, 7.2)	6.7 (5.0, 8.9)	1.4 (0.8, 2.6)	0.0 (0.0, 0.5)	1.4 (0.8, 2.6)	1.0 (0.5, 2.1)	2.4 (1.5, 3.9)
Cardiff and Vale University Health Board	6233	6197	2.4 (1.5, 4.0)	1.9 (1.1, 3.4)	4.8 (3.4, 6.9)	7.7 (5.8, 10.2)	2.9 (1.8, 4.6)	0.8 (0.3, 1.9)	3.7 (2.5, 5.6)	1.3 (0.7, 2.5)	5.0 (3.5, 7.1)
Cwm Taf Health Board	3705	3688	2.4 (1.3, 4.6)	2.2 (1.1, 4.3)	4.6 (2.9, 7.3)	5.7 (3.7, 8.6)	1.1 (0.4, 2.8)	0.8 (0.3, 2.4)	1.9 (0.9, 3.9)	1.9 (0.9, 3.9)	3.8 (2.3, 6.4)
South East Wales	16965	16872	2.0 (1.4, 2.8)	1.9 (1.4, 2.7)	5.0 (4.0, 6.1)	6.8 (5.7, 8.2)	1.9 (1.3, 2.7)	0.5 (0.2, 0.9)	2.4 (1.7, 3.2)	1.3 (0.9, 2.0)	3.7 (2.9, 4.7)
Unknown	297	297									
Wales	36217	36028	1.7 (1.4, 2.2)	1.7 (1.3, 2.2)	4.6 (4.0, 5.4)	6.8 (6.0, 7.7)	2.2 (1.7, 2.7)	0.5 (0.3, 0.8)	2.7 (2.2, 3.3)	1.3 (1.0, 1.8)	4.0 (3.4, 4.7)

Source: NCCHD & AWPS. Data on late fetal losses, stillbirths and neonatal deaths relate to the date of birth, while data on post neonatal deaths relate to the date of death in 2010.

* excludes 26 terminations of pregnancy from 24 weeks gestation (22 stillbirths, 4 early neonatal deaths)

Table 19 Adjusted* mortality rates by Local Authority and Welsh NHS Regions in 2010 – RATES per 1,000 with 95% confidence intervals

Health Board	Local authority and NHS Region	Registrable Births	Livebirths	Therapeutic abortion rate [20-23 wks]	Spontaneous miscarriage rate [20-23]	Stillbirth rate*	Perinatal mortality rate*	Early neonatal mortality	Late neonatal mortality	Neonatal mortality rate	Post neonatal mortality	Infant mortality rate
Abertawe Bro Morgannwg University Health Board	Bridgend	1660	1645	1.8 (0.6, 5.3)	1.8 (0.6, 5.3)	9.0 (5.5, 14.9)	12.7 (8.3, 19.3)	3.6 (1.7, 7.9)	1.2 (0.3, 4.4)	4.9 (2.5, 9.6)	0.0 (0.0, 2.3)	4.9 (2.5, 9.6)
	Neath Port Talbot	1627	1614	2.5 (1.0, 6.3)	1.8 (0.6, 5.4)	6.8 (3.8, 12.1)	9.2 (5.6, 15.2)	2.5 (1.0, 6.4)	0.6 (0.1, 3.5)	3.1 (1.3, 7.2)	2.5 (1.0, 6.4)	5.6 (2.9, 10.6)
	Swansea	2817	2799	0.0 (0.0, 1.4)	0.0 (0.0, 1.4)	5.7 (3.5, 9.2)	7.5 (4.9, 11.4)	1.8 (0.8, 4.2)	0.0 (0.0, 1.4)	1.8 (0.8, 4.2)	1.8 (0.8, 4.2)	3.6 (1.9, 6.6)
Hywel Dda Health Board	Carmarthenshire	1967	1961	0.5 (0.1, 2.9)	1.0 (0.3, 3.7)	1.5 (0.5, 4.5)	4.6 (2.4, 8.7)	3.1 (1.4, 6.7)	0.0 (0.0, 2.0)	3.1 (1.4, 6.7)	0.0 (0.0, 2.0)	3.1 (1.4, 6.7)
	Ceredigion	730	726	4.1 (1.4, 12.0)	2.7 (0.7, 9.9)	4.1 (1.4, 12.0)	4.1 (1.4, 12.0)	0.0 (0.0, 5.3)	0.0 (0.0, 5.3)	0.0 (0.0, 5.3)	1.4 (0.2, 7.8)	1.4 (0.2, 7.8)
	Pembrokeshire	1297	1291	1.5 (0.4, 5.6)	0.0 (0.0, 3.0)	2.3 (0.8, 6.8)	5.4 (2.6, 11.1)	3.1 (1.2, 7.9)	0.8 (0.1, 4.4)	3.9 (1.7, 9.0)	1.5 (0.4, 5.6)	5.4 (2.6, 11.1)
Powys Teaching Health Board	Powys	1192	1188	1.7 (0.5, 6.1)	5.0 (2.3, 10.9)	3.4 (1.3, 8.6)	5.9 (2.8, 12.1)	2.5 (0.9, 7.4)	0.8 (0.1, 4.8)	3.4 (1.3, 8.6)	0.8 (0.1, 4.8)	4.2 (1.8, 9.8)
Mid and West Wales		11290	11224	1.3 (0.8, 2.2)	1.4 (0.9, 2.3)	4.9 (3.7, 6.3)	7.4 (5.9, 9.1)	2.5 (1.7, 3.6)	0.4 (0.2, 1.0)	2.9 (2.1, 4.1)	1.2 (0.7, 2.0)	4.1 (3.1, 5.5)
Betsi Cadwaladr University Health Board	Conwy	1129	1126	1.8 (0.5, 6.4)	0.9 (0.2, 5.0)	1.8 (0.5, 6.4)	2.7 (0.9, 7.8)	0.9 (0.2, 5.0)	0.0 (0.0, 3.4)	0.9 (0.2, 5.0)	0.0 (0.0, 3.4)	0.9 (0.2, 5.0)
	Denbighshire	1049	1040	1.0 (0.2, 5.4)	4.7 (2.0, 11.1)	8.6 (4.5, 16.2)	10.5 (5.9, 18.7)	1.9 (0.5, 7.0)	1.9 (0.5, 7.0)	3.8 (1.5, 9.8)	0.0 (0.0, 3.7)	3.8 (1.5, 9.8)
	Flintshire	1753	1750	0.0 (0.0, 2.2)	1.7 (0.6, 5.0)	1.1 (0.3, 4.2)	3.4 (1.6, 7.4)	2.3 (0.9, 5.9)	0.6 (0.1, 3.2)	2.9 (1.2, 6.7)	1.7 (0.6, 5.0)	4.6 (2.3, 9.0)
	Gwynedd	1251	1243	4.0 (1.7, 9.3)	0.8 (0.1, 4.5)	6.4 (3.2, 12.6)	7.2 (3.8, 13.6)	0.8 (0.1, 4.5)	0.8 (0.1, 4.5)	1.6 (0.4, 5.8)	3.2 (1.3, 8.2)	4.8 (2.2, 10.5)
	Isle of Anglesey	794	792	0.0 (0.0, 4.8)	1.3 (0.2, 7.1)	2.5 (0.7, 9.1)	7.6 (3.5, 16.4)	5.1 (2.0, 12.9)	1.3 (0.2, 7.1)	6.3 (2.7, 14.7)	0.0 (0.0, 4.8)	6.3 (2.7, 14.7)
	Wrexham	1689	1684	3.5 (1.6, 7.7)	1.2 (0.3, 4.3)	3.0 (1.3, 6.9)	6.5 (3.6, 11.6)	3.6 (1.6, 7.8)	0.6 (0.1, 3.4)	4.2 (2.0, 8.6)	3.6 (1.6, 7.8)	7.7 (4.5, 13.2)
North Wales		7665	7635	1.8 (1.1, 3.1)	1.7 (1.0, 2.9)	3.7 (2.5, 5.3)	6.0 (4.5, 8.0)	2.4 (1.5, 3.7)	0.8 (0.4, 1.7)	3.1 (2.1, 4.7)	1.7 (1.0, 2.9)	4.8 (3.5, 6.7)
Aneurin Bevan Health Board	Blaenau Gwent	818	811	0.0 (0.0, 4.7)	1.2 (0.2, 6.9)	8.6 (4.2, 17.6)	9.8 (5.0, 19.2)	1.2 (0.2, 7.0)	0.0 (0.0, 4.7)	1.2 (0.2, 7.0)	0.0 (0.0, 4.7)	1.2 (0.2, 7.0)
	Caerphilly	2265	2253	1.8 (0.7, 4.5)	2.6 (1.2, 5.8)	4.4 (2.4, 8.1)	6.2 (3.7, 10.3)	1.8 (0.7, 4.6)	0.0 (0.0, 1.7)	1.8 (0.7, 4.6)	1.3 (0.5, 3.9)	3.1 (1.5, 6.4)
	Monmouthshire	872	869	13.6 (7.8, 23.6)	13.6 (7.8, 23.6)	3.4 (1.2, 10.1)	3.4 (1.2, 10.1)	0.0 (0.0, 4.4)	0.0 (0.0, 4.4)	0.0 (0.0, 4.4)	1.2 (0.2, 6.5)	1.2 (0.2, 6.5)
	Newport	1975	1964	0.5 (0.1, 2.9)	0.0 (0.0, 1.9)	5.1 (2.8, 9.3)	7.6 (4.6, 12.5)	2.5 (1.1, 5.9)	0.0 (0.0, 2.0)	2.5 (1.1, 5.9)	1.0 (0.3, 3.7)	3.6 (1.7, 7.3)
	Torfaen	1097	1090	1.8 (0.5, 6.6)	0.0 (0.0, 3.5)	6.4 (3.1, 13.1)	6.4 (3.1, 13.1)	0.0 (0.0, 3.5)	0.0 (0.0, 3.5)	0.0 (0.0, 3.5)	0.9 (0.2, 5.2)	0.9 (0.2, 5.2)
Cardiff and Vale University Health Board	Cardiff	4796	4767	0.6 (0.2, 1.8)	0.6 (0.2, 1.8)	5.2 (3.5, 7.7)	8.5 (6.3, 11.6)	3.4 (2.1, 5.4)	0.8 (0.3, 2.2)	4.2 (2.7, 6.5)	1.7 (0.9, 3.3)	5.9 (4.1, 8.5)
	The Vale of Glamorgan	1437	1430	5.5 (2.8, 10.9)	5.5 (2.8, 10.9)	3.5 (1.5, 8.1)	4.9 (2.4, 10.0)	1.4 (0.4, 5.1)	0.7 (0.1, 3.9)	2.1 (0.7, 6.1)	0.0 (0.0, 2.7)	2.1 (0.7, 6.1)
Cwm Taf Health Board	Merthyr Tydfil	705	701	4.2 (1.4, 12.4)	0.0 (0.0, 5.4)	5.7 (2.2, 14.5)	7.1 (3.0, 16.5)	1.4 (0.3, 8.0)	0.0 (0.0, 5.5)	1.4 (0.3, 8.0)	0.0 (0.0, 5.5)	1.4 (0.3, 8.0)
	Rhondda Cynon Taff	3000	2987	0.3 (0.1, 1.9)	1.0 (0.3, 2.9)	4.3 (2.5, 7.4)	5.3 (3.3, 8.6)	1.0 (0.3, 2.9)	1.0 (0.3, 2.9)	2.0 (0.9, 4.4)	2.3 (1.1, 4.8)	4.4 (2.5, 7.4)
South East Wales		16965	16872	2.0 (1.4, 2.8)	1.9 (1.4, 2.7)	5.0 (4.0, 6.1)	6.8 (5.7, 8.2)	1.9 (1.3, 2.7)	0.5 (0.2, 0.9)	2.4 (1.7, 3.2)	1.3 (0.9, 2.0)	3.7 (2.9, 4.7)
Unknown		297	297									
Wales		36217	36028	1.7 (1.4, 2.2)	1.7 (1.3, 2.2)	4.6 (4.0, 5.4)	6.8 (6.0, 7.7)	2.2 (1.7, 2.7)	0.5 (0.3, 0.8)	2.7 (2.2, 3.3)	1.3 (1.0, 1.8)	4.0 (3.4, 4.7)

Source: NCCHD & AWPS. Data on late fetal losses, stillbirths and neonatal deaths relate to the date of birth, while data on post neonatal deaths relate to the date of death in 2010.

* excludes 26 terminations of pregnancy from 24 weeks gestation (22 stillbirths, 4 early neonatal deaths)

Autopsy data in 2010

Autopsies are useful for understanding underlying causes of death. This important information may not be available if autopsy is not performed. The figures presented in this section include all outcomes - spontaneous miscarriage, therapeutic abortion, stillbirth and early, late and post neonatal deaths where the mother was resident in Wales. Data regarding whether an autopsy was performed was available in 94% of all perinatal and infant deaths, including spontaneous and therapeutic abortions.

- Of these 94% (433/463) of cases:
 - Autopsy was performed in 39% of these deaths (36% in 2009, updated from AWPS annual report 2009).
 - Parents did not give consent in 55% of the cases (55% in 2009, updated from AWPS annual report 2009).
 - Autopsy was not requested by clinicians in 6% of the cases (9% in 2009, updated from AWPS annual report 2009).
 - Overall the autopsy rate, in known cases, has decreased from 56% in 2001 to 39% in 2010.
 - Autopsy was performed most often in unclassifiable death and sudden unexpected death (13/14 cases) and least often in deaths due to prematurity (3/33 cases).

- The decreasing rate of autopsy continues to be of concern.



Section C: Outcome by Gestation and Birthweight

The tables in this section show outcome by gestation and birthweight for 2010 and the annual rate for the combined 5 years for 2006-2010.

Outcome by Gestation and Birthweight

Improvements in perinatal care, antenatal steroids, surfactant therapy and advances in neonatal care have all resulted in improved outcome of very preterm infants. In Wales the survival figures compare with UK figures and international figures¹⁻³

The most significant improvement has been in the 24 and 25 weeks gestation infants. In Wales, in 1994 the survival up to 1 year was 19% for 24 weeks and 46% for a 25 weeks gestation infant⁴. In 2010 the survival is nearly 37% for 24 weeks gestation and 67% for a 25 weeks gestation infant. From 26-30 weeks there has been a 10% improvement in survival from 1994 to 2010.

The survival figures for 22 and 23 weeks gestation infants have not shown any significant improvement.

Tables 20-23 in this section show gestation specific and birthweight specific survival in Wales for 2010 and for the 5 years 2006-2010.

We also present survival figures by gestation and birth weight in table 24 and this data should be useful for clinicians while counselling parents antenatally and at birth⁵. It is well recognised that gestation and birthweight influence survival and many clinical decisions in the perinatal and neonatal period are taken based on these two variables. If clinicians use these charts for counselling they should take into consideration that no adjustments have been made for recognised variables that influence survival including sex and ethnicity. If these charts are used to counsel parents in the antenatal period, the accuracy of the antenatal ultrasound scan in predicting birthweight and gestation should be considered.

References

1. Field DJ, Dorling JS, Manktelow BN, Draper ES. Survival of extremely premature babies in a geographically defined population: prospective cohort study of 1994-9 compared with 2000-5. *BMJ* 2008;336(7655):1221-3
2. Larroque B, Breart G, Kaminski M, Dehan M, Andre M, Burguet A, et al. Survival of very preterm infants: Epipage, a population based cohort study. *Arch Dis Child Fetal Neonatal Ed* 2004 89(2):F139-F44
3. Costeloe K, Hennessy E, Gibson AT, Marlow N, Wilkinson A, for the EPICure Study Group. The EPICure Study: Outcomes to Discharge from Hospital for Infants Born at the Threshold of Viability. *Pediatrics* 2000;106(4):659-71
4. Cartlidge PH, Stewart JH. Survival of very low birthweight and very preterm infants in a geographically defined population. *Acta paediatrica* 1997;86(1):105-10
5. Draper ES, Manktelow B, Field DJ, James D. Prediction of survival for preterm births by weight and gestational age: retrospective population based study. *BMJ* 1999;319(7217):1093-7

Outcome by gestation in Wales

Table 20 Outcome by gestation 2010

Gestation [weeks]	Total registrable births	Stillbirths*		Livebirths**		Survivors up to 1 year after livebirth***		
	Number	Number	%	Number	%	Number	%	95%CI
20	1	0	0.0%	1	100.0%	0	0.0%	(0.0, 79.3)
21	2	0	0.0%	2	100.0%	0	0.0%	(0.0, 65.8)
22	5	0	0.0%	5	100.0%	0	0.0%	(0.0, 43.4)
23	19	0	0.0%	19	100.0%	3	15.8%	(5.5, 37.6)
24	35	16	45.7%	19	54.3%	7	36.8%	(19.1, 59.0)
25	42	18	42.9%	24	57.1%	16	66.7%	(46.7, 82.0)
26	35	9	25.7%	26	74.3%	22	84.6%	(66.5, 93.9)
27	56	4	7.1%	52	92.9%	46	88.5%	(77.0, 94.6)
28	76	8	10.5%	68	89.5%	64	94.1%	(85.8, 97.7)
29	63	8	12.7%	55	87.3%	54	98.2%	(90.4, 99.7)
30	91	6	6.6%	85	93.4%	79	92.9%	(85.4, 96.7)
31	99	6	6.1%	93	93.9%	91	97.8%	(92.5, 99.4)
32	147	11	7.5%	136	92.5%	135	99.3%	(96.0, 99.9)
33	185	11	5.9%	174	94.1%	171	98.3%	(95.1, 99.4)
34	347	8	2.3%	339	97.7%	338	99.7%	(98.3, 99.9)
35	515	13	2.5%	502	97.5%	498	99.2%	(98.0, 99.7)
36	928	6	0.6%	922	99.4%	919	99.7%	(99.0, 99.9)
37	1946	9	0.5%	1937	99.5%	1933	99.8%	(99.5, 99.9)
>37	31612	56	0.2%	31556	99.8%	31511	99.9%	(99.8, 99.9)
Unknown	13	0	0.0%	13	100.0%	13	100.0%	(77.2, 100.0)
Total	36217	189	0.5%	36028	99.5%	35900	99.6%	(99.6, 99.7)

Source: NCCHD & AWPS

*includes 22 terminations of pregnancy from 24 weeks gestation

**includes 4 terminations of pregnancy

***interim number for births 2010 as figure is based on date of birth: final number will be available in 2011 report

Table 21 Outcome by gestation (2006-2010) in Wales

Gestation [weeks]	Total registrable births	Stillbirths*		Livebirths**		Survivors up to 1 year after livebirth***		
	Number	Number	%	Number	%	Number	%	95%CI
20	8	0	0.0%	8	100.0%	0	0.0%	(0.0, 32.4)
21	12	0	0.0%	12	100.0%	0	0.0%	(0.0, 24.3)
22	25	0	0.0%	25	100.0%	2	8.0%	(2.2, 25.0)
23	82	0	0.0%	82	100.0%	15	18.3%	(11.4, 28.0)
24	175	84	48.0%	91	52.0%	36	39.6%	(30.1, 49.8)
25	185	64	34.6%	121	65.4%	71	58.7%	(49.8, 67.1)
26	221	56	25.3%	165	74.7%	124	75.2%	(68.0, 81.1)
27	239	41	17.2%	198	82.8%	165	83.3%	(77.5, 87.9)
28	286	27	9.4%	259	90.6%	233	90.0%	(85.7, 93.1)
29	356	35	9.8%	321	90.2%	291	90.7%	(87.0, 93.4)
30	445	34	7.6%	411	92.4%	390	94.9%	(92.3, 96.6)
31	531	37	7.0%	494	93.0%	473	95.7%	(93.6, 97.2)
32	785	35	4.5%	750	95.5%	736	98.1%	(96.9, 98.9)
33	1092	39	3.6%	1053	96.4%	1040	98.8%	(97.9, 99.3)
34	1747	41	2.3%	1706	97.7%	1686	98.8%	(98.2, 99.2)
35	2612	54	2.1%	2558	97.9%	2536	99.1%	(98.7, 99.4)
36	4489	40	0.9%	4449	99.1%	4416	99.3%	(99.0, 99.5)
37	9212	53	0.6%	9159	99.4%	9132	99.7%	(99.6, 99.8)
>37	153141	252	0.2%	152889	99.8%	152641	99.8%	(99.8, 99.9)
Unknown	61	0	0.0%	61	100.0%	61	100.0%	(94.1, 100.0)
Total	175704	892	0.5%	174812	99.5%	174048	99.6%	(99.5, 99.6)

Source: NCCHD & AWPS

* includes 91 terminations of pregnancy from 24 weeks gestation

**includes 9 terminations of pregnancy from 24 weeks gestation

***interim number for births 2010 as figure is based on date of birth: final number will be available in 2011 report.

All spontaneous and therapeutic abortions under 24 weeks have been excluded.

Outcome by birthweight in Wales

Table 22 Outcome by birthweight 2010

Birthweight [grams]	Total registrable births	Stillbirths*		Livebirths**		Survivors up to 1 year after livebirth***		
	Number	Number	%	Number	%	Number	%	95%CI
<400	16	12	75.0%	4	25.0%	1	25.0%	(4.6, 69.9)
400-499	14	4	28.6%	10	71.4%	1	10.0%	(1.8, 40.4)
500-749	84	22	26.2%	62	73.8%	29	46.8%	(34.9, 59.0)
750-999	97	17	17.5%	80	82.5%	72	90.0%	(81.5, 94.8)
1000-1249	131	14	10.7%	117	89.3%	107	91.5%	(85.0, 95.3)
1250-1499	152	13	8.6%	139	91.4%	136	97.8%	(93.8, 99.3)
1500-1999	536	20	3.7%	516	96.3%	507	98.3%	(96.7, 99.1)
2000-2499	1574	20	1.3%	1554	98.7%	1545	99.4%	(98.9, 99.7)
2500-2999	5643	26	0.5%	5617	99.5%	5598	99.7%	(99.5, 99.8)
3000-4499	27269	39	0.1%	27230	99.9%	27206	99.9%	(99.9, 99.9)
>4499	687	0	0.0%	687	100.0%	687	100.0%	(99.4, 100.0)
Not known	14	2	14.3%	12	85.7%	11	91.7%	(64.6, 98.5)
Total	36217	189	0.5%	36028	99.5%	35900	99.6%	(99.6, 99.7)

Source: NCCHD & AWPS

*includes 22 terminations of pregnancy from 24 weeks gestation

**includes 4 terminations of pregnancy

***interim number for births 2010 as figure is based on date of birth: final number will be available in 2011 report.

Table 23 Outcome by birthweight (2006-2010) in Wales

Birthweight [grams]	Total registrable births	Stillbirths*		Livebirths**		Survivors up to 1 year after livebirth***		
	Number	Number	%	Number	%	Number	%	95%CI
<400	69	50	72.5%	19	27.5%	1	5.3%	(0.9, 24.6)
400-499	67	32	47.8%	35	52.2%	3	8.6%	(3.0, 22.4)
500-749	392	129	32.9%	263	67.1%	115	43.7%	(37.9, 49.8)
750-999	485	80	16.5%	405	83.5%	314	77.5%	(73.2, 81.3)
1000-1249	564	52	9.2%	512	90.8%	463	90.4%	(87.6, 92.7)
1250-1499	717	41	5.7%	676	94.3%	640	94.7%	(92.7, 96.1)
1500-1999	2765	98	3.5%	2667	96.5%	2608	97.8%	(97.2, 98.3)
2000-2499	7951	111	1.4%	7840	98.6%	7788	99.3%	(99.1, 99.5)
2500-2999	27767	96	0.3%	27671	99.7%	27573	99.6%	(99.6, 99.7)
3000-4499	131781	188	0.1%	131593	99.9%	131420	99.9%	(99.8, 99.9)
>4499	3081	3	0.1%	3078	99.9%	3074	99.9%	(99.7, 99.9)
Not known	65	12	18.5%	53	81.5%	49	92.5%	(82.1, 97.0)
Total	175704	892	0.5%	174812	99.5%	174048	99.6%	(99.5, 99.6)

Source: NCCHD & AWPS

* includes 91 terminations of pregnancy from 24 weeks gestation

**includes 9 terminations of pregnancy

***interim number for births 20010as figure is based on date of birth: final number will be available in 2011 report.

All spontaneous and therapeutic abortions under 24 weeks have been excluded.

Table 24 Percentage one-year survival all live born* between 2005 and 2009

	23	24	25	26	27	28	29	30	31	32
400 - 499										
500 - 749	10 (37) 27.0% (15.4%, 43.0%)	16 (49) 32.7% (21.2%, 46.6%)	15 (24) 62.5% (42.7%, 78.8%)	12 (22) 54.5% (34.7%, 73.1%)	14 (18) 77.8% (54.8%, 91.0%)	7 (10) 70.0% (39.7%, 89.2%)	5 (9) 55.6% (26.7%, 81.1%)	4 (4) 100.0% (51.0%, 100.0)		1 (1) 100.0% (20.7%, 100.0%)
750 - 999	0 (5) 0.0% (0.0%, 43.4%)	8 (21) 38.1% (20.8%, 59.1%)	36 (57) 63.2% (50.2%, 74.5%)	56 (76) 73.7% (62.8%, 82.3%)	41 (48) 85.4% (72.8%, 92.8%)	39 (44) 88.6% (76.0%, 95.0%)	21 (25) 84.0% (65.3%, 93.6%)	16 (16) 100.0% (80.6%, 100.0%)	8 (8) 100.0% (67.6%, 100.0%)	1 (2) 50.0% (9.5%, 90.5%)
1000 - 1249			3 (5) 60.0% (23.1%, 88.2%)	30 (36) 83.3% (68.1%, 92.1%)	58 (66) 87.9% (77.9%, 93.7%)	53 (60) 88.3% (77.8%, 94.2%)	55 (59) 93.2% (83.8%, 97.3%)	48 (50) 96.0% (86.5%, 98.9%)	29 (29) 100.0% (88.3%, 100.0%)	30 (31) 96.8% (83.8%, 99.4%)
1250 - 1499				2 (3) 66.7% (20.8%, 93.9%)	8 (11) 72.7% (43.4%, 90.3%)	42 (45) 93.3% (82.1%, 97.7%)	68 (71) 95.8% (88.3%, 98.6%)	91 (93) 97.8% (92.5%, 99.4%)	60 (62) 96.8% (89.0%, 99.1%)	55 (57) 96.5% (88.1%, 99.0%)
1500 - 1749						8 (8) 100.0% (67.6%, 100.0%)	32 (36) 88.9% (74.7%, 95.6%)	79 (87) 90.8% (82.9%, 95.3%)	124 (127) 97.6% (93.3%, 99.2%)	125 (126) 99.2% (95.6%, 99.9%)
1750 - 1999					1 (1) 100.0% (20.7%, 100.0%)	1 (1) 100.0% (20.7%, 100.0%)	13 (14) 92.9% (68.5%, 98.7%)	30 (31) 96.8% (83.8%, 99.4%)	78 (82) 95.1% (88.1%, 98.1%)	180 (182) 98.9% (96.1%, 99.7%)
2000 - 2249					1 (1) 100.0% (20.7%, 100.0%)		3 (5) 60.0% (23.1%, 88.2%)	4 (4) 100.0% (51.0%, 100.0%)	23 (23) 100.0% (85.7%, 100.0%)	92 (93) 98.9% (94.2%, 99.8%)
2250 - 2499							1 (1) 100.0% (20.7%, 100.0%)		7 (7) 100.0% (64.6%, 100.0%)	32 (32) 100.0% (89.3%, 100.0%)

[Survivors (Live births) in numbers], [Percentage (95% CI)]

*from 500 grams AND between 23 weeks and 32 weeks gestation, singleton births only, excluding congenital anomaly



Section D: Unit Based Data

These data include both Welsh and non-Welsh resident mothers giving birth in Welsh units. The data are supplied by unit coordinators.

Maternity Unit Data 2010

Table 25 Births within maternity unit

		Total Births	Registrable births in Unit	Livebirths in Unit	Caesarean sections (CS)		Emergency CS		Elective CS		Vaginal breech deliveries		Induction of labour		Forceps only delivery		Ventouse only delivery	
					No.	% of total births	No.	% of total births	No.	% of total births	No.	% of total births	No.	% of total births	No.	% of total births	No.	% of total births
Mid and West Wales	Bronglais Hospital	605	577	575	168	27.8%	99	16.4%	69	11.4%	1	0.2%	195	32.2%	22	3.6%	43	7.1%
	Princess of Wales Hospital	2519	2320	2298	634	25.2%	249	9.9%	385	15.3%	8	0.3%	559	22.2%	120	4.8%	127	5.0%
	Singleton Hospital*	3780	3647	3625	973	25.7%	487	12.9%	486	12.9%	32	0.8%	0	0.0%	244	6.5%	183	4.8%
	West Wales General Hospital	1699	1596	1589	485	28.5%	192	11.3%	293	17.2%	unavailable this year		367	21.6%	unavailable this year		unavailable this year	
	Withybush Hospital	1323	1251	1245	322	24.3%	175	13.2%	147	11.1%	0	0.0%	0	0.0%	unavailable this year		unavailable this year	
North Wales	Ysbyty Glan Clwyd	2412	2309	2299	683	28.3%	425	17.6%	258	10.7%	9	0.4%	359	14.9%	105	4.4%	263	10.9%
	Ysbyty Gwynedd**	2232	2172	2162	495	22.2%	302	13.5%	193	8.6%	6	0.3%	400	17.9%	108	4.8%	172	7.7%
	Ysbyty Wrexham Maelor	2632	2560	2552	600	22.8%	380	14.4%	220	8.4%	9	0.3%	571	21.7%	187	7.1%	137	5.2%
South East Wales	Nevill Hall Hospital	2302	2221	2208	608	26.4%	374	16.2%	234	10.2%	9	0.4%	582	25.3%	92	4.0%	161	7.0%
	Prince Charles and Aberdare Hospitals	1800	1765	1755	463	25.7%	240	13.3%	223	12.4%	3	0.2%	429	23.8%	127	7.1%	46	2.6%
	Royal Glamorgan Hospital	2561	2480	2471	825	32.2%	394	15.4%	431	16.8%	5	0.2%	641	25.0%	109	4.3%	97	3.8%
	Royal Gwent Hospital*	3642	3526	3501	865	23.8%	328	9.0%	537	14.7%	26	0.7%	883	24.2%	159	4.4%	226	6.2%
	University Hospital Of Wales*	6176	6031	5995	1454	23.5%	835	13.5%	619	10.0%	49	0.8%	0	0.0%	763	12.4%	235	3.8%
Midwifery Led Units	Caerphilly Birth Centre	427	387	386	0	0.0%	0	0.0%	0	0.0%	1	0.2%	0	0.0%	0	0.0%	0	0.0%
	Llandough Hospital Midwifery Led Unit	367	367	367	0	0.0%	0	0.0%	0	0.0%	3	0.8%	0	0.0%	0	0.0%	0	0.0%
	Neath and Port Talbot Birth Centre	471	425	425	0	0.0%	0	0.0%	0	0.0%	1	0.2%	0	0.0%	0	0.0%	0	0.0%
	Powys Units	326	223	223	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total		35274	33857	33676	8575	24.3%	4480	12.7%	4095	11.6%	162	0.5%	4986	14.1%	2036	6.3%	1690	5.2%

Data supplied by Unit Coordinators

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

Table 26 Livebirths outside maternity unit 2010

	TOTAL registrable BIRTHS (Within and out of Unit)	Total no. of births OUTSIDE Unit		Planned homebirths		Unplanned homebirths		Births elsewhere (E.g. in transit)		
		No.	% of total births	No.	% of total births	No.	% of total births	No.	% of total births	
Mid and West Wales	Bronglais Hospital	605	28	4.6%	23	3.8%	5	0.8%	0	0.0%
	Princess of Wales Hospital	2519	199	7.9%	194***	7.7%	Included in planned		5	0.2%
	Singleton Hospital*	3780	133	3.5%	126***	3.3%	Included in planned		7	0.2%
	West Wales General Hospital	1699	103	6.1%	101***	5.9%	Included in planned		2	0.1%
	Withybush Hospital	1323	72	5.4%	70***	5.3%	Included in planned		2	0.2%
North Wales	Ysbyty Glan Clwyd	2412	103	4.3%	103	4.3%	0	0.0%	0	0.0%
	Ysbyty Gwynedd**	2232	60	2.7%	45	2.0%	6	0.3%	9	0.4%
	Ysbyty Wrexham Maelor	2632	72	2.7%	52	2.0%	0	0.0%	20	0.8%
South East Wales	Nevill Hall Hospital	2302	81	3.5%	77	3.3%	4	0.2%	0	0.0%
	Prince Charles and Aberdare Hospitals	1800	35	1.9%	18	1.0%	12	0.7%	5	0.3%
	Royal Glamorgan Hospital	2561	81	3.2%	53	2.1%	24	0.9%	4	0.2%
	Royal Gwent Hospital*	3642	116	3.2%	97	2.7%	19	0.5%	0	0.0%
	University Hospital Of Wales*	6176	145	2.3%	71***	1.1%	Included in planned		74	1.2%
Midwifery Led Units	Caerphilly Birth Centre	427	40	9.4%	33	7.7%	7	1.6%	0	0.0%
	Llandough Hospital Midwifery Led Unit	367	included in UHW MLU figs		0	0.0%	0	0.0%	0	0.0%
	Neath and Port Talbot Birth Centre	471	46	9.8%	27	5.7%	19	4.0%	0	0.0%
	Powys Units	326	103	31.6%	102	31.3%	1	0.3%	0	0.0%
Total	35274	1417	4.0%	1192	3.4%	97	0.3%	128	0.4%	

Data supplied by unit coordinators

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

***includes unplanned homebirths

Unit Based Mortality Statistics

Tables 27 and 28 presented here illustrate stillbirth and mortality rates by the hospital or midwifery led unit where the baby died and intended hospital of birth as stated at time of booking for antenatal care. Figures 18 to 20 are funnel plots that show the mortality rate for each unit plotted against the number of births in that unit.

These rates are unadjusted for variables known to influence mortality rate such as deprivation, case mix and referral bias. Therefore, we urge readers to exercise caution whilst interpreting the data. Complicated pregnancies are likely to be referred to the regional centre (University Hospital of Wales) or a sub-regional centre (Singleton, Royal Gwent, Glan Clwyd and Wrexham Maelor hospitals) and these may account for the higher rates observed in such units.

This is partly ameliorated by analysing the data according to the intended place of delivery as stated at time of booking for antenatal care but referral bias is still likely. University Hospital of Wales in Cardiff is the only centre in Wales offering fetal medicine interventions and paediatric surgical services and hence can be expected to have higher mortality rates.

Mortality data by intended hospital of birth as stated at time of booking for antenatal care must be treated with caution. Due to a lack of systematic collection of accurate data on the total number of women booking to give birth in each unit, the true denominator data is unknown. This effect will be more apparent in smaller units where there are fewer births and where the true denominator is likely to be greater than shown. The numerator for these rates is based on intended place of birth as stated at time of booking for antenatal, but not necessarily intrapartum, care. A more appropriate measure would be the intended place of birth at time of onset of labour. We have started to collect this data from 2009 and present rates for 2009 and 2010 by intended place of delivery at time of onset of labour (table 29).

It is not intended that the results of these reports are considered to be evidence of poor performance in any specific instance but rather that they are taken as suggesting that further exploration is needed at a local level.

Table 27 Mortality RATES per 1,000 by hospital where baby died

Hospital		2006-2010								2010					
		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality	
			rate	95% CI	rate	95% CI	rate	95% CI		rate	95% CI	rate	95% CI	rate	95% CI
Mid and West Wales	Bronglais Hospital	2963	5.7	(3.6, 9.2)	6.7	(4.4, 10.4)	1.0	(0.3, 3.0)	605	3.3	(0.9, 12.0)	3.3	(0.9, 12.0)	0.0	(0.0, 6.3)
	Princess of Wales Hospital	12075	5.2	(4.1, 6.7)	6.3	(5.0, 7.9)	1.2	(0.7, 2.0)	2519	8.3	(5.5, 12.7)	9.5	(6.4, 14.1)	1.2	(0.4, 3.5)
	Singleton Hospital*	18105	6.5	(5.4, 7.8)	9.5	(8.2, 11.0)	4.2	(3.3, 5.2)	3780	6.6	(4.5, 9.7)	11.4	(8.5, 15.3)	5.3	(3.5, 8.2)
	West Wales General Hospital	8248	3.4	(2.3, 4.9)	4.5	(3.3, 6.2)	1.1	(0.6, 2.1)	1699	3.5	(1.6, 7.7)	4.7	(2.4, 9.3)	1.2	(0.3, 4.3)
	Withybush Hospital	6682	4.5	(3.1, 6.4)	5.7	(4.1, 7.8)	1.5	(0.8, 2.8)	1323	4.5	(2.1, 9.9)	5.3	(2.6, 10.9)	1.5	(0.4, 5.5)
North Wales	Ysbyty Glan Clwyd	12240	3.4	(2.5, 4.6)	6.4	(5.1, 7.9)	4.3	(3.3, 5.6)	2412	4.6	(2.5, 8.1)	7.9	(5.0, 12.3)	4.2	(2.3, 7.7)
	Ysbyty Gwynedd**	10848	4.1	(3.1, 5.5)	5.0	(3.8, 6.5)	0.9	(0.5, 1.7)	2232	4.5	(2.4, 8.2)	5.4	(3.1, 9.4)	0.9	(0.2, 3.3)
	Ysbyty Wrexham Maelor	13027	5.1	(4.1, 6.5)	7.5	(6.2, 9.2)	2.8	(2.0, 3.8)	2632	3.0	(1.5, 6.0)	4.9	(2.9, 8.4)	1.9	(0.8, 4.5)
South East Wales	Nevill Hall Hospital	11222	5.1	(3.9, 6.6)	5.7	(4.5, 7.3)	0.8	(0.4, 1.5)	2302	5.6	(3.3, 9.6)	6.1	(3.6, 10.2)	0.4	(0.1, 2.5)
	Prince Charles and Aberdare Hospitals	8588	4.4	(3.2, 6.1)	5.0	(3.7, 6.7)	0.6	(0.2, 1.4)	1800	4.4	(2.3, 8.7)	5.0	(2.6, 9.5)	0.6	(0.1, 3.2)
	Royal Glamorgan Hospital	12633	4.2	(3.2, 5.5)	5.4	(4.2, 6.8)	1.8	(1.2, 2.7)	2561	3.5	(1.8, 6.7)	3.9	(2.1, 7.2)	0.4	(0.1, 2.2)
	Royal Gwent Hospital*	17789	5.3	(4.4, 6.5)	7.6	(6.4, 9.0)	3.0	(2.3, 3.9)	3642	6.6	(4.4, 9.8)	8.0	(5.5, 11.4)	1.4	(0.6, 3.2)
	University Hospital Of Wales*	28342	6.9	(6.0, 7.9)	10.6	(9.5, 11.9)	5.3	(4.5, 6.2)	6176	6.6	(4.9, 9.0)	9.9	(7.7, 12.7)	4.2	(2.9, 6.2)
Midwifery Led Units	Caerphilly Birth Centre	2271	0.4	(0.1, 2.5)	0.4	(0.1, 2.5)	0.0	(0.0, 1.7)	427	2.3	(0.4, 13.1)	2.3	(0.4, 13.1)	0.0	(0.0, 8.9)
	Llandough Hospital Midwifery Led Unit	2479	0.4	(0.1, 2.3)	0.4	(0.1, 2.3)	0.0	(0.0, 1.5)	367	2.7	(0.5, 15.3)	2.7	(0.5, 15.3)	0.0	(0.0, 10.4)
	Neath and Port Talbot Birth Centre	2302	0.4	(0.1, 2.5)	0.4	(0.1, 2.5)	0.0	(0.0, 1.7)	471	0.0	(0.0, 8.1)	0.0	(0.0, 8.1)	0.0	(0.0, 8.1)
	Powys Units	1549	0.0	(0.0, 2.5)	0.0	(0.0, 2.5)	0.0	(0.0, 2.5)	326	0.0	(0.0, 11.6)	0.0	(0.0, 11.6)	0.0	(0.0, 11.6)
Total		171363	5.0	(4.6, 5.3)	6.9	(6.5, 7.3)	2.6	(2.4, 2.9)	35274	5.3	(4.6, 6.1)	7.2	(6.3, 8.1)	2.2	(1.8, 2.8)

Source: unit coordinator & AWPS

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

Table 28 Mortality RATES per 1,000 by intended hospital of birth as stated at time of booking for antenatal care

	Hospital	2006-2010								2010							
		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality			
			rate	95% CI	rate	95% CI	rate	95% CI		rate	95% CI	rate	95% CI	rate	95% CI		
Mid and West Wales	Bronglais Hospital	2963	6.1	(3.8, 9.6)	7.1	(4.6, 10.8)	1.0	(0.3, 3.0)	605	3.3	(0.9, 12.0)	3.3	(0.9, 12.0)	0.0	(0.0, 6.3)		
	Princess of Wales Hospital	12075	3.6	(2.7, 4.9)	5.5	(4.4, 7.0)	2.7	(2.0, 3.8)	2519	6.0	(3.6, 9.8)	9.1	(6.1, 13.7)	4.0	(2.2, 7.3)		
	Singleton Hospital*	18105	6.0	(4.9, 7.2)	8.0	(6.8, 9.4)	2.7	(2.1, 3.6)	3780	5.6	(3.6, 8.5)	7.9	(5.6, 11.3)	2.4	(1.3, 4.5)		
	West Wales General Hospital	8248	3.5	(2.4, 5.0)	5.8	(4.4, 7.7)	2.9	(2.0, 4.3)	1699	3.5	(1.6, 7.7)	5.9	(3.2, 10.8)	2.4	(0.9, 6.1)		
	Withybush Hospital	6682	4.5	(3.1, 6.4)	6.6	(4.9, 8.8)	2.6	(1.6, 4.1)	1323	3.8	(1.6, 8.8)	6.0	(3.1, 11.9)	3.0	(1.2, 7.8)		
North Wales	Ysbyty Glan Clwyd	12240	3.0	(2.2, 4.2)	5.5	(4.3, 6.9)	3.4	(2.5, 4.6)	2412	3.7	(2.0, 7.1)	5.8	(3.5, 9.7)	2.5	(1.1, 5.4)		
	Ysbyty Gwynedd**	10848	4.1	(3.1, 5.5)	6.3	(4.9, 7.9)	3.0	(2.1, 4.2)	2232	4.9	(2.8, 8.8)	6.7	(4.1, 11.1)	2.7	(1.2, 5.9)		
	Ysbyty Wrexham Maelor	13027	4.9	(3.8, 6.3)	7.6	(6.2, 9.2)	3.3	(2.5, 4.5)	2632	2.7	(1.3, 5.5)	5.3	(3.2, 8.9)	3.0	(1.5, 6.0)		
South East Wales	Nevill Hall Hospital	11222	4.9	(3.8, 6.4)	6.0	(4.7, 7.6)	1.6	(1.0, 2.5)	2302	4.8	(2.7, 8.5)	5.6	(3.3, 9.6)	0.9	(0.2, 3.2)		
	Prince Charles and Aberdare Hospitals	8588	4.8	(3.5, 6.5)	6.8	(5.2, 8.7)	2.9	(2.0, 4.3)	1800	4.4	(2.3, 8.7)	6.1	(3.4, 10.9)	2.2	(0.9, 5.7)		
	Royal Glamorgan Hospital	12633	3.8	(2.9, 5.0)	5.7	(4.5, 7.2)	2.7	(1.9, 3.8)	2561	3.5	(1.8, 6.7)	4.3	(2.4, 7.7)	1.6	(0.6, 4.0)		
	Royal Gwent Hospital*	17789	4.4	(3.6, 5.5)	6.4	(5.3, 7.6)	2.4	(1.8, 3.2)	3642	5.2	(3.3, 8.1)	6.6	(4.4, 9.8)	1.4	(0.6, 3.2)		
	University Hospital Of Wales*	28342	5.2	(4.4, 6.1)	7.7	(6.7, 8.8)	3.5	(2.9, 4.2)	6176	5.0	(3.5, 7.1)	7.8	(5.9, 10.3)	3.4	(2.2, 5.2)		
	Total	162762	4.4	(4.1, 4.7)	6.3	(6.0, 6.7)	2.7	(2.5, 2.9)	33683	4.6	(3.9, 5.4)	6.6	(5.8, 7.5)	2.5	(2.0, 3.1)		

Source: unit coordinator & AWPS

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

rates are based on outcomes of women receiving antenatal, but not necessarily intrapartum, care at these centres

Table 29 Mortality RATES per 1,000 by intended hospital of birth at time of onset of labour

	Hospital	2009-2010								2010					
		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality		Total registrable births	Stillbirth rate		Perinatal mortality		Neonatal mortality	
			rate	95% CI	rate	95% CI	rate	95% CI		rate	95% CI	rate	95% CI	rate	95% CI
Mid and West Wales	Bronglais Hospital	1204	5.8	(2.8, 12.0)	5.8	(2.8, 12.0)	0.0	(0.0, 3.2)	605	1.7	(0.3, 9.3)	1.7	(0.3, 9.3)	0.0	(0.0, 6.3)
	Princess of Wales Hospital	4904	6.1	(4.3, 8.7)	8.2	(6.0, 11.1)	3.1	(1.9, 5.1)	2519	7.5	(4.8, 11.8)	10.3	(7.1, 15.1)	3.6	(1.9, 6.8)
	Singleton Hospital*	7328	6.3	(4.7, 8.4)	8.3	(6.5, 10.7)	2.2	(1.4, 3.6)	3780	5.8	(3.8, 8.8)	8.5	(6.0, 11.9)	2.7	(1.4, 4.9)
	West Wales General Hospital	3268	4.3	(2.6, 7.2)	6.1	(4.0, 9.4)	2.5	(1.2, 4.8)	1699	3.5	(1.6, 7.7)	5.3	(2.8, 10.0)	1.8	(0.6, 5.2)
	Withybush Hospital	2650	3.8	(2.1, 6.9)	5.3	(3.1, 8.8)	2.3	(1.0, 4.9)	1323	3.8	(1.6, 8.8)	5.3	(2.6, 10.9)	2.3	(0.8, 6.7)
North Wales	Ysbyty Glan Clwyd	4858	3.1	(1.9, 5.1)	6.8	(4.8, 9.5)	3.9	(2.5, 6.1)	2412	4.6	(2.5, 8.1)	7.5	(4.7, 11.8)	3.3	(1.7, 6.6)
	Ysbyty Gwynedd**	4421	5.0	(3.3, 7.5)	6.8	(4.8, 9.7)	2.5	(1.4, 4.5)	2232	4.9	(2.8, 8.8)	6.7	(4.1, 11.1)	2.7	(1.2, 5.9)
	Ysbyty Wrexham Maelor	5280	4.4	(2.9, 6.5)	7.4	(5.4, 10.1)	3.6	(2.3, 5.6)	2632	3.0	(1.5, 6.0)	5.7	(3.5, 9.4)	3.0	(1.5, 6.0)
South East Wales	Nevill Hall Hospital	4492	6.2	(4.3, 9.0)	6.5	(4.5, 9.3)	0.4	(0.1, 1.6)	2302	5.6	(3.3, 9.6)	6.1	(3.6, 10.2)	0.4	(0.1, 2.5)
	Prince Charles and Aberdare Hospitals	3472	3.5	(2.0, 6.0)	5.8	(3.7, 8.9)	3.2	(1.8, 5.7)	1800	3.9	(1.9, 8.0)	5.0	(2.6, 9.5)	1.7	(0.6, 4.9)
	Royal Glamorgan Hospital	5080	3.1	(1.9, 5.1)	4.1	(2.7, 6.3)	1.2	(0.5, 2.6)	2561	3.1	(1.6, 6.2)	3.9	(2.1, 7.2)	1.2	(0.4, 3.4)
	Royal Gwent Hospital*	7184	4.9	(3.5, 6.8)	6.8	(5.2, 9.0)	2.4	(1.5, 3.8)	3642	6.0	(4.0, 9.1)	7.4	(5.1, 10.8)	1.4	(0.6, 3.2)
	University Hospital Of Wales*	11888	6.9	(5.6, 8.6)	10.3	(8.6, 12.2)	4.4	(3.4, 5.8)	6176	6.6	(4.9, 9.0)	9.7	(7.6, 12.5)	3.9	(2.6, 5.8)
Midwifery Led Units	Caerphilly Birth Centre	917	3.3	(1.1, 9.6)	3.3	(1.1, 9.6)	0.0	(0.0, 4.2)	427	4.7	(1.3, 16.9)	4.7	(1.3, 16.9)	0.0	(0.0, 9.0)
	Llandough Hospital Midwifery Led Unit	871	2.3	(0.6, 8.3)	3.4	(1.2, 10.1)	1.2	(0.2, 6.5)	367	2.7	(0.5, 15.3)	5.4	(1.5, 19.6)	2.7	(0.5, 15.3)
	Neath and Port Talbot Birth Centre	925	2.2	(0.6, 7.8)	4.3	(1.7, 11.1)	2.2	(0.6, 7.9)	471	4.2	(1.2, 15.3)	4.2	(1.2, 15.3)	0.0	(0.0, 8.1)
	Powys Units	616	3.2	(0.9, 11.8)	3.2	(0.9, 11.8)	0.0	(0.0, 6.2)	326	6.1	(1.7, 22.1)	6.1	(1.7, 22.1)	0.0	(0.0, 11.7)
	Total	69358	5.0	(4.5, 5.6)	7.2	(6.6, 7.8)	2.7	(2.3, 3.1)	35274	5.1	(4.4, 5.9)	7.1	(6.3, 8.0)	2.4	(1.9, 3.0)

Source: unit coordinator & AWPS

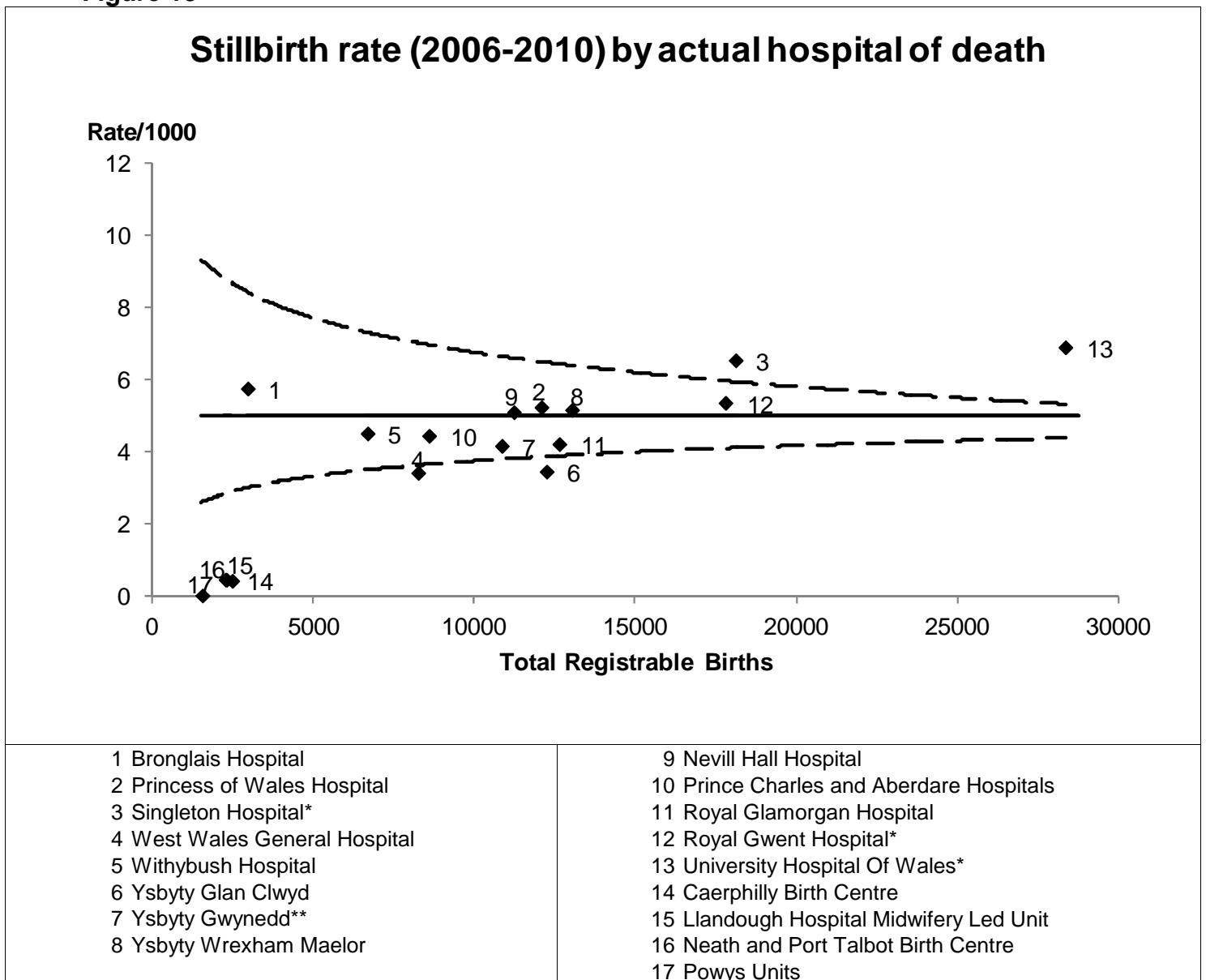
* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

Mortality RATES per 1,000 by hospital (2006 – 2010)

These funnel plots show the mortality rate for each hospital plotted against the number of births in that hospital. The average mortality rate is indicated by the solid horizontal line. The curved lines represent limits within which 95% of hospitals' results should lie if the average rate across Wales applied to all hospitals. Hospitals above or below these dashed lines have a mortality rate that is significantly different from the average rate. The plots are calculated using the Wilson score interval. This method is generally regarded as an improvement over the normal approximation interval and has the advantage that the lower line of the funnel plot cannot reach implausible values i.e. below zero. These funnel plots are calculated assuming that the populations of women giving birth are directly comparable between units. Therefore they do not allow for any heterogeneity (for example differences in case mix) between units. Hence there may be plausible reasons for the significantly higher or lower rates in the units that are identified as outliers.

Figure 18

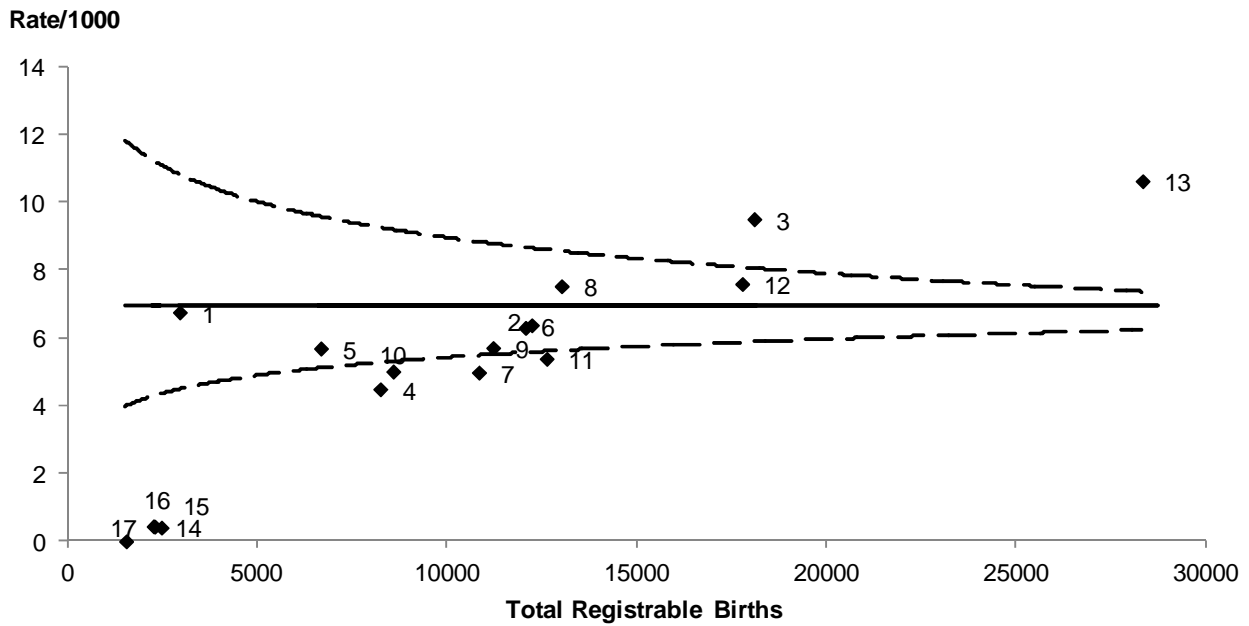


* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

Figure 19

Perinatal mortality rate (2006-2010) by actual hospital of death



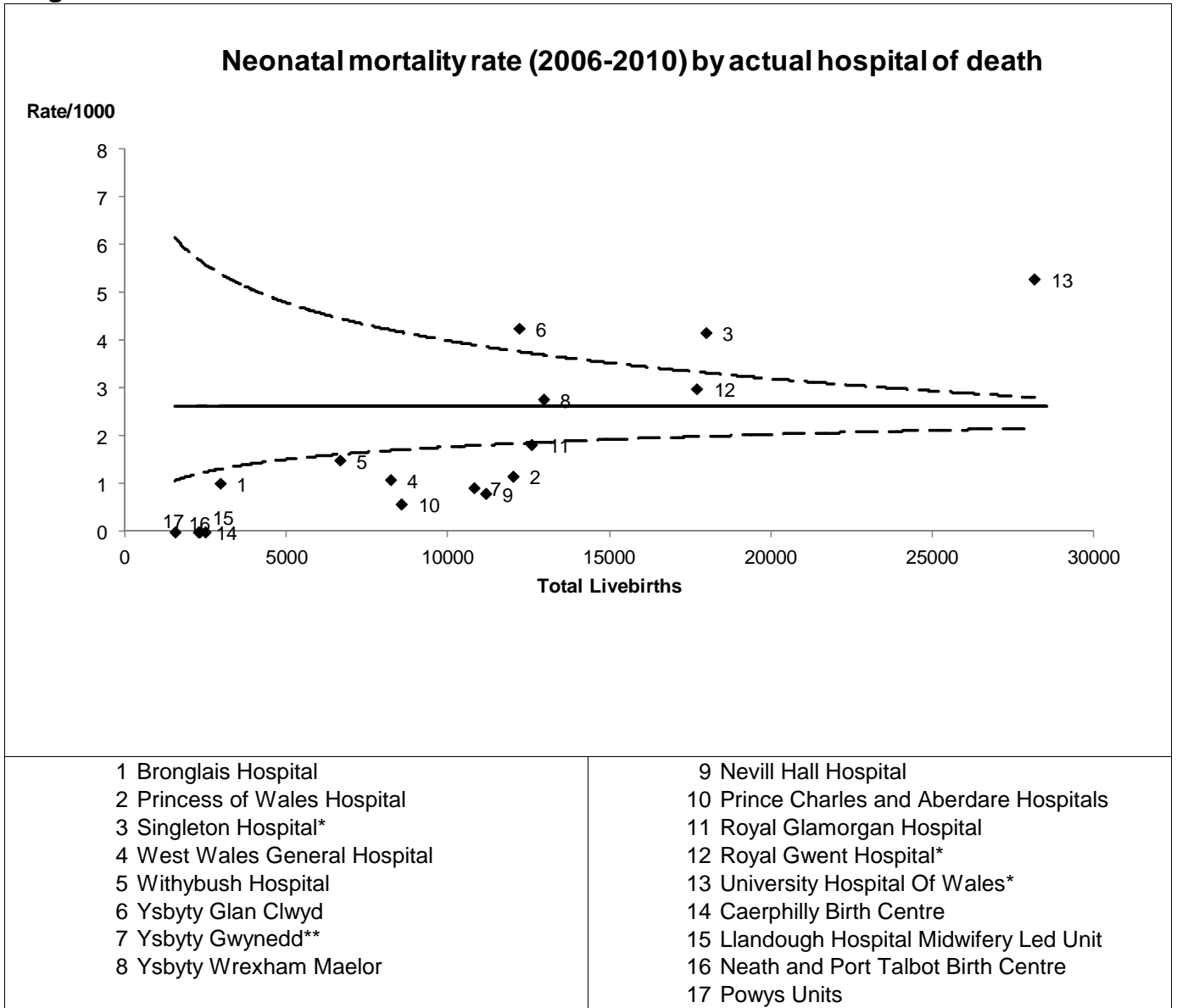
- 1 Bronglais Hospital
- 2 Princess of Wales Hospital
- 3 Singleton Hospital*
- 4 West Wales General Hospital
- 5 Withybush Hospital
- 6 Ysbyty Glan Clwyd
- 7 Ysbyty Gwynedd**
- 8 Ysbyty Wrexham Maelor

- 9 Nevill Hall Hospital
- 10 Prince Charles and Aberdare Hospitals
- 11 Royal Glamorgan Hospital
- 12 Royal Gwent Hospital*
- 13 University Hospital Of Wales*
- 14 Caerphilly Birth Centre
- 15 Llandough Hospital Midwifery Led Unit
- 16 Neath and Port Talbot Birth Centre
- 17 Powys Units

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

Figure 20



- 1 Bronglais Hospital
- 2 Princess of Wales Hospital
- 3 Singleton Hospital*
- 4 West Wales General Hospital
- 5 Withybush Hospital
- 6 Ysbyty Glan Clwyd
- 7 Ysbyty Gwynedd**
- 8 Ysbyty Wrexham Maelor

- 9 Nevill Hall Hospital
- 10 Prince Charles and Aberdare Hospitals
- 11 Royal Glamorgan Hospital
- 12 Royal Gwent Hospital*
- 13 University Hospital Of Wales*
- 14 Caerphilly Birth Centre
- 15 Llandough Hospital Midwifery Led Unit
- 16 Neath and Port Talbot Birth Centre
- 17 Powys Units

* includes data from alongside midwifery-led units

** includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units



Publications and Presentations

Publications and Presentations

AWPS Publications

Cartlidge PH, Dawson AT, Stewart JH, Vujanic GM. **Value and quality of perinatal and infant postmortem examinations: cohort analysis of 400 consecutive deaths.** British Medical Journal 1995; 310: 155-158.

Cartlidge PH, Stewart JH. **Effect of changing the stillbirth definition on evaluation of perinatal mortality rates.** Lancet 1995; 346: 486-8.

Vujanic GM, Cartlidge PH, Stewart JH and Dawson AJ. **Perinatal and infant postmortem examinations: how well are we doing?** Journal of Clinical Pathology 1995; 48: 998-1001.

All Wales Perinatal Survey and Confidential Enquiry into Stillbirths and Deaths in Infancy. Journal of Neonatal Nursing 1996; 2 (2): 14-17.

Cartlidge PH, Stewart JH. **Survival of very low birthweight and very preterm infants in a geographically defined population.** Acta Paediatrica 1997; 86: 105-10.

Stewart J H, Andrews J, and Cartlidge PHT. **Number of deaths related to intrapartum asphyxia and the timing of birth in all Wales perinatal survey: 1993-5.** British Medical Journal 1998; 316: 657-60.

Fillmore EJ; Cartlidge PHT. **Late death of very low birthweight infants.** Acta Paediatrica 1998; 1998; 87:809-810.

Vujanic GM, Cartlidge PH and Stewart JH. **Improving the quality of perinatal and infant necropsy examinations: a follow up study.** Journal of Clinical Pathology 1998; 51: 850-853.

Cartlidge PHT; Jones HP; Stewart JH; Drayton MR; Ferguson DS; Matthes JWA; Minchom PE; Moorcraft J. **Confidential Enquiry into deaths due to Prematurity.** Acta Paediatrica 1999; 88(2): 220-223.

Tuthill DP, Stewart JH, Coles EC, Andrews J, Cartlidge PH. **Maternal cigarette smoking and pregnancy outcome.** Paediatric and Perinatal Epidemiology 1999; 13: 245-253.

Guildea ZES, Fone DL, Dunstan FD, Sibert JR, Cartlidge PHT. **Social Deprivation and the Causes of Stillbirth and Infant Mortality.** Archives of Disease in Childhood 2001; 84: 307-310.

Cartlidge PHT, Thomas S and Stewart JH. **CESDI and Clinical Governance: responding to variations in mortality rates.** Welsh Paediatric Journal 2001; 14: 40-41.

Stewart, JH, Guildea ZE. **How do midwives acquire their knowledge and skills in CTG interpretation?** British Journal of Midwifery 2002; 10: 505-508

Jones H, Guildea Z, Stewart J, Cartlidge P, 15-20. **The Health Status Questionnaire: achieving concordance with published disability criteria.** Archives of Disease in Childhood 2002;86:15-20.

Thomas SC, Guildea ZES, Stewart JH, Cartlidge PHT. **Responding to variations in mortality due to intrapartum asphyxia.** British Journal of Clinical Governance 2003; 8: 296-299.

Guildea ZES, Fone DL, Dunstan FD, Cartlidge PHT. **Differences in risk of mortality under one year between rural and urban areas:an ecological study.** Public Health 2005 May; 119(5): 442-7.

R Adappa, S Paranjothy, Z Roberts, PHT Cartlidge. **Perinatal and infant autopsy.** Archives of Disease in Childhood. Fetal Neonatal Ed. 2007; 92: F49-F50

Papers presented at Scientific Meetings

Evaluating perinatal mortality rates: effect of changing the stillbirth definition. Welsh Paediatric Society. Wrexham. 1995.

Smoking, stillbirths and neonatal deaths. Paediatric Research Society. Nottingham. 1996.

Smoking, social class and sudden infant death syndrome. BPA Annual Meeting. York. 1996.

Survival of very low birthweight and very preterm infants in a geographically defined population. European Congress of Perinatal Medicine. Glasgow. 1996.

Intrapartum related deaths and the timing of birth. BAPM. London. 1997.

Confidential Enquiry into deaths due to prematurity. Paediatric Research Society. Sheffield. 1997.

Confidential Enquiry into deaths due to prematurity. Welsh Paediatric Society. Newport. 1997.

Late death of very low birthweight infants. Welsh Paediatric Society. Newport. 1997.

Disability and perinatal care: validation of the Health Status questionnaire. Paediatric Research Society. Swansea. 1998.

Disability and perinatal care: validation of the Health Status questionnaire. Royal College of Paediatrics and Child Health Annual Meeting. York. 1998.

Outcome at two years of very low birthweight and preterm infants. Welsh Paediatric Society. Chester. 1998.

Confidential Enquiry into deaths due to prematurity. BAPM. London. 1997.

Immunisation status of preterm infants. Welsh Paediatric Society. Cardiff. 1998.

The quality of perinatal and infant postmortem examinations: Reversing the decline. XXII International Congress of the International Academy of Pathology. Nice. 1998.

Social deprivation and the causes of stillbirth and infant mortality. Welsh Paediatric Society. Abergavenny. 2000.

Social deprivation and the causes of stillbirth and infant mortality. Royal College of Paediatrics and Child Health Annual Meeting. York. 2000.

Trends in perinatal and infant autopsy rate. Welsh Paediatric Society. Cardiff. 2004.

Trends in infant mortality rate in Wales and avoidable causes of death in infants between 1994 and 2003. Welsh Paediatric Society. Wrexham. 2005.

Organ retention incident and Perinatal and Infant autopsy rates. BAPM. Belfast. 2005.

Outcome of pre-term infants receiving cardio-pulmonary resuscitation (CPR) in the delivery room. Welsh Paediatric Society. Ruthin. 2007.

Intensive care needs of premature infants following discharge in South Wales. Welsh Paediatric Society. Llanelli. 2007.



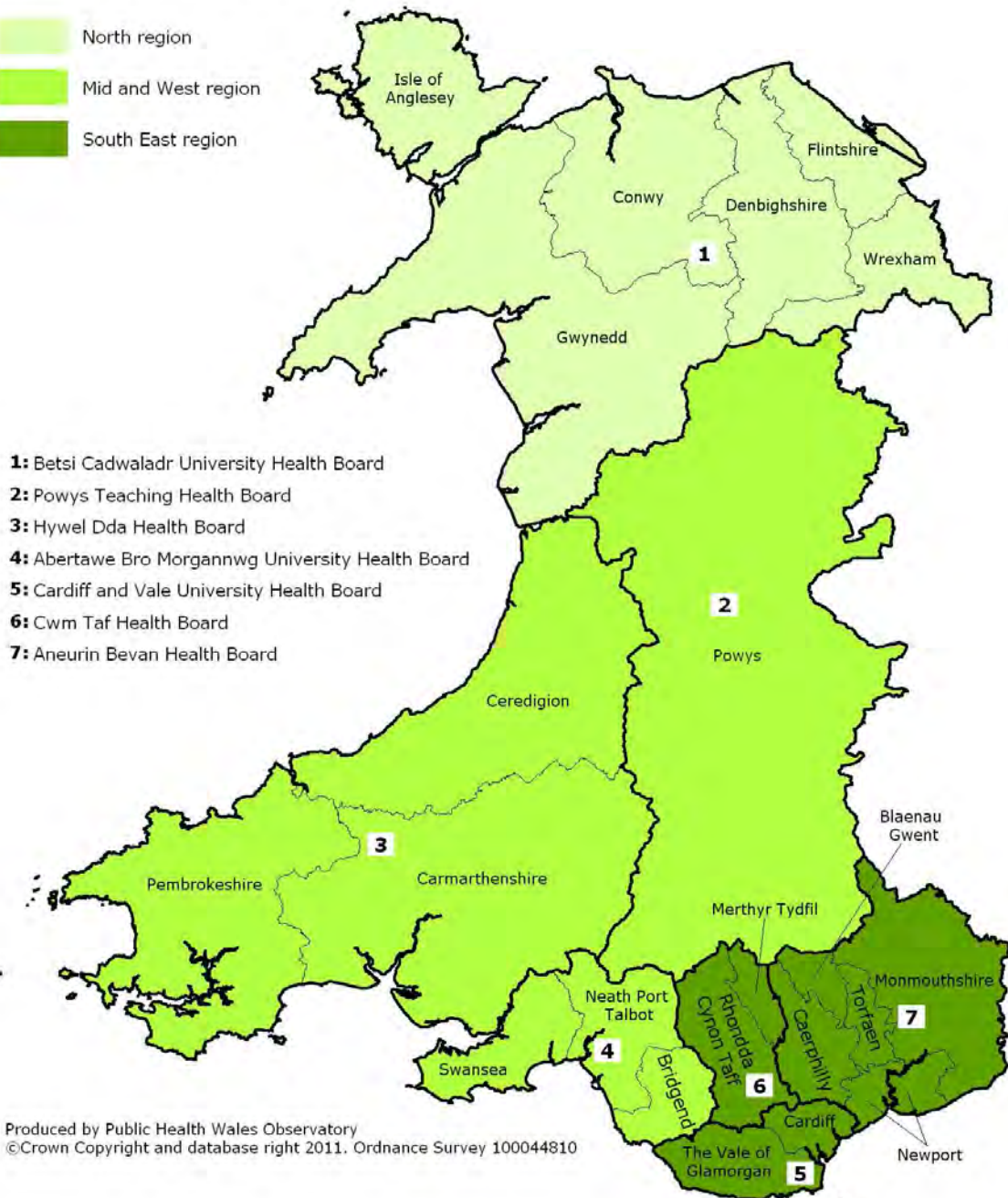
Appendices

Appendices

Appendix A

Map - The 22 Local Authorities, 7 Health Boards and 3 NHS Regions in Wales

Wales health boards and local authorities



Appendix B**Executive Steering Group 2010**

Prof S Kotecha	Professor of Child Health, School of Medicine, Cardiff University
Dr S Paranjothy	Sr Clinical Lecturer, Department of Primary Care and Public Health, School of Medicine, Cardiff University
Dr R Adappa	Consultant in Neonatal Medicine, Cardiff and Vale University Health Board
Prof F Dunstan	Professor of Medical Statistics, Primary Care and Public Health, School of Medicine, Cardiff University
Dr W J Watkins	Statistician, Department of Primary Care and Public Health, School of Medicine, Cardiff University
Mrs JM Hopkins	Project Administrator (AWPS), School of Medicine, Cardiff University
Mrs K Rolfe	Data Manager, School of Medicine, Cardiff University
Dr P Stutchfield	Consultant Paediatrician, Ysbyty Glan Clwyd, Bodelwyddan, Nr Rhyl, Clwyd
Dr J Greenacre	Director of Health Intelligence, Public Health Wales
Mr B Kumar	Consultant Obstetrician, Ysbyty Wrexham Maelor, Wrexham, Clwyd
Prof B Hunter	Professor of Midwifery, College of Human and Health Sciences, Swansea University
Dr E Lazda	Paediatric Pathologist, School of Medicine, Cardiff University
Jane Abbott/ Helen Kirrane	Head of Programmes/Campaigns and Policy Manager, BLISS (for babies born too soon, too small, too sick)
Cate Langley	Acting Head of Midwifery and sexual health, Powys (teaching) Health Board - Women and Childrens Services

Appendix C**Unit Coordinators for Wales 2010****Mid and West Wales**

District Coordinators	Dr J Greenacre Dr C Vulliamy
Bronglais General Hospital	Ms S Davies
West Wales General Hospital	Ms J Henderson
Withybush General Hospital	Ms J York
Neath General Hospital	Ms D Jones
Princess of Wales Hospital	Ms C Bartle
Singleton Hospital	Mrs S Calvert

North Wales

Ysbyty Wrexham Maelor	Ms B Evans
Ysbyty Glan Clwyd	Mrs J Butters
Ysbyty Gwynedd	Ms S Williams

South East Wales

Caerphilly District Miners Hospital	Ms D Jackson
Nevill Hall Hospital	Ms P Mullins/Ms C Lewis
Prince Charles Hospital	Ms K Dennett
Royal Glamorgan Hospital	Ms R Evans
Royal Gwent Hospital	Ms J Westwood/Mrs C Bradley
University Hospital of Wales	Ms E Stephenson/Ms H Protheroe-Davies

Appendix D

Calculated Gestation Algorithm

Perinatal Survey Database from Sept 1999

	LMP ¹	Early USS ²	Working EDD ³	Clinical Assessment ⁴	Test for agreement	Calculated Gestation Outcome
Rule A	Yes	Yes	-	-	Agree within 10 days	Accept LMP
Rule A	Yes	Yes	-	-	Do not agree within 10 days	Accept USS
Rule B	No	Yes	-	-		Accept USS
Rule B1	Yes	No	Yes	-	Agree within 14 days	Accept LMP
Rule B1	Yes	No	Yes	-	Do not agree within 14 days	Accept working EDD
Rule C	Yes	No	No	Yes	Agree within 14 days	Accept LMP
Rule C	Yes	No	No	Yes	Do not agree within 14 days	Accept Clinical Assessment
Rule C	Yes	No	No	No		Accept LMP
Rule D	No	No	Yes	Yes	Agree within 14 days	Accept Working EDD
Rule D	No	No	Yes	Yes	Do not agree within 14 days	Accept Clinical Assessment
Rule D	No	No	Yes	No		Accept Working EDD
Rule D	No	No	No	Yes		Accept Clinical Assessment

Fields used

1. EDD by USS 2. LMP 3. [Date first USS] 4. [Gestation first USS weeks] 5. [Gestation first USS days]	date field date field date field number field number field
6. Date of Birth 7. Gestation Assessment 8. Gestation (days) 9. Calc gest weeks (whole completed weeks – not rounded up) 10. Calc gest days	date field number field number field number field number field

LMP ¹	Early USS ²	Working EDD ³	Clinical Assessment ⁴
Gestation in days calculated:- [Date of Birth] [LMP] – Number of days difference	Gestation in days calculated:- If there is [Gestation first USS weeks] And ([Date first USS]) Then = [Gestation first USS weeks]*7 + [Gestation first USS days]+ (DateDiff("d", [Date first USS], [Date of Birth])) Otherwise DateDiff("d", [EDD by USS], [Date of Birth]) + 280	Gestation in days calculated:- DateDiff("d", [Working EDD], [Date of Birth]) + 280	Gestation in days calculated:- [Gestation Assessment] *7+ [Gestation (days)]

Abbreviations

LMP – Last menstrual period

USS – Ultrasound Scan

EDD – Expected Date of Delivery

Appendix E

Classification of Death

**Clinico-Pathological Classification:
All deaths****1. Congenital anomaly**

Include all major anomalies. Infants with minor or potentially treatable anomalies should not be included here unless they formed part of a complex of at least two malformations and they died before the onset of labour. Deformations - that is abnormalities of form secondary to a fetal disease or functional impairment - could also be included here. Thus, pulmonary hypoplasia that follows oligohydramnios may be included, although this difficult diagnosis should always be supported by the presence of other deformations or malformations.

2. Unexplained death prior to the onset of labour

In the absence of other evidence, the presence of maceration should be taken to indicate that death preceded the onset of labour. Antepartum fetal deaths due to lethal malformations and specific conditions are excluded. Infants with minor isolated lesions (e.g. small VSD) should remain in this group but infants with multiple minor anomalies should be classified in group one.

2a. Death prior to the onset of labour associated with placental abruption

After 20 weeks gestation whether revealed or not, excluding APH secondary to pre-eclampsia. Minor degrees of haemorrhage at the start of labour (a 'show') and haemorrhage due to cervical erosion or polyp should be ignored but significant or recurrent bleeding of uncertain origin that is then fairly closely followed by preterm labour should not be ignored.

3. Intrapartum events

This group should include all fetal deaths of whatever weight without malformations or specific disorder, provided that death occurred during labour. In the absence of other information all fresh stillbirths should be included in this group. Liveborn infants not in group 1, 5 or 6 and weighing over 1000g who died at less than 4 hours should be included in this group. If death occurred during an intervention such as caesarean section, in the absence of labour, the case should be classified in group 3, as should any infant surviving longer than four hours for whom there was evidence of cerebral birth trauma or asphyxia.

4. Conditions consequent upon preterm birth

This group includes only liveborn infants of under 37 weeks gestation. Infants weighing less than 1000g and not in groups 1, 5, 6, 7 or 8 belong to this group irrespective of the age at death. Larger preterm infants are likely to have suffered from birth asphyxia if they died at less than 4 hours of age. Thus any infant dying at less than 4 hours, delivered preterm, and weighing more than 1000g, should be coded to group 3 unless a specific condition or malformation was present. Neonatal death with infection, even congenital infection, should be included here, except specific infections, e.g. group B streptococcal, CMV, rubella which should be coded group 5. Term infants dying with conditions normally associated with prematurity e.g. HMD, IVH, should be coded group 6.

5. Infection

Infection of the baby before, during or after birth (including death from necrotising enterocolitis). Exclude infection secondary to treatment for HMD.

6. Specific conditions

Include deaths due to: blood group incompatibilities, inborn errors of metabolism, twin to twin transfusion, hydrops not associated with malformation, conditions usually associated with prematurity but occurring in term infants, tumours, hamartomas, feto-maternal bleeds, or anything completely out of the ordinary.

7. Accidental death

Death after delivery due to violence (other than trauma during delivery) whether accidental or deliberate. Deaths due to unattended delivery, suffocation, drowning, smoke inhalation, burns, scalds and poisoning are also included.

8. Sudden infant death

Death after birth that occurs suddenly and unexpectedly and for which no explanation can be found after full review, including detailed autopsy examination.

9. Unclassifiable

Termination of pregnancy for reasons not related to the condition of the fetus. Other deaths with completely inadequate documentation.

**Aberdeen (Baird) Classification:
Stillbirths and neonatal deaths****I. Congenital anomaly**

Any genetic or structural defect arising at conception or during embryogenesis incompatible with life or potentially treatable but causing death.

II. Isoimmunisation

Death ascribable to blood group incompatibility.

III. Pre - eclampsia:

Only significant pre-eclampsia (a diastolic BP of 90 mm Hg or more on 2 separate days after the 20th week with significant proteinuria) in the absence of existing hypertensive disease prior to pregnancy. The full definition is that given to pre-eclampsia and eclampsia (ICD codes 642.4-642.6) by FIGO.

IV. Antepartum haemorrhage (APH)

After 20 weeks gestation whether revealed or not, excluding APH secondary to pre-eclampsia. Minor degrees of haemorrhage at the start of labour (a 'show') and haemorrhage due to cervical erosion or polyp should be ignored but significant or recurrent bleeding of uncertain origin that is then fairly closely followed by preterm labour should not be ignored.

V. Mechanical

Any death from uterine rupture and those deaths from birth trauma or intrapartum asphyxia that are associated with disproportion, malpresentation, cord compression or breech delivery in babies of \geq 1.0 kg. Deaths with anoxia or cerebral trauma should be classified as 'unexplained' if there is no evidence of difficulty in labour. Antepartum deaths associated with cord entanglement in the absence of strong circumstantial evidence that cord compression caused death (e.g. fetal death soon after external version) should also be classified as 'unexplained'.

VI. Maternal disorder

Include maternal trauma (such as a road traffic accident), diabetes, appendicitis, and cardiac disease etc. if severe enough to jeopardise the baby. Include significant renal disease or essential hypertension known to be present before pregnancy. Also include symptomatic and asymptomatic maternal infection where this results in the death of the baby. Specify the disease or organism.

VII. Miscellaneous

Specific fetal and neonatal conditions. DO NOT include conditions directly attributable to prematurity or anoxia before birth because these deaths are attributable to the relevant underlying obstetric disorder. Include, however, specific fetal conditions (e.g. twin-to-twin transfusion) or neonatal conditions (e.g. inhalation of milk) where these are not directly ascribable to intrapartum anoxia or preterm delivery. Include, also, postnatally acquired infection, except in babies becoming infected as a result of artificial ventilatory support or in babies of $<$ 1.0kg (where the reason for the ventilator dependency or low birthweight in the codeable factor). Specify the disease or organism.

VIII. Unexplained

Deaths with no obstetric explanation including unexplained antepartum stillbirth, deaths resulting from unexplained preterm delivery (including hyaline membrane disease, intraventricular haemorrhage etc.), and cases of intrapartum anoxia or trauma if the baby weighed $<$ 1.0kg or delivery was not associated with any obvious mechanical problem. Specify if there was documented cervical incompetence, premature rupture of membranes before labour, unexplained preterm labour, biochemical evidence of 'placental insufficiency' or documented growth retardation (weight at birth below the fifth centile for confirmed gestation). Growth retardation should not be diagnosed merely on the basis of weight at birth if the baby died more than a few days before delivery.

IX. Unclassifiable

Cases where nothing is known about delivery or mother's health before delivery

Form completion guidelines

Forms should be completed for all deaths of babies from 20 weeks gestation to 1 year of age to mothers resident in Wales or elsewhere. The reporting of cases normally resident outside Wales is included to assist other Regions.

Fetal losses of 20 completed weeks of gestation or more, or weighing >300g if gestation not known (incl. therapeutic abortions), stillbirths, neonatal deaths (early and late), post-neonatal infant deaths (28 days to 1 year).

The form should be completed by members of the nominated local team under the guidance of the unit coordinator. The form will normally be completed by the team in the district of death. In the case of babies transferred to another unit before death, the reporting team will need to liaise with staff who previously cared for mother and baby. Multiple reporting is not a problem.

All answers should be based on the date of birth in the case of babies dying within 28 days of birth, and the date of death in the case of babies dying between 28 days and 1 year.

Dates and times: Use the convention dd/mm/yy

(e.g. 09-11-08 (9th November 2008) and a 24 hour clock (09:14 hrs).

Section 1: Women's Details

NHS number: State the number from hospital notes.

Hospital number: State the number on hospital notes.

Address and Postcode at time of birth/delivery: State mother's usual residential address and postcode.

Date of birth: State date of birth where possible; state Age only if date of birth is not available.

Country of birth: of mother

Ethnic group: The mother's ethnic group is that to which the mother considers she belongs.

Marital status: Current legal marital status.

Stable relationship: Defined as the mother living with or directly supported by her partner.

Woman's occupation and Partner's occupation: if currently employed at booking give full details, e.g. manager food shop. If not employed give full details of the last known employment including the last place of work. If she/he has never been employed please write **never employed**.

Height and Weight: Take from first booking record made by the community midwife or GP.

Maternal smoking: Give the best estimate of maternal smoking throughout the pregnancy.

Section 2: Previous Pregnancies

Previous infertility: Where a medical opinion has been sought concerning primary or secondary infertility.

Total number of previous pregnancies of 24 weeks or more: Multiple pregnancy counts as **one** pregnancy.

Number and Outcome of previous pregnancies: Give details of all livebirths, stillbirths, miscarriages, ectopic pregnancies, hydatidiform moles, therapeutic abortions, neonatal deaths and post neonatal deaths stating the number in each category, gestation, and where applicable birthweight and cause of death. If further space is needed please use section 12.

Were there any previous pregnancy problems? If Yes, tick all that apply.

Section 3: Previous Medical History

Were there any pre-existing medical problems? If Yes, tick all that apply.

Section 4: This Pregnancy

LMP: The original date of the Last Menstrual Period given at booking.

USS information: Please complete all questions in this section.

Final Estimated Date of Delivery (EDD) (previously Working EDD just before delivery): State the date being used for the purposes of obstetric management at the time labour began based on LMP, ultrasound and clinical assessments.

Was this a multiple pregnancy at the onset of pregnancy?: Yes or No

Date of first booking appointment (previously Date of antenatal assessment): This item aims to record when detailed care is first given including a booking record made by the community midwife or GP. When there is no antenatal care arranged tick **not booked**.

Intended place of delivery at booking?: Name the hospital at which the woman intended to deliver at booking ticking Obstetric or Midwifery led unit.. Tick **home** if the woman originally planned to have a home delivery.

Section 5: Delivery

Intended place of delivery at onset of labour?: Name the hospital at which the woman intended to deliver at onset of labour, ticking Obstetric or Midwifery led unit. Tick **home** if the mother originally planned to have a home delivery.

Antenatal steroid treatment: This refers to steroid treatment given within 10 days of delivery.

Date and time of membrane rupture: Give the best estimate.

Labour:

1. Spontaneous onset of labour with no induction.

2. Induced. This is the artificial induction of labour **prior** to the onset of labour.

3. No labour and No induction with baby born by Caesarean Section.

Induction: This is the artificial induction of labour **prior** to the onset of labour. Indicate the method(s) of induction (may be more than one).

Augmentation: This is the augmentation or acceleration of labour **after** the onset of labour. Indicate the method(s) of augmentation used (may be more than one).

Actual place of delivery: State the name of the hospital/unit/other where the delivery took place.

What was the Final Mode of Delivery?: This is the final method of delivery - ring the most appropriate category. If several methods are attempted, the final method of delivery should be given. For instance, a failed Ventouse going on to Caesarean Section should be reported as delivery by Caesarean Section.

What was the presentation at Delivery?: Please tick one item.

Caesarean Sections: Please complete all questions.

Section 6: All Baby Outcomes

Surname: State the registered surname of the baby. If not registered then state mother's surname.

NHS number: State the number from infant's hospital notes.

Hospital number: State the number on infant's hospital notes.

Usual address of baby at date of death: (if different to address in section 1.4)

Sex: Ring as appropriate. If chromosomes available then answer according to karyotype.

Number of babies/fetuses this pregnancy: Give the highest number of confirmed fetuses during the pregnancy.

Birthweight: Record birthweight in grams. If the baby was never weighed give the best available estimate indicating that the weight is an estimate.

Gestation at delivery (previously Clinical assessment of gestation): State best assessment of gestation at time of delivery in weeks and days.

Section 7: Stillbirths

Stillbirths: Respond to all questions. If the baby was stillborn, death should be stated to have occurred before the labour unless there is clear evidence to the contrary.

Section 8: Neonatal and Post Neonatal Deaths

Was the baby admitted to a neonatal unit? (previously Transfers for neonatal care): Answer 'Yes' for neonatal transfers.

Apgar score: Give the Apgar score at 1 minute and at 5 minutes as recorded in infant's maternity notes.

Neonatal resuscitation: Respond to all questions with Yes, No.

Place of death: Specify according to the place where death was confirmed.

Date of death and Time of death: The time and date of death stated should be that at which this diagnosis was confirmed.

Was the baby transferred to another unit after birth?: Answer Yes or No.

8.7 Contributing factors (previously Clinical management): Include relevant and major items of neonatal management including ventilation, TPN, exchange transfusion, pneumothoraces and surgical operations etc.

Guidance and Definitions for Completion of Section 9:

CAUSE OF DEATH - STILLBIRTHS & NEONATES

The following definitions and associated subcategories will help you choose the relevant maternal or fetal conditions causing and associated with the death.

DEFINITION OF TERMS	Subcategory
<p>1. MAJOR CONGENITAL ANOMALY. Any genetic or structural defect arising at conception or during embryogenesis incompatible with life or potentially treatable but causing death.</p>	Central nervous system Cardiovascular system Respiratory system Gastro-intestinal system Musculo-skeletal anomalies Multiple anomalies Chromosomal disorders Metabolic diseases Urinary tract Other
<p>2. HYPERTENSIVE DISORDERS OF PREGNANCY.</p>	Pregnancy induced hypertension Pre-eclampsia toxemia (PET) HELLP syndrome Eclampsia
<p>3. ANTEPARTUM or INTRAPARTUM HAEMORRHAGE. After 20 w gestation whether revealed or not. If associated with PET, APH will be a secondary diagnosis. Ignore minor degrees of haemorrhage (e.g. 'shows', cervical polyps etc). Recurrent bleeding of uncertain origin followed by preterm labour should not be ignored.</p>	Praevia Abruption Uncertain
<p>4. MECHANICAL. Any death attributed to uterine rupture, deaths from birth trauma or intrapartum asphyxia associated with problems in labour such as cord compression, malpresentation etc. Intrapartum 'asphyxia' deaths with no underlying cause should be recorded under 'Associated factor – IP asphyxia'. Antepartum deaths associated with cord entanglement in the absence of strong circumstantial evidence that cord compression caused death should be classified as having no associated factor.</p>	<p>Cord Compression: Prolapse cord Cord around neck Other cord entanglement or knot</p> <p>Uterine Rupture: Before labour During labour</p> <p>Mal-presentation: Breech Face Compound Other</p>
<p>5. MATERNAL DISORDER. Specify hypertensive disease present before pregnancy or any other maternal disease sufficient to jeopardise the baby such as trauma, diabetes, cardiac disease etc. Infection is classified separately.</p>	Pre-existing hypertensive disease Diabetes Endocrine diseases Thrombophilias Cholestasis Drug misuse Uterine anomalies Other
<p>6. INFECTION. Specify maternal infections sufficient to have compromised the baby which may be associated with congenital infection of the baby. Trans-placental transmission may have occurred such as CMV, toxoplasmosis etc. Specify only those ascending infections that are a significant factor in death. Chorioamnionitis sufficient to cause preterm birth may be specified for some neonates but evidence of fetal infection may be required as an explanation of stillbirth.</p>	<p>Maternal infection: Bacterial Syphilis Viral diseases Protozoal Other</p> <p>Ascending infection: Chorioamnionitis Other</p>
<p>7. SPECIFIC FETAL CONDITIONS. Document only those specific conditions arising in the fetal period.</p>	Twin-twin transfusion Feto-maternal haemorrhage Non-Immune hydrops Iso-immunisation Other
<p>8. SPECIFIC PLACENTAL CONDITIONS. Specific placental conditions sufficient to cause death or be associated with fetal compromise such as IUGR. These will often be secondary to other maternal conditions e.g. PET. Cord problems associated with compression will normally be classified under 'Mechanical'.</p>	Placental infarction Massive perivillous fibrin deposition Vasa praevia Velamentous insertion Other
<p>9. INTRA-UTERINE GROWTH RESTRICTION.</p>	
<p>10. ASSOCIATED OBSTETRIC FACTORS. Birth Trauma and/or Intrapartum asphyxia should normally be classified primarily by the underlying cause (e.g. Mechanical). Birth \trauma and/or Intrapartum asphyxia can be recorded here either as a secondary factor or when there is no underlying explanation.</p> <p>Factors recorded as Other Associated Obstetric Factors will be important clinical or pathological features of the pregnancy or baby but will not be an explanation of the death; they will often be secondary to other maternal or fetal conditions.</p>	<p>Birth Trauma: Intracranial haemorrhage Birth injury to scalp Other</p> <p>Intrapartum Asphyxia Other: Polyhydramnios Oligohydramnios Premature rupture of membranes Spontaneous premature labour Other</p>
<p>11. NO ANTECEDENT OR ASSOCIATED OBSTETRIC FACTORS. Deaths with no explanation or significant associated factor.</p>	
<p>12. UNCLASSIFIED. Cases where little or nothing is known about pregnancy or delivery and cannot be fitted into any of the above categories. Use as sparingly as possible.</p>	

Guidance and Definitions for Completion of Section 10:

CAUSE OF DEATH – NEONATES ONLY

The following definitions and associated subcategories will help you choose the relevant neonatal conditions causing and associated with the death.

DEFINITION OF TERMS	Subcategory
MAJOR CONGENITAL ANOMALY. Any genetic or structural defect arising at conception or during embryogenesis incompatible with life or potentially treatable but causing death.	Central nervous system Cardiovascular system Respiratory system Gastro-intestinal system Musculo-skeletal system Multiple anomalies Chromosomal disorders Metabolic disorders Urinary tract Other
EXTREME PREMATURITY. Babies (21w + 6d or less) who are non-viable at birth because of gestation but who show signs of life.	
RESPIRATORY DISORDERS. Severe pulmonary immaturity will encompass those babies where structural lung immaturity is so gross as to mean ventilatory support is unsustainable at the outset, usually babies between 22 – 24w gestation. Surfactant Deficient Lung Disease may include babies with clinical or pathological evidence of hyaline membrane disease.	Severe pulmonary immaturity Surfactant deficiency lung disease Pulmonary hypoplasia Meconium aspiration syndrome Primary persistent pulmonary hypertension Chronic lung disease/BPD Other (includes pulmonary haemorrhage)
GASTRO-INTESTINAL DISEASE. Many babies with NEC will have associated sepsis which may be given as a secondary cause.	Necrotising enterocolitis (NEC) Other
NEUROLOGICAL DISORDER. HIE includes those babies with severe hypoxic-ischaemic brain injury before birth. If possible, please specify if HIE was primarily of intrapartum or antepartum origin. Specify periventricular leukomalacia only if this is a significant factor in the infant death. Birth Trauma will usually be classified here.	Hypoxic-ischaemic encephalopathy (HIE) Intraventricular/Periventricular haemorrhage Other
INFECTION. Where possible specify the location of infection and whether due to bacteria, virus, fungus or other specific organism. Also specify whether infection is congenital (i.e. acquired ante or intrapartum acquired) or neonatal in origin.	Generalised (sepsis) Pneumonia Meningitis Other
INJURY / TRAUMA. Post natal trauma only including iatrogenic injury. 'Birth Trauma' will usually be classified under neurological disorder e.g. HIE; the obstetric classification identifying the timing of the injury.	
OTHER SPECIFIC CAUSES. Death due to specific fetal and neonatal conditions such as isoimmunisation or unexplained hydrops. Neonatal conditions will include aspiration, unexplained pulmonary haemorrhage.	Malignancies / Tumours Specific conditions
SUDDEN UNEXPECTED DEATHS. SIDS should conform to the accepted definition. Unascertained are those unexpected deaths that are not explained despite a full investigation including autopsy, but do not conform to the accepted definition of SIDS.	SIDS Infant deaths – cause unascertained
UNCLASSIFIED. Cases where little or nothing is known about pregnancy or delivery and that cannot be fitted into any of the above categories. Use this category as sparingly as possible.	

Appendix F

For Office Use Only: AWPS Survey Number

W/10/

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Mother's name:.....

Unit of birth:.....

All Wales Perinatal Survey and Centre for Maternal and Child Enquiries

Improving the health of mothers, babies and children



Perinatal Death Notification Form 2010



CHOOSE Type of Case (tick)

SPONTANEOUS MISCARRIAGE: Spontaneous late fetal death before 24 weeks of gestation.

OR

THERAPEUTIC ABORTION: Therapeutic late fetal death before 24 weeks of gestation.

OR

STILLBIRTH: A baby delivered without life **after** 23⁺⁶ weeks of pregnancy i.e. no signs of life at birth and where no heartbeat was ever detected.

If the birth occurred unattended and there was no lung aeration seen at Post Mortem (PM) and no other circumstantial evidence of life at birth, it should be assumed that the baby was stillborn.

In all cases where there is evidence that the fetus has died prior to the 24th week of pregnancy, the death **should not** be notified as a stillbirth. Where there is any doubt about the gestational age at which the fetus died, the default position would be to notify as a stillbirth.

OR

EARLY NEONATAL DEATH: Death, following live birth at ANY GESTATION, of a baby before the age of 7 completed days.

OR

LATE NEONATAL DEATH: Death of a baby occurring from the 7th day of life and before the age of 28 completed days.

OR

POST NEONATAL DEATH: Death of a baby at age 28 days and over but under one year of age.

Brief Instructions and Guidance

1. Fill in the form using the information available in the maternity case notes and discharge summary.
2. Guidance for completing Sections 9 and 10 on Cause of Death is found on the folder enclosing this form.
3. There are no "not known" codes as all the information should be contained in the notes. ***If you do not know the answer to a question please indicate this in Section 12.***
4. Please complete all dates in the format DD/MM/YY, & all times using the 24hr clock e.g. 17:45.
5. Do NOT wait for the Post Mortem to complete and return this form – it should be completed within **8 weeks** of death.
6. Please keep a copy of this form for your own records.

Section 1. WOMAN'S DETAILS – Please use addressograph if possible1.1 NHS number:

1.2 Surname: First name:

1.3 Hospital number:

1.4 Usual residential address at time of delivery/birth:

1.5 Postcode: 1.6 Woman's date of birth: / / or estimated age

Country of birth:

1.7 Ethnic group:

White: British Irish Any other White background, specifyMixed: White & Black Caribbean White & Black African White & Asian Any other mixedAsian or Asian British: Indian Pakistani Bangladeshi Any other AsianBlack or Black British: Caribbean African Any other Black backgroundOther ethnic groups: Chinese Any other, specifyNot stated: Marital status: Married Single Separated Divorced Co-habiting WidowedStable relationship? Yes No1.8 Was the woman in paid employment at booking? Yes NoIf Yes, what is her occupation? (*Transcribe exactly what is in the notes*)

If No, what was her occupation when she last worked or state if never employed

1.9 Was the woman's partner in paid employment at booking? Yes No Not knownIf Yes, what is the partner's occupation? (*Transcribe exactly what is in the notes*)

If No, what was their occupation when they last worked or state if never employed

Does the partner's employment fit into the following: H.M. Forces Student Prison1.10 Height at booking (cm): round up to nearest cm 1.11 Weight at booking (kg): round up to nearest kg If weight is unavailable, was there evidence that the woman was too heavy for hospital scales? Yes No1.12 Body mass index at booking (BMI): 1.13 Smoking status: Never smoked Gave up prior to pregnancy Gave up in pregnancy Non-smoker, history not known Current: less than 10 per day Current: 10 or more per day1.14 Was this woman known to abuse alcohol? Yes No1.15 Was this woman known to be a substance user? Yes No

Section 2. PREVIOUS PREGNANCIES

- Previous infertility? Yes No
- 2.1 Did the woman have any previous pregnancies? (if yes, complete questions 2.2-2.4) Yes No
- 2.2 No. of completed pregnancies ≥ 24 weeks (all live and stillbirths) (please provide details below)
- 2.3 No. of pregnancies < 24 weeks (please provide details below)

	Number	Give details of gestation, birthweight and cause of death (if applicable)
Livebirths		
Stillbirths		
Miscarriages, ectopics and moles		
Therapeutic abortions		
Neonatal deaths (0-27 days)		
Post-neonatal deaths (28 days-1 year)		

- 2.4 Were there any previous pregnancy problems? Yes No (if yes, tick all that apply below)

- | | | |
|---|---|--|
| <input type="checkbox"/> Three or more miscarriages | <input type="checkbox"/> Pre-term birth or mid trimester loss | <input type="checkbox"/> Stillbirth |
| <input type="checkbox"/> Neonatal death | <input type="checkbox"/> Baby with congenital anomaly | <input type="checkbox"/> Infant requiring intensive care |
| <input type="checkbox"/> Previous caesarean section | <input type="checkbox"/> Placenta praevia | <input type="checkbox"/> Placental abruption |
| <input type="checkbox"/> Pre-eclampsia (hypertension & proteinuria) | | <input type="checkbox"/> Post-partum haemorrhage requiring transfusion |
| <input type="checkbox"/> Other, please specify | | |

Section 3. PREVIOUS MEDICAL HISTORY

- 3.1 Were there any pre-existing medical problems? Yes No (if yes, tick all that apply below)

- | | |
|---|--|
| <input type="checkbox"/> Cardiac disease (congenital or acquired) | <input type="checkbox"/> Epilepsy |
| <input type="checkbox"/> Endocrine disorders e.g. hypo or hyperthyroidism | <input type="checkbox"/> Renal disease |
| <input type="checkbox"/> Haematological disorders e.g. sickle cell disease | <input type="checkbox"/> Psychiatric disorders |
| <input type="checkbox"/> Inflammatory disorders e.g. inflammatory bowel disease | <input type="checkbox"/> Drug or substance abuse |
| <input type="checkbox"/> Diabetes | <input type="checkbox"/> Other, specify |

Section 4. THIS PREGNANCY

- 4.1 Date of first booking appointment: / / Not booked
- L.M.P. as originally given / /
- Was USS done? Yes No Date of first ultrasound scan / /
- Gestation at first USS weeks days EDD by first USS / /
- 4.2 Final Estimated date of delivery (EDD) Use best estimate (ultrasound scan or date of last menstrual period) based on a 40 week gestation. Or the final date agreed in the notes. / /
- 4.3 Was this a multiple pregnancy at the onset of pregnancy? Yes No
- 4.4 Intended place of delivery at booking: Name of unit / place:..... Undecided
- Type of unit: Obstetric unit Alongside midwifery unit Freestanding midwifery unit Home Other
- 4.5 What was the intended type of delivery at booking?: Obstetric led care Midwifery led care

Section 5. DELIVERY

- 5.1 Onset of labour: 1. Spontaneous 2. Induced 3. Never in labour
- 5.2 Intended place of delivery at onset of labour: Name of unit / place:.....
- Type of unit: Obstetric unit Alongside midwifery unit Freestanding midwifery unit Home Other
- 5.3 What was the intended delivery type at onset of labour? Obstetric led care Midwifery led care
- Free birthing Other
- Free birthing is where the woman chose to have no midwifery/obstetric involvement during labour and delivery*

Antenatal steroid treatment within 10 days of delivery None For less than 24 hours For 24 hours or more

Date of membrane rupture / / Time of membrane rupture :
 Induction before onset of labour: **Augmentation** after onset of labour:

Oxytocin YES NO Oxytocin YES NO
 Surgical YES NO Surgical YES NO
 Prostaglandin YES NO Prostaglandin YES NO

5.4 Was the intended mode of delivery a planned caesarian section? Yes No

5.5 Actual place of delivery: Name of unit / place:.....

Type of unit: Obstetric unit Alongside midwifery unit Freestanding midwifery unit Home Other
 Place of delivery 1. Hospital 2. Home 3. In transit 4. Elsewhere

5.6 What was the type of care at delivery? Obstetric led care Midwifery led care
Free birthing is where the woman chose to have no midwifery/obstetric involvement during labour and delivery Free birthing Unattended
 Other

Reason for change in place of delivery

No change Change of address during pregnancy
 Clinical reasons during pregnancy Other reasons during pregnancy Clinical reasons during labour
 Other reasons during labour Unintentionally during labour

5.7 Date and time of delivery/birth: / / :

5.8 What was the presentation **at delivery**?
 Vertex Breech Compound (includes transverse & shoulder presentations) Brow Face

5.9 What was the FINAL mode of delivery?
 Spontaneous cephalic/vaginal Forceps – low (Lift-out) Forceps – mid-cavity Rotational forceps
 Ventouse Breech (Assisted) Breech extraction Destructive operation
 Elective Caesarean section (Pre-labour) Emergency Caesarean section (after onset of labour)

CAESAREAN SECTIONS ONLY (non-Caesarean Sections go to Section 6)

5.10 What was the type of caesarean section?
 Elective – A time to suit the woman or maternity team Scheduled – Needing early delivery but no maternal or fetal compromise
 Urgent – Maternal or fetal compromise not immediately life-threatening Emergency – Immediate threat to life of woman or fetus

Section 6. ALL BABY OUTCOMES

6.1 Baby's surname: First name:

6.2 Baby's NHS number: (including stillbirths)

Baby's Hospital number:

Usual address of baby at date of death (if different to address in section 1.4):

Postcode:

6.3 Sex of fetus/baby: Male Female Indeterminate

6.4 Number of fetuses/babies this delivery: (all identifiable, including papyraceous)

6.5 Birth order of this fetus/baby: (1= singleton)

6.6 If from a multiple delivery, what was the chorionicity?
 Dichorionic diamniotic Monochorionic diamniotic Monochorionic monoamniotic Trichorionic Not known

6.7 Birth weight (kg): .

6.8 Gestation at delivery: weeks + days

6.9 Was this a termination of pregnancy? Yes No

NB: a case can be both a registrable stillbirth or neonatal death AND a legal abortion

Outcome (please select) 1. Liveborn 2. Spontaneous miscarriage 3. Therapeutic abortion
 4. Stillbirth-antenatal macerated 5. Stillbirth-antenatal fresh 6. Stillbirth-in labour

6.10 Was the death due to an intrapartum event? Yes No

INTRAPARTUM RELATED EVENTS ONLY (non-intrapartum go to section 7)

6.11 Was a local Hospital/Trust review of this case undertaken? Yes No

6.12 If no, please state why not:

6.13 If yes, what method was used?

Root cause analysis Hospital/Trust review Clinical governance review

Other, please specify

Section 7. STILLBIRTHS (if not stillbirth go to section 8)

7.1 At what gestation was death confirmed to have occurred? weeks + days
(confirmed by ultrasound, pathological report or when baby born dead)

If known, what date was death confirmed? / /

7.2 Was the baby alive at **onset of care** in labour?

Yes No Never in labour Unattended Not known

Section 8. NEONATAL & POST NEONATAL DEATHS (if not neonatal go to section 9)

8.1 Was spontaneous respiratory activity **absent or ineffective** at 5 minutes? Yes No

If a baby is receiving any artificial ventilation at 5 minutes assumption is absent/ineffective activity; a 0 Apgar score indicates absent activity.

8.2 Was the heart rate persistently <100? (i.e. heart rate NEVER rose above 100 before death)

Persistently <100 Rose above 100

8.3 Was the baby admitted to a neonatal unit? (includes SCBU and ICU) Yes No

Apgar score: 1 min 5 mins Was surfactant used? Yes No

Neonatal resuscitation:

Oxygen: Yes No Mask ventilation: Yes No
 Intubation: Yes No Cardiac massage: Yes No
 Drugs: Yes No Specify drugs used:

8.4 Place of death:

This is where the baby actually died, e.g. 'name of unit', 'at home', 'in transit'. This includes babies who are brought to hospital, but are either declared dead on arrival or show no subsequent signs of life, despite attempted resuscitation.

Labour ward Neonatal unit Hospital (other) Home In transit Elsewhere

8.5 Date and time of death: / / :

8.6 Was the baby transferred to another unit after birth? Yes No

Was baby discharged home after birth or neonatal care? Yes No

If YES, date and time of (last) readmission to hospital: / / :

8.7 Please briefly describe the obstetric and neonatal factors contributing to and associated with the death:

Section 9. ASSOCIATED FACTORS & CAUSE OF DEATH – ALL DEATHS AND STILLBIRTHS

9.1. Which condition, indicated in 9.2 as being present, was the MAIN condition causing or associated with the death? (NB 'non-MAIN' conditions are best described as the 'Other clinically relevant maternal or fetal conditions/ factors that were associated with but not necessarily causing the death'). Please give the MAIN condition:

9.2. Please TICK ALL the maternal or fetal conditions that were present during pregnancy or were associated with the death – PLEASE REFER TO SEPARATE CAUSE OF DEATH GUIDANCE ON THE ENCLOSING FOLDER

9.2.1. MAJOR CONGENITAL ANOMALY:

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Central nervous system | <input type="checkbox"/> Cardiovascular system | <input type="checkbox"/> Respiratory system | <input type="checkbox"/> Gastro-intestinal system |
| <input type="checkbox"/> Musculo-skeletal anomalies | <input type="checkbox"/> Multiple anomalies | <input type="checkbox"/> Chromosomal disorders | <input type="checkbox"/> Metabolic diseases |
| <input type="checkbox"/> Urinary tract | <input type="checkbox"/> Other, specify | | |

9.2.2. HYPERTENSIVE DISORDERS OF PREGNANCY:

- | | | | |
|---|--|---|------------------------------------|
| <input type="checkbox"/> Pregnancy induced hypertension | <input type="checkbox"/> Pre-eclampsia | <input type="checkbox"/> HELLP syndrome | <input type="checkbox"/> Eclampsia |
|---|--|---|------------------------------------|

9.2.3. ANTEPARTUM or INTRAPARTUM HAEMORRHAGE:

- | | | |
|----------------------------------|------------------------------------|--|
| <input type="checkbox"/> Praevia | <input type="checkbox"/> Abruption | <input type="checkbox"/> Cause uncertain |
|----------------------------------|------------------------------------|--|

9.2.4. MECHANICAL:

- Cord Compression:** Prolapse cord Cord around neck Other cord entanglement or knot
- Uterine Rupture:** Before labour During labour
- Mal-presentation:** Breech Face Compound Transverse Other, please specify.....
- Shoulder dystocia:**

9.2.5. MATERNAL DISORDER:

- | | | | |
|--|--------------------------------------|--|---|
| <input type="checkbox"/> Pre-existing hypertensive disease | <input type="checkbox"/> Diabetes | <input type="checkbox"/> Other endocrine conditions (excluding diabetes) | <input type="checkbox"/> Primary thrombophilias |
| <input type="checkbox"/> Obstetric cholestasis | <input type="checkbox"/> Drug misuse | <input type="checkbox"/> Uterine anomalies | <input type="checkbox"/> Other thrombophilias |
| <input type="checkbox"/> Other, please specify | | | |

9.2.6. INFECTION:

- Maternal infection:** Bacterial Syphilis Viral diseases Protozoal
- Other, specify..... Specify organism if known
- Ascending infection:** Chorioamnionitis Other, specify

9.2.7. SPECIFIC FETAL CONDITIONS:

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Twin-twin transfusion | <input type="checkbox"/> Feto-maternal haemorrhage | <input type="checkbox"/> Non-immune hydrops | <input type="checkbox"/> Iso-immunisation |
| <input type="checkbox"/> Other, specify | | | |

9.2.8. SPECIFIC PLACENTAL CONDITIONS:

- | | | | |
|---|--|---------------------------------------|--|
| <input type="checkbox"/> Placental infarction | <input type="checkbox"/> Massive perivillous fibrin deposition | <input type="checkbox"/> Vasa praevia | <input type="checkbox"/> Velamentous insertion |
| <input type="checkbox"/> Other, specify | | | |

9.2.9. INTRA-UTERINE GROWTH RESTRICTION DIAGNOSIS MADE:

What was this based on? (tick all that apply)

- | | | |
|--|---|--|
| <input type="checkbox"/> Suspected antenatally | <input type="checkbox"/> Observed at delivery | <input type="checkbox"/> Observed at post mortem |
|--|---|--|

9.2.10. ASSOCIATED OBSTETRIC FACTORS:

- Birth Trauma:** Intracranial haemorrhage Birth injury to scalp Fracture, specify..... Other, specify.....
- Intrapartum Asphyxia:**
- Other:** Polyhydramnios Oligohydramnios Premature rupture of membranes Spontaneous premature labour
- Amniocentesis Cordocentesis Chorionic villus sampling Other, specify.....

9.2.11. NO ANTECEDENT OR ASSOCIATED OBSTETRIC FACTORS:

9.2.12. UNCLASSIFIED (Use this category as sparingly as possible):

Section 10. CAUSE OF DEATH – NEONATES & POST NEONATES ONLY (Stillbirths go to Section 11)

10.1. Which condition, indicated in 10.2. as being present, was the MAIN condition causing or associated with the death?
(NB 'non-MAIN' conditions are best described as the 'Other clinically relevant maternal or fetal conditions/ factors that were associated with but not necessarily causing the death'). Please give the MAIN condition:

10.2. Please TICK ALL the neonatal conditions causing and associated with the death – PLEASE REFER TO SEPARATE CAUSE OF DEATH GUIDANCE ON THE ENCLOSING FOLDER

10.2.1. MAJOR CONGENITAL ANOMALY:

- Central nervous system Cardiovascular system Respiratory system Gastro-intestinal system
- Musculo-skeletal anomalies Multiple anomalies Chromosomal disorders Metabolic disease
- Urinary tract Other, specify

10.2.2. PRE-VIABLE (less than 22 weeks):

10.2.3. RESPIRATORY DISORDERS:

- Severe pulmonary immaturity Surfactant deficiency lung disease Pulmonary hypoplasia
- Meconium aspiration syndrome Primary persistent pulmonary hypertension
- Chronic lung disease/Bronchopulmonary dysplasia (BPD)
- Other (includes pulmonary haemorrhage), specify

10.2.4. GASTRO-INTESTINAL DISEASE:

- Necrotising enterocolitis (NEC) Other, specify

10.2.5. NEUROLOGICAL DISORDER:

- Hypoxic-ischaemic encephalopathy (HIE) Intraventricular/Periventricular haemorrhage
- Other, specify

10.2.6. INFECTION:

- Generalised (sepsis) Pneumonia Meningitis Other, specify

10.2.7. INJURY / TRAUMA (postnatal):

Specify:

10.2.8. OTHER SPECIFIC CAUSES:

- Malignancies / Tumours Specific conditions, specify

10.2.9. SUDDEN UNEXPECTED DEATHS:

- SIDS/SUDI Infant deaths – cause unascertained

10.2.10. UNCLASSIFIED (Use this category as sparingly as possible):

Section 11. POST MORTEM (Please do not wait for post mortem results before sending in this form)

- 11.1 Was a Post Mortem offered? Yes No
- 11.2 Was consent given for a Post Mortem? Yes, full Yes, limited NO consent
- 11.2.1 If PM was limited, what was consent given for?
 - MRI X-Ray Other, specify
- 11.3 Was the placenta sent for histology? Yes No
- 11.4 Was this a Coroners' Case? Yes No

Section 12. ANY OTHER RELEVANT DETAILS

Section 13. DETAILS OF PERSON WHO COMPLETED THE FORM *(information not given to central office)*

Name: _____
 Positions: _____
 Addresses: _____

 Tel no./email address: _____

 Date of notification: / /

Section 14. AWPS OFFICE USE ONLY

Please code the causes of death that were given and the clinically derived *single main cause of death*. *(Refer to coding sheet.)*

14.1 Cause of death: Associated maternal and fetal factors and cause of death – stillbirths and neonates (section 9).

14.1.1 *Single main cause* _____
 14.1.2 *Other cause(s) (no more than 3):* _____

14.2 Cause of death: Associated neonatal factors and cause of death – neonates ONLY (section 10).

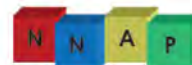
14.2.1 *Single main cause* _____
 14.2.2 *Other cause(s) (no more than 3):* _____

14.3 **Maternal death:** Yes No
 14.4 **Was a copy of the Post Mortem report received?** Yes No
 If yes, was it a limited Post Mortem? MRI scan X-ray Other limited No
 If yes, was it a Coroners' Post Mortem? Yes No
 14.5 **Was a copy of the placental histology report received?** Yes No
 14.6 **Was cause of death coding completed using a placental histology or Post Mortem?**
 Placental histology Post Mortem No

Appendix G



«ADD1»



Please use ONE form for every type of unit in each hospital/trust

Unit birth statistics for «ADD1»

1st January 2010 – 31st December 2010

Name:	«Name»	Trust Name:	«Trust»
Job Title:	«Job_Title»	Tel:	«WorktelephoneNumber»
Date:	Email address: «EmailAddress»		

Please indicate which of the following applies to the data you are supplying us with:

Data from an obstetric unit	<input type="checkbox"/>
Data from an alongside midwifery unit	<input type="checkbox"/>
Data from a freestanding midwifery unit	<input type="checkbox"/>
Other (please specify)	

TOTAL:- SUM OF HOSPITAL, HOME AND ELSEWHERE

TOTAL REGISTRABLE births (NOT deliveries – twins count as two births), including stillbirths. Sum of hospital, home and elsewhere	<input type="text"/>
TOTAL LIVEBIRTHS - (NOT deliveries – twins count as two births). Sum of hospital, home and elsewhere	<input type="text"/>

Of which:

IN UNIT ONLY

TOTAL REGISTRABLE births IN UNIT (NOT deliveries – twins count as two births), including stillbirths.	<input type="text"/>
TOTAL LIVEBIRTHS IN UNIT- (NOT deliveries – twins count as two births).	<input type="text"/>

Of total births IN UNIT

Total number of Caesarean Sections	<input type="text"/>	Total number of vaginal breech deliveries	<input type="text"/>
Of which Emergency Caesarean Sections	<input type="text"/>	Total number of induction of labour	<input type="text"/>
Of which Elective Caesarean Sections	<input type="text"/>	Total number of augmentation of labour	<input type="text"/>
		Total number of forceps only delivery	<input type="text"/>
		Total number of ventouse only delivery	<input type="text"/>
		Total number of BOTH forceps AND ventouse delivery	<input type="text"/>
		Total number of planned homebirths that became hospital births	<input type="text"/>

Births OUTSIDE Unit

	Total Livebirths	Of which	
		Attended	Unattended
Total Planned homebirths	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total Unplanned homebirths	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total number of births elsewhere (eg in transit)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total number of livebirths OUTSIDE Unit	<input type="text"/>		
Total number stillbirths OUTSIDE Unit	<input type="text"/>		

Wednesday, 09 November 2011
PLEASE COMPLETE PAGES 1 - 3

«ADD1»

Total number of live births by gestational age (completed weeks ⁺⁰ to ⁺⁶)*Should include births in hospital, home and elsewhere*

<22 ⁺⁰ weeks	
22 ⁺⁰ to 22 ⁺⁶ weeks	
23 weeks	
24 weeks	
25 weeks	
26 weeks	
27 weeks	
28 weeks	
29 weeks	
30 weeks	
31 weeks	
32 weeks	
33 weeks	
34 weeks	
35 weeks	
36 weeks	
37 weeks	
38 weeks	
39 weeks	
40 weeks	
41 weeks	
42+ weeks	
Not known	

«ADD1»

Total number of live births by birth weight*Should include births in hospital, home and elsewhere*

<500 g	
500-999 g	
1000-1499 g	
1500-1999 g	
2000-2499 g	
2500-2999 g	
3000-3499 g	
3500-3999 g	
4000+ g	
Not known	

Total number of live births by multiplicity*Should include births in hospital, home and elsewhere*

Singletons	
Twins*	
Triplets and higher order multiples*	
Not known	

* Please count each live born baby within the multiple pregnancy

**Thank you for your continued help and support of
AWPS, CMACE and NNAP**

Children and Young People Committee Inquiry into Neonatal Care

Additional information from Cardiff and Vale University Health Board

During the meeting on 17 May, Cardiff and Vale University Health Board were asked to comment on the claim that some neonatal nurses have funded their own training and also undertaken training in their own time. Their response is below:

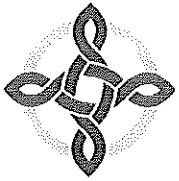
Further to the enquiry made at the Children and Young People Committee and the evidence provided by the RCN, I can confirm that all the nurses from NICU here in Cardiff and Vale UHB who undertake the neonatal modules do not self-fund or attend lectures in their own time; they are fully funded and given study leave. I hope this clarifies our position but if you require further information please do not hesitate to contact me.

Paul Hollard

Interim Chief Executive/Interim Chief Operating Officer

Cardiff and Vale UHB

30 May 2012



GIG
CYMRU
NHS
WALES

Bwrdd Iechyd
Cwm Taf
Health Board

Your ref/eich cyf: AJW/KAD
Our ref/ein cyf: 28th May 2012
Date/Dyddiad: 01443 744803
Tel/ffôn: 01443 744800
Fax/ffacs: Allison.Williams4@wales.nhs.uk
Email/ebost: Chair & Chief Executive
Dept/adran:

Claire Griffiths
Deputy Clerk
Legislation Office
National Assembly for Wales
Cardiff Bay
Cardiff
CF99 1NA

Dear Claire

Re: Children and Young People Committee - 17th May 2012

Thank you for your e-mail sent on the 25th May 2012, regarding the additional information requested by the above Committee. The information required related to the claim that neonatal nurses have funded their own training and also undertaken training in their own time.

I can confirm following advice from the service that no nurses within Cwm Taf Health Board have paid for essential training. The Health Board funds modules via a contract agreement with the University of Glamorgan and staff are appropriately allocated modules dependant on their personal development plans. Essential courses required by nurses for the maintenance and development of key skills are fully funded and granted full study leave.

Other development opportunities that are non essential to an individuals role are also often supported and funded via the Health Board and a percentage of study leave will be agreed dependant on service needs. Cwm Taf Health Board endeavours to support all training opportunities for staff equitably across professions and the range of services provided.

I hope the above offers reassurance that all essential training identified at personal development reviews is fully supported financially and with adequate study leave.

Yours sincerely

Mrs Allison Williams
Chief Executive/Prif Weithredydd

Return Address:

Ynysmeurig House, Abercynon, CF45 4SN

Chair/Cadeirydd: Dr C D V Jones, CBE

Chief Executive/Prif Weithredydd: Mrs Allison Williams

Hywel Dda Neonatal Services Action Plan June 2012

KEY:

	Fully compliant with standard
	Some areas of standard not yet achieved
	Compliance with standard not achieved
	Not applicable

					Compliance Dec_2010	Compliance March_2011	Compliance June_2011	Compliance Dec_2011	Compliance June 2012	Planned Compliance Oct 2012	Compliance Statement at each unit at December 2011	Action Planned	Position at June 2012	Timescale for Action			
Standard Number	Standard Text										Comment	Actions	Current	Short term	Medium Term	Long Term	
OBJECTIVE 1: ACCESS TO NEONATAL CARE Rationale: All newborn babies who require over and above the normal birth pathway have equitable access to the appropriate level of care in a timely manner.																	
1.1	Neonatal care is commissioned to meet the local and national population need.										Interim actions in place to meet the local and national population need. ▲	Plans for reconfiguration to improve this position accepted the Health Board. Currently shared with the public in Listening and Engagement exercise.	Public consultation planned to commence July 2012 ▲	Protocols and policies in place to ensure risk avoidance of complex obstetric cases by transfer within Hywel Dda. Staffing levels addressed by covering variable pay	Focus Level II care on one site with support from the second site providing Level III care	Single level two neonatal unit for Hywel Dda, with Stabalise and transfer for emergencies from Bronglais and second site	
2.5	All neonatal units have a designated neonatal nurse with protected time dedicated to providing teaching and education of the neonatal team.										Additional staff recruitment underway which will facilitate this Target end of August 2012 ▲	Convert variable spend pay to established posts	Job description being finalised to be advertised in June 2012 ▲	Staffing and role review undertaken to release protected time	Consolidate training program for delivery by designate neonatal nurse., to maintain transferrable skills across both sites	Centralise staffing on single level two unit	
LEVEL II Care in Level II Unit Neonatal High Dependency Care																	
2.16	A nursing ratio of 1:2 is provided for babies requiring High Dependency care. The named nurse has training in neonatal care.										Staff recruitment will allow appropriate ratios ▲	Convert variable spend pay to established posts	Posts to bring establishment to recommended standard are out to advert, interviews in June 2012 ▲	Staffing contract changes to allow Neonatal nurses to work across both sites in response to demand	Focus Level II care on one site with support from the second site providing Level III care allowing flexible staffing	Centralise staffing on single level two unit	
2.17	The unit can provide evidence that the establishment is correct for the number of High Dependency cots commissioned.										As above. ▲	Convert variable spend pay to established posts	Job description being finalised to be advertised in June 2012 ▲	Staffing based on BAPM recommendations	Focus Level II care on one site with support from the second site providing Level III care staffed to BAPM recommendations	Centralise staffing on single level two unit	

2.21	A Level II unit has SHOs/ANNPs dedicated to the neonatal service.									During the hours of 9-4, there is a dedicated rota in operation, after 4 pm the rotas is across Paediatric services. We are unable to effect any change in the short or medium term, but plan to develop ANNP roles to address this care level, which could take up to 3 years and so is a long term plan ▶	Review opportunities to develop ANNP roles	Participating in the Together for Health: South Wales Program to fully understand Walws Deanery plans for Training rotas to inform ANNP planning ▶	Review opportunities to develop ANNP roles by recruitment or development of current staff.	Implement recruitment/development plans	Centralise staffing on single level two unit
LEVEL III Care in Level I Unit Neonatal Special Care															
2.23	The unit can provide evidence that the establishment is correct for the number of Special Care cots commissioned.									Interim actions in place to meet the local and national population need. ▲	Plans for reconfiguration to improve this position accepted the Health Board. Currently shared with the public in Listening and Engagement exercise.	Job description being finalised to be advertised in June 2012 ▲	Protocols and policies in place to ensure risk avoidance of complex obstetric cases by transfer within Hywel Dda. Staffing levels addressed by covering variable pay	Focus Level II care on one site with support from the second site providing Level III care	Single level two neonatal unit for Hywel Dda, with Stabalise and transfer for emergencies from Bronglais and second site
OBJECTIVE 3: FACILITIES FOR NEONATAL SERVICES, INCLUDING EQUIPMENT Rationale: Appropriate, up to date and safe equipment and facilities are available to care for babies with neonatal care needs and their families.															
3.1	Neonatal facilities are commissioned based on population need, taking into account local differences.									Interim actions in place to meet the local and national population need. ▲	Plans for reconfiguration to improve this position accepted the Health Board. Currently shared with the public in Listening and Engagement exercise.	Public consultation planned to commence July 2012 ▲	Protocols and policies in place to ensure risk avoidance of complex obstetric cases by transfer within Hywel Dda. Staffing levels addressed by covering variable pay	Focus Level II care on one site with support from the second site providing Level III care	Single level two neonatal unit for Hywel Dda, with Stabalise and transfer for emergencies from Bronglais and second site
3.5	Support services are readily available. These include: Pharmacy Dietetics Therapy Screening Genetics Physiotherapy Social Work Speech and Language Therapy These include staff with expertise in the care of neonates.									These services are accessible, and though these services do not currently have dedicated resource referrals are prioritised based on assessed need and advice is sought from specialist therapists in a level III unit in relation to specific complex cases as required (this may be Swansea or Cardiff). ▲	Therapy services will be an integral part of the Health Board's neonatal service development and alongside medical and nursing staffing will be considered as part of the current work to implement the recommendations of the Hywel Dda neonatal action plan. The work will inform therapy service development plans	Work ongoing with Pharmacy and Dietetics services to support introduction of TPN (intravenous feeding). Therapy services will have detailed action plans and identified related resource implications by the end of June working alongside the wider neonatal team. ▲	Detailed discussions with the therapy services to identify their contribution to the delivery of interim arrangements.	Full consultation and business plan	Centralise staffing on single level two unit, allowing these services to have critical mass on a single site

3.9	Each cot on a Neonatal Intensive Care Unit or High Dependency Unit has the following equipment: a. Incubator or unit with radiant heating b. Ventilator* and NCPAP driver with humidifier c. Syringe/infusion Pumps d. Facilities for monitoring the following variables: i. Respiration ii. Heart rate iii. Intra-vascular blood pressure iv. Transcutaneous or intra-arterial oxygen tension v. Oxygen saturation vi. Ambient Oxygen. * Intensive Care Cot only								All cots within the HB have this equipment apart from d points iii & iv which will be addressed by replacement of the monitors. Currently on order via this years Capital replacement program.	Equipment ordered via Capital Replacement Program.	Delivery date for equipment July 2012 ▲	Replacing monitoring equipment.	Focus Level II care on one site with support from the second site providing Level III care	Sinige level two neonatal unit for Hywel Dda, with fully appropriate equipment provision
OBJECTIVE 4: CARE OF THE BABY AND FAMILY/PATIENT EXPERIENCE Rationale: The baby and the family receive holistic child and family centred care as close to home as possible, with ease of access to specialist centres when this care is required.														
5.1	Transport services are planned and commissioned on an all Wales basis with working arrangements in place for each network and across the border with England. All units accepting and/or referring neonates have, or have access to, an appropriately staffed and equipped transport								Although CHANTS (the network transport system is in operation, this is only on a 12 hour access window, which requires an extended period of stabilised care for infants delivering in BGH. The operation/provision of the CHANTS service is without the control of Hywel Dda.	Protocols and policies in place to ensure risk avoidance of complex obstetric cases by transfer in utero within Hywel Dda	Public consultation planned to commence July 2012 ▲	Plans for reconfiguration to improve this position accepted the Health Board. Currently shared with the public in Listening and Engagement exercise.	Full consultation ans business plan	Sinige level two neonatal unit for Hywel Dda, with stabalise and transfer for emergencies from Bronglais and second site
5.4	Staff responsible for transfers are in addition to those of the clinical inpatient team.								Unlike the Boards where the CHANTS services are based Hywel Dda is unable to access CHANTS for within county transfers so additional staff are brought in to facilitate these transfers. ▲	Protocols and policies in place to ensure risk avoidance of complex obstetric cases by transfer in utero within Hywel Dda Use of additional hours to bring staff in for transfers.	Public consultation planned to commence July 2012 ▲	Plans for reconfiguration to improve this position accepted the Health Board. Currently shared with the public in Listening and Engagement exercise.	Full consultation ans business plan	Sinige level two neonatal unit for Hywel Dda, with Stabalise and transfer for emergencies from Bronglais and second site