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Bwrdd Iechyd Prifysgol  
Abertawe Bro Morgannwg  
University Health Board

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Dyddiad/Date: 12<sup>th</sup> March 2012

Mrs. Christine Chapman,  
Chair – Children and Young People Committee,  
Welsh Government,  
Cardiff Bay,  
Cardiff.  
CF99 1NA

Dear Mrs. Chapman,

### **Neonatal Services.**

Thank you for your letter of the 21<sup>st</sup> February 21<sup>st</sup> February 2012 concerning your on going review of Neonatal Services within Wales.

I am pleased to supply the attached information in response to the questions raised, and look forward to discussing these further as appropriate.

Yours sincerely,

**PAUL ROBERTS**  
**CHIEF EXECUTIVE.**

Enc.

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• Chairman/Cadeirydd: **Win Griffiths**

• Chief Executive/ Prif Weithredydd: **Paul Roberts**

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ABM University Health Board is the operational name of Abertawe Bro Morgannwg University Local Health Board

[www.abm.wales.nhs.uk](http://www.abm.wales.nhs.uk)

## **Abertawe Bro Morgannwg University Health Board**

### **Response to Questions raised by the Children's and Young People Committee**

- **A copy of your current local neonatal action plan, including information about the mechanisms you have put in place to monitor and evaluate the implementation of the key actions within these plans and timescales.**

*Please see attached Action Plan for your information.*

- **A copy of the latest annual report on quality of care (as set out in Standard 6.8 of the All Wales Neonatal Standards), alongside information on the number of instances of when patient safety has been compromised.**

*I enclose a copy of the latest **annual report** on Quality of Care which covers the neonatal service in Singleton. This is for the Year 2010 as we have not yet analysed the outcomes for 2011. The Vermont Oxford Network (VON) only publishes outcomes from the preceding year following September. Therefore we will not be able to complete the 2011 report for at least 7 or 8 months.*

*The Vermont Oxford Network (VON) provides outcomes for babies less than 1500 g birth weight compared with those from about 850 neonatal centres worldwide. These include most large neonatal units in the USA and many in Europe. Babies less than 1500 g are the most vulnerable babies.*

*The methodology for the VON report is described on pp 37-38. The data provides assurance that the quality of care to these babies at Singleton hospital falls within the expected range. This is shown on pages 39-81. Page 43 shows the main outcomes corrected (or standardised) for risk factors such as degree of prematurity, multiple births etc. Whilst these results are acceptable, we would like still like to see further improvements.*

#### **Information on the number of instances where patient safety has been compromised.**

#### **Capacity issues and closures of the neonatal unit at Singleton**

*Capacity issues on the neonatal unit are a recurring problem due to a number of variable factors.*

*The unit is staffed (nursed) to provide an annual contract of 1,631 cot days for level 1 (ITU), 1,807 cot days for Level 2 (HDU) with this roughly equates to 4.5 ITU cots and 5 HDU cots being available each day.*

*This assumes a 100% occupancy each day of each week. However, we tend to plan our nursing resource to staff 5 level 1 and 4 level 2 cots per day. Our staffing levels meet the current BAPM and All Wales Standards for Nursing for this number of cots per day as detailed below:*

### **Singleton NNU**

*BAMP standards require 60.20 WTE*

*All Wales standards require 59.71 WTE*

*Actual in post = 61 WTE*

*There are of course peaks and troughs, and the department are as flexible as possible in managing these changes in cot occupancy. These changes can see utilisation of ITU level cots increase substantially each day. Additionally, we ought to provide sufficient cots being available each day at a 70% occupancy in order that capacity is always available to accommodate unexpectedly high numbers of admissions from within our service boundaries and support other maternity/Neonatal services across South Wales. This is based on information from several years worth of data, and the neonatal capacity review taking into account displaced activity. Our current neonatal accommodation has the physical spaces for 6 ITU cots and 6 HDU cots. Ideally, in order to provide sufficient cot spaces to deliver our "contract" activity we would need in Swansea 7 ITU cots and 7 HDU cots staffed according to BAPM and Welsh standards.*

*However, there are many examples where the Singleton unit has had to limit admissions because of capacity has reached a maximum safe level. This has repercussions for the obstetric service and the ambulance service. Closures necessitate mothers from ABM or Hywel Dda needing to be transferred to other units elsewhere in Wales or England for their care. This uses resources of the ambulance service and also takes midwives away from the labour ward as they need to accompany the mothers during the journey.*

*In 2010 the Singleton neonatal unit had to limit admissions to above 36 weeks for 102 days of the year because the occupied cots exceeded the nurse staffing. The unit closed to all admissions on 7 days of the year. 86 women were transferred elsewhere to be delivered.*

*In 2011 the Singleton neonatal unit was limited to admissions above 36 weeks on 82 days and closed completely to admissions on 6 days due to all critical care cots being full. We refused requests for in-utero transfers of 107 babies.*

*In January and February 2012 the unit in Singleton was fully open for only 4 days in total. For 20 out of 60 days the unit was restricted and for a further 25 out of 60 days the unit was restricted to a >36 week obstetric model because of lack of available cots and only one stabilisation cot available. On 11 out of 60 days the unit was closed completely due to no cots available.*

*For these two months in 2012 to date we have refused requests for in-utero transfers or transferred out 52 mothers to be to other units.*

*The occupancy levels of the cots are high. In 2010 the staffed intensive care cots at Singleton were at an average of 91 % capacity and the high dependency cots at 145 % capacity.*

*In 2011 the 5 intensive care cots were at an average of 77% occupancy and the 4 high dependency cots at average 95 % occupancy. These figures belie the fact that the unit was severely restricted due to infection in November and December 2011 (see below).*

*Some of the data which we have included within this report clarifies (see page 10 of the annual report) that the activity we provide is primarily for the population of ABMU but that there is fluidity with some days of care being provided for all the Health Boards in South Wales.*

*The Health Board has funded additional 2 ITU level cots at the Princess of Wales Hospital in Bridgend, and plans to transfer these cots across to Singleton during the next 12 months as additional capacity is made available through its refurbishment programme.*

### **Infection outbreak**

*An outbreak of infection with ESBL Ecoli resulted in the death of one premature baby in November 2011. A potential factor which possibly contributed was the overcrowded unit with little space between cots, and the high occupancy level. We are planning to address the issue of space between the cots with a refurbishment of the current unit which should be complete by December 2012.*

- **An outline of any action taken and any plans for investing into neonatal services in the short, medium and longer term to ensure all services in your area are fully compliant with the Standards.**

*The Health Board has committed to refurbishing the existing neonatal facility at Singleton Hospital. This programme of work which involves a temporary transfer of the existing unit to another area of the hospital is well underway and should be completed by the end of this calendar year.*

*Additionally, the Health Board has funded and plans to transfer 2 ITU cots from the Princess of Wales to Singleton Hospital following that refurbishment being completed.*

- **The costs associated with cross border transfers, including the amount paid to English PCTs for the transfer of neonates as well as the income generated for Welsh providers.**

*The Health Board does not pick up the costs of those babies born in England as a consequence of being transferred out, as this is a tertiary funded service commissioned by the Welsh Health Specialised Services team.*

*However, when Singleton is under pressure the activity tends to be displaced eastwards and may be absorbed by units in Bridgend, Royal Glamorgan, UHW etc. Hence it is probably rarer for ABMU mothers to be transferred to England than for mothers in the Royal Gwent Hospital for example.*

*Nevertheless for the Year 2012 so far we are aware of at least four ABMU mothers who have been transferred to England because of lack of capacity in Wales. These include mothers transferred to Birmingham (a mother with triplets), Taunton (a mother with twins), Portsmouth (a mother with twins) and Gloucester (a mother with twins). We know that costs have been incurred for at least 14 intensive care days, 15 high dependency days and 17 special care days in England in 2012 alone plus the costs for obstetric care and those incurred by CHANTS in doing the repatriations. This takes the CHANTS service away from Wales for long periods leaving the services in Wales exposed. We have not provided any care to babies from England within this time.*

*In 2011 there were 10 mothers from ABMU who delivered their babies in the South West region of England (e.g. Bristol, Taunton etc) but we do not have any further details at present about women who may have delivered in other regions of England.*

*In 2010 we have data on 5 mothers booked at Singleton and delivered in Bristol (including 1 set of twins) 1 who delivered in Bath and 1 mother from Aberystwyth who delivered in Liverpool because of capacity issues.*

- **Whether you have had any discussions with WHSSC and neighbouring LHBS about the overall increase in cots needed and any joint planning as to where they are located and at what level of intensity.**

*Discussions are on going with WHSSC and the Network around capacity and funding arrangements for this service. The Lead clinician and General Manager for this service within the Health Board have instigated a local network meeting with Hywel Dda to discuss future developments and closer collaboration arrangements.*

- **Whether any work has been undertaken with neighbouring Boards, or the Welsh Government via WHSSC, on workforce planning to address what impact changes to junior doctor recruitment and the number of training places in the future will have on services in coming years.**

*We would like to train additional advanced neonatal nurse practitioners but would need to find the costs of their training and backfilling the nursing posts. However, the costs are substantial - to train 1 ANNP would be round £60,000 per annum including course fees, backfilling the post, transport and accommodation. This is currently under review but is a significant pressure in the context of the current financial environment.*

*We already provide considerable support to Hywel Dda neonatal service.*

*Examples are as follows*

- *Neonatal roads shows twice a year where ABMU neonatal consultants go to Carmarthen to give lectures and teach skills to the doctors and nurses*
- *All our protocols are freely available to all the neonatal units in Hywel Dda*
- *Any new doctors commencing work in Hywel Dda may attend our 3 day induction program for neonatal doctors*
- *Neonatal stabilisation and transport training days twice yearly available for all neonatal doctors, paediatricians and neonatal nurses. (lectures, case discussions, skills stations and workshops)*
- *Training of paramedics and ambulance drivers involved in neonatal resuscitation eg from home deliveries*
- *Free telephone advice whenever required*

*Our "Changing for the Better" programme will also consider further how our Maternal and new baby services are delivered within ABMU HB and how those service changes will impact on our neighbouring Health Boards as part of the overarching Regional Changes Programme Board activities.*



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Evidence from Abertawe Bro Morgannwr University Health Board

**ABMU Neonatal Action Plan 2012**

ACTION	TIMESCALE	LEADS	STATUS	FURTHER ACTION/TIMESCALE
<b>IMPROVE NEONATAL ENVIRONMENT AND CAPACITY</b>				
Improve Neonatal Unit environment at Singleton by refurbishing the unit and improving space around cots	March 2013	Malcolm Thomas / Paul Stauber	<ul style="list-style-type: none"> <li>• Following ESBL EColi outbreak November 2011, Neonatal Unit will decant to temporary area (Level 2) April 17<sup>th</sup> 2012.</li> <li>• Plans for refurbishment of old unit advanced.</li> <li>• Tendering process undertaken.</li> <li>• Refurbishment to commence May 2012.</li> <li>• Improve spacing around cots to meet standards.</li> <li>• Improved hand washing facilities and general environment</li> </ul>	Completion planned for March 2013
Increase cot numbers	March 2013	Paul Stauber, Malcolm Thomas, Jean Matthes, Wendy Davies	Increase cot numbers to 7 intensive care plus 1 stabilisation, plus 7- 10 high dependency cots.	Transfer Level 1 cots from Princess of Wales to Singleton 1 <sup>st</sup> cot May 2012, 2 <sup>nd</sup> cot December 2012

Inquiry into Neonatal Care  
 Evidence from Abertaweili Bro Morgannwg University Health Board

				Funding required for 3 more high dependency cots and resolve any outstanding nurse staffing, equipment and revenue costs
Change obstetric model at POW	March 2013	Cathy Dowling, Malcolm Thomas, Myriam Bonduelle	Change from 29 weeks and above to 32 weeks and above for those mothers that currently deliver at PoW and will need to be transferred to Singleton in order to access appropriate Neonatal services	Change may be undertaken in stages– this will need to be agreed as part of any proposed reconfiguration exercise as part of “Changing for the Better”

Establish 12 bedded transitional care area at Singleton		James Moorcraft Malcolm Thomas, Sian Passey, Wendy Davies, Cathy Dowling	Paper being prepared to identify possible areas and staffing requirements.	Review of space utilisation at Singleton  December 2012
Decant special care to separate area	December 2012	Malcolm Thomas / Paul Stauber	As above	As Above
Improve parent facilities	June 2013	Malcolm Thomas / Paul Stauber	Current Facilities to be enhanced to rooms being adjacent to neonatal facilities	

**STAFFING AND EDUCATION ISSUES**

Due to potential shortages of medical trainees – to undertake review of neonatal services across ABMU	End of September 2012	Malcolm Thomas, Sian Passey, Jean Matthes, Myriam Bonduelle	Ongoing. Part of “Changing for the Better” review.	
ANNP’s to undergo training to enable independent prescribing	End of Sept 2012	Jean Matthes	Course places and funding are obtained.	Funding needs to be identified.
Identify funds to train one more ANNP Year commencing 2012 and	June 2012	Sian Passey, Malcolm Thomas	Two ANNP’s have applied for training in Southampton. Costs of backfilling their posts have not been identified. Service	

one more ANNP Year commencing 2013.				pressures require funds to be put in place. Evidence from Abertawe Bro Morgannwr University Health Board	Inquiry into Neonatal Care
To introduce Neonatal Life Support Course in ABMU	September 2012	Carol Sullivan		To apply to ALSG and book facility for delivery of course	
To apply for neonatal transport trainee from Deanery for ABMU	June 2012	Carol Sullivan Jean Matthes		On Going	
<b>EQUIPMENT ISSUES</b>					
Undertake review of possible mechanisms to provide CPAP and recommend policy to improve and enhance the service for babies	June 2012	Sujoy Banerjee, Pinki Surana		A number of methods of delivering CPAP are available. Many of our CPAP machines are in need of replacement. In addition we require ability to deliver CPAP to more babies.	Need to arrange additional investment for replacement of existing equipment and to purchase additional new CPAP equipment.  2012 / 2013
Ensure that each cot station on the neonatal unit has facilities for resuscitation in air or air/oxygen mix	End 2012	Sujoy Banerjee, Pinki Surana		At present babies on neonatal unit can only be resuscitated in 100% oxygen. This is in contravention of existing recommendations which recognise that this is harmful to babies and recommend resuscitation in air or air oxygen mix. This will reduce retinopathy, chronic lung disease, possibly improve neurological outcomes. The refurbished neonatal unit will provide the necessary air and oxygen points but blenders will need to be purchased.	To be fitted as part of refurbishment of Neonatal facility  March 2013
Replace old cardiac respiratory monitors in special care area	End 2013	Paul Lawrence		Monitors are > 10 years old, no longer supported and need replacing	Requires capital purchase - forms part of capital Equipment



Also central monitor needs to be replaced				Inquiry into Neonatal Care Evidence from Abertawe Bro Morgannwr University Health Board	Replacement bid.
Equip additional high dependency and intensive care	December 2012	Paul Lawrance, Paul Stauber, Malcolm Thomas		4 incubators, ventilators , monitors, 12 syringe pumps	Funding will need to be addressed as part of future funding for increase capacity.
Replace neonatal resuscitaires in POW and Neath Port Talbot and ensure ability to resuscitate in air when necessary	December 2013	Paul Lawrance, Paul Stauber			Requires capital purchase - forms part of capital Equipment replacement bid.
<b>INFECTION CONTROL</b>					
Introduce MRSA screening for all babies admitted to the Neonatal Unit	June 2012	Jean Matthes, Ann Lewis (Consultant Microbiologist)		NICE recommends that all babies admitted to the Neonatal Unit should be screened for MRSA. To date only babies admitted from other Neonatal Units are screened. Following the infection outbreak on the Neonatal unit in November 2011 the neonatal outbreak group recommended introduction of MRSA screening.	Business case has been prepared. Revenue costs not yet identified.
<b>PARTNER ORGANISATIONS</b>					
Support Hywel Dda to provide safe care as close to home wherever possible	ongoing	Malcolm Thomas Kevin Tribble Jean Matthes Simon Fountain Polley		Series of meeting arranged Support provided re training needs	Ongoing support / partnership working



# Neonatal Intensive Care Unit

## Annual Report 2010

### Parts I & II



**Singleton Hospital  
Sketty Lane  
Sketty  
Swansea, SA2 8QA**

## **Prepared by:**

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Dr. Jean Matthes	MB, BCh, MD, FRCP, FRCPCH, Consultant Neonatologist
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Hilary Berry	Data Manager, Singleton Neonatal Unit

**Published:** February 2012

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# PART I

# ALL BABIES

**Outline Report on Births during 2010**

**Table 1a. Singleton Hospital registered births**

<b>Deliveries</b>	<b>Number</b>
Total Babies born including Singleton Midwifery Led Unit (live and stillborn)	3780
Births on Midwifery Led Unit	579
Total Deliveries including stillbirths and homebirths	3725
Home Births	106
Born Before Arrival	27
Still Births	22
Deaths on Labour Ward	4
Twin deliveries	60
Triplet deliveries	1
Quad deliveries	1

**Table 1b. Princess of Wales Hospital registered births**

<b>Deliveries</b>	<b>Number</b>
Total Babies born (live and stillborn)	2519
Total Deliveries including stillbirths and homebirths	2480
Home Births	185
Born Before Arrival	14
Still Births	22
Deaths on Labour Ward	0
Twin deliveries	39
Triplet deliveries	0
Quad deliveries	0

**Table 1c. Neath Port Talbot Hospital**

<b>Deliveries</b>	<b>Number</b>
Total Babies born including Midwifery Led Unit (live and stillborn)	471
Births on Midwifery Led Unit	425
Total Deliveries including stillbirths and homebirths	471
Planned Home Births	32
Born Before Arrival	14
Still Births	0
Deaths on Labour Ward	0
Twin deliveries	0
Triplet deliveries	0
Quad deliveries	0



**Outline Report on Births during 2010**

**Introduction**

During 2010, 6666 women gave birth whilst under the care of ABM Maternity Services with 6770 babies being born (99 sets of twins plus 1 set of triplets and 1 set of quads).

**Number of births**

**Singleton Hospital - 3780**

Labour Ward	-	3068
Midwifery Led Unit	-	579
Home	-	106
BBA/In Transit	-	27

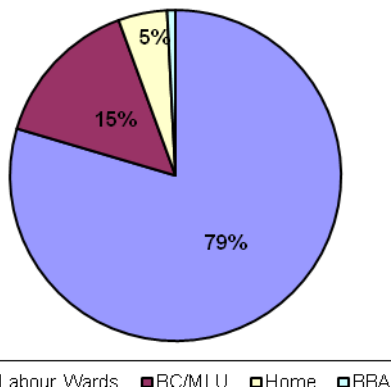
**Princess of Wales/Neath Port Talbot - 2990**

Labour Ward	-	2320
Birth Centre	-	425
Home	-	217
BBA/In Transit	-	28

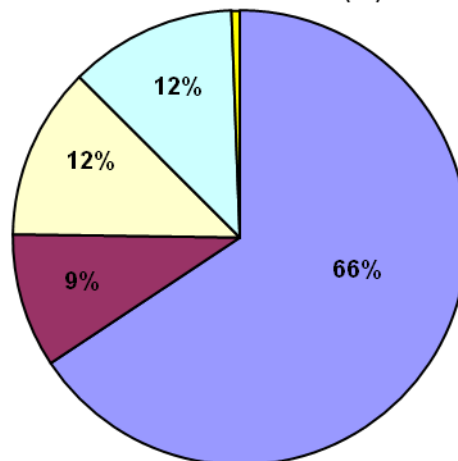
**Mode of Birth**

	S	POW/NPT
Normal birth	2349 (62.1%)	2105 (70.4%)
Instrumental	427 (11.3%)	247 (8.3%)
C-Section Emergency	487 (12.9%)	249 (8.3%)
Elective	486 (12.9%)	385 (12.9%)
Breech	31 (0.8%)	4 (0.1%)
Stillbirth	22 (0.6%)	22 (0.7%)

**Place of birth (%)**



**Mode of birth (%)**



**Table 2a. Activity of Neonatal Unit - Singleton**

	<b>Number</b>	<b>%</b>
Admissions	352	
Re-admissions	29	8.2
Admissions and Re-admissions	381	
Primary Discharge	335	
Deaths prior to discharge	17	4.8

**Table 2b. Activity of Neonatal Unit - Princess of Wales**

	<b>Number</b>	<b>%</b>
Admissions	289	
Re-admissions	13	4.5
Admissions and Re-admissions	302	
Primary Discharge	286	
Deaths prior to discharge	3	1

**Table 3a. Singleton Hospital Dependency Levels**

<b>Level of Care</b>	<b>Number of days</b>	<b>Occupancy per funded level</b>
Intensive Care	1562	91%
High Dependency Care	1857	145%
Special Care	3521	64%

Funding was for 4.7 Intensive Care Cots, 3.5 HDU Cots and 15 SC Cots.

**Table 3b. Princess of Wales Hospital Dependency Levels**

<b>Level of Care</b>	<b>Number of days</b>	<b>Occupancy per funded level</b>
Intensive Care	229	31%
High Dependency Care	594	54%
Special Care	2670	146%

Funding was for 2 Intensive Care Cots, 3 HDU Cots and 5 SC Cots.

**Table 4(a) Admission to Singleton by Locality According to Mother's Post Code**

	<b>Number</b>	<b>%</b>
Swansea	200	57
Carmarthenshire	38	11
Neath & Port Talbot	52	15
Bridgend	21	6
Powys	7	2
Pembrokeshire	9	2.5
Rhondda Cynon Taf	3	<1
Ceredigion	7	2
Caerphilly	3	<1
Cardiff	4	1
Cardiganshire	1	<1
Vale of Glamorgan	1	<1
Gwynedd	1	<1
Other	5	1.4
<b>TOTAL</b>	<b>352</b>	

**Table 4(b) Admission to Princess of Wales by Locality According to Mother's Post Code**

	<b>Number</b>	<b>%</b>
Bridgend	157	54
Neath & Port Talbot	76	26
Swansea	22	7.6
Vale of Glamorgan	12	4
Rhondda Cynon Taf	5	1.7
Ceredigion	4	1.4
Cardiff	4	1.4
Powys	2	<1
Pembrokeshire	2	<1
Caerphilly	1	<1
Carmarthenshire	1	<1
Other	3	1
<b>TOTAL</b>	<b>289</b>	

**Table 5(a) Singleton - Total Care Days Attributable to Maternal Area of Residence**

<b><u>Post Code Locality</u></b>	<b><u>Intensive Care</u></b>	<b><u>High Dependency</u></b>	<b><u>Special Care</u></b>	<b><u>Total Care Days</u></b>
Swansea	697	1194	2422	<b>4313</b>
Carmarthenshire	177	194	392	<b>763</b>
Neath & Port Talbot	207	239	531	<b>977</b>
Bridgend	181	50	44	<b>275</b>
Powys	49	33	43	<b>125</b>
Pembrokeshire	50	85	15	<b>150</b>
Rhondda Cynon Taff	19	0	11	<b>30</b>
Ceredigion	32	32	38	<b>102</b>
Caerphilly	71	17	2	<b>90</b>
Cardiff	23	1	7	<b>31</b>
Cardiganshire	4	4	1	<b>9</b>
Vale of Glamorgan	5	4	0	<b>9</b>
Gwynedd	4	0	0	<b>4</b>
Other	43	4	15	<b>62</b>
<b>TOTAL</b>	<b>1562</b>	<b>1857</b>	<b>3521</b>	<b>6940</b>

**Table 5(b) Princess of Wales - Total Care Days Attributable to Maternal Area of Residence**

<b><u>Post Code Locality</u></b>	<b><u>Intensive Care</u></b>	<b><u>High Dependency</u></b>	<b><u>Special Care</u></b>	<b><u>Total Care Days</u></b>
Bridgend	128	366	1500	<b>1994</b>
Neath & Port Talbot	49	92	668	<b>809</b>
Swansea	23	70	198	<b>291</b>
Vale of Glamorgan	3	23	97	<b>123</b>
Rhondda Cynon Taff	7	0	41	<b>48</b>
Ceredigion	7	10	35	<b>52</b>
Cardiff	0	4	58	<b>62</b>
Powys	3	0	7	<b>10</b>
Pembrokeshire	1	1	19	<b>21</b>
Caerphilly	6	4	0	<b>10</b>
Carmarthenshire	0	23	36	<b>59</b>
Other	2	1	11	<b>14</b>
<b>TOTAL</b>	<b>229</b>	<b>594</b>	<b>2670</b>	<b>3493</b>

**Table 6. Source of Admission to Neonatal Unit - Singleton**

	<b>Number</b>	<b>%</b>
Labour Ward or Theatre - Singleton Hospital	237	67
Postnatal Wards - Singleton Hospital	58	16
Princess of Wales Hospital - Bridgend	16	4.5
Withybush Hospital - Haverfordwest	8	2
UHW - Cardiff	6	1.70
Bristol	5	1.4
Bronglais Hospital - Aberystwyth	5	1.4
Home	4	1
Glangwili Hospital - Carmarthen	4	1
Neath	2	0.6
Royal Glamorgan	2	<1
Ambulance	1	<1
Morrison	1	<1
Newport	1	<1
Birthing Centre - Singleton Hospital	1	<1
Main Theatre - Singleton Hospital	1	<1
<b>TOTAL</b>	<b>352</b>	

**Table 7. Primary Disposition - Singleton**

	<b>Number</b>	<b>%</b>
Home	149	42
Postnatal Ward - Singleton	94	27
Transferred	81	23
Deaths	17	5
Foster Care	10	3
Labour Ward - Singleton	1	<1
<b>TOTAL</b>	<b>352</b>	
<b>Post-mortem examinations performed</b>	<b>2</b>	

**Table 8. Source of Readmission - Singleton**

	<b>Number</b>
UHW - Cardiff	13
Bristol	8
Bridgend	4
Home	1
Leicester	1
Postnatal Ward - Singleton	1
Withybush	1
<b>TOTAL</b>	<b>29</b>

**Table 9a. Limitations to Neonatal Service - Singleton** Evidence from Abertawe Bro Morgannwr University Health Board

Number of days unit was on 'amber' alert - 80% acuity (open to own)	124
Number of days unit was on 'red' alert - 100% acuity 36 week model (only taking >36 week gestation)	102
Number of days unit was on 'black' alert - Closed, no stabilisation cot	7
Total number of <b>babies</b> where requests for in-utero transfer to the unit were refused or women were transferred out for reasons of capacity	87

For further details see Appendix 1 - Singleton Hospital Pages 83-89

**Table 9b. Limitations to Neonatal Service - Princess of Wales**

Number of days unit was on 'amber' alert - 80% acuity (open to own)	110
Number of days unit was on 'red' alert - 100% acuity 36 week model (only taking >36 week gestation)	65
Number of days unit was on 'black' alert - Closed, no stabilisation cot	1
Total number of <b>babies</b> where requests for in-utero transfer to the unit were refused or women were transferred out for reasons of capacity	19

For further details see Appendix 2 - Princess of Wales Hospital Page - 90

**Table 10(a) Admissions by Birth-weight (grams) - Singleton**

<b>Birth-weight</b>	<b>TOTAL 352</b>	<b>In-born 297</b>	<b>Out-born 55</b>
= or > 3,500g	55	48	7
2,500 - 3,499g	92	74	18
1,500 - 2,499g	109	101	8
1,250 - 1,499g	29	28	6
1,000 - 1,249g	31	26	5
750 - 999g	16	11	5
500 - 749g	16	11	5
<500g	4	3	1

<b>Deaths In-born 11</b>	<b>Deaths Out-born 6</b>
1	
2	2
1	
	2
5	2
2	0

**Table 10(b) Admissions by Birth-weight (grams) - Princess of Wales**

<b>Birth-weight</b>	<b>TOTAL 287</b>	<b>In-born 246</b>	<b>Out-born 41</b>
= or > 3,500g	64	59	5
2,500 - 3,499g	88	84	4
1,500 - 2,499g	87	78	9
1,250 - 1,499g	25	14	11
1,000 - 1,249g	10	6	4
750 - 999g	10	3	7
500 - 749g	3	2	1
<500g	0	0	0

<b>Deaths In-born 3</b>	<b>Deaths Out-born 0</b>
1	
1	
1	
0	0



**Table 11(a) Admissions by Gestation (weeks) - Singleton**

<b>Gestation</b>	<b>TOTAL 352</b>	<b>In-born 297</b>	<b>Out-born 55</b>	<b>Deaths In-born 11</b>	<b>Deaths Out-born 6</b>
> 41	3	3	0		
37 - 41	132	109	23	4	1
34 - 36	89	81	8		1
33	13	13	0		
32	18	16	2		
31	14	12	2		
30	16	16	0		
29	12	10	2		
28	17	12	5		1
27	18	10	8	1	1
26	4	2	2		
25	5	5	0		
24	4	3	1	3	
23	7	5	2	3	2
<23	0	0	0	0	0

**Table 11(b) Admissions by Gestation (weeks) - Princess of Wales**

<b>Gestation</b>	<b>TOTAL 287</b>	<b>In-born 246</b>	<b>Out-born 41</b>	<b>Deaths In-born 3</b>	<b>Deaths Out-born 0</b>
> 41	19	19	0		
37 - 41	112	106	6	1	
34 - 36	69	64	5	1	
33	16	15	1		
32	23	17	6		
31	9	6	3		
30	12	7	5		
29	10	3	7		
28	12	7	5	1	
27	1	0	1		
26	1	0	1		
25	1	0	1		
24	0	0	0		
23	2	2	0		
<23	0	0	0	0	0

**Table 12. Multiple Births and Fertility Treatment - Singleton Neonatal Unit, Swansea**

Multiple Pregnancies	Babies admitted to Neonatal Unit	Fertility treatment		
		Y	N	Not/Doc
22 sets & 6 single babies of twin pregnancy	50	4 sets	24 sets	0
1 set of Triplets	3	Yes	0	0
1 set of Quads	4	Yes	0	0

**Table 13. Multiple or Single Births Admitted to the Singleton Neonatal Unit, Swansea**

	Singleton	Twins	Triplets	Quads
> 41	3			
37 - 41	131	1 baby		
34 - 36	70	6 sets + 4 babies	1 set	
33	13			
32	12	3 sets		
31	9	2 sets + 1 baby		
30	10	3 sets		
29	6	3 sets		
28	15	1 set		
27	10	2 sets		1 set
26	4			
25	3	1 set		
24	4			
23	5	1 set		
<23	0			
<b>TOTAL</b>	<b>295</b>	<b>50</b>	<b>3</b>	<b>4</b>

**Table 14. Respiratory Support Delivered at Singleton Hospital, Swansea**

	<b>Number</b>	
Days of mechanical ventilation (IPPV) delivered	524	
Days of CPAP delivered	2106	
Days of HFOV (SLE) delivered	252	
		<b>% of total admissions</b>
Number of infants receiving mechanical ventilation (IPPV)	115	33
Number of infants receiving CPAP but not mechanical ventilation	237	67
Numbers of infants receiving HFOV (SLE) and IPPV	66	19
Number of infants receiving supplemental oxygen at 36 weeks gestation	21	
Number of infants discharged home on oxygen therapy	19	

**Table 15. Infants receiving Nitric Oxide - Singleton Hospital**

Babies on Nitric Oxide	12
Babies Referred for ECMO	1

**Table 16. Breastfeeding - Singleton Hospital**

<b>Type</b>	<b>No. of Babies</b>	<b>% of total admissions</b>
Received some expressed milk	244	69
Breast fed at discharge	68	19
Donor milk used	34	10

**Table 17. Screening and Surveillance - Singleton Hospital, Swansea**

**a) Retinopathy of Prematurity**

	<b>No. of Babies</b>	<b>%</b>
Inpatients having retinal examination	212	100% (of eligible)
Outpatients having retinal examination	109	
Babies receiving treatment for retinopathy	6	3% of screened

**b) Hearing Screening**

	<b>No. of Babies</b>	<b>%</b>
Babies admitted to unit	<b>352</b>	
Babies who died prior to screening	17	
Babies who were not screened (palliative care)	1	
Babies who had hearing screening	334	100% (of eligible)
Babies who had clear responses in both ears	297	
Babies who had clear response in one ear	21	
Babies who had no clear response in either ear	16	

**Table 18. Babies with congenital malformations who were admitted to Singleton Neonatal Unit** Evidence from Abertawe Bro Morgannwg University Health Board

Date of Birth	Diagnosis	ICD 10 Code
05/01/2010	Mild mitral stenosis Hydronephrosis Double outlet right ventricle Ventricular septal defect Stenosis of pulmonary artery Microcephaly	Q23.2 Q62.0 Q20.1 Q21.0 Q25.6 Q02.X
10/01/2010	Penoscrotal hypospadias	Q54.2
21/01/2010	Mitochondrial myopathy with associated lactic acidosis - complex 4 deficiency	G71.3
03/02/2010	Plagiocephaly Hypotonia	Q67.3 P94.2
24/02/2010	Stridor Bicuspid aortic valve	Q31.4 Q23.1
21/03/2010	Gastroschisis	Q79.3
23/03/2010	Tetralogy of Fallot Hypospadias Patent ductus arteriosus	Q21.3 Q54.9 Q25.0
27/03/2010	Congenital absence, atresia and stenosis of duodenum Congenital absence, atresia and stenosis of jejunum Annular pancreas	Q41.0 Q41.1 Q45.1
07/04/2010	Cleft Palate Micrognathia	Q35.9 K07.0
09/04/2010	Bilateral talipes equino varus	Q66.0
15/04/2010	Absent septum pellucidum	Q04.8
13/04/2010	Bilateral moderate sensori-neural hearing loss	H90.3
23/04/2010	Bilateral sensorineural hearing loss Branch pulmonary artery stenosis Patent foramen ovale	H90.3 Q25.6 Q21.11
02/05/2010	Trisomy 18 (Inlet) Inlet Ventricular septal defect Atrial septal defect	Q91.0 Q21.0 Q21.1
08/05/2010	Cardiomyopathy	Q24.8
16/05/2010	Hypospadias	Q54.0
25/05/2010	Bilateral hydronephrosis Bilateral vesico-uretero-renal reflux, - Grade 3 on the right and Grade 4 on the left	Q62.0 Q62.71
11/06/2010	Extra digit both feet	Q69.29
16/06/2010	Multiple Rhabdomyomas Tuberous sclerosis	D15.1 Q85.1

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Evidence from Abertawe Bro Morgannwg University Health Board

Date of Birth	Diagnosis	ICD 10 Code
23/06/2010	Critical aortic stenosis Bicuspid aortic valve Mitral regurgitation Left ventricular dysfunction	Q23.0 Q23.10 Q23.3 Q24.8
26/06/2010	Hypoplasia and dysplasia of lung	Q33.6
07/07/2010	Hypospadias	Q54.9
03/08/2010	Ladd's band Frontal bossing - Large anterior fontanelle	Q43.30 Q75.9
09/08/2010	Agenesis of corpus callosum Severe bilateral ventriculomegaly	Q04.00 Q03.9
11/08/2010	Agenesis of corpus callosum Ventriculomegaly	Q04.00 Q03.9
11/08/2010	Hypospadias Emerging hypothyroidism Right sided hydrocele	Q54.9 E03.1 P83.5
12/08/2010	Bilateral inguinal hernia	K40.2
26/08/2010	Bilateral inguinal hernia	K40.2
28/08/2010	Gastroschisis	Q79.3
02/09/2010	PUJ obstruction right side	Q62.10
07/09/2010	Iris pigmentation epithelial cyst	Q13.2
08/10/2010	Dandy walker malformation Multiple capillary haemangiomas Congenital hypothyroidism without goitre	Q03.1 D18.00 E03.1
08/10/2010	Trisomy 21 Mild insufficiency of aortic valve Facial dysmorphism	Q90.0 Q23.1 Q18.9
21/10/2010	Ventricular septal defect Fetal alcohol syndrome (dysmorphic)	Q21.0 Q86.0
27/10/2010	Trisomy 21 Dysmorphic features characteristic of Trisomy 21 Single palmar crease	Q90.0 Q18.9 Q82.80
29/10/2010	Bilateral inguinal hernia	K40.2
02/11/2010	Muscular ventricular septal defect	Q21.0
08/11/2010	Bilateral dysplastic kidneys Bilateral hydronephrosis Posterior urethral valves Bilateral vesico-uretero-renal reflux	Q61.4 Q62.0 Q64.20 Q62.71
20/11/2010	Tracheo-oesophageal fistula without atresia	Q39.2
24/11/2010	Cystic adenomatoid malformation of left lung Mild left sided pulmonary stenosis	Q33.80 Q25.6

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Evidence from Abertawe Bro Morgannwg University Health Board

<b>Date of Birth</b>	<b>Diagnosis</b>	<b>ICD 10 Code</b>
27/11/2011	Atresia of oesophagus with tracheo-oesophageal fistula	Q39.1
05/12/2010	Ventricular septal defects x 3	Q21.0
06/12/2010	Congenital laryngomalacia	Q31.5
20/12/2010	Perimembranous ventricular septal defect with extension to right ventricle outlet	Q21.0
	Coarctation of aorta	Q25.19
<b>TOTAL:</b>		<b>44</b>

**Table 19a) NEC b) Maternal Drugs c) Surgery for PDA d) Exchange Transfusions**

	<b>No. of babies</b>
a) Necrotizing Enterocolitis	<b>6</b>
b) Neonatal Abstinence Syndrome	<b>12</b>
c) Surgery for PDA	<b>3</b>
d) Exchange Transfusions	<b>5</b> (3 were partial)

**Table 20. Rate of Inborn babies with HIE between 2002-2010**

<b>Year</b>	<b>Liveborn infants</b>	<b>No. of HIE (inborn)</b>
2002	3207	2
2003	3320	5
2004	3713	5
2005	3616	5
2006	3495	3
2007	3457	3
2008	3648	4
2009	3531	2
2010	3780	7
<b>TOTAL</b>	<b>31767</b>	<b>36</b>
<b>OVERALL RATE</b>	<b>1.13 per 1000 live births</b>	

**Number of babies cooled in 2010 - 13**



**Table 21. Stillbirth Rate by Hospital**

	<b>2006-2010</b>	<b>2010</b>
<b>Singleton</b>	6.5	6.6
<b>UHW</b>	6.9	6.6
<b>Royal Gwent</b>	5.3	6.6

**Table 22. Crude Perinatal Mortality Rate by Hospital**

	<b>2006-2010</b>	<b>2010</b>
<b>Singleton</b>	9.5	11.4
<b>UHW</b>	10.6	9.9
<b>Royal Gwent</b>	7.6	8.0

**Table 23. Crude Early & Late Neonatal Mortality Rate by Hospital**

	<b>2006-2010</b>	<b>2010</b>
<b>Swansea</b>	4.2	5.3
<b>UHW</b>	5.3	4.2
<b>Royal Gwent</b>	3.0	1.4

The following figures 1-4, 7-9 and Table 2 are extracts from the All Wales Perinatal Survey 2010. With grateful acknowledgements to Dr. Adappa, Dr. Paranjothy, Mrs. Rolfe, Dr. Watkins, Professor Kotecha, Mrs. Hopkins and Professor Dunstan.

In the following figures 'by Local Authority' refers to mother's post code residence. Dotted lines = 5%, 95%

Figure 1

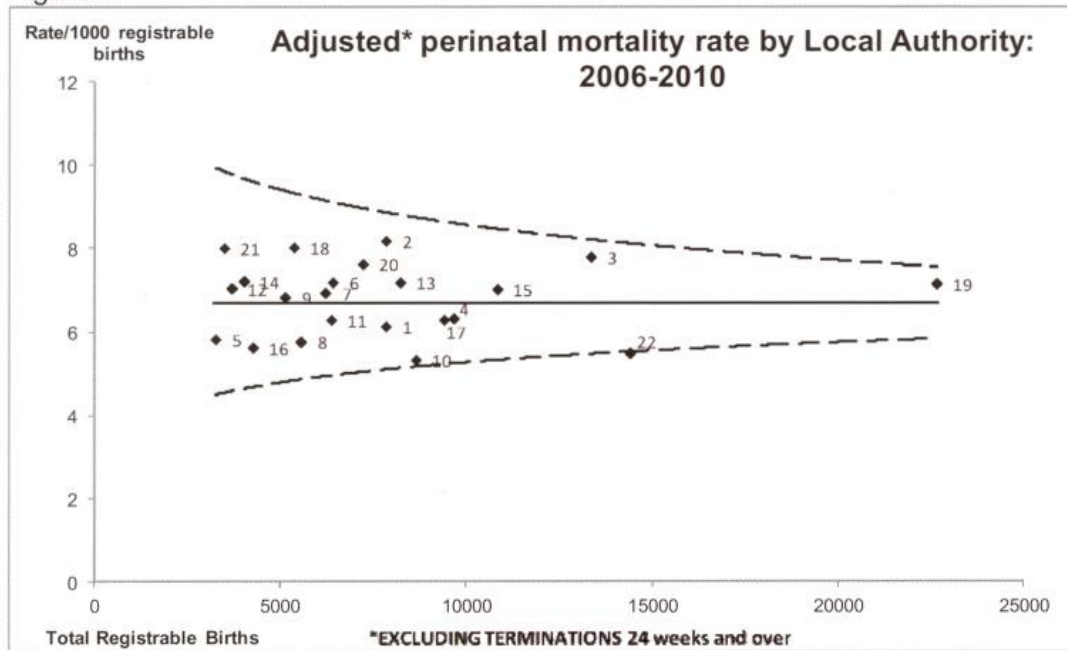
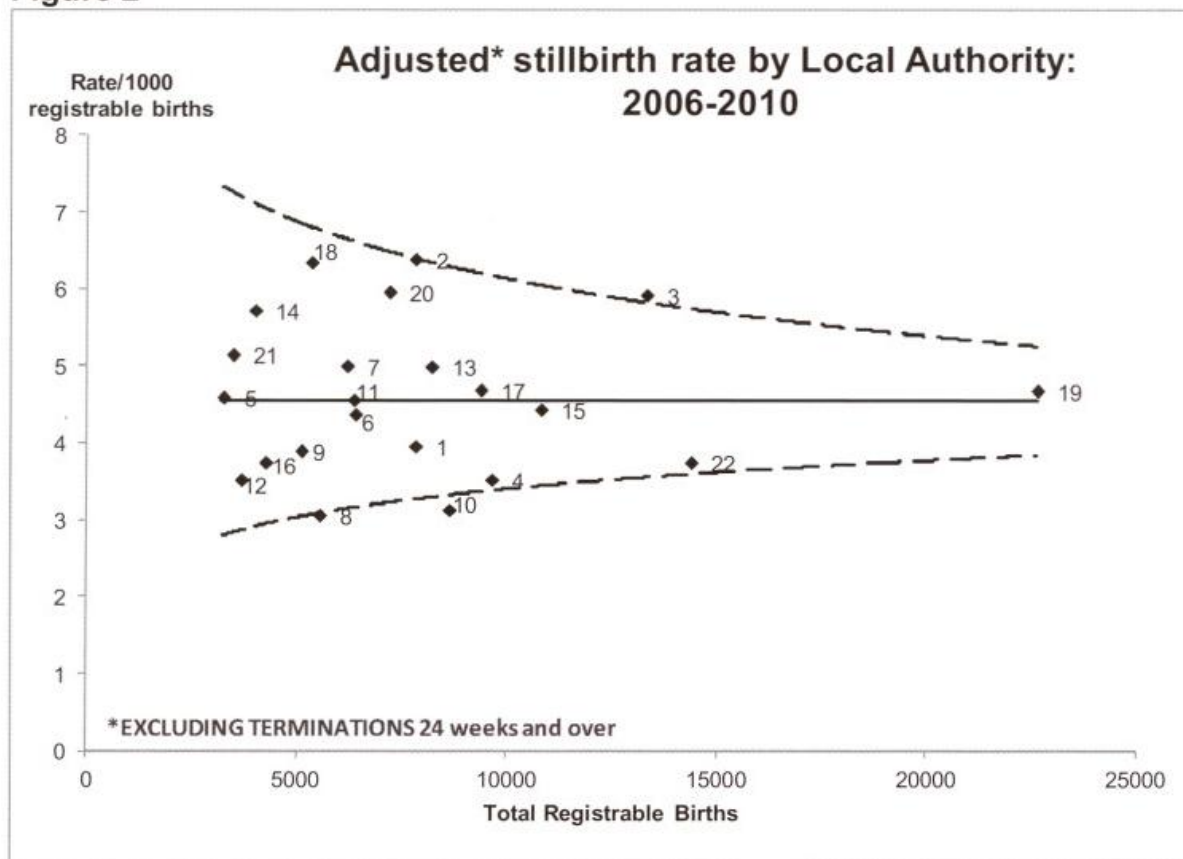


Figure 2



- |    |                       |  |
|----|-----------------------|--|
| 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                           |

Figure 3

Inquiry into Neonatal Care

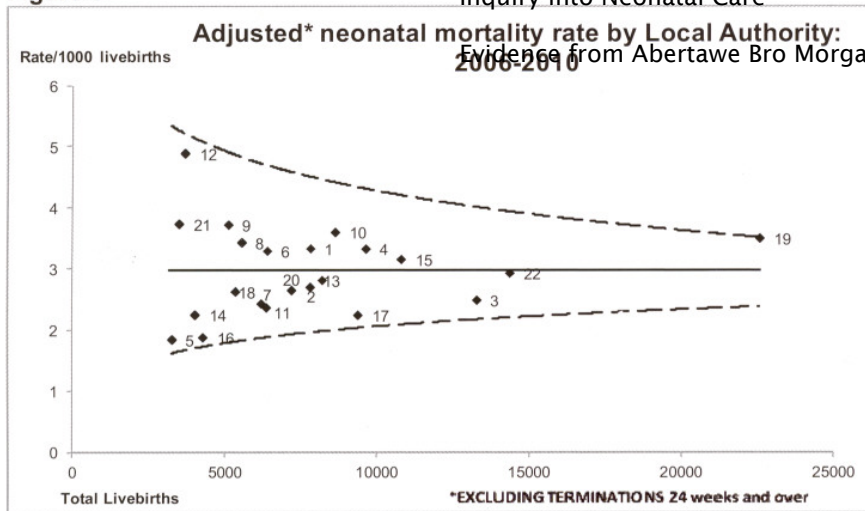
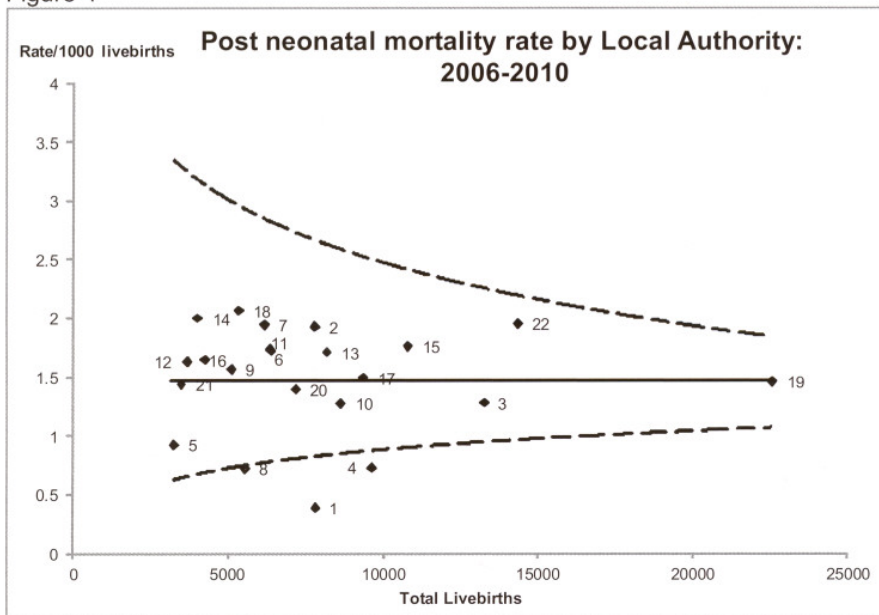


Figure 4



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

- |    |                       |  |
|----|-----------------------|--|
| 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  | Cardiff               | Cardiff and Vale University 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                           |

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwr University Health Board

**Table 2 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)

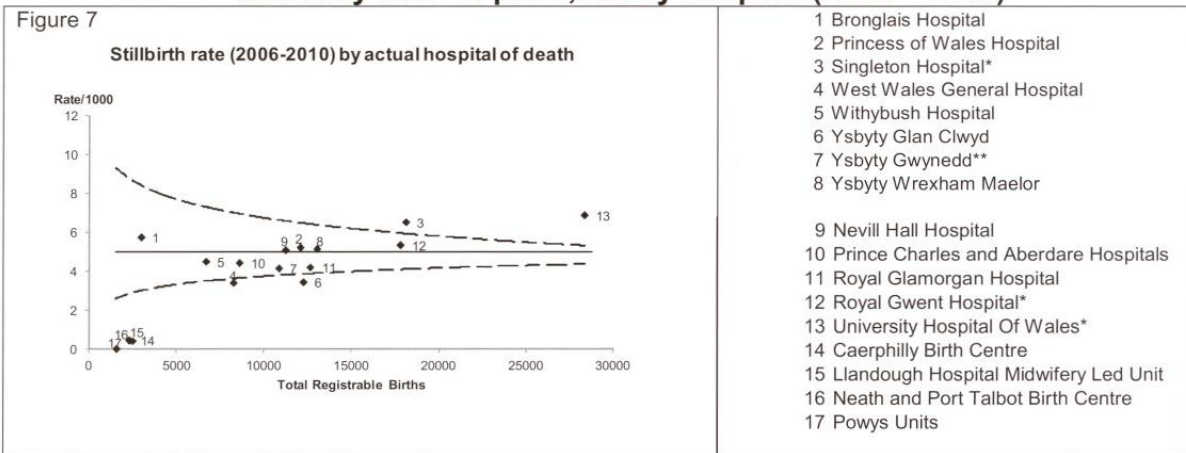
Source: NCCHD & AWPS. Data on late fetal losses, stillbirths and neonatal deaths relate to the date of birth, while data on post neonatal deaths relate to the date of death in 2010.

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

Inquiry into Neonatal Care

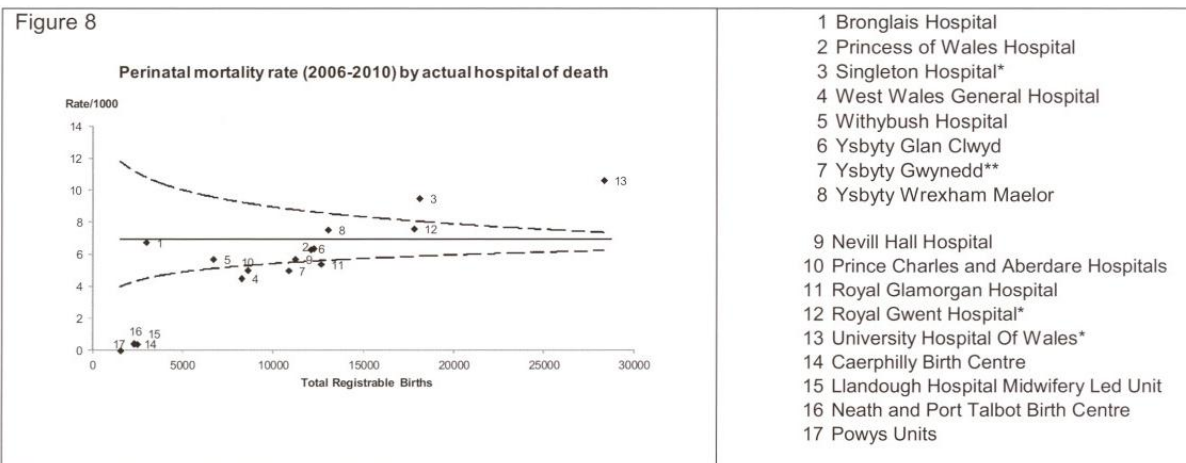
Evidence from Abertawe Bro Morgannwr University Health Board

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



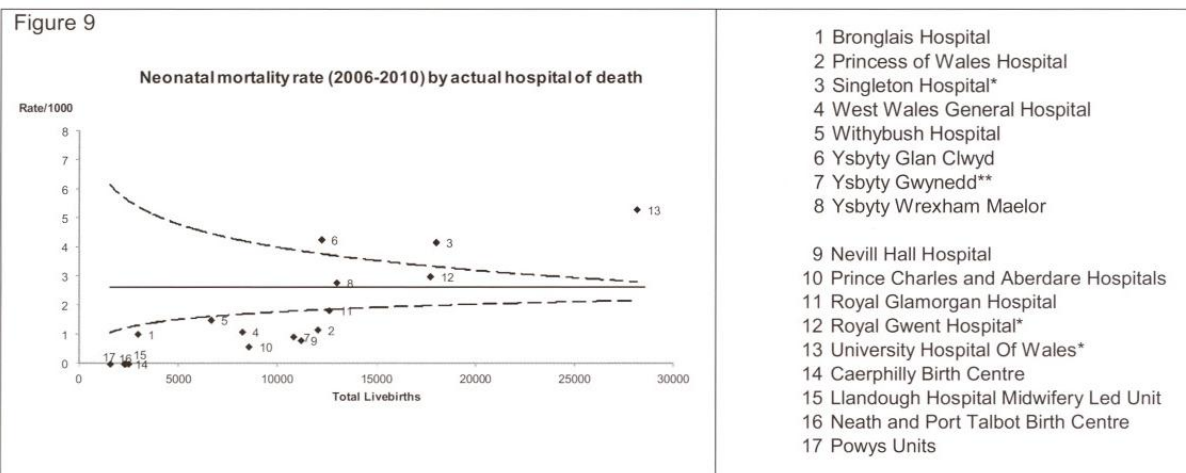
\* includes data from alongside midwifery-led units  
 \*\* includes data from Bryn Beryl, Dolgellau and Towyn midwifery-led units

- 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  
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- 1 Bronglais Hospital
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- 7 Ysbyty Gwynedd\*\*
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- 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

- 1 Bronglais Hospital
- 2 Princess of Wales Hospital
- 3 Singleton Hospital\*
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- 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

**Table 24. Singleton Stillbirths 2010**

Survey Number	Intended place of delivery	Place of delivery	Calculated gestation (weeks)	Birth weight	CP Classification Name	icd10 diagnosis 1	icd10_2	Aberdeen Classification Name	Autopsy Description
W/10/0008/0	Singleton Hospital	Singleton Hospital	37	2000	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0001/0	Singleton Hospital	Singleton Hospital	25	240	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0026/0	Singleton Hospital	Singleton Hospital	39	2860	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Antepartum haemorrhage (APH)	Not permitted
W/10/0027/0	Singleton Hospital	Singleton Hospital	28	1140	Congenital anomaly	Termination of pregnancy	Congenital anomaly, multiple	Congenital anomaly	Not permitted
W/10/0052/0	Singleton Hospital	Singleton Hospital	34	2240	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Antepartum haemorrhage (APH)	Not permitted
W/10/0053/0	Singleton Hospital	Singleton Hospital	35	2100	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Antepartum haemorrhage (APH)	Not permitted
W/10/0081/0	Singleton Hospital	Singleton Hospital	39	2640	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0102/0	Singleton Hospital	Singleton Hospital	37	4020	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Antepartum haemorrhage (APH)	Not permitted
W/10/0100/0	Singleton Hospital	Singleton Hospital	24	640	Infection	Bronchopneumonia, organism unspecified	None	Maternal Disorder	Yes
W/10/0101/0	Neath Port Talbot Hospital	Singleton Hospital	25	620	Unexplained death prior to onset of labour	Premature rupture of membranes	None	Unexplained	Not permitted

Inquiry into Neonatal Care

Survey Number	Intended place of delivery	Place of delivery	Calculated gestation (weeks)	Birth weight	CP Classification Name	Evidence from Abertawe Bro Morgannwg University Health Board icd10 diagnosis 1	Evidence from Abertawe Bro Morgannwg University Health Board icd10_2	Aberdeen Maternity University Hospital Name	University Health Board Description
W/10/0147/0	Neath Port Talbot Hospital	Singleton Hospital	26	380	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0148/0	Singleton Hospital	Singleton Hospital	27	1480	Congenital anomaly	Termination of pregnancy	Trisomy21 Down's Syndrome	Congenital anomaly	Not permitted
W/10/0172/0	Singleton Hospital	Singleton Hospital	38	2200	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0187/0	Singleton Hospital	Singleton Hospital	33	2700	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Mechanical	Not permitted
W/10/0167/0	Neath Port Talbot Hospital	Singleton Hospital	41	3120	Unexplained death prior to onset of labour	None	None	Unexplained	Yes
W/10/0190/0	Singleton Hospital	Singleton Hospital	32	1900	Death prior to onset of labour associated with placental abruption	Placental abruption	None	Mechanical	Not permitted
W/10/0189/0	Neath Port Talbot Hospital	Singleton Hospital	24	680	Congenital anomaly	Termination of pregnancy	Trisomy21 Down's Syndrome	Congenital anomaly	Yes
W/10/0217/0	Singleton Hospital	Singleton Hospital	30	2780	Unexplained death prior to onset of labour	None	None	Maternal disorder	Not permitted
W/10/0238/0	Singleton Hospital	Singleton Hospital	35	1630	Unexplained death prior to onset of labour	Fetal death of unspecified cause	None	Unexplained	Yes
W/10/0240/0	Singleton Hospital	Singleton Hospital	39	3370	Intrapartum events	Placental abruption	None	Antepartum haemorrhage (APH)	Not permitted
W/10/0284/0	Singleton Hospital	Singleton Hospital	29	800	Unexplained death prior to onset of labour	Fetal death of unspecified cause	None	Unexplained	Not permitted



Inquiry into Neonatal Care

Survey Number	Intended place of delivery	Place of delivery	Calculated gestation (weeks)	Birth weight	CP Classification Name	Evidence from Abertawe Bro Morgannwg University Health Board icd10 diagnosis 1	Evidence from Abertawe Bro Morgannwg University Health Board icd10_2	Aberdeen Maternity Unit Name	City of Edinburgh Health Board Description
W/10/0286/0	Singleton Hospital	Singleton Hospital	30	1310	Congenital anomaly	Congenital heart disease NOS	None	Congenital anomaly	Yes
W/10/0287/0	Singleton Hospital	Singleton Hospital	41	4040	Unexplained death prior to onset of labour	Fetal death of unspecified cause	None	Unexplained	Not permitted
W/10/0326/0	Singleton Hospital	Singleton Hospital	31	1200	Unexplained death prior to onset of labour	Fetal death of unspecified cause	None	Unexplained	Not permitted
W/10/0325/0	Singleton Hospital	Singleton Hospital	25	600	Unexplained death prior to onset of labour	Fetal death of unspecified cause	None	Unexplained	Yes

**Table 25, Summary of Deaths - Singleton Hospital, Swansea**

<b>Neonatal Deaths on Labour Ward (&lt;7days) - Singleton Hospital</b>		
<b>Birth weight</b>	<b>Gestation</b>	<b>Cause of Death</b>
540g	22 <sup>+6</sup>	Extreme prematurity Retroplacental clot Postmortem - No
1160g	27 <sup>+6</sup>	Severe Hypoxic Ischaemic Encephalopathy Prematurity Left Pneumothorax Prolonged rupture of membranes Postmortem - No
400g	25	Extreme prematurity Extreme IUGR Maternal PET Severe oligohydramnios Postmortem - Yes
2260g	31 <sup>+5</sup>	Pulmonary hypoplasia Hydrops Fetalis Postmortem - No

<b>Early Neonatal Deaths (&lt;7days) Singleton Neonatal Unit</b>		
<b>Birth weight</b>	<b>Gestation</b>	<b>Cause of Death</b>
1940g	38 <sup>+2</sup>	Inborn error of metabolism Severe congenital lactic acidosis due to a mitochondrial cytopathy (complex 4 deficiency) leading to multi-organ failure Postmortem - No
2670g	39 <sup>+6</sup>	Early neonatal death, cause undetermined Postmortem - Yes
3310g	39 <sup>+2</sup>	Severe Hypoxic Ischaemic Encephalopathy (Grade 3) Multi-organ failure Underlying maternal condition: Placental Abruption Postmortem - No
1030g	28 <sup>+6</sup>	Severe respiratory distress syndrome secondary to pulmonary hypoplasia Poor cardiac function Bilateral pneumothorax PPROM with anhydramnios Postmortem - No
3785g	40 <sup>+1</sup>	Neonatal septicaemia (Streptococcal species) Hypoxic Ischemic Encephalopathy Multi-organ failure Postmortem - No
680g	24 <sup>+3</sup>	Severe respiratory distress syndrome Extreme prematurity Bilateral pneumothorax Postmortem - No
3250g	40 <sup>+1</sup>	Severe Hypoxic Ischaemic Encephalopathy (Grade 3) Cord prolapse Postmortem - No
1200g	27	Pulmonary hypoplasia Severe persistent pulmonary hypertension of the newborn Severe oligohydramnios Postmortem - No
420g	23 <sup>+2</sup>	Extreme prematurity Twin Chorioamnionitis Postmortem - Yes
2590g	36	Hypoxic Ischaemic Encephalopathy Placental abruption Postmortem - No

<b>Early Neonatal Deaths (&lt;7days) Singleton Neonatal Unit (Con't)</b>		
<b>Birth weight</b>	<b>Gestation</b>	<b>Cause of Death</b>
310g	27 <sup>+3</sup>	Extremely low birth weight IUGR Prematurity Multiple pregnancy Quadruplets Postmortem - No
655g	24 <sup>+2</sup>	Extreme prematurity Respiratory distress syndrome with bilateral pneumothoraces Pulmonary hypertension of the newborn Postmortem - No
515g	23 <sup>+3</sup>	Extreme prematurity Severe respiratory distress syndrome Pulmonary haemorrhage Postmortem - No
590g	23 <sup>+3</sup>	Extreme prematurity Respiratory distress syndrome Pneumothorax Postmortem - No

<b>Late Neonatal Deaths (7-28 days) - Singleton Neonatal Unit</b>		
<b>Birth weight</b>	<b>Gestation</b>	<b>Cause of Death</b>
590g	23 <sup>+1</sup>	Neonatal CLD Respiratory distress syndrome Extreme prematurity Postmortem - No
650g	24 <sup>+2</sup>	Extreme prematurity Severe respiratory distress syndrome Bilateral pneumothorax Coagulase negative Staphylococci septicaemia Postmortem - No

<b>Post-Neonatal Deaths (&gt;28 days prior to discharge) - Singleton Neonatal Unit</b>		
<b>Birth weight</b>	<b>Gestation</b>	<b>Cause of Death</b>
590g	23 <sup>+2</sup>	Extreme prematurity Necrotizing Enterocolitis Septicaemia (CONS) Postmortem - No



## PART II

# DATA VERMONT OXFORD DATASET BENCHMARKING

## **VON Data 2010**

### **For Singleton Hospital Neonatal Unit VLBW Dataset**

VON is a world-wide network which consists of 850 neonatal units including most neonatal units in USA and Canada and many in Europe. Babies eligible for the VLBW database are those born alive and whose birth weight is between 401 and 1500g or whose gestational age is between 22 weeks 0 days and 29 weeks 6 days.

A live born infant is one who breathes or has any evidence of life, such as a beating of the heart, pulsation of the umbilical cord, a definite movement of the voluntary muscle, regardless of whether the umbilical cord has been cut. Heartbeats are to be distinguished from fleeting respiratory efforts or gasps. Stillborn infants (those who are not live born) are not eligible for the VLBW.

Out born infants of similar birth weights and gestations who are admitted to Singleton within the first 28 days of life are also included in the data.

When interpreting the data included in this report, it is important to keep in mind that the rates, percentiles and other statistics presented can vary from those at other centres for a number of reasons, even when there are no true differences in the quality or appropriateness of care. First, the total number of infants at individual centres may be relatively small, and random variation due to small numbers may cause large differences in estimated rates, even when no true differences exist. Second, there may be differences among centres in the types of cases they treat, and these differences in case mix may account for differences in patient outcomes among centres. VON attempts to account for case mix in several ways:

- (1) Outcomes and interventions are reported by birth weight and gestational age categories. For VLBW infants these variables are highly associated with risks for morbidity and mortality.
- (2) Some outcomes and length of stay are reported by disposition status (Home, Transfer, Died, etc.), since the disposition of the infants is predictive of the result.
- (3) Standardised morbidity and mortality ratios (SMRs) and their 95% confidence intervals are reported for key outcomes. The SMR is the ratio of the number of observed cases (O) to the number of expected cases (E), where the number of expected cases is based on a multivariable risk adjustment model. In addition, the SMRs and confidence intervals have been corrected or “shrunk” using methods which recognise that some of the observed variation is random “noise”, particularly for small hospitals. The shrunken values are more stable estimates because they are adjusted for imprecise estimates and account for random variation.

Inquiry into Neonatal Care

- Evidence from Abertawe Bro Morgannwg University Health Board
- (4) Measures of the number of observed cases minus the number of expected cases (O-E) for infants 501 to 1500 grams are also reported. The number of expected cases is based on a multivariable risk adjustment model, and the O-E values have been shrunk to account for random variation.
  - (5) For total hospital stay in surviving infants with birth weights between 501 and 1500 grams (see the section on Length of Stay), a multivariable risk adjustment model is used to adjust the case mix differences among units.

It is important to realise that these adjustment methods are imperfect - even the best statistical risk models cannot adjust for all the differences in case mix among centres, nor can they account for all of the random variation. Given these caveats, however, it is appropriate to use the data in this report to target specific clinical practices and patient outcomes for further in-depth analysis with the goal of identifying potential quality improvement opportunities. The infant lists can be used to identify individual cases for audit and review.

This annual report is intended for use as one component of a continuous quality improvement program. The goal is to identify potential opportunities where we can do a better job for our patients and their families.

Singleton Hospital is centre 763.



**Table 1. Number of Infants and Centres in the VLBW Database**  
**Infants 501-1500 grams born 1990 to 2010**

Vermont Oxford Network 2010 VLBW QMR for Center 763

TABLE 1.1, NUMBER OF INFANTS AND CENTERS IN THE VLBW DATABASE  
 Infants 501-1500 Grams Born 1990 to 2010

Year	Number of Centers	Number of Infants Center	Number of Infants Network
1990	36	0	2,956
1991	51	0	3,868
1992	68	0	5,033
1993	84	0	6,629
1994	114	0	8,364
1995	138	0	10,892
1996	192	0	14,715
1997	250	0	19,672
1998	295	0	23,725
1999	326	0	26,414
2000	351	0	29,333
2001	374	0	30,275
2002	408	0	32,328
2003	443	0	35,234
2004	504	0	39,304
2005	557	0	43,394
2006	635	0	47,160
2007	683	78	50,867
2008	751	69	53,735
2009	815	86	55,193
2010	850	86	53,862
Total		319	592,953

**Table 2. Singleton Neonatal Unit Observed Rates for Key Outcomes  
 Infants 501-1500 grams born 2008 to 2010**

Vernont Oxford Network 2010 VLEW QMR for Center 763

TABLE 1.2, OBSERVED RATES FOR KEY OUTCOMES  
 Infants 501-1500 Grams Born 2008 to 2010

	2008		2009		2010		2008 to 2010					
	N	Ctr 763 Percent	N	Ctr 763 Percent	N	Ctr 763 Percent	N	Ctr 763 Percent	Network Percent	25th %tile	75th %tile	
Pneumothorax												
Your Center	0		84	2.4	85	8.2	169	5.3	4.0	1.5	5.3	
Any Location	68	8.8	84	2.4	85	9.4	237	6.8	4.4	1.9	5.4	
PVL	67	3.0	84	3.6	82	0.0	233	2.1	3.1	1.1	4.0	
CLD	48	39.6	64	18.8	71	19.7	183	24.6	24.9	12.5	29.0	
CLD < 33 Weeks GA	47	40.4	60	20.0	61	23.0	168	26.8	26.5	13.1	30.9	
NEC												
Your Center	0		84	7.1	85	4.7	169	5.9	5.8	2.4	7.5	
Any Location	68	4.4	84	8.3	85	4.7	237	5.9	6.6	2.9	8.3	
Any IVH												
Your Center	0		81	16.0	81	6.2	162	11.1	24.2	14.5	28.1	
Any Location	66	19.7	82	24.4	81	8.6	229	17.5	25.8	16.7	29.6	
Severe IVH												
Any Location	66	6.1	82	6.1	81	2.5	229	4.8	8.8	5.0	10.6	
ROP	53	35.8	63	41.3	68	26.5	184	34.2	33.5	18.9	41.2	
Severe ROP	53	7.5	63	9.5	68	4.4	184	7.1	6.8	1.9	8.7	
Late Infections												
Late Bacterial												
Your Center	0		80	5.0	78	3.8	158	4.4	9.0	4.0	11.2	
Any Location	63	12.7	80	6.3	78	3.8	221	7.2	9.8	4.7	12.1	
Coag Neg Staph												
Your Center	0		80	8.8	78	6.4	158	7.6	8.8	2.3	10.3	
Any Location	63	17.5	80	11.3	78	6.4	221	11.3	9.7	3.2	11.2	
Nosocomial												
Your Center	0		80	12.5	78	10.3	158	11.4	15.4	7.3	18.5	
Any Location	63	27.0	80	16.3	78	10.3	221	17.2	16.7	8.3	20.4	
Fungal												
Your Center	0		80	0.0	78	0.0	158	0.0	1.3	0.0	1.7	
Any Location	63	3.2	80	0.0	78	0.0	221	0.9	1.6	0.0	2.1	
Any Late Inf.												
Your Center	0		80	12.5	78	10.3	158	11.4	15.9	7.7	19.2	
Any Location	63	27.0	80	16.3	78	10.3	221	17.2	17.3	8.9	21.2	
Mortality												
Excl. Early Deaths	65	10.8	83	14.5	84	9.5	232	11.6	9.8	6.5	12.2	
Overall	69	15.9	86	17.4	86	11.6	241	14.9	13.0	9.2	16.0	
Death or Morbidity	69	50.7	86	47.7	86	38.4	241	45.2	46.9	35.6	52.2	

Variables labeled 'Your Center' are only available since 2009.

**Table 3. Singleton Unit Observed Rates for Procedures and Length of Stay  
 Infants 501-1500 grams born 2008 to 2010**

Vermont Oxford Network 2010 VLBW QMR for Center 763

TABLE 1.3, PROCEDURES AND LENGTH OF STAY  
 Infants 501-1500 Grams Born 2008 to 2010

	2008		2009		2010		2008 to 2010				
	N	Ctr 763 Value	N	Ctr 763 Value	N	Ctr 763 Value	N	Ctr 763 Value	Network Value	25th %tile	75th %tile
Antenatal Steroids											
GA 24/0 to 33/6 wk (%)	68	85.3	82	91.5	72	88.9	222	88.7	80.3	71.4	86.8
501-1500 g (%)	69	85.5	86	90.7	85	88.2	240	88.3	77.2	68.6	83.6
Eye Exam (%)	68	77.9	84	75.0	85	80.0	237	77.6	73.9	60.0	79.5
Cranial Imaging (%)	68	97.1	84	97.6	85	95.3	237	96.6	90.7	83.1	95.1
Surfactant after 2 hrs											
501-1250 g (%)	49	6.1	51	5.9	46	13.0	146	8.2	13.7	4.7	20.2
501-1500 g (%)	58	6.9	65	10.8	63	22.2	186	13.4	17.0	7.5	25.6
Length of Stay*											
Center LOS (Days)	58	46.7	71	39.4	76	40.4	205	41.9	60.3	45.8	62.7
Total LOS (Days)	58	69.7	71	61.6	75	58.5	204	62.8	67.7	59.2	71.8

\* Length of stay in days for surviving infants only.

**Table 4. Singleton Hospital Risk Adjusted Outcome Measures  
 Infants 501-1500 grams born 2008 to 2010**

Vermont Oxford Network 2010 VLEW QMR for Center 763

TABLE 1.4, RISK-ADJUSTED OUTCOME MEASURES  
 Infants 501 TO 1500 Grams Born 2008 to 2010

	2008 to 2010					O-E vs. Control Limit
	N	SMR (Shrunken)	SMR 95% Lower	SMR 95% Upper	O-E (Shrunken)	
Pneumothorax						
Any Location	237	1.22	0.79	1.66	3	Within
PVL	233	0.73	0.16	1.29	-2	Within
CLD	183	1.00	0.73	1.27	0	Within
CLD < 33 Weeks GA	168	1.01	0.74	1.29	1	Within
NEC						
Any Location	237	0.90	0.49	1.32	-2	Within
Any IVH						
Any Location	229	0.69	0.46	0.91	-20	Below
Severe IVH						
Any Location	229	0.67	0.32	1.02	-7	Within
ROP	184	1.08	0.83	1.33	5	Within
Severe ROP	184	1.15	0.64	1.67	2	Within
Infections						
Late Bacterial						
Any Location	221	0.81	0.41	1.22	-4	Within
Coag Neg Staph						
Any Location	221	1.13	0.73	1.53	3	Within
Nosocomial						
Any Location	221	1.02	0.72	1.33	1	Within
Fungal						
Any Location	221	0.69	0.00	1.63	-1	Within
Any Late Inf.						
Any Location	221	0.99	0.69	1.28	-1	Within
Mortality						
Excl. Early Deaths	232	1.11	0.75	1.46	3	Within
Overall	241	1.09	0.79	1.40	3	Within
Death or Morbidity	241	0.93	0.77	1.09	-9	Within

## Figure 1 - Shrunk Standardised Morbidity and Mortality Ratios (SMR) Infants 501-1500 grams born 2008 to 2010

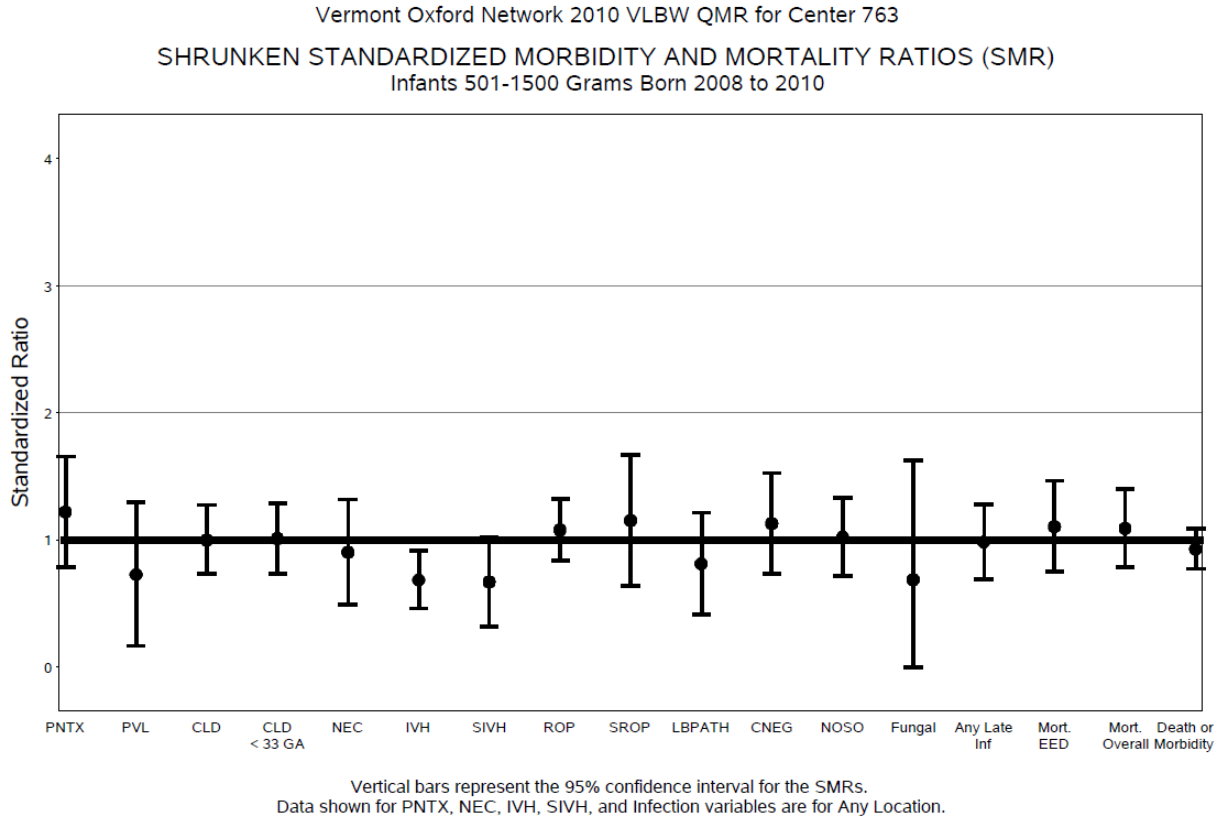
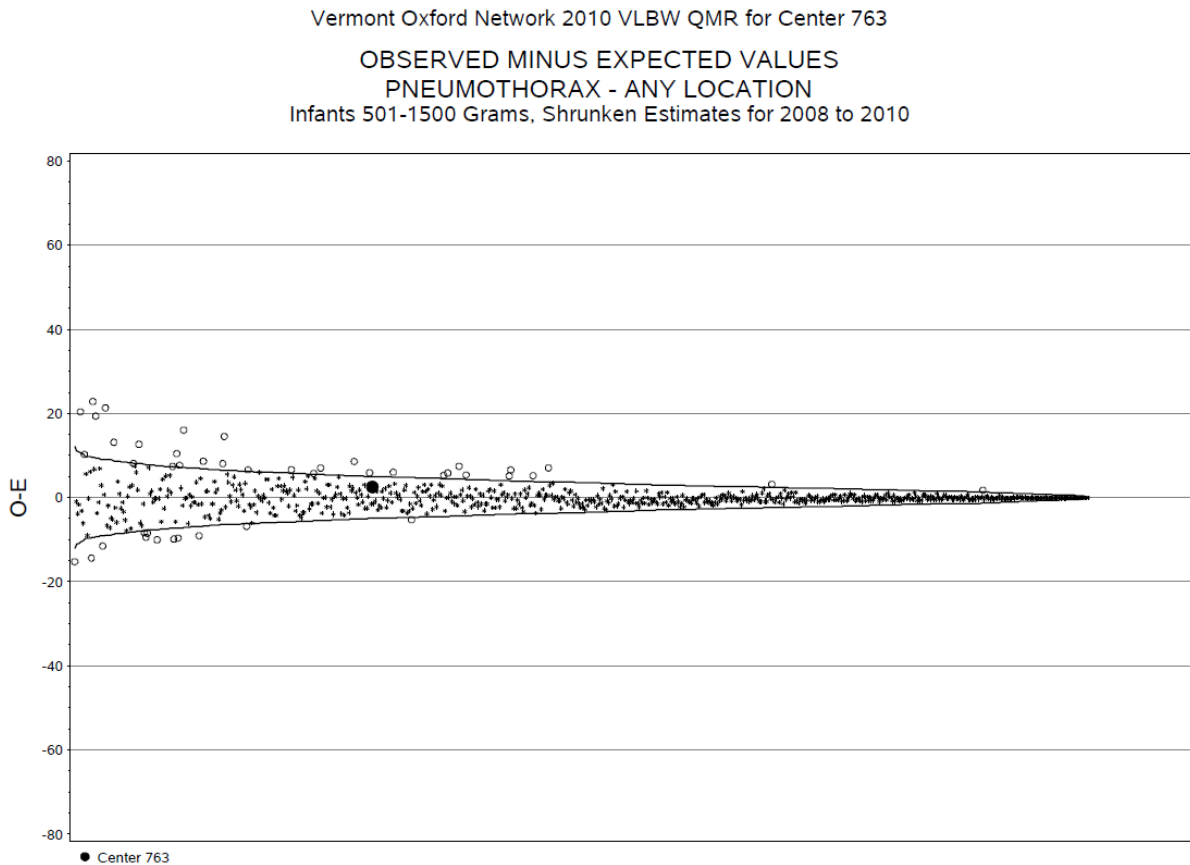


Figure 1.1

KEY		=	
PNTX	=	Pneumothorax	
PVL	=	Periventricular	
CLD	=	Chronic lung disease	
NEC	=	Necrotizing enterocolitis	
IVH	=	Intraventricular haemorrhage	
SIVH	=	Severe intraventricular haemorrhage	
ROP	=	Retinopathy of prematurity	
SROP	=	Severe retinopathy of prematurity	
LBPATH	=	Sepsis or meningitis after day 3 of life	
CNEG	=	Coagulase negative staph infection after day 3 of life	
NOSO	=	Nosocomial infection after day 3 of life	
Fungal	=	Fungal infection after day 3 of life	

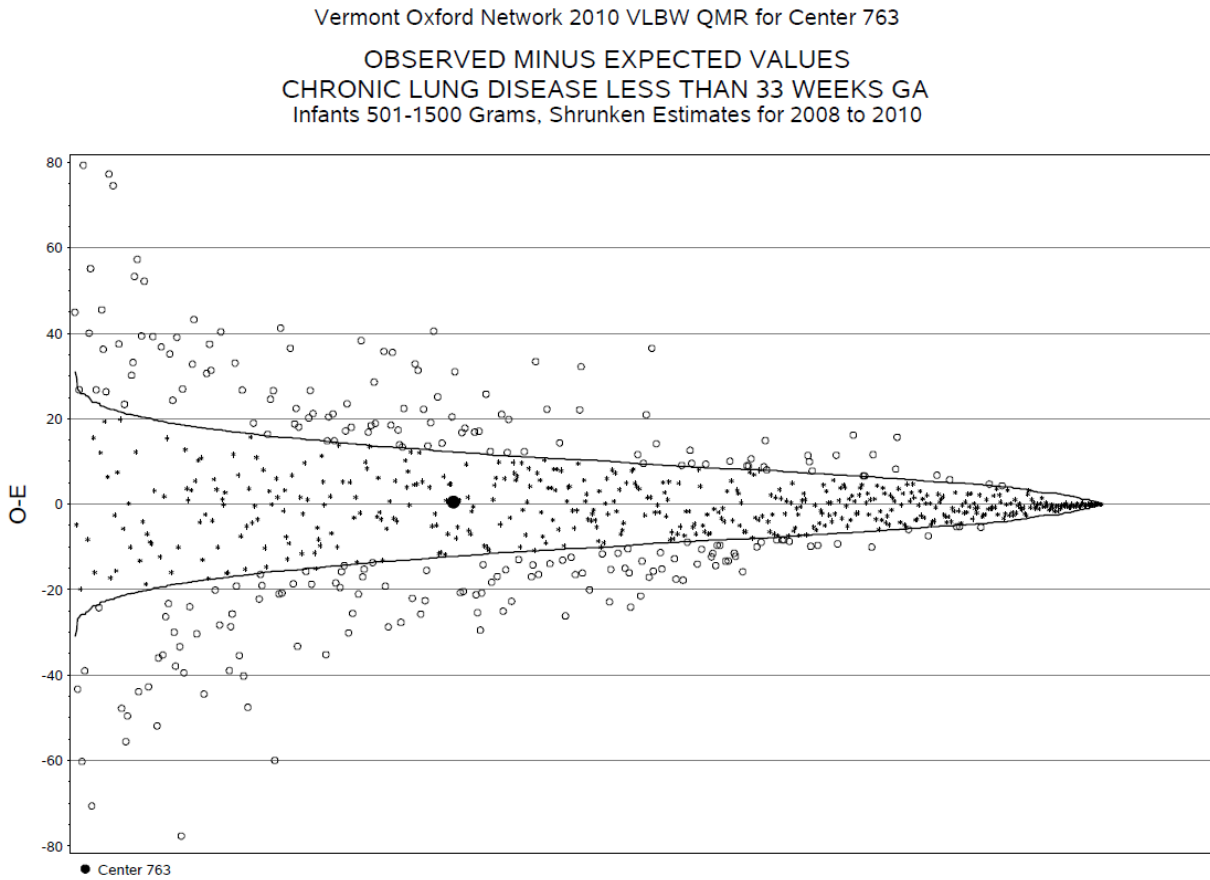
**Figure 2. Observed Minus Expected Values  
Pneumothorax - Any Location  
Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010**



95% control limits are shown.

Figure 1.2

### Figure 3. Observed Minus Expected Values Chronic Lung Disease Less than 33 weeks GA Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.5

**Figure 4. Observed Minus Expected Values  
Intraventricular Haemorrhage - Any Location  
Infants 501-1500 grams, Shrunken Estimates for 2007 - 2009**

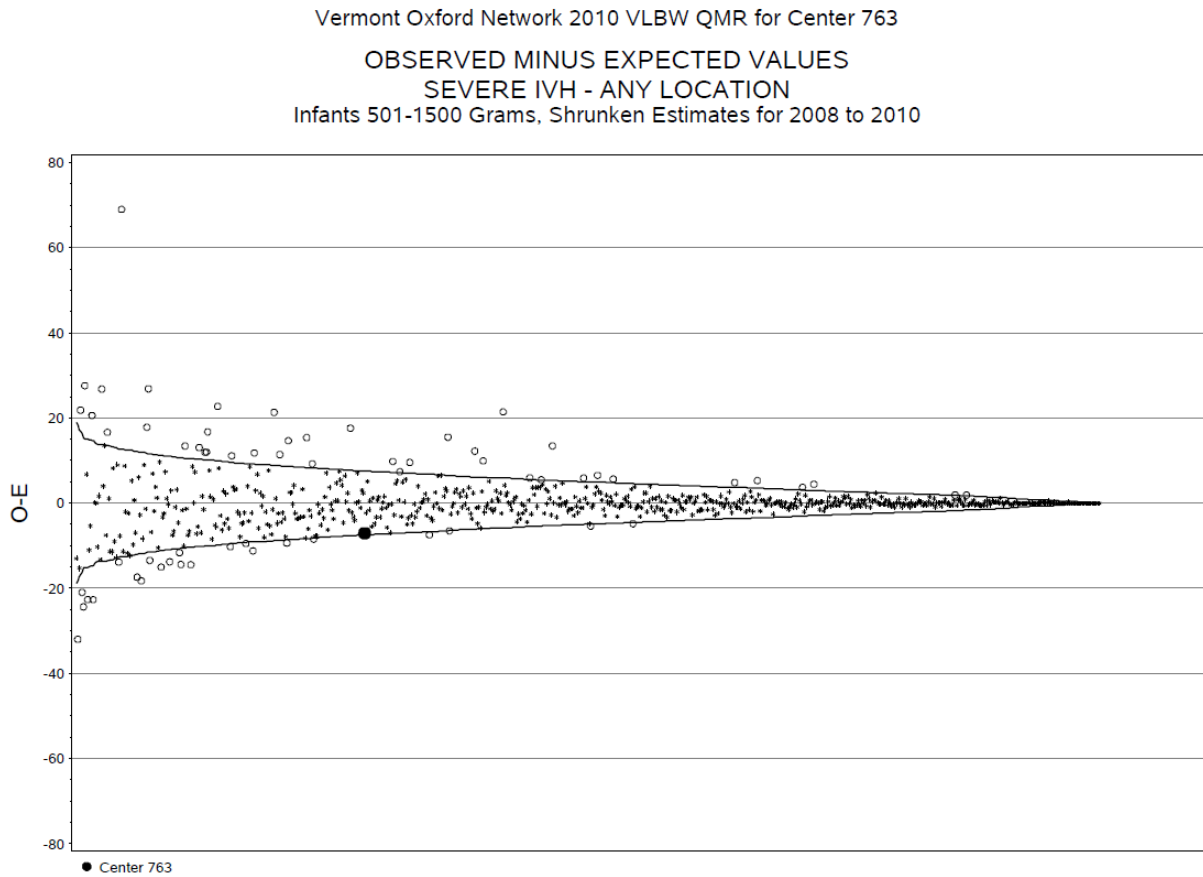


95% control limits are shown.

Figure 1.7



**Figure 5. Observed Minus Expected Values  
Severe IVH - Any Location  
Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010**



95% control limits are shown.

Figure 1.8

**Figure 6. Observed Minus Expected Values  
Late Bacterial Infection - Any Location  
Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010**

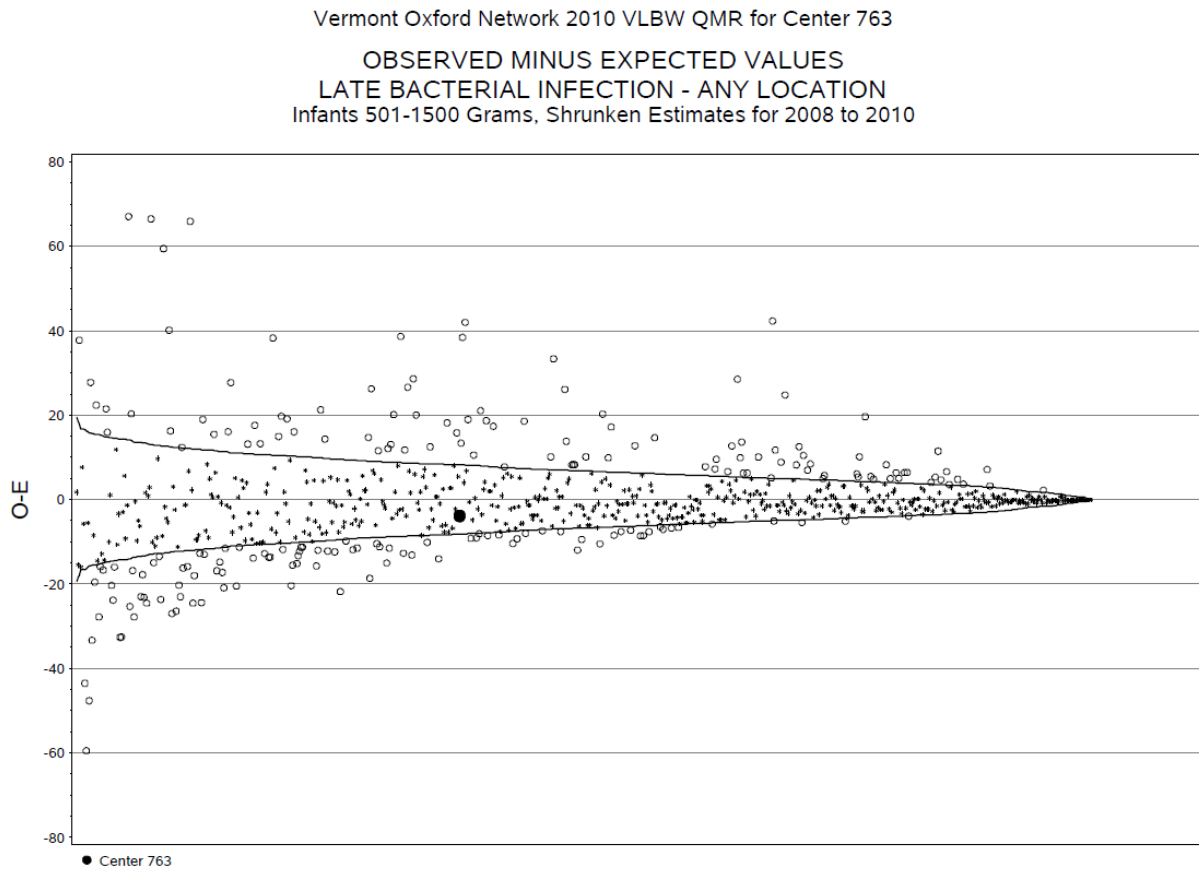
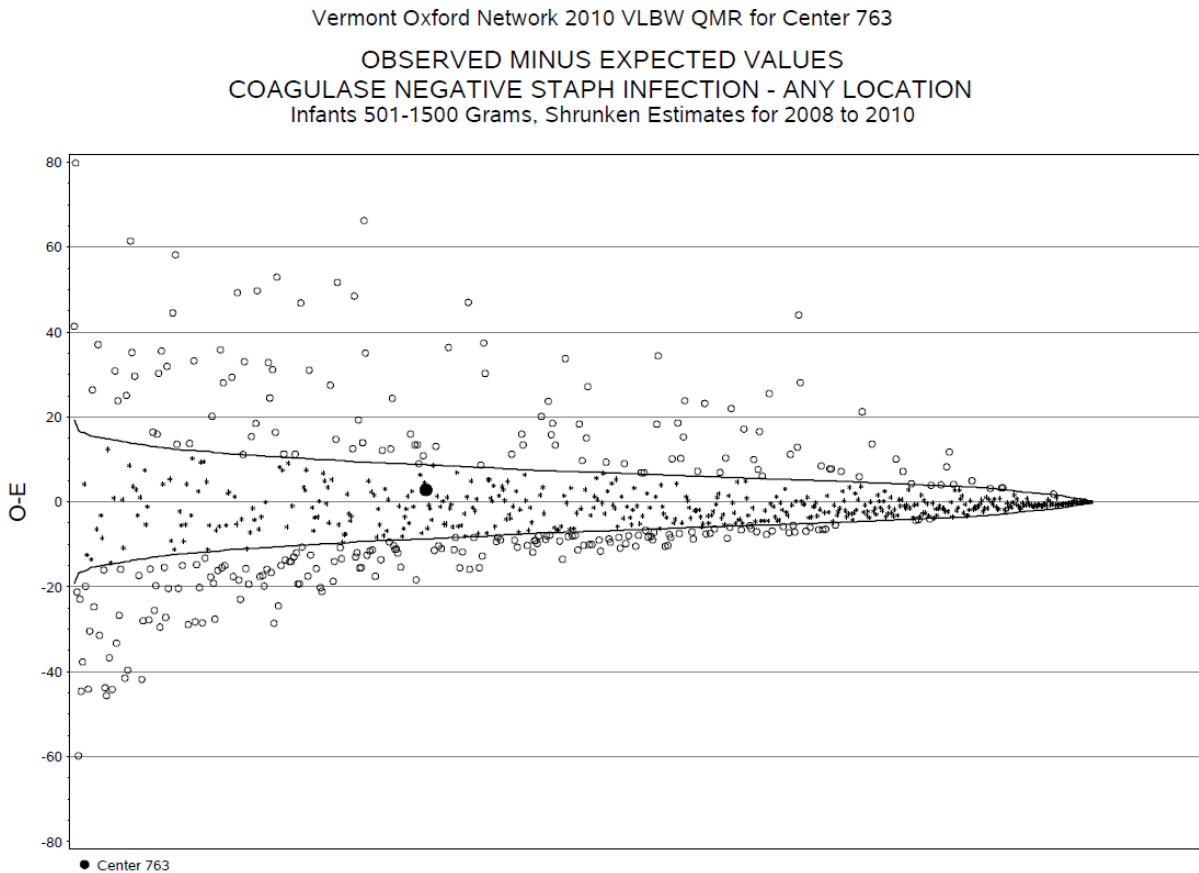


Figure 1.11

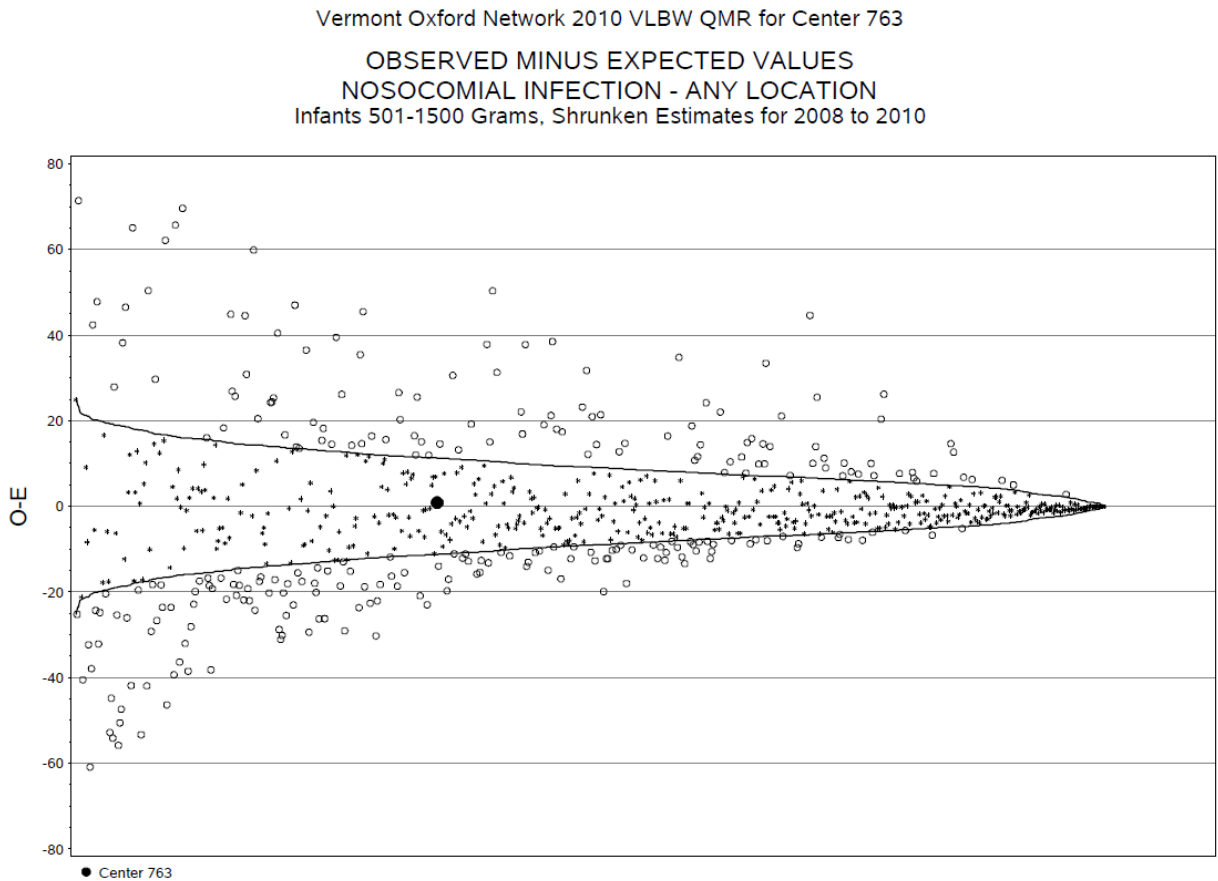
### Figure 7. Observed Minus Expected Values Coagulase Negative Staph Infection - Any Location Infants 501-1500 grams, Shrunk Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.12

### Figure 8. Observed Minus Expected Values Nosocomial Infection - Any Location Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.13

### Figure 9. Observed Minus Expected Values Fungal Infection - Any Location Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010

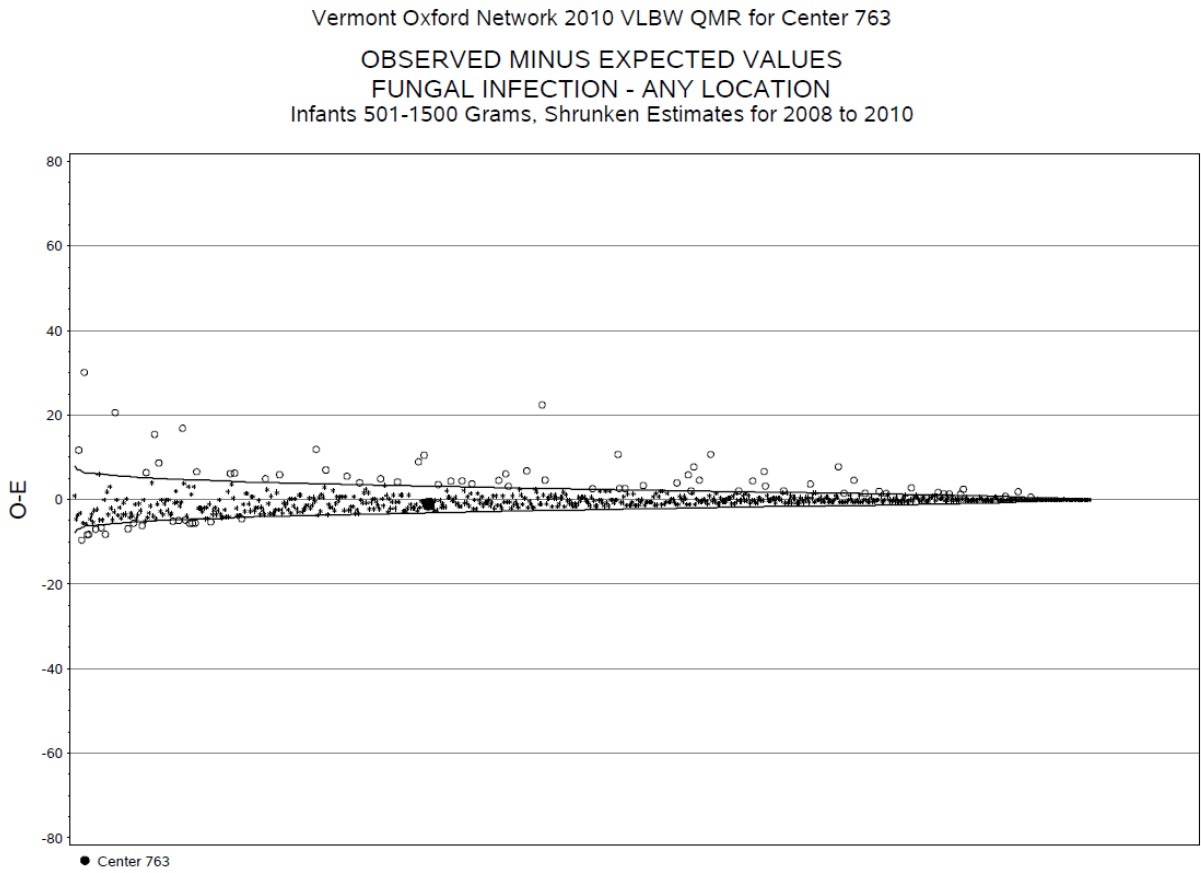
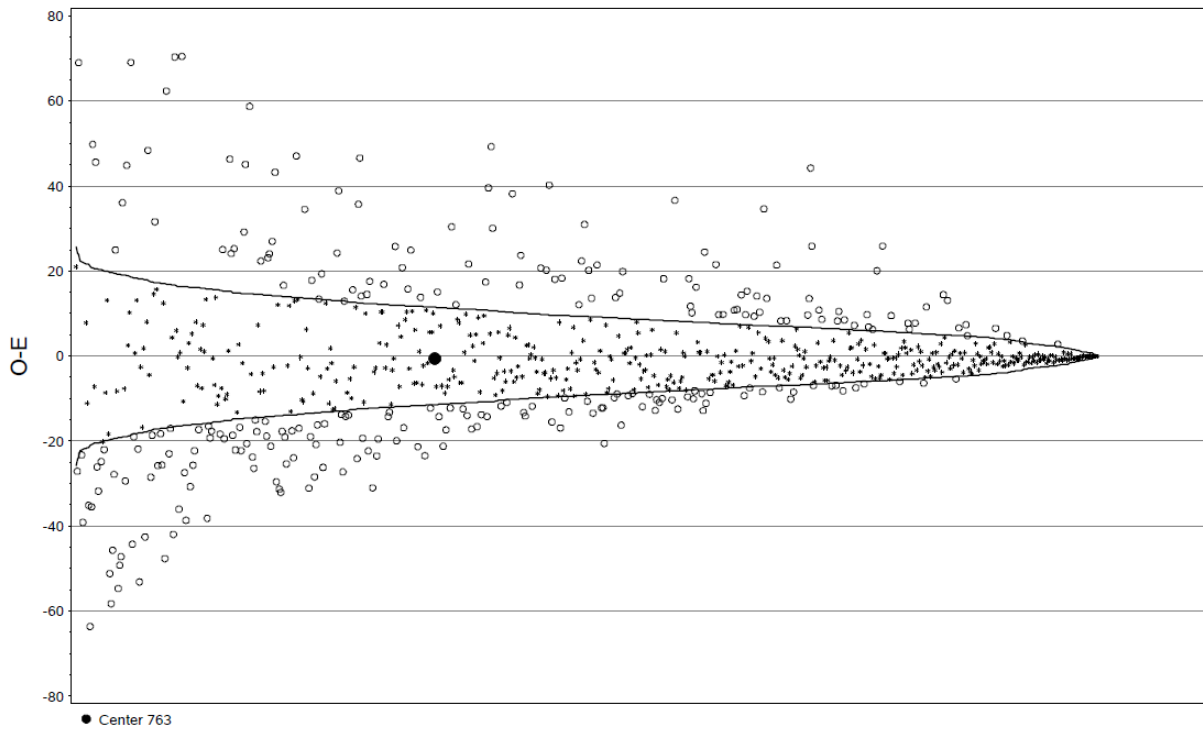


Figure 1.14

### Figure 10. Observed Minus Expected Values Any Late Infection - Any Location Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010

Vermont Oxford Network 2010 VLBW QMR for Center 763

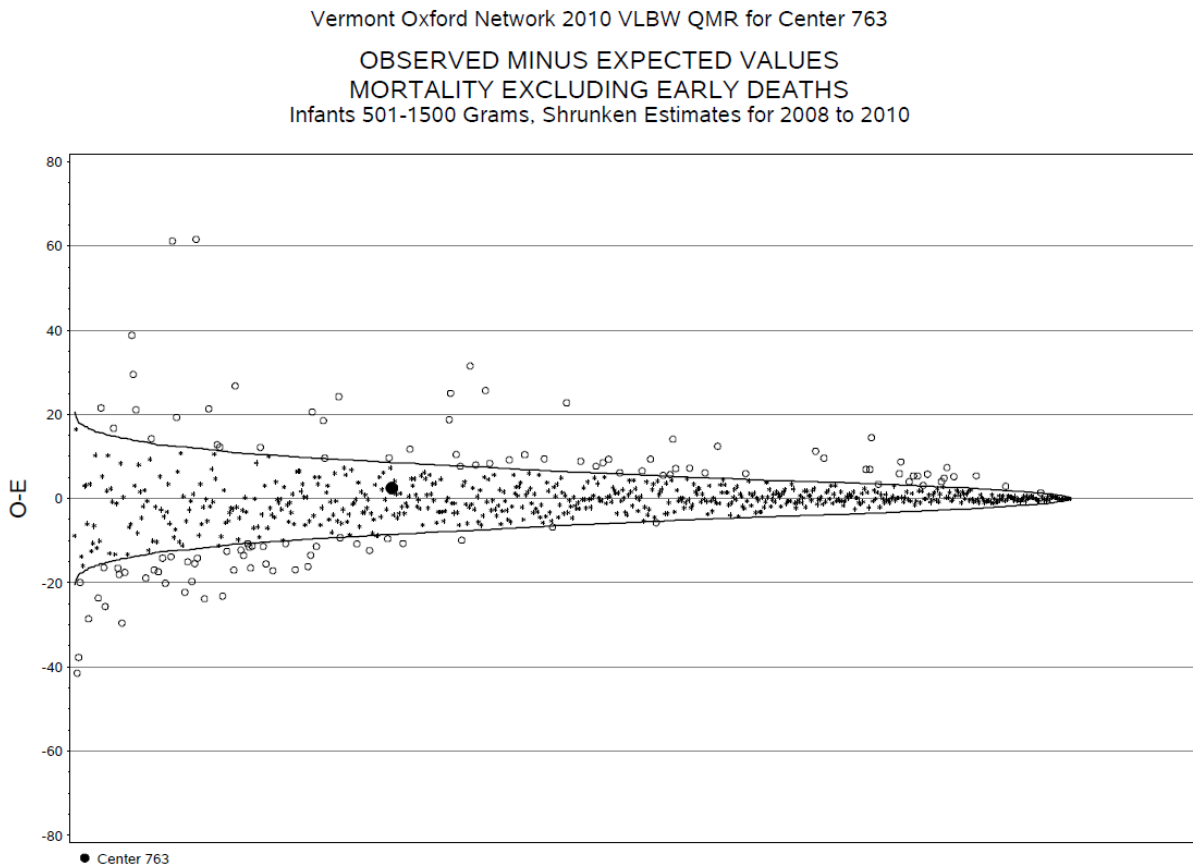
OBSERVED MINUS EXPECTED VALUES  
ANY LATE INFECTION - ANY LOCATION  
Infants 501-1500 Grams, Shrunken Estimates for 2008 to 2010



95% control limits are shown.

Figure 1.15

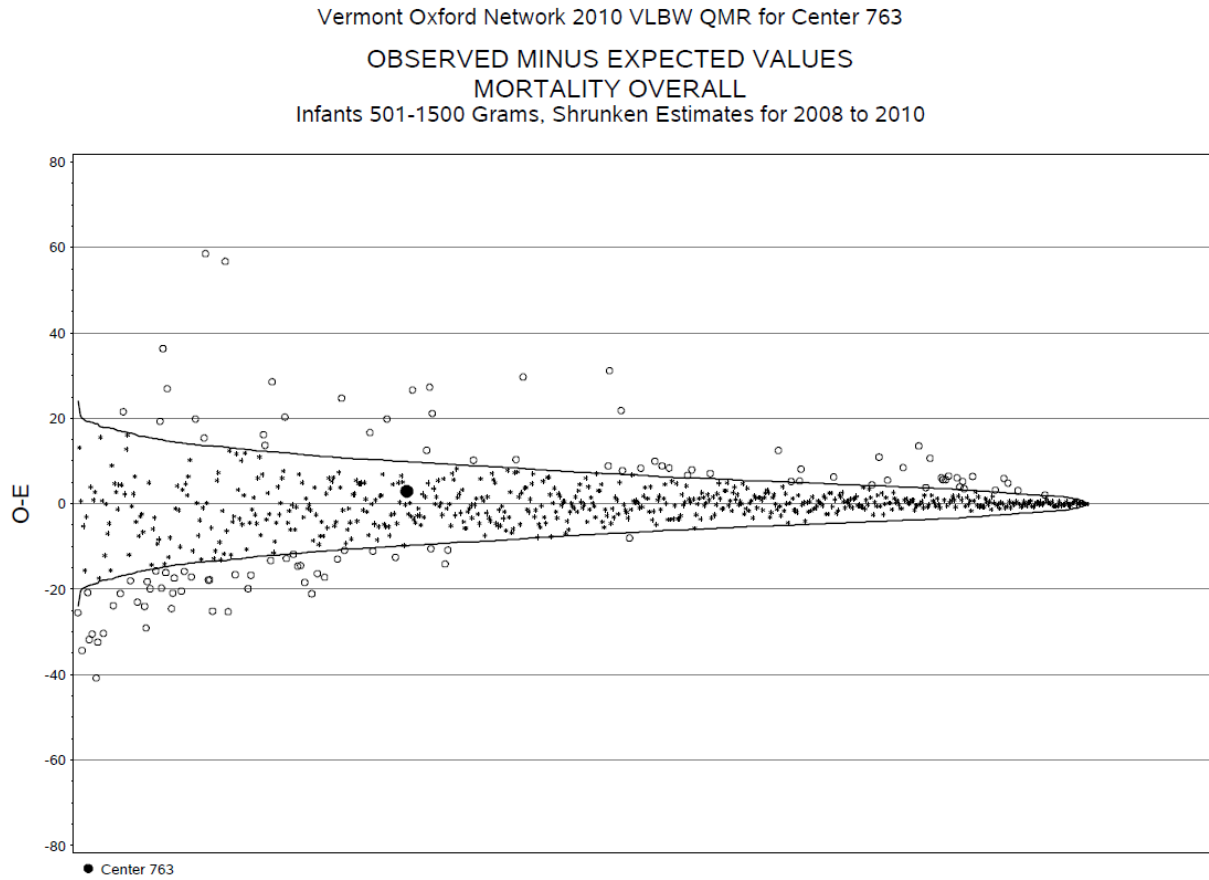
### Figure 11. Observed Minus Expected Values Mortality Excluding Early Deaths - Any Location Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.16

## Figure 12. Observed Minus Expected Values Mortality Overall - Any Location Infants 501-1500 grams, Shrunken Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.17



### Figure 13. Observed Minus Expected Values Death or Morbidity - Any Location Infants 501-1500 grams, Shrunk Estimates for 2008 - 2010



95% control limits are shown.

Figure 1.18

Evidence from Abertawe Bro Morgannwr University Health Board  
**UK VON REPORT**

In addition to enabling the data from Singleton Hospital Neonatal Unit to be compared with other units world-wide, VON also enables comparison of the combined data in the VON UK centres within the network as a whole, and also allows internal comparisons of the UK centres.

There are for 2010 twenty-five centres in the UK who participate in VON.

These are shown below.

<b>Hospital</b>	<b>City</b>
Altnagelvein Area Hospital	Londonderry, N. Ireland
Antrim Area Hospital	Antrim, N. Ireland
Craigavon Area Hospital	Craigavon, N. Ireland
Derriford Hospital	Plymouth
Gloucestershire Royal Hospital	Gloucester
Great Western Hospital NHS Trust	Swindon
John Radcliffe Hospital	Oxford
Liverpool Women's Hospital	Liverpool
North Devon District Hospital	Barnstaple
Queen Charlotte's and Chelsea Hospital	London
Royal Cornwall Hospitals NHS Trust	Truro
Royal Devon and Exeter NHS Foundation Trust	Exeter
Royal Gwent Hospital	Newport
Royal Maternity Service	Belfast, N. Ireland
Royal United Hospital Bath NHS Trust	Bath
Singleton Hospital Neonatal Unit, Swansea	Swansea, Wales
Somerset Neonatal Intensive Care Unit	Taunton, Somerset
Southmead Hospital	Bristol
St. Mary's Hospital, Imperial College NHS	London
St. Michael's Hospital	Bristol
Torbay Hospital	Torquay
Ulster Hospital	Belfast, N. Ireland
University Hospital of Wales	Cardiff
Wishaw General Hospital	Wishaw, Scotland
Yeovil District Hospital	Yeovil, Somerset

### **Table 1. Number of Infants**

This shows the number of UK infants entered onto VON since 2004, and the number of participating centres

Vermont Oxford Network 2010 UK Group Report

TABLE 1.1, NUMBER OF INFANTS  
Infants 501-1500 Grams, Group Start Year to 2010

Year	Number of Centers in Group	Number of Infants in Group	Number of Infants in Network
2004	10	596	39,304
2005	10	638	43,394
2006	15	893	47,160
2007	19	1,168	50,867
2008	21	1,457	53,735
2009	23	1,538	55,193
2010	25	1,616	53,862
Total		7,906	343,515

**Table 2. Key Statistics for Group and Network**  
 This shows the data for the combined 25 units in the UK compared with the whole VON network

Vermont Oxford Network 2010 UK Group Report

TABLE 3.1, Key Statistics for Group and Network  
 Infants 501-1500 Grams, Born in 2010

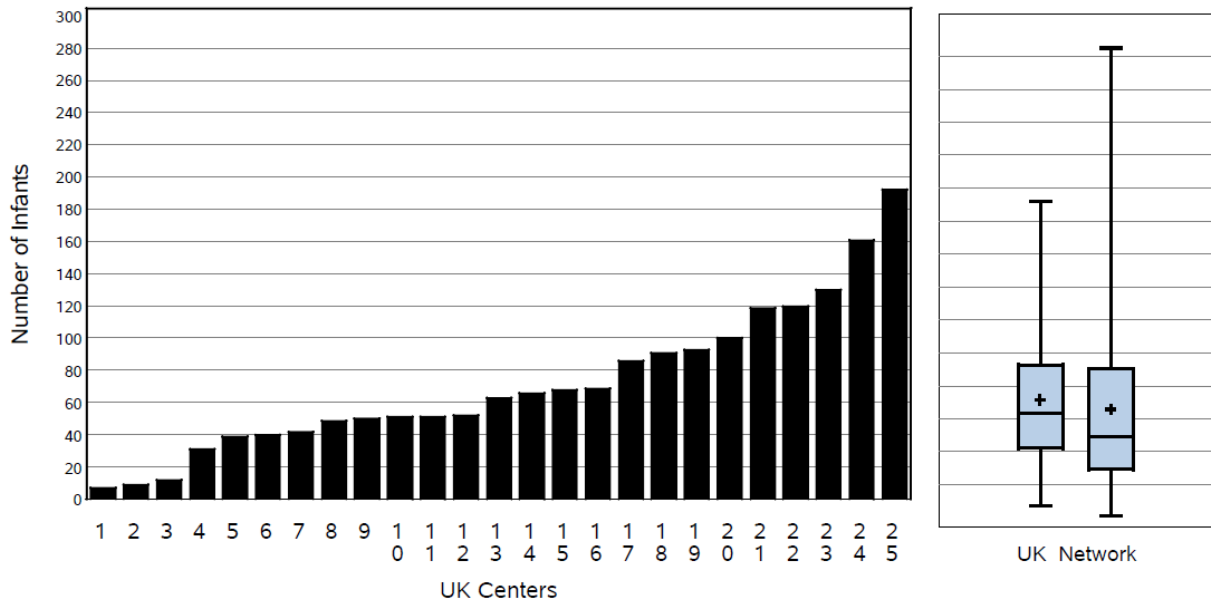
N for Admissions, Minimums, 1st Quartiles, Means, Medians, 3rd Quartiles, Maximums

	Group						Network					
	N or Min	Q1	Mn	Med	Q3	Max	N or Min	Q1	Mn	Med	Q3	Max
Admissions (N)	1,616						53,862					
Antenatal Steroids												
Overall	44	81	85	84	90	94	0	69	78	79	86	100
24/0 to 33/6	50	84	88	87	92	97	0	72	81	82	89	100
Chorioamnionitis	0	6	14	11	17	30	0	3	13	9	17	100
Maternal Hypertension	6	16	20	22	24	42	0	21	28	28	35	100
Cesarean Section	0	51	59	59	69	81	0	67	73	74	81	100
Adm Temp LT 36°C	0	8	14	13	20	32	0	9	24	19	37	100
RDS	28	68	73	77	82	93	0	66	73	76	85	100
Conventional Vent	30	50	66	63	71	83	0	50	62	63	73	100
Inhaled NO	0	0	3	2	3	6	0	0	5	2	5	35
High Frequency Vent	0	5	11	8	13	27	0	7	21	17	27	89
HFNC	0	0	19	3	25	78	0	10	50	54	73	100
NIMV	0	0	11	0	20	51	0	0	19	7	29	84
Nasal CPAP	9	74	73	78	83	92	0	55	69	70	80	100
Surfactant	39	48	68	62	71	84	0	52	64	64	75	100
Surf after 2 Hrs	0	4	10	11	22	40	0	6	17	14	26	93
Pneumothorax	0	2	5	4	6	9	0	0	4	3	6	29
Steroids for CLD	0	1	5	2	5	17	0	1	8	6	11	50
CLD at 36 Wks	0	14	26	18	27	47	0	11	25	19	30	100
CLD for LT 33 Wks GA	0	16	29	21	32	49	0	12	26	21	32	100
Oxygen at 28 Days	13	32	50	38	58	80	0	31	47	43	55	100
Infection												
Early Bacterial	0	0	3	2	4	20	0	0	2	1	3	73
Late Bacterial	0	6	12	12	15	50	0	3	9	7	12	50
Coag Neg Staph	0	11	20	16	26	38	0	1	8	5	10	52
Nosocomial	2	15	27	24	32	50	0	6	15	12	19	58
Fungal	0	0	1	0	2	3	0	0	1	0	2	43
NEC	0	5	8	7	11	20	0	2	6	5	8	54
GI Perf	0	0	2	2	3	20	0	0	3	2	4	20
PDA	8	19	28	24	31	60	0	23	37	33	44	100
Indomethacin	0	1	11	3	13	37	0	3	19	14	27	78
Ibuprofen for PDA	0	3	8	7	10	40	0	0	11	7	15	73
PDA Ligation	0	0	4	2	4	15	0	0	7	4	9	54
Cranial Imaging	63	86	91	90	95	100	0	82	90	92	96	100
IVH	0	19	30	28	37	60	0	15	26	22	31	100
Severe IVH	0	3	9	5	11	21	0	4	9	7	11	73
PVL	0	0	3	2	5	9	0	0	3	2	5	21
Eye Exam	29	61	64	69	80	100	0	60	75	73	81	100
ROP	0	11	26	20	33	67	0	17	33	29	42	100
Severe ROP	0	0	6	4	6	17	0	0	6	4	9	59
Any Major Surgery	0	4	12	8	14	36	0	4	16	11	19	75
Any Breast Milk at Discharge	17	47	52	54	64	88	0	36	51	50	65	100
Mortality												
Excl. Early Deaths	0	5	12	9	13	24	0	5	10	8	13	38
Overall	6	9	16	14	18	29	0	8	13	12	16	43

**Table 3. Number of Admissions**  
**Singleton is 17**

Vermont Oxford Network 2010 UK Group Report

NUMBER OF ADMISSIONS  
Infants 501-1500 Grams, Born in 2010



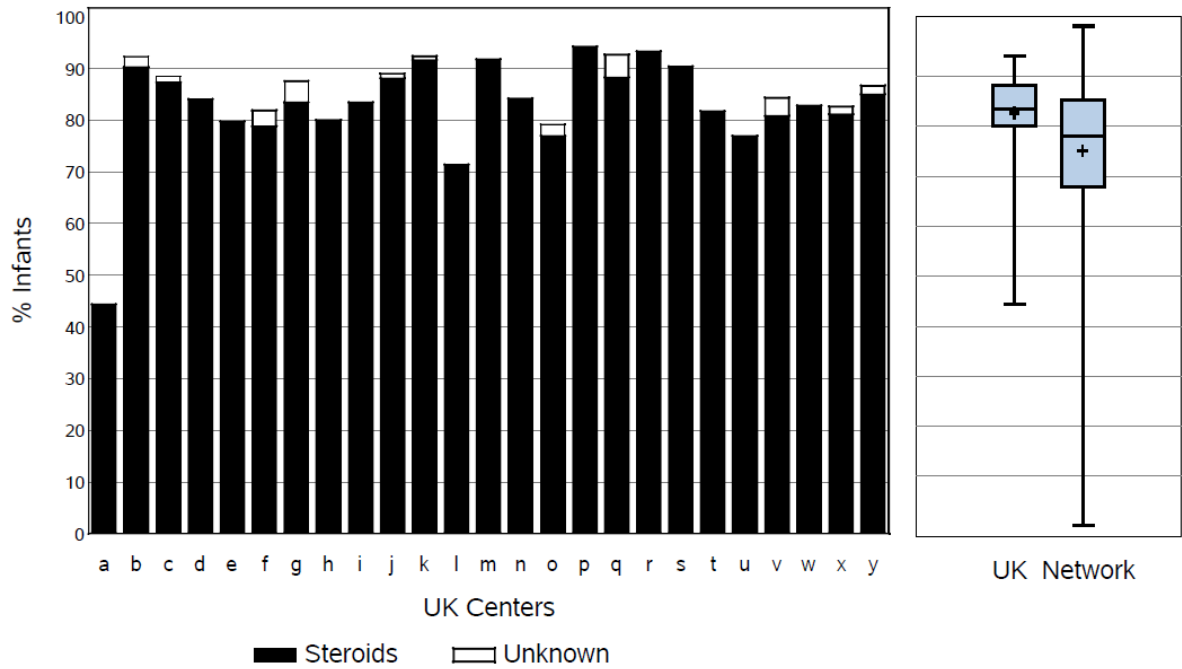
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.1

**Table 4. Antenatal Steroids**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**ANTENATAL STEROIDS**  
Infants 501 to 1500 Grams, Born in 2010



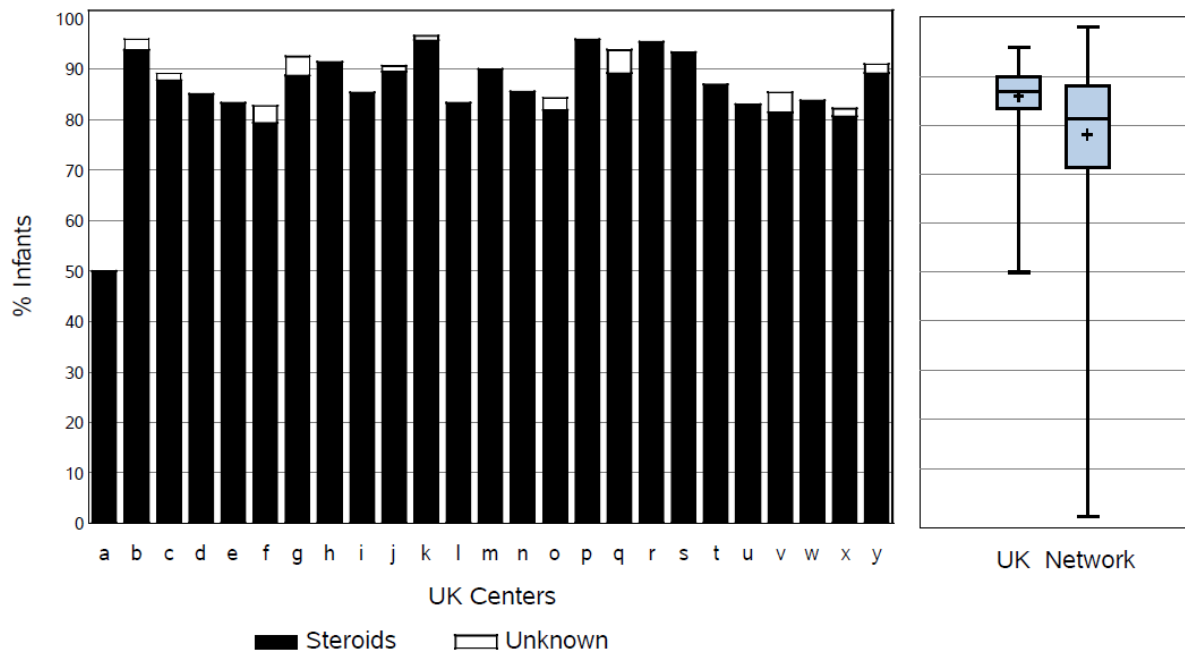
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.2

### Table 4. Antenatal Steroids Singleton is C

Vermont Oxford Network 2010 UK Group Report

#### ANTENATAL STEROIDS FOR INFANTS WITH GESTATIONAL AGE BETWEEN 24 AND 33 WEEKS Infants 501 to 1500 Grams, Born in 2010



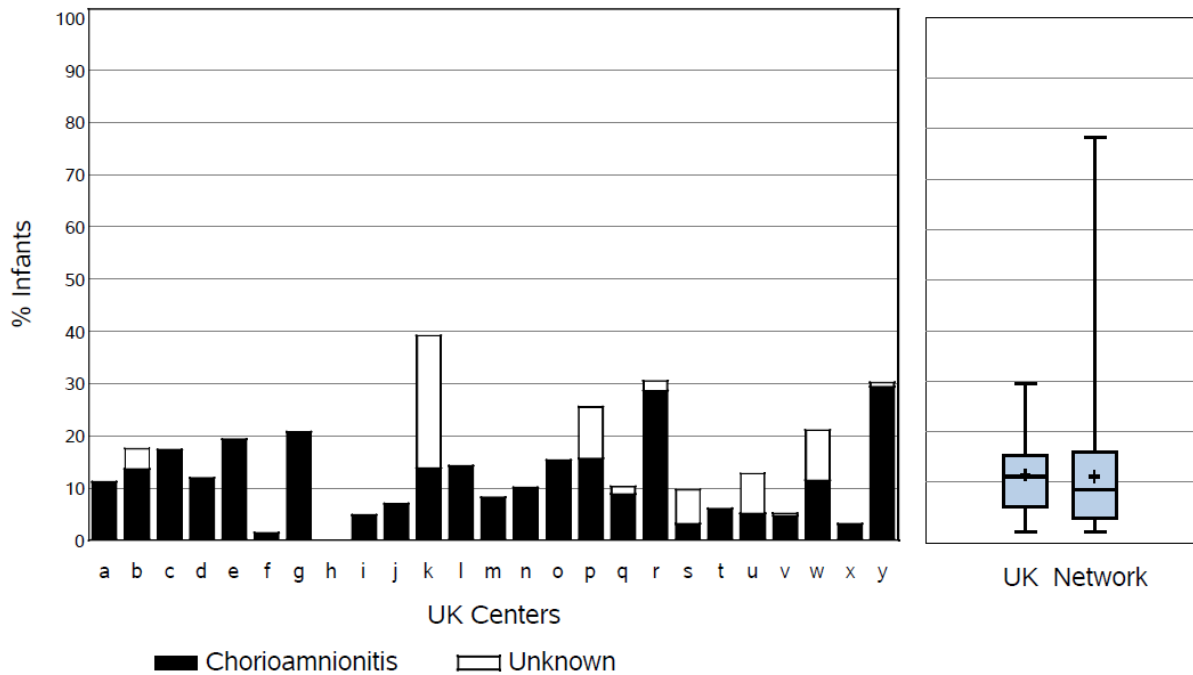
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.3

**Table 5. Chorioamnionitis  
Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**CHORIOAMNIONITIS**  
Infants 501 to 1500 Grams, Born in 2010



There are 25 centers in the UK Group and 850 centers in the Network.

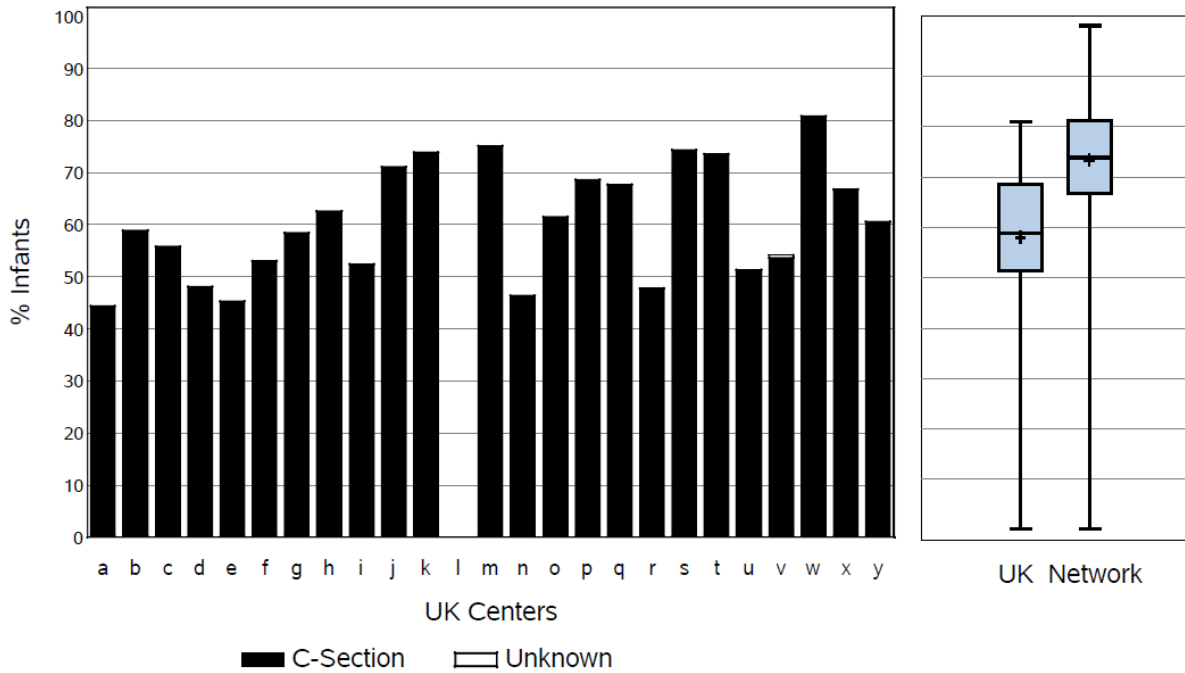
Figure 3.4



**Table 6. Caesarean Section  
Singleton is C**

Vermont Oxford Network 2010 UK Group Report

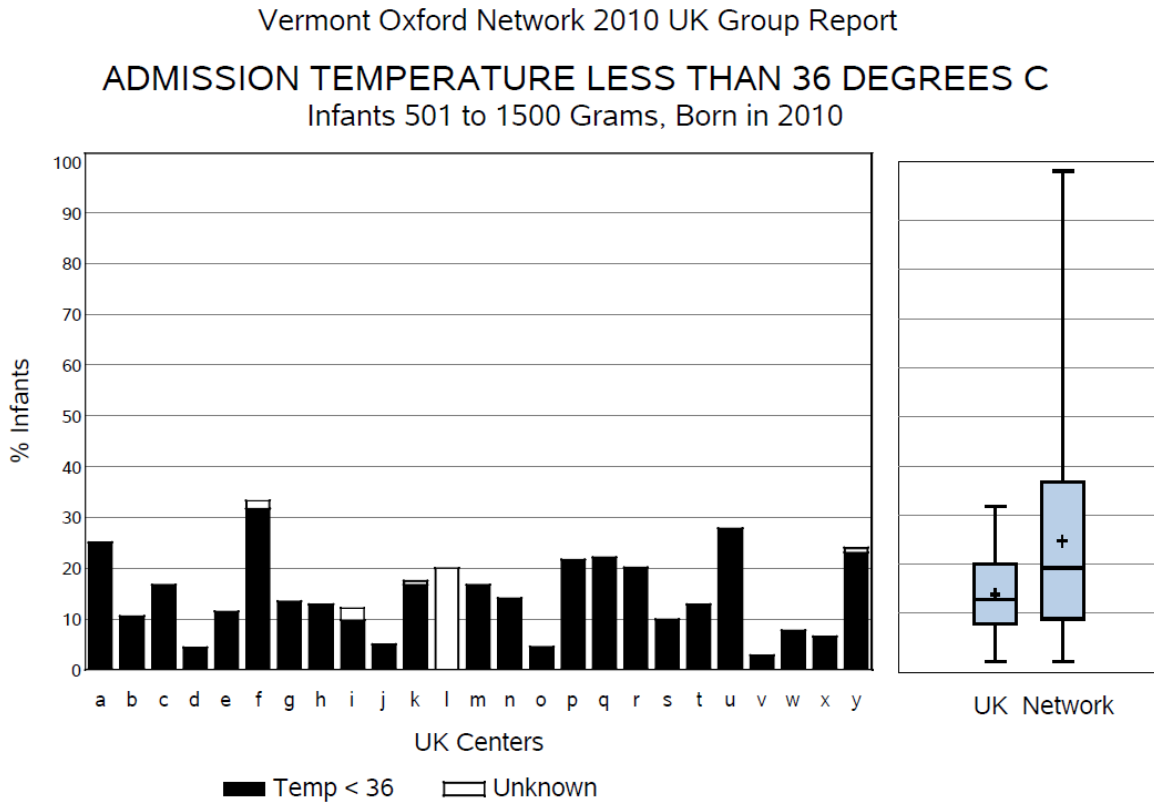
**CESAREAN SECTION**  
Infants 501 to 1500 Grams, Born in 2010



There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.6

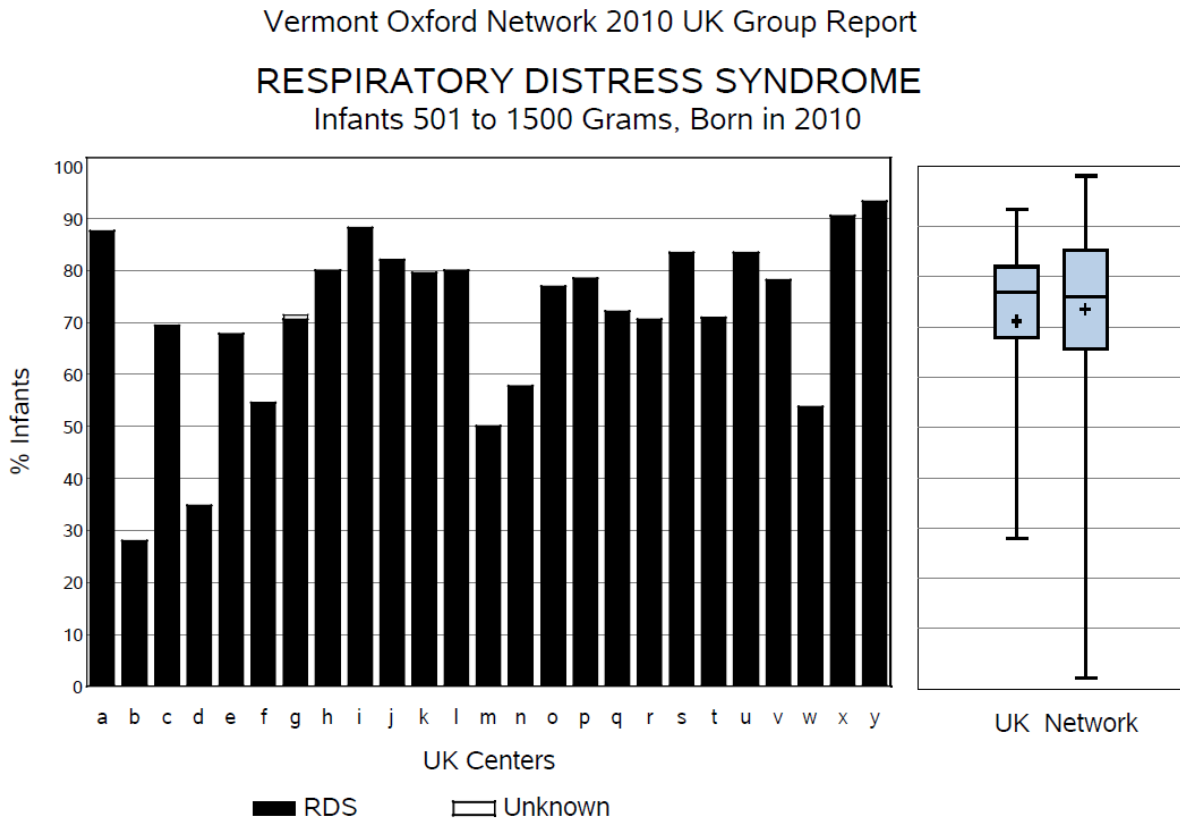
**Table 7. Admission Temperature Less than 36 Degrees C  
Singleton is C**



There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.7

**Table 8. Respiratory Distress Syndrome**  
Singleton is C



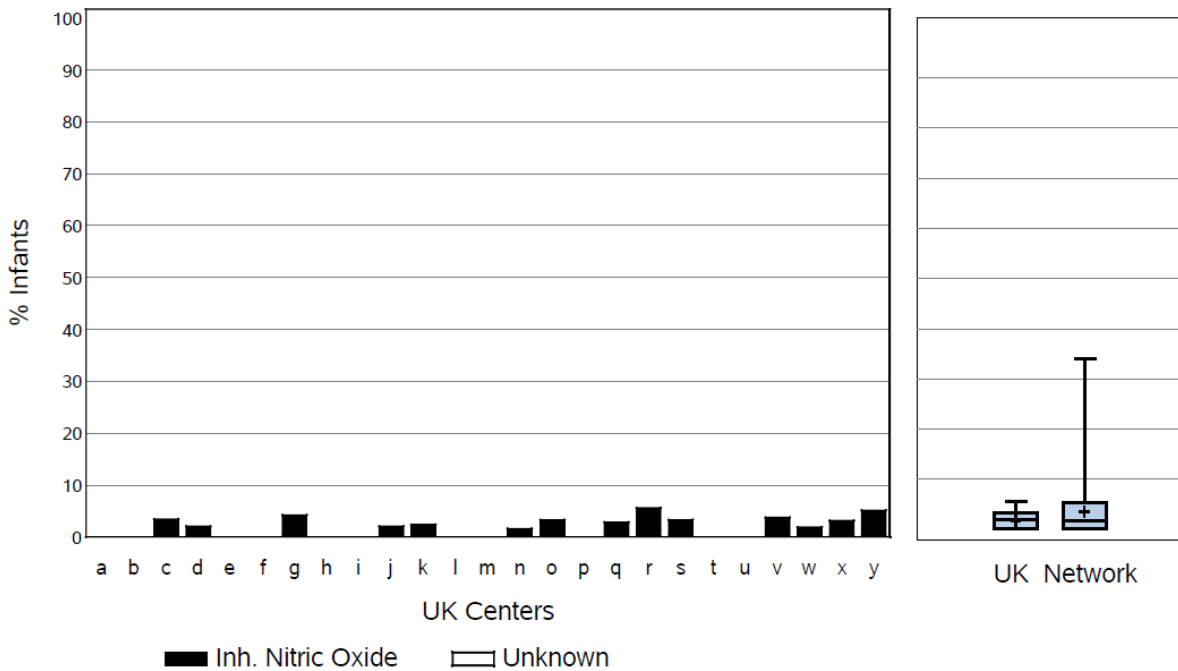
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.8

**Table 9. Inhaled Nitric Oxide**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**INHALED NITRIC OXIDE**  
Infants 501 to 1500 Grams, Born in 2010



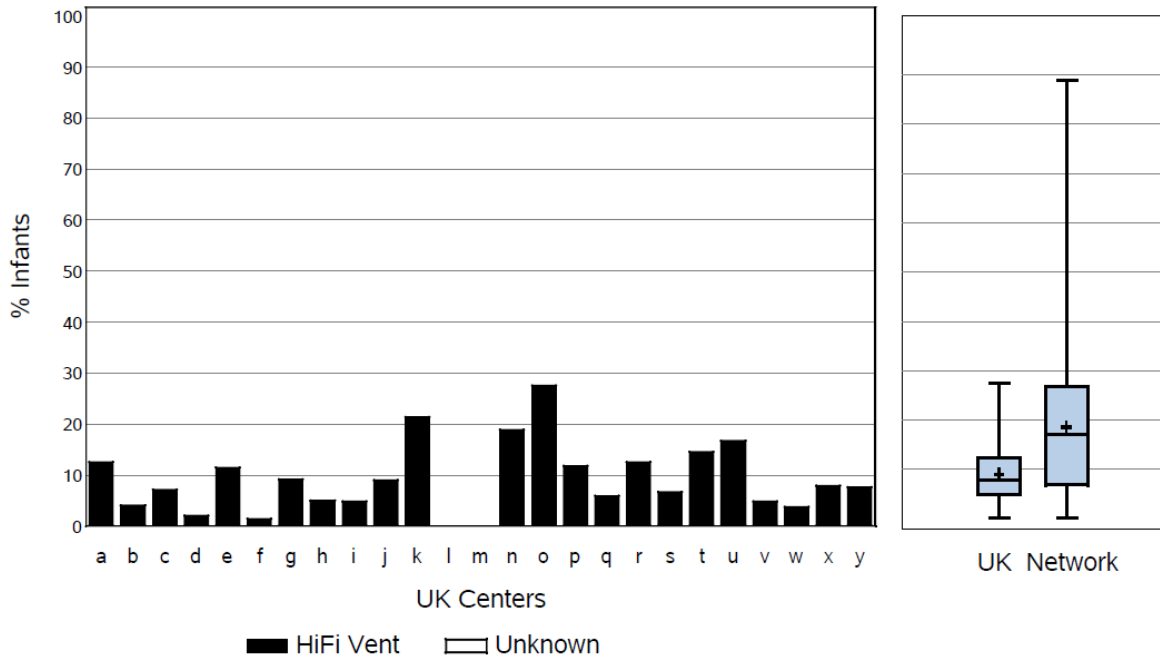
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.10

**Table 10. High Frequency Ventilation**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**HIGH FREQUENCY VENTILATION**  
Infants 501 to 1500 Grams, Born in 2010



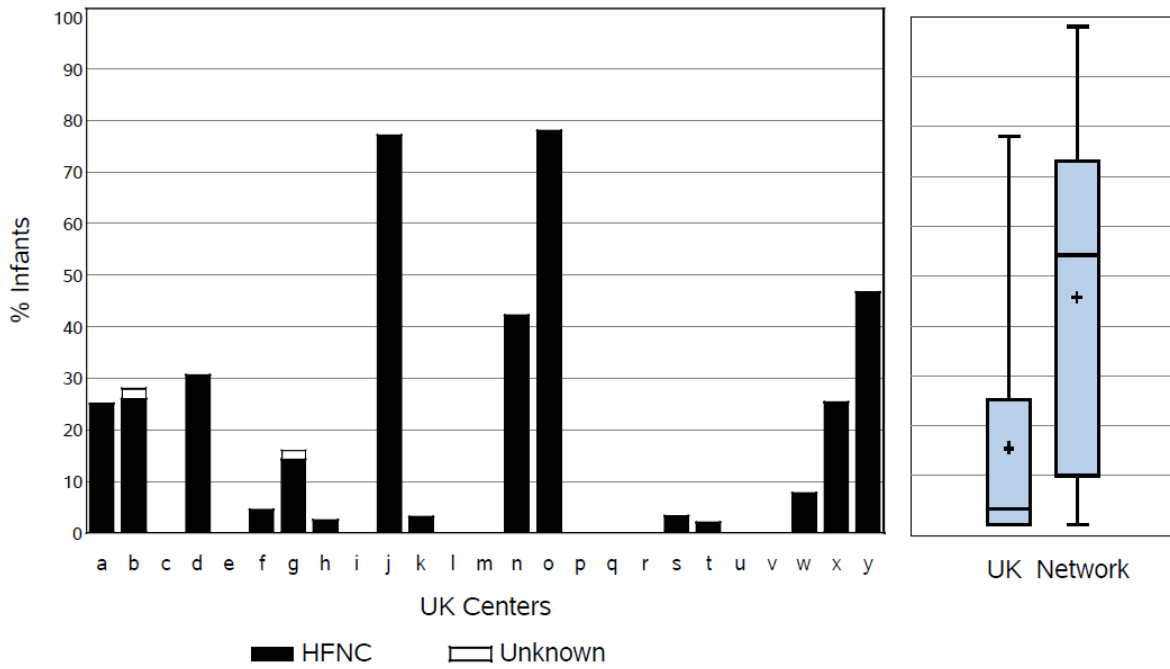
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.11

**Table 11. High Flow Nasal Cannula  
 Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**HIGH FLOW NASAL CANNULA  
 Infants 501 to 1500 Grams, Born in 2010**



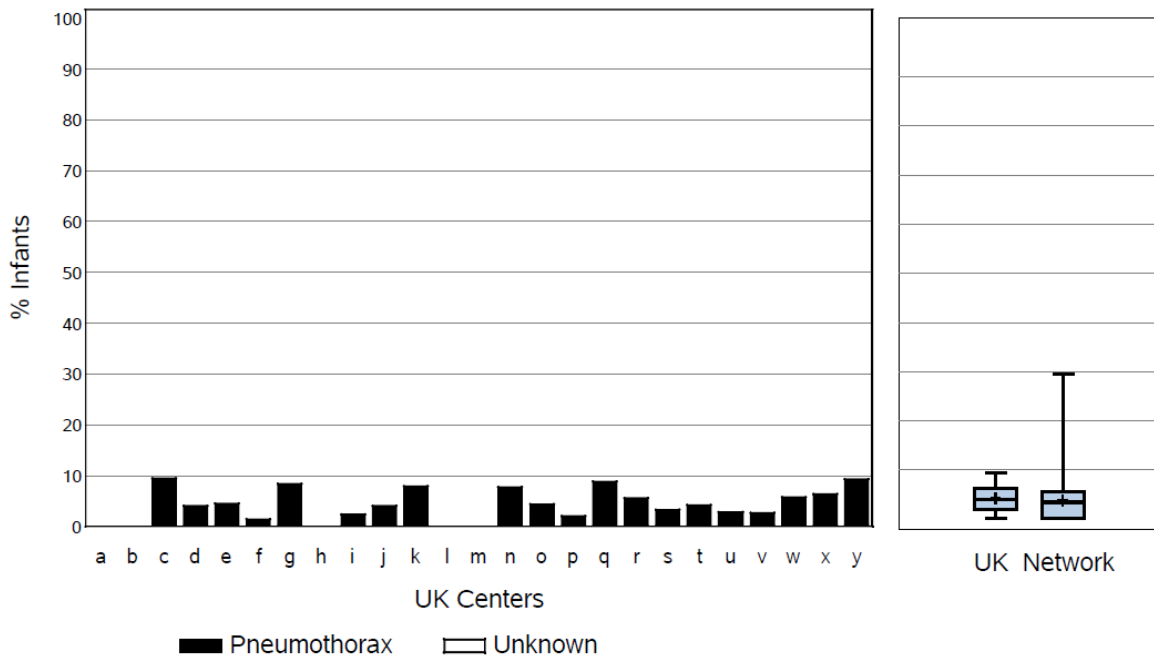
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.12

**Table 12. Pneumothorax**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**PNEUMOTHORAX**  
Infants 501 to 1500 Grams, Born in 2010



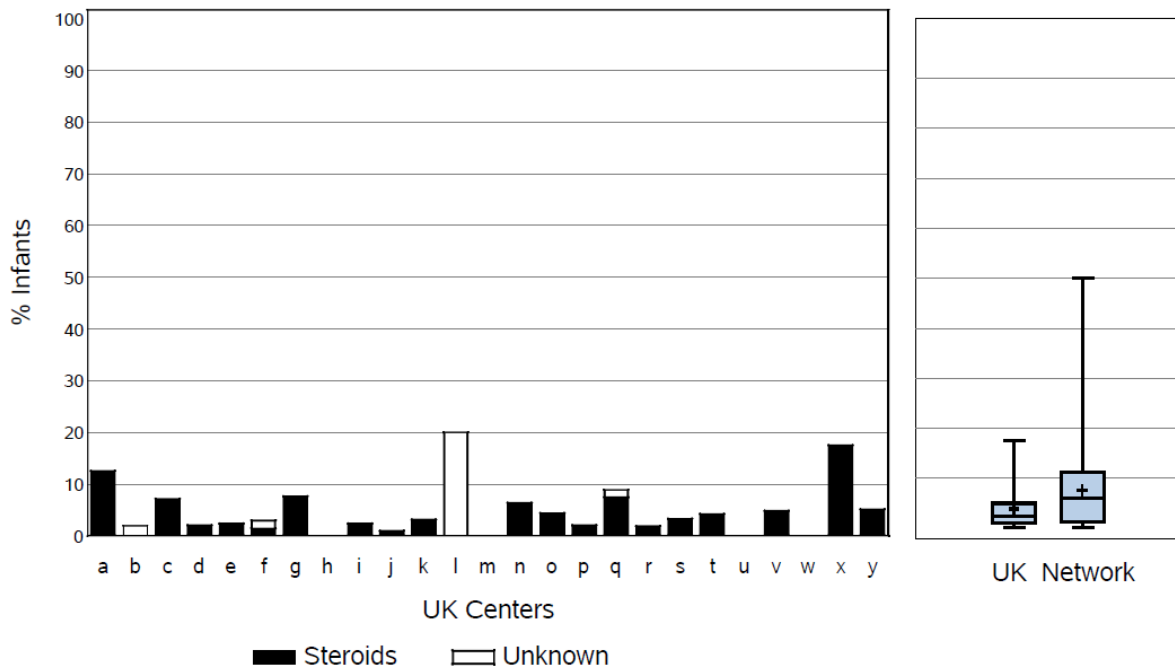
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.17

**Table 13. Steroids for Chronic Lung Disease**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**STERIODS FOR CHRONIC LUNG DISEASE**  
Infants 501 to 1500 Grams, Born in 2010



There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.18

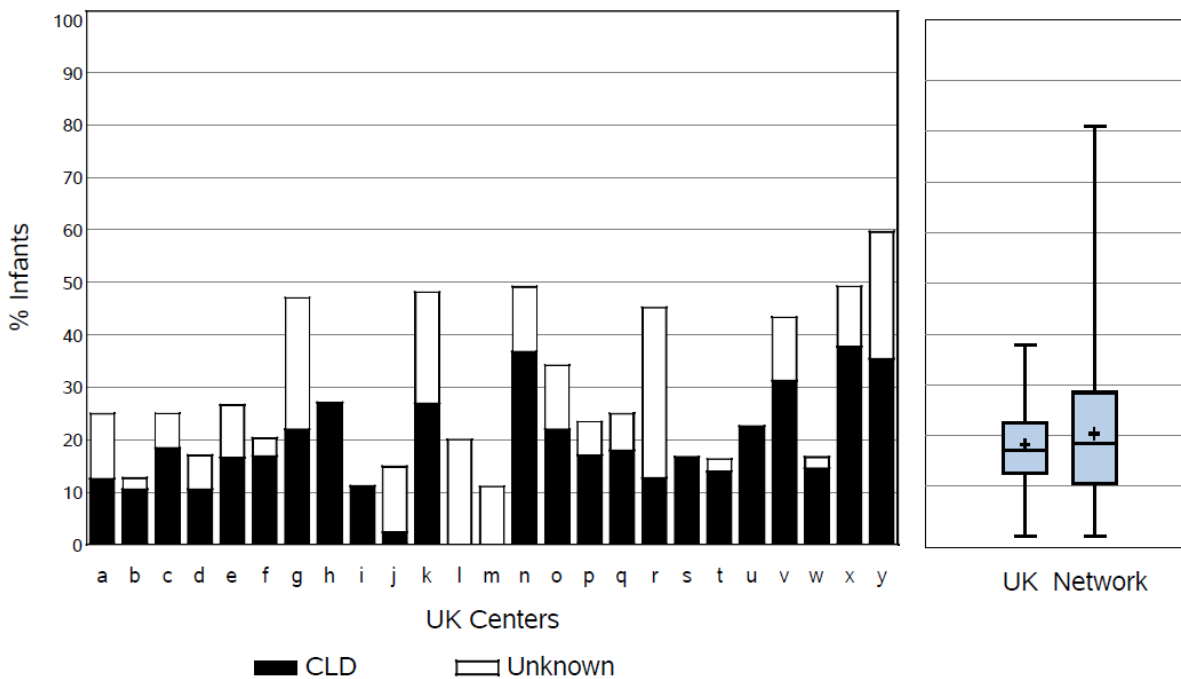


**Table 14. Chronic Lung Disease at 36 weeks**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**CHRONIC LUNG DISEASE AT 36 WEEKS**

Infants 501 to 1500 Grams, Born in 2010



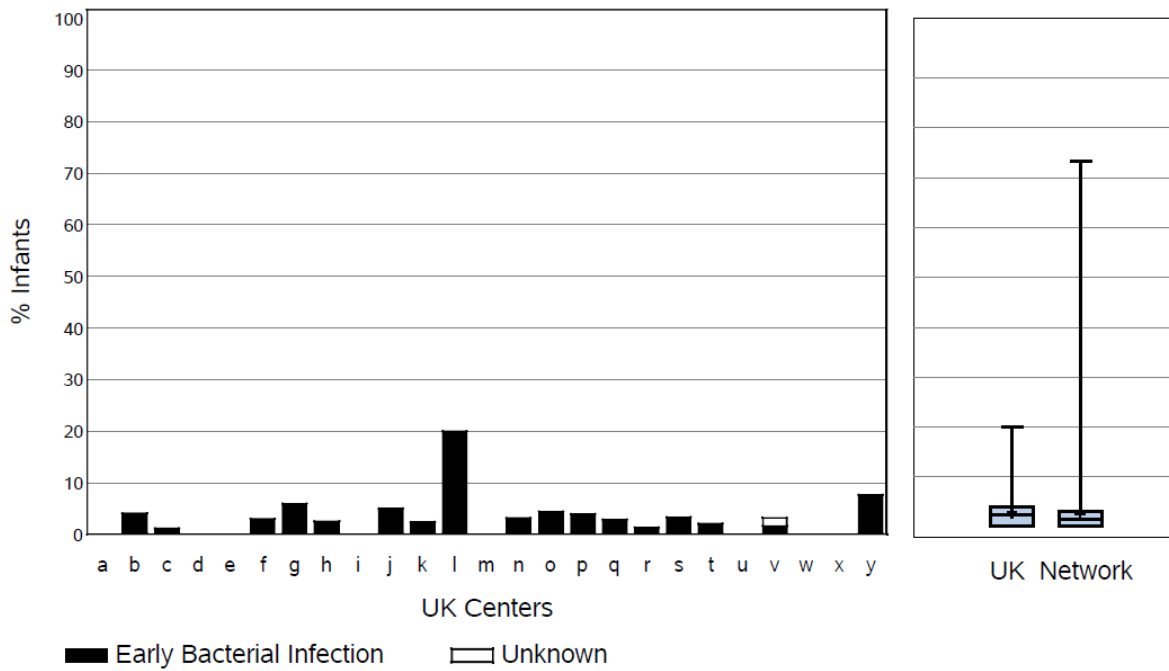
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.19

**Table 15. Early Bacterial Infection**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**EARLY BACTERIAL INFECTION**  
Infants 501 to 1500 Grams, Born in 2010



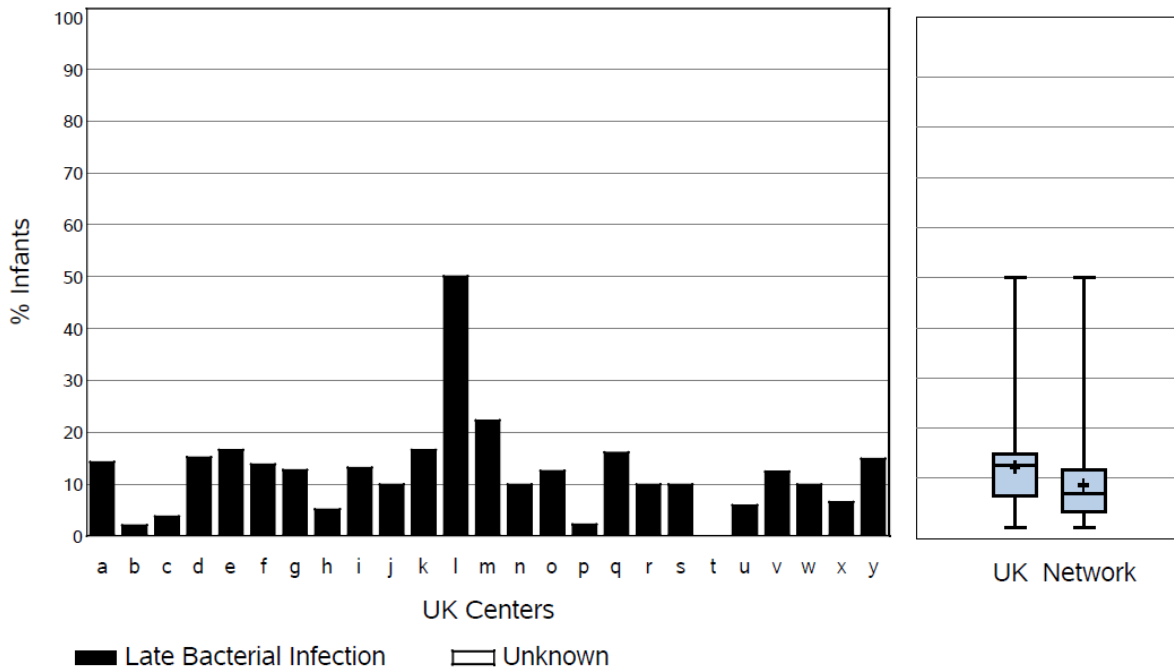
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.22

**Table 16. Late Bacterial Infection**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**LATE BACTERIAL INFECTION**  
 Infants 501 to 1500 Grams, Born in 2010



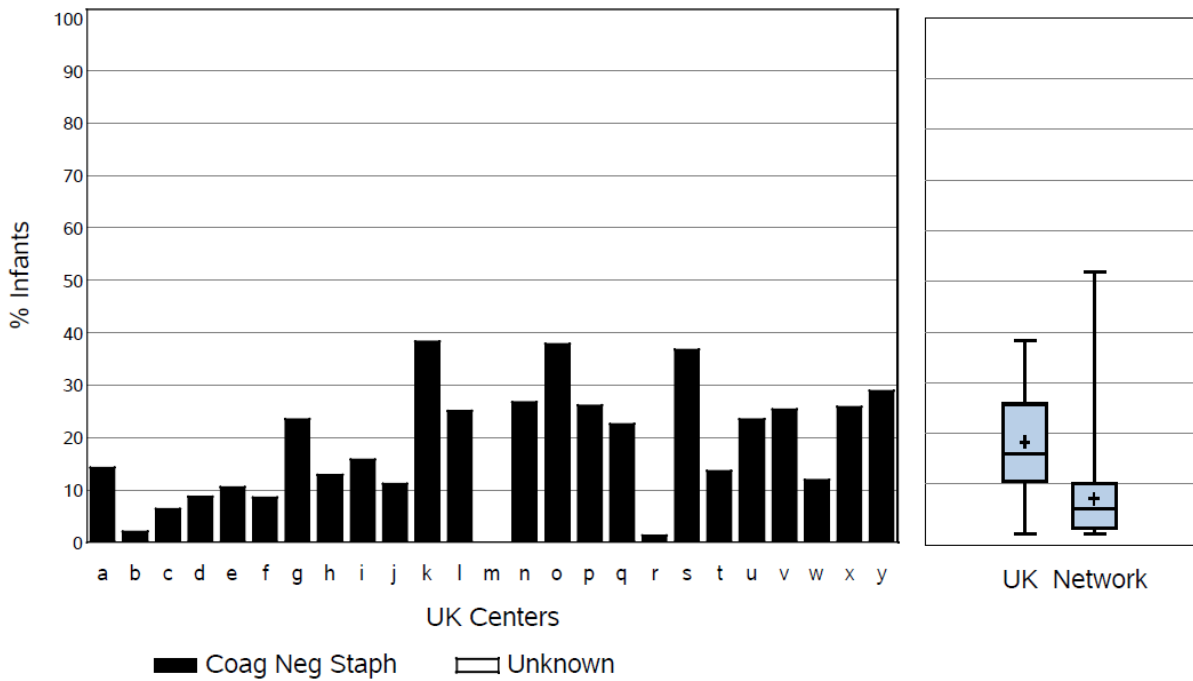
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.23

**Table 17. Coagulase Negative Staph Infection**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**COAGULASE NEGATIVE STAPH INFECTION**  
 Infants 501 to 1500 Grams, Born in 2010



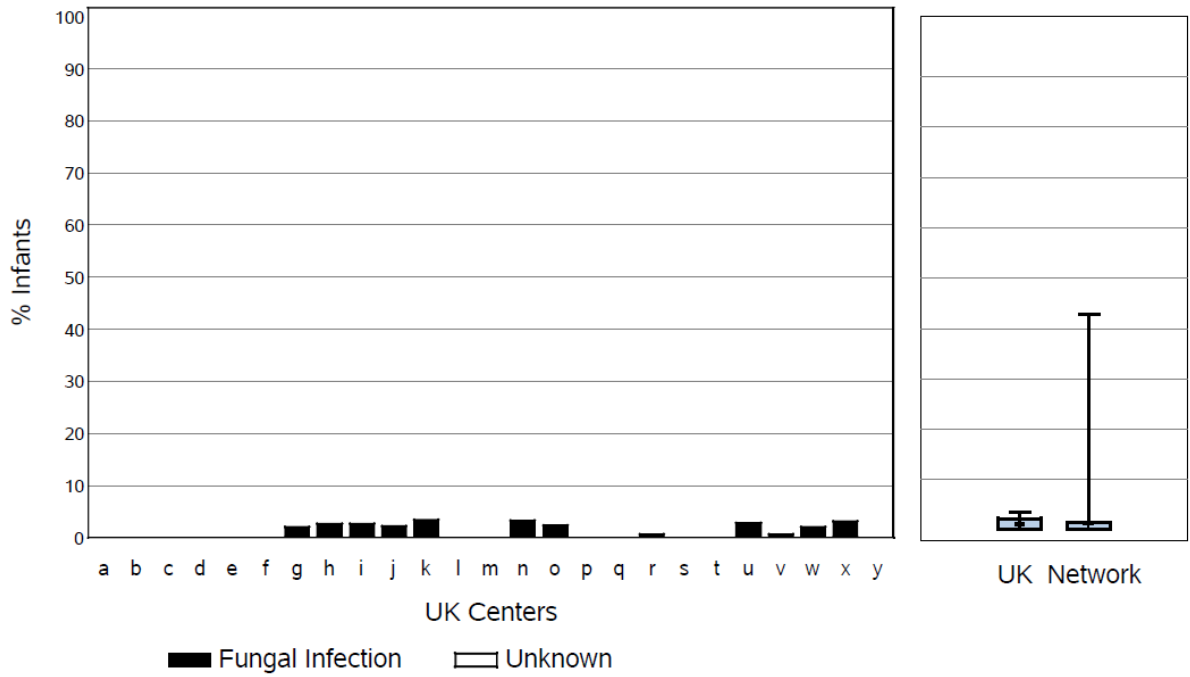
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.24

**Table 18. Fungal Infection**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**FUNGAL INFECTION**  
Infants 501 to 1500 Grams, Born in 2010



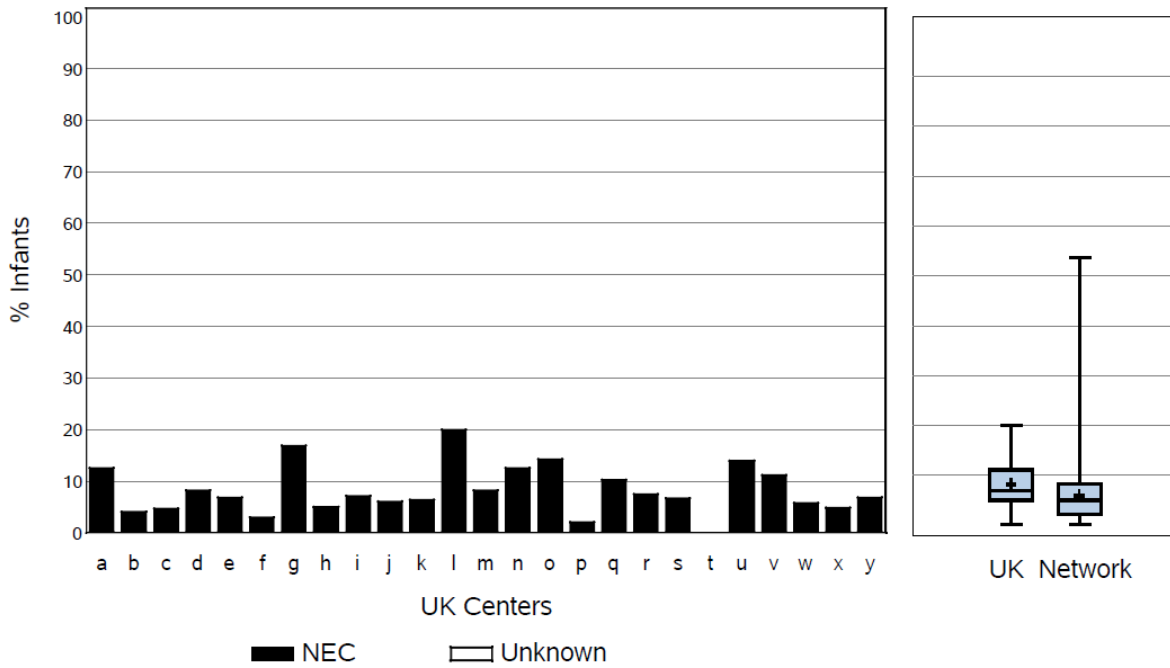
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.26

**Table 19. Necrotizing Enterocolitis**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report

**NECROTIZING ENTEROCOLITIS**  
Infants 501 to 1500 Grams, Born in 2010



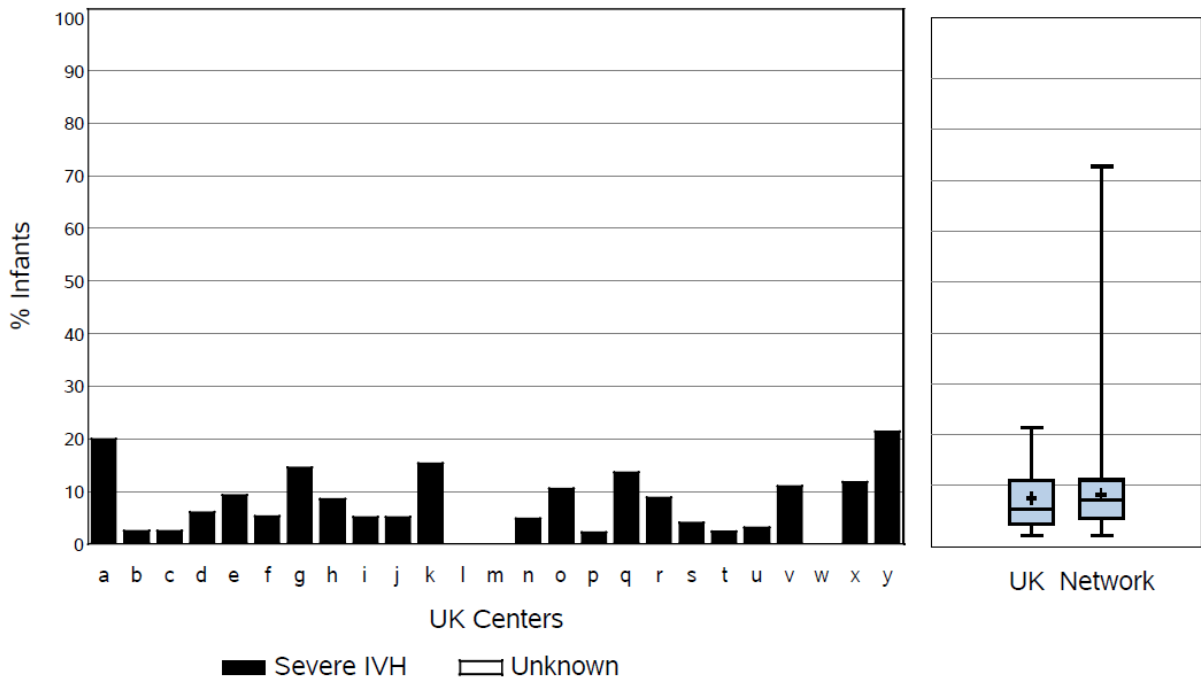
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.27

**Table 20. Severe Intraventricular Haemorrhage**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**SEVERE INTRAVENTRICULAR HEMORRHAGE**  
 Infants 501 to 1500 Grams, Born in 2010

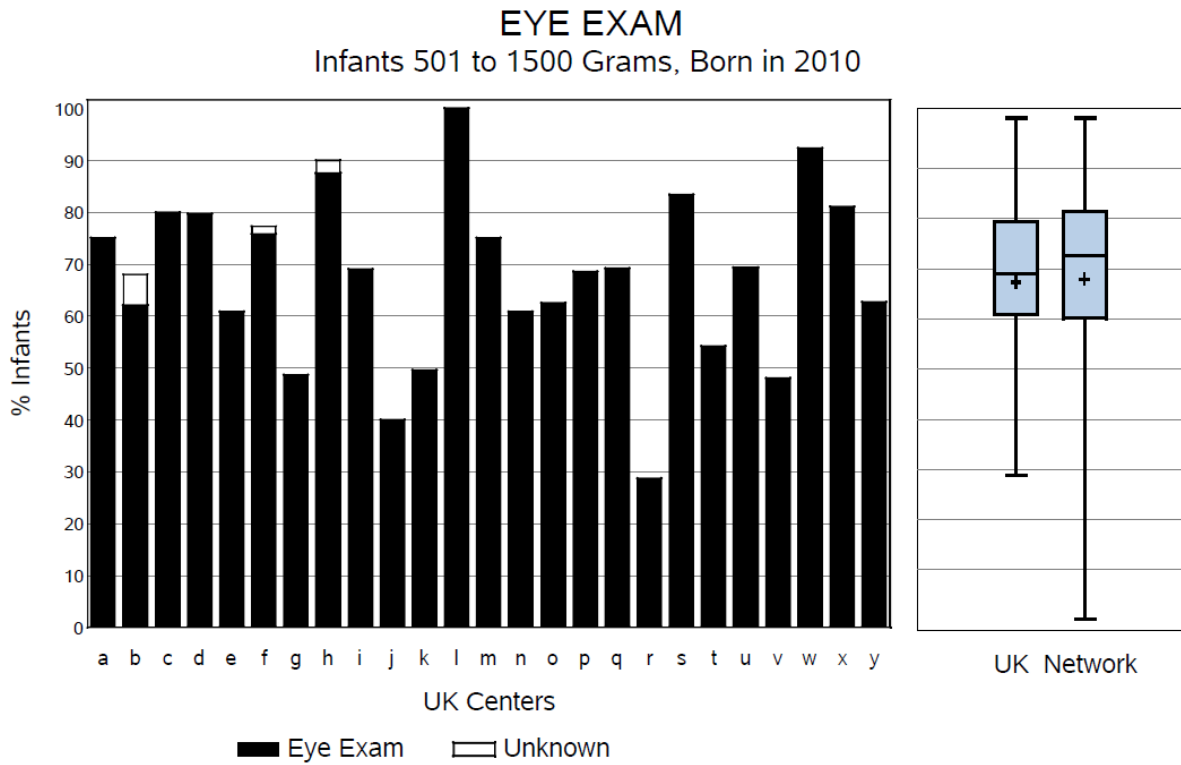


Severe IVH: Intraventricular Hemorrhage Grades 3 or 4  
 There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.35

**Table 21. Eye Exam**  
Singleton is C

Vermont Oxford Network 2010 UK Group Report



There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.37



**Table 22. Severe Retinopathy of Prematurity  
 Singleton is C**

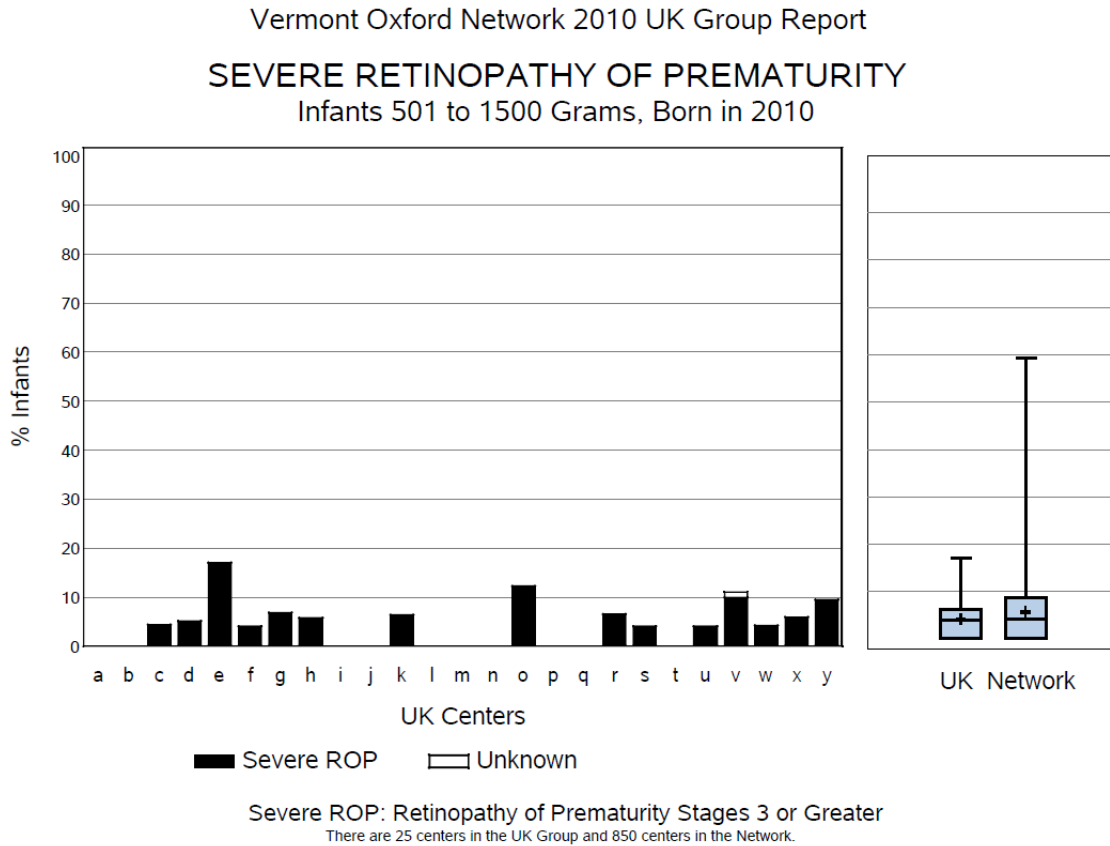
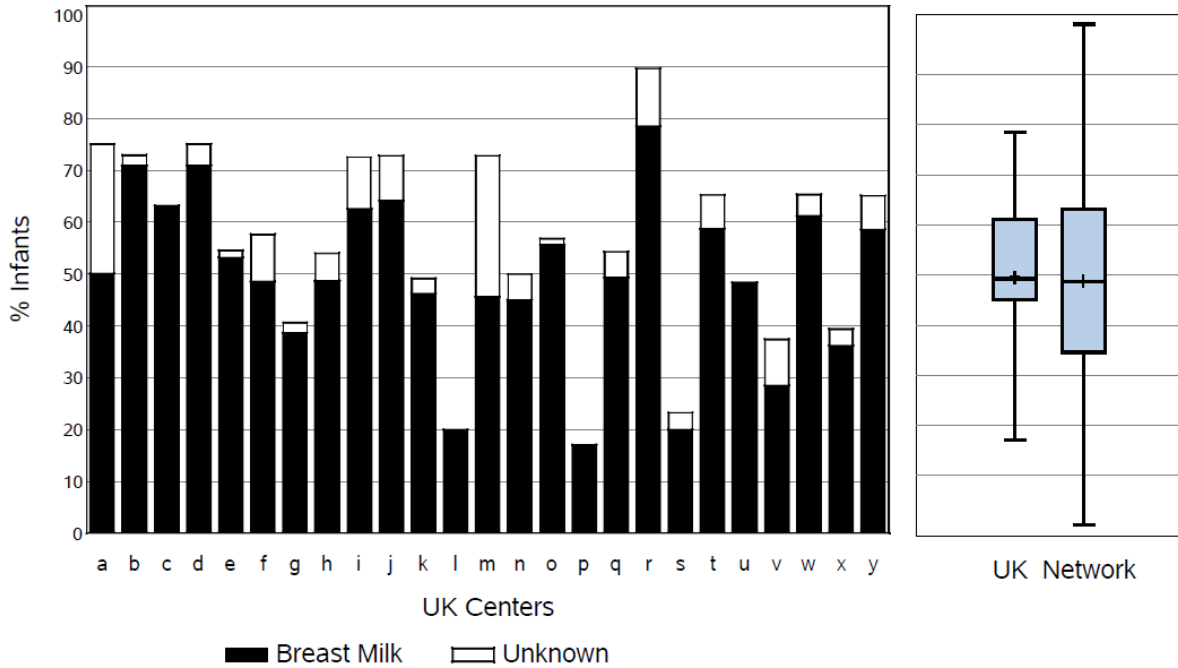


Figure 3.39

**Table 23. Any Breast Milk at Discharge**  
 Singleton is C

Vermont Oxford Network 2010 UK Group Report

**ANY BREAST MILK AT DISCHARGE**  
 Infants 501 to 1500 Grams, Born in 2010



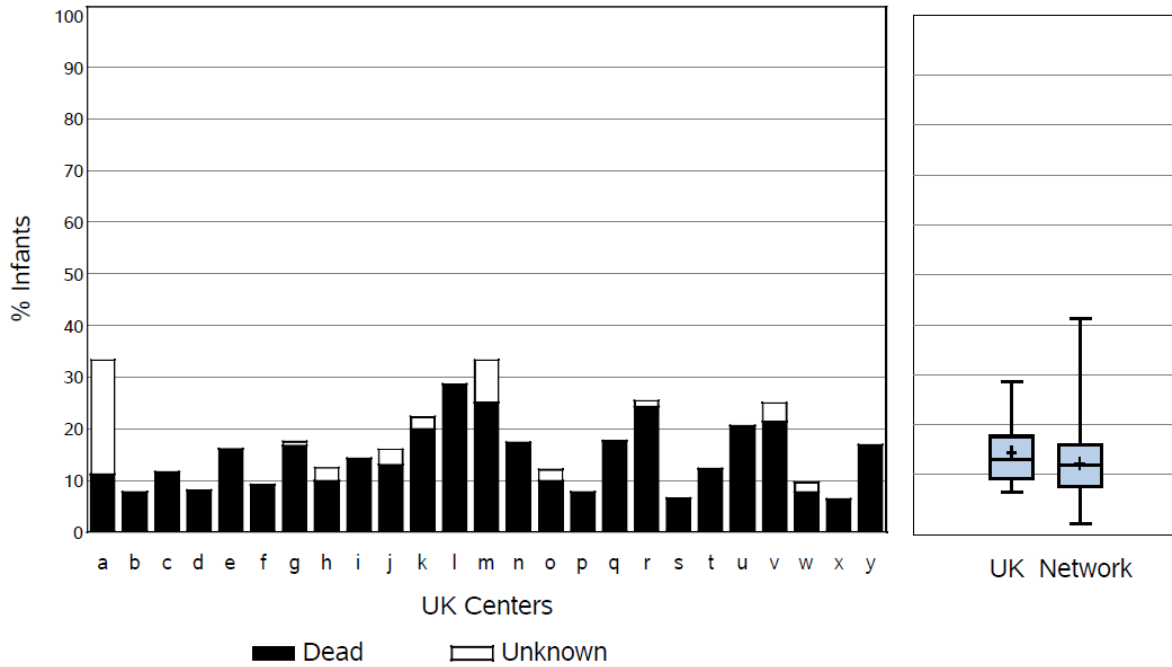
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.41

**Table 24. Mortality Overall**  
**Singleton is C**

Vermont Oxford Network 2010 UK Group Report

**MORTALITY OVERALL**  
Infants 501 to 1500 Grams, Born in 2010



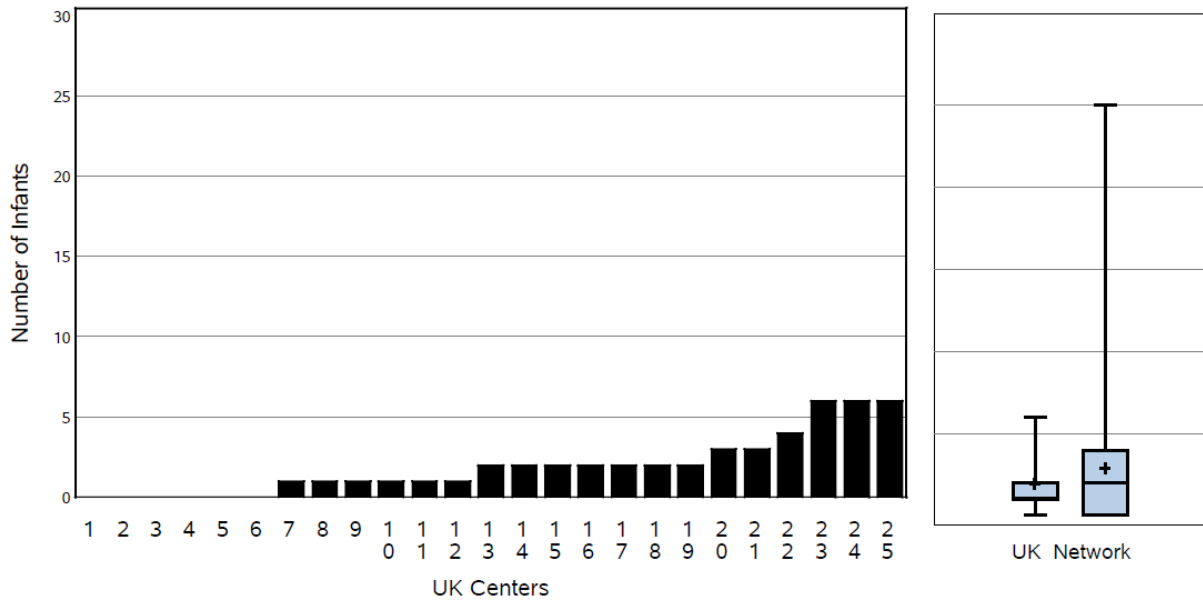
There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.43

**Table 25. Number of Admissions**  
**Singleton is 25**

Vermont Oxford Network 2010 UK Group Report

**NUMBER OF ADMISSIONS**  
Infants under 501 Grams, Born in 2010



There are 25 centers in the UK Group and 850 centers in the Network.

Figure 3.44

**SINGLETON HOSPITAL**

<b>Referring Unit</b>	<b>Date Referred</b>	<b>Gestation</b>	<b>Reason Refused</b>	<b>Accepting Unit</b>	<b>Outcome if known</b>
Carmarthen	04/01/2010	26 <sup>+1</sup>	NICU on red alert	Bristol	Baby born in Bristol on 04/01/10 admitted to Singleton on 16/02/10
Carmarthen	05/01/2010	Not known	Accepted by NICU, LW unable to accept	Not known	Not known
Royal Glam	08/01/2010	Not known	Refused by CDS	Not known	Not known
Royal Gwent	11/01/2010	Not known	Unit on amber, insufficient staff	Not known	Not known
Carmarthen	11/01/2010	Not known	Referred to Bridgend - 23 babies, 1 emergency cot	Not known	Not known
Royal Gwent	12/01/2010	Not known	23 babies, 1 emergency cot	Not known	Not known
Singleton	17/01/2010	Not known	NICU closed	Bridgend	Not known
Singleton	18/01/2010	37/40	LW on black alert	Bridgend	Not known
Singleton	18/01/2010	Not known	LW on black alert	Bridgend	Not known
Singleton	18/01/2010	39 <sup>+</sup> /40	Breech, contracting	Bridgend	Not known
Singleton	18/01/2010	Not known	NICU closed	Bridgend	Not known
Singleton	18/01/2010	Not known	Unit on red alert (Methadone user)	Bridgend	Not known
Singleton	18/01/2010	33/40	NICU on red alert	Royal Glam	Not known
Singleton	20/01/2010	27/40	37/40 NICU on red alert	Bristol	Baby born in Bristol on 20/01/10 admitted to Singleton on 08/02/10
Bronglais	22/01/2010	32/40	P-Previa Insulin Dependent Diabetic	Not known	Not known

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Merthyr	22/01/2010	Not known	Unit on amber, triplets delivering in 2 days	Not known	Not known
Royal Glam	26/01/2010	Not known	Unit on amber, 22 babies, 1x31/40 on LW tightening	Not known	Not known
Bridgend	28/01/2010	Not known	Unit on amber, 93% acuity, awaiting 25/40 wk gestation	Not known	Not known
UHW	28/01/2010	Not known	Unit on amber, 93% acuity, awaiting 25/40 wk gestation	Not known	Not known
Singleton	29/01/2010	32/40	NICU on red alert	Withybush	Not known
Singleton	03/02/2010	Not known	NICU on red alert	Royal Gwent	Not known
Royal Glam	05/02/2010	Not known	NICU on red alert, acuity 104.6%	Not known	Not known
Singleton	06/02/2010	Not known	LW on red alert	Bridgend	Not known
Singleton	06/02/2010	Not known	NICU on red alert	Bridgend	Not known
Royal Glam	09/02/2010	Not known	NICU on red alert, acuity 102.3%	Not known	Not known
Singleton	10/02/2010	Not known	NICU on red alert	Bridgend	Not known
Royal Glam	14/02/2010	Not known	NICU on red alert, acuity 109%	Not known	Not known
Royal Glam	15/02/2010	Not known	NICU on red alert, acuity 116%	Not known	Not known
Singleton	16/02/2010	Not known	NICU on red alert, acuity 116%	Shrewsbury?	Not known
Bronglais	17/02/2010	Not known	No space available	Not known	Not known
Bridgend	18/02/2010	Not known	LW staff shortage	Not known	Not known
UHW	27/02/2010	Not known	NICU on amber, 97% acuity, open to own	Not known	Not known
Newport	01/03/2010	Not known	Unit on amber	Not known	Not known
Singleton	01/03/2010	Not known	Black alert - NICU has no flat space	Bridgend	Not known
Singleton	10/03/2010	Not known	NICU black alert	Bridgend	Not known

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Singleton	10/03/2010	36/40	NICU black alert	Withybush	Not known
Singleton	10/03/2010	Not known	NICU black alert	Newport	Not known
Bridgend	06/05/2010	34 <sup>+</sup>	Accepted by NICU but LW unable to accept	Not known	Not known
UHW	06/05/2010	23 <sup>+3</sup>	Cots available on NICU but LW unable to accept	Not known	Not known
Singleton	22/05/2010	Not known	NICU closed	Bridgend	Not known
Bronglais	23/05/2010	24/40	NICU on red alert, acuity 11, 18 babies - 7 x level 1, 5 x level 2	Glanclwyd	Not known
Singleton	23/05/2010	Not known	NICU closed	Southmead, Bristol	Not known
Singleton	25/05/2010	Not known	LW on red alert, home birth transfer from patient's home	Bridgend	Not known
Singleton	26/05/2010	Not known	NICU on red alert	Bridgend	Not known
Bronglais	04/06/2010	36 <sup>+5</sup> Twins	Accepted by NICU, LW unable to take	Not known	Not known
Carmarthen	05/06/2010	32/40	Cots available on NICU, LW unable to accept	Stayed in Carmarthen	Not known
Prince Charles	08/06/2010	24 <sup>+4</sup>	Suggested try Royal Glam or Cardiff (LW closed - had a cot) if difficulty to contact us again	Not known	Not known
Prince Charles	12/06/2010	29 <sup>+2</sup>	Accepted by NICU, LW unable to take	Not known	Not known
Withybush	08/08/2010	30/40	NICU red alert - 103% acuity, 8 x Level 1 (previously accepted from Withybush)	Royal Gwent	Baby born in Royal Gwent 08/08/10 transferred to Withybush on 25/08/10

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Singleton	11/08/2010	30/40	Maternal clinical reasons	UHW, Cardiff	Mother resides in Neath - baby transferred to Bridgend on 23/08/10
Singleton	12/08/2010	40 <sup>+3</sup>	NICU red alert	Bridgend	Not known
Singleton	12/08/2010	30 <sup>+3</sup> twins	NICU red alert	Bridgend	Baby born in Bridgend on 12/08/10 discharged home on 17/09/10
Singleton	12/08/2010	27 <sup>+3</sup> twins	NICU red alert	Bristol	Baby born in Bristol on 12/08/10 Twin I admitted to Singleton on 16/08/10 Twin II admitted to Singleton 20/08/10
Singleton	13/08/2010	28/40	NICU red alert	Bristol	Baby born in Bristol on 14/08/10 and remained in Bristol for 19 days
Singleton	13/08/2010	41 <sup>+6</sup>	NICU black alert	Bridgend	Did not deliver
Singleton	13/08/2010	39/40	NICU black alert	Bridgend	Did not deliver
Singleton	13/08/2010	36 <sup>+</sup>	NICU black alert	Bridgend	Did not deliver
Singleton	13/08/2010	32/40	NICU black alert	Bridgend	Did not deliver
Singleton	14/08/2010	40 <sup>+</sup>	NICU black alert	Bridgend	Did not deliver
Singleton	14/08/2010	25 <sup>+6</sup>	NICU closed, no NICU beds in Wales	Luton & Dunstable Hospital, London by Air Ambulance (no land ambulances available)	Did not deliver
Aberystwyth	21/08/2010	40 <sup>+</sup>	NICU red alert	Liverpool Women's Hospital	Baby born at Liverpool Women's Hospital on 22/08/10



Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Singleton	28/08/2010	30 <sup>+1</sup> twins	NICU red alert	Royal United Hospital, Bath	Did not deliver
Singleton	31/08/2010	31/40	NICU red alert	UHW, Cardiff	Did not deliver
Singleton	05/09/2010	39 <sup>+</sup>	NICU on red alert	Carmarthen	Baby born in Carmarthen on 05/09/10
Singleton	07/09/2010	34/40 twins	NICU on red alert	Haverfordwest	Did not deliver
Singleton	08/09/2010	38/40	NICU on black alert	Carmarthen	Baby born in Carmarthen on 08/09/10
Singleton	08/09/2010	39/40	NICU on black alert	Bridgend	Baby born in Bridgend on 08/09/10
Singleton	11/09/2010	34/40 twins	NICU on red alert	Bridgend	Twins born in Bridgend on 13/09/10 and were discharged home on 28/09/10
Singleton	15/09/2010	33/40	NICU on black alert	Haverfordwest	Did not deliver
Singleton	15/09/2010	40 <sup>+3</sup>	NICU on black alert	Bridgend	Baby born in Bridgend on 15/09/10 and remained there for 5 days
Singleton	15/09/2010	38/40	NICU on black alert	Bridgend	Baby born in Bridgend on 17/09/10 and remained there for 3 days
Singleton	15/09/2010	39/40	NICU on black alert	Bridgend	Baby born in Bridgend on 15/09/10 and remained there for 5 days
Singleton	15/09/2010	40/40	NICU on black alert	Neath	Baby born in Neath on 15/09/10 and transferred to Bridgend on 16/09/10 and remained there for 4 days

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Singleton	15/09/2010	40 <sup>+4</sup>	NICU on black alert	Bridgend	Baby born at Bridgend on 15/09/10 and remained there for 9 days
Singleton	18/09/2010	34/40	NICU on red alert	Bridgend	Baby born at Bridgend on 18/09/10 and remained there for 13 days
Bridgend	21/09/2010	29/40	NICU on red alert	UHW	Baby born UHW on 21/09/10 admitted to Singleton on 02/10/10
Singleton	25/09/2010	36/40	NICU on red alert	Bridgend	Baby born at Bridgend on 25/09/10 and remained there for 5 days
Singleton	26/09/2010	32 <sup>+2</sup> twins	NICU on red alert	Bristol	Twins born at Bristol on 29/09/10 and remained there for 9 days before being transferred to Bridgend where they remained for 19 days
Singleton	01/10/2010	39/40	High activity/ acuity on LW	Bridgend	Baby born in Bridgend on 01/10/10 and remained there for 4 days
Singleton	09/10/2010	40/40	High activity/ acuity on LW	Bridgend	Baby born in Bridgend on 01/10/10 and remained there for 4 days

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board					
Bronglais	22/10/2010	31 <sup>+2</sup>	Unable to accept as already accepted 28/40 twins from Neville Hall and 31/40 twins - PET on LW	UHW	Baby born in UHW on 28/11/10 and remained there for 3 days
Bronglais	30/10/2010	40/40	Bed in UHW but Singleton unable to retrieve due to patient numbers and nursing staff	Carmarthen	Baby born in Carmarthen on 30/10/10 and remained there for 6 days
Singleton	31/10/2010	40/40	NICU on red alert	Royal Gwent	Baby born in Royal Gwent on 01/11/10 and remained there for 3 days
Singleton	07/11/2010	34/40	NICU on red alert	Princess of Wales, Bridgend	Did not deliver
Carmarthen	11/11/2010	27 <sup>+6</sup>	NICU on amber alert	UHW	Baby born UHW on 11/11/10 admitted to Singleton on 21/11/10
Singleton	26/11/2010	40 <sup>+2</sup>	LW on red alert	Princess of Wales, Bridgend	Baby born in Bridgend on 27/11/10 and remained there for 2 days
Singleton	26/11/2010	37/40 twins	LW on red alert	Princess of Wales, Bridgend	Twins born in Bridgend on 26/11/10 and remained there for 3 days

**PRINCESS OF WALES**

<b>Referring Unit</b>	<b>Date Referred</b>	<b>Gestation</b>	<b>Reason Refused</b>	<b>Accepting Unit</b>
Royal Glam	20/02/10	34	Refused by LW	Not known
Nevill Hall	23/02/10	24 <sup>+2</sup> twins	NICU on red alert	Not known
Nevill Hall	26/02/10	34 <sup>+2</sup>	LW refused	Not known
Nevill Hall	26/02/10	31 <sup>+5</sup>	LW refused	Not known
Royal Gwent	01/03/10	30	LW refused	Not known
Royal Gwent	26/03/10	34 <sup>+6</sup> twins	LW refused	Not known
Worcester	31/03/10	31	LW refused	Not known
UHW	03/07/10	31 twins	LW refused	Not known
Singleton	14/08/10	32	NICU on black alert	Nevill Hall
UHW	14/08/10	30 twins	NICU closed	Not known
Withybush	11/09/10	34 twins	NICU closed	Not known
UHW	22/10/10	36 twins	LW refused	Not known
UHW	27/10/10	35 <sup>+1</sup>	LW refused	Not known
Royal Glam	14/11/10	33	NICU on red alert	Not known
UHW	19/11/10	34	NICU on red alert	Not known
Withybush	22/11/10	29	NICU on amber	Not known
POW	23/11/10	32 <sup>+2</sup>	NICU on red alert	Singleton
UHW	28/12/10	29 twins	LW refused	Not known
UHW	28/12/10	33	LW refused	Not known



# Neonatal Intensive Care Unit

## Annual Report 2010

### Part III



**Singleton Hospital**  
**Sketty Lane**  
**Sketty**  
**Swansea, SA2 8QA**

## **Prepared by:**

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**Published:** February 2012

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# PART III

## Supplementary Data



# Women and Child Health Community Neonatal Nursing Team

## Report by Cheryl Morgan Community Lead - Neonatal Services

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The Community Neonatal Nursing Team provides supportive services, facilitating a stress free transition from hospital to home, for babies discharged from the neonatal unit. The aims of the service are as follows:-

- ◆ To ensure that a neonate has the opportunity to reach their full potential within the environment of their family.
- ◆ To provide information, advice and technical support to ensure the neonate maintains a state of well being.
- ◆ To provide emotional support.

The service has been a Specialist Health Visitor led service since the recommendations of the Stroud Report 1983.

Since 2000 the service was incorporated within the Child Health Division Swansea NHS Trust.

The base is on the 4<sup>th</sup> Floor, West Ward Block, Singleton Hospital, Swansea.

The geographical area served is Swansea, Neath & Port Talbot and Llanelli. In September 2010 this was extended across the A.B.M. U.L.H.B. which now includes Bridgend.

### **Personnel**

Since August 2007 the team has been led by a Community Children's Nurse Band 7 and a Community Children's Nurse Band 6 was appointed in October 2007.

Following inclusion of Bridgend in September 2010 a Nursery Nurse Band 4 has joined the team working 18¾ hours.

The band 7 is also the Local Coni co-ordinator for the Swansea area.

## **Service Specification**

**The community neonatal team is a flexible service; we offer a home visiting service to the following babies:**

- ◆ Babies born < 1.5kg.
- ◆ Babies <30weeks gestation and under.
- ◆ Oxygen dependent babies.
- ◆ Special circumstances as requested by the Neonatal Consultant i.e. congenital heart, major neurological concern, tube fed babies. (This includes Swansea, Neath & Port Talbot and Llanelli. With regards to Neath and Port Talbot babies if they are a Bridgend booking these are usually followed up from Bridgend as they are transferred back to their referral unit prior to discharge.) Since September 2010 all babies from Bridgend who fit the criteria have been followed up the Community Neonatal Nursing Team.

## **Discharge Planning - The Community Neonatal Team will organise:**

- ◆ Discharge planning meetings for all babies who are visited by the Community Neonatal Team.
- ◆ Ordering of specialised equipment and home oxygen.
- ◆ Liaise with other members of the multi-disciplinary team.

## **Follow Up**

The duration of follow up is one year post term; the babies with specific medical needs were then referred to the appropriate multi-disciplinary team.

## **Neuro Developmental Clinic**

This clinic follows up neuro development of high-risk babies (as above) at 6 months, one year, and two years corrected age. The 'Community Neonatal Team' are qualified assessors in the Bayley's development assessment and work in conjunction with the consultant. These clinics are run weekly.

## **Palivizimab immunization**

Clinics still continue to be organised and held by the Community Neonatal Team in the winter months (October - February) with babies coming in for monthly vaccinations. Palivizumab (brand name Synagis) is a monoclonal antibody produced by recombinant DNA technology. It is used in the prevention of respiratory syncytial virus (RSV) infections. It is recommended for infants that are high-risk because of prematurity or other medical problems such as congenital heart disease.

## **Chronic Lung Clinic**

These are held in Children's Outpatient Department reviewing those babies discharged from the Neonatal Unit who are oxygen dependant, liaising with the Paediatrician, Dietician and Physiotherapist.

## **Home Oxygen**

Air Products continued to supply and deliver home oxygen, which is paid for by the Local Health boards. They also maintain all of the equipment.

Oxygen concentrator's portable cylinders and micro flow meters are delivered to the family home and Air Products undertake the training of parents and carers.

Oxygen can be delivered 24 hours prior to discharge.

Written parental consent must be obtained prior to ordering home oxygen supplies.

The **Chronic Lung Disease Clinic** continues to be led by Dr Carol Sullivan.

The **Palivizimab Clinic** is held during the winter months October to February.

The team continued to monitor development progress, working closely with the Community Paediatricians, identifying those neonates prior to discharge who have special needs, referring to therapists and support services available in their home area. Developmental assessments were performed at corrected age of 52 weeks gestation on all babies 32 weeks gestation and under prior to discharge.

## **Caseload Activity**

### Number of Babies Visited at Home 2010

23 weeks and under	1
24 - 26 weeks	19
26 - 28weeks	22
28 <sup>+</sup> - 30 weeks	34
30 <sup>+</sup> -35 weeks	40
35-term	15

### **Babies who were born between 30 - 35 weeks**

34 babies had a birth weight below 1.5kgs. and 2 were followed up because their twin was below 1.5kgs.

1 oxygen dependent baby who was also n.g.t fed.

1 I.V.H. (Consultant Referral from Swansea).

1 31<sup>+</sup>/40 Collapse prior to discharge with N.E.C. (Referral from Consultant in Bridgend).

1 Persistent Hypoglycaemia and the Twin (Consultant Referral from Bridgend).

### **Babies who were born 35 weeks - Term**

1 V.A.T.E.R. syndrome

1 Duodenal Atresia

2 I.U.G.R.

2 Hypoxia Ischaemic Encephalopathy.

1 Tracheospageal Fistula.

2 Down's Syndrome with pulmonary hypertension who were oxygen dependent.

1 Oxygen Dependent also N.G.T. fed.

1 Tetralogy of Fallots.

2 H.I.E.

1 Seizure.

1 Edward's Syndrome (Died).

Oxygen dependent 22

Death 1

### **Number of Babies who received Palivizimab:**

During the winter 2010/2011 25 babies received Palivizumab due to the amount of babies who received Synagis two clinics were run each month.

**Coni Families** = 12

I am the Coni-Coordinator for the Swansea area and attend yearly updates which are held in St. David's Hospital, Cardiff. These are arranged by the National Coni Co-ordinator who is based in Sheffield.

**Objectives 2010-2011**

To develop the community service at Princess of Wales so there will be one service across the Abertawe BroMorganwg University Health Board. To audit the service after 12 months.



## Singleton Hospital Infant Parent Support

S.H.I.P.S. was set up by some staff members and a group of parents with the aim of raising funds to purchase various items for the nursery, and to provide support to other parents who have infants on the unit, as they know first-hand the difficulties and worries that parents experience when their infants are on the unit. These supporters regularly visit the unit to speak to parents of infants who are inpatients. Their work is invaluable. We are trying to recruit new members at present.

Christmas and summer parties were a great success and enjoyed by all who attended.

This year SH.I.P.S. has purchased Easter gifts, keepsake boxes, new bedding for babies and for the family unit, breast pumps, Christmas stockings and Mother's Day chocolates and cards.

We are donating a large amount to the unit for refurbishment. We are also purchasing waterproof mattresses and new beds for the family unit.

When the new unit is complete we will equip each bedroom with tea/coffee facilities, fridges and microwaves.

## **Health outcomes of High-Risk Singleton NICU Graduates (<32 weeks OR <1500grams)**

**Background:** The Working Group of the British Association of Perinatal Medicine (BAPM) / RCPCH in 2008 recommended that all neonatal services providing intensive care should collect standardised dataset on health outcomes of high-risk babies for audit, benchmarking and research across clinical networks and health regions. The document standardised outcome definitions and assessment methods for collecting health status dataset for preterm babies less than 32 weeks gestation at birth or with birth weight <1500gms at 2 years corrected age.

**Service:** A neurodevelopmental follow up service was set up in early 2008d by Dr Sujoy Banerjee, Consultant Neonatologist. The other members of the team were Dr. Malini Ketty, Specialty Doctor in neonatal medicine, Mrs. Michelle Barry, Senior Paediatric Physiotherapist and Mrs. Vicky Burrige, Outreach Neonatal Community Nurse, all of whom were trained in Bayley scale of neurodevelopmental assessments. The team expanded in 2011 with the joining of two neonatal consultants, Dr James Moorcraft and Dr Pinki Surana. Mrs. Lynda Challacombe and Mrs. Joanna Morgan provide secretarial support. Referral pathways are agreed with the local community services.

The service was designed to cater for all premature babies less than 32 weeks gestation or 1500 grams at birth cared for at Singleton Hospital and aimed to assess these babies at 6 months and 2 years of corrected ages. The service also evaluates all babies who underwent therapeutic hypothermia and babies with identified abnormal neurology.

As the service was established in 2008, concurrent follow up was planned for babies born in this year. Children underwent developmental assessments using the Bayley 3 scales and a health outcome questionnaire was completed. Data was entered on to an electronic database and analysed using Excel 2003.

Families from outreach centres who were unable to attend this clinic due to geographical and/ or financial constraints were contacted and outcome information obtained through validated parental questionnaire (PARCA-r), SOGS2 assessments by Health Visitors or Ruth Griffiths assessment by local paediatricians. Duplication of work was avoided by obtaining information from clinicians if the children had already been assessed on a standardised scale due to ongoing clinical problems.



**Clinic:** The neurodevelopmental follow up clinic is held every Wednesday afternoon and alternate Tuesday afternoons in the Paediatric Outpatients at Singleton Hospital. Evidence from Abertawe Bro Morgannwr University Health Board

**Outcome data presentation:** The data is presented in a standardised format as recommended by the BAPM Working party report. In this annual report, we present the cumulative outcome for babies born in 2006-2008 followed by outcomes of babies from 2008 only.

**Outcome definitions:**

Criteria for	Severe Neurodevelopmental Disability	Moderate Neurodevelopmental disability
<b>Domain</b>	<i>Any one of the below:</i>	<i>Any one of the below:</i>
Motor	Cerebral palsy with GMFCS level 3, 4 or 5	Cerebral palsy with GMFCS level 2
Cognitive function	Score <-3 standard deviations below norm (DQ<55)	Score -2SD to -3SD below norm (DQ 55-70)
Hearing	No useful hearing even with aids (profound >90dBHL)	Hearing loss corrected with aids (usually moderate 40-70dBHL) <u>or</u> Some hearing but loss not corrected by aids (usually severe 70-90dBHL)
Speech and Language	No meaningful words/signs <u>or</u> unable to comprehend cued command (i.e. commands only understood in a familiar situation or with visual cues e.g. gestures).	Some but fewer than 5 words or signs <u>or</u> unable to comprehend un-cued command but able to comprehend a cued command
Vision	blind <u>or</u> can only perceive light or light reflecting objects	seems to have moderately reduced vision but better than severe visual impairment; <u>or</u> blind in one eye with good vision in the contralateral eye

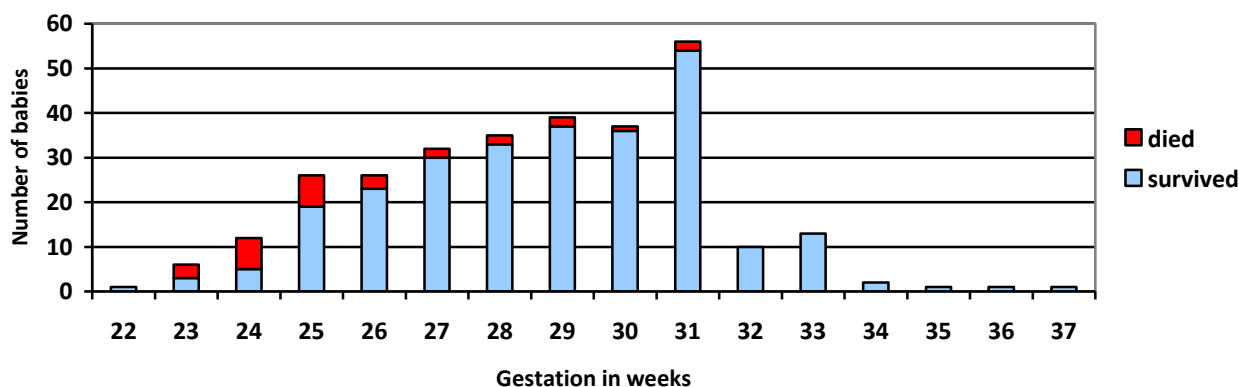
Inquiry into Neonatal Care

**Cumulative outcome (2006-2008):**

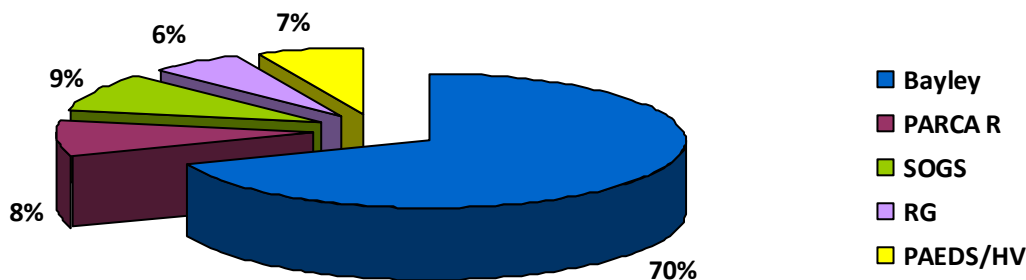
Evidence from Abertawe Bro Morgannwr University Health Board

Outcome (2006-2008)	Number (%)
Admitted for intensive care	298
Survived to discharge	269 (90.3%)
Survived at 2 years corrected age	266 (89.2%)
Contactable (% of surviving children)	192 (72.1%)
Information available	192
Death or Disability at 2 years CGA (% admitted for intensive care)	63 (21.1%)
Total Neurodevelopmental Impairment at 2 years CGA (% of children assessed)	31 (16%)
Neurodevelopmental Impairment only (NDI) (% of children assessed)	27 (14%)
Severe neurodevelopmental disability (SND) (% of children assessed)	4 (2%)
Survival free of Neurodevelopmental Impairment (% of children assessed)	161 (83.8%)

**Survival at 2 years CGA by gestation (2006-2008):**



**Type of assessments (2006-2008):**



**Outcome by gestation (2006-2008):**

<b>Gestational age at birth</b>	<b>22w</b>	<b>23w</b>	<b>24w</b>	<b>25w</b>	<b>26w</b>	<b>27w</b>	<b>28w</b>	<b>29w</b>	<b>30w</b>	<b>31w</b>	<b>32w</b>	<b>33w</b>	<b>34w</b>	<b>35w</b>	<b>36w</b>	<b>37w</b>	<b>Total</b>
Number of admissions for intensive care	1	6	12	26	26	32	35	39	37	56	10	13	2	1	1	1	298
No.(% admissions) of survival to discharge	1(100)	3(50)	5(42)	19(73)	23(88)	30(94)	33(94)	37(95)	36(97)	54(96)	10(100)	13(100)	2(100)	1(100)	1(100)	1(100)	269
No. of deaths between discharge and 2 yrs of age	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	3
No.(% admissions) of survivors at 2 yrs	1(100)	3(50)	4(33)	19(73)	23(88)	29 (91)	33(94)	36(92)	36(97)	54(96)	10(100)	13(100)	2(100)	1(100)	1(100)	1(100)	266
No.(% ) of survivors where information available for outcome at 2 yrs	1(100)	3(100)	3(75)	14(74)	14(61)	23(79)	27(82)	21(58)	27(75)	37(69)	8(80)	10(77)	2(100)	0(0)	1(100)	1(100)	192
No(% of admission) of Death or Neurodevelopmental Impairment	1 (100)	5(83)	9(75)	9(35)	7(27)	6(19)	4(11)	7(18)	2(5)	8(14)	2(20)	1(7)	1(50)	0(0)	0(0)	1(100)	63
No. (% of survivors evaluated) of Neurodevelopmental Impairment (SND + NDI)	1(100)	2(67)	1(33)	2(14)	4(29)	3(13)	2(7)	4(19)	1(4)	6(16)	2(20)	1(10)	1(50)	0(0)	0(0)	1(100)	31
Neurodevelopmental impairment(NDI) only (% of survivors evaluated)	0(0)	1(33)	1(33)	2(14)	3(21)	3(13)	2(7)	4(19)	1(4)	5(13)	2(20)	1(10)	1(50)	0(0)	0(0)	1(100)	27
Severe neurodevelopmental disability(% of survivors evaluated)	1(100)	1(33)	0(33)	0(0)	1(7)	0(0)	0(0)	0(0)	0(0)	1(3)	0(0)	0	0(0)	0(0)	0(0)	0(0)	4

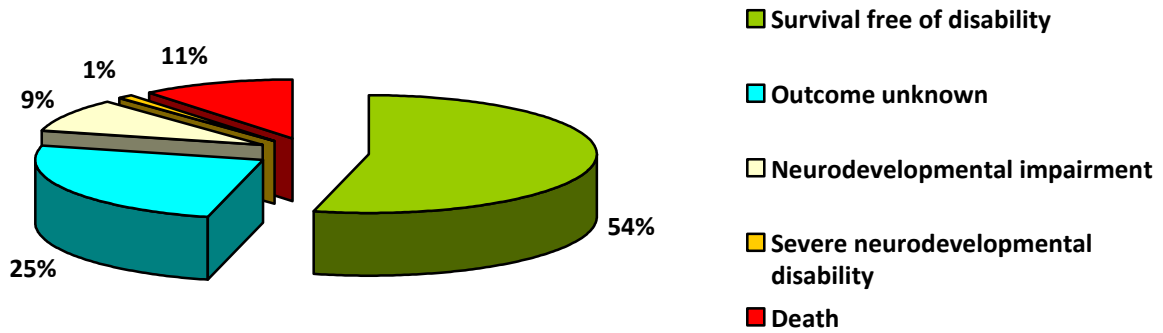
**Pattern of impairment /disability at 2 years (2006 - 2008): Total no. Of babies 31 (16.1%)**

Gestational age at birth	22w	23w	24w	25w	26w	27w	28w	29w	30w	31w	32w	33w	34w	35w	36w	37w	Total
No. with definite CP	1	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	5
Motor delay GMFCS 2	0	0	1	0	3	0	0	0	0	1	0	1	1	0	0	0	7
Motor delay GMFCS 3-5	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Cognitive <2SD	0	1	0	0	0	1	0	2	0	2	0	0	1	0	0	1	8
Cognitive <3SD	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
No. with hearing aids but not severe hearing impairment	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
No. with severe hearing impairment	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
No. with SAL impairment	1	1	0	2	1	2	2	4	1	5	2	0	0	0	0	1	22
No. with severe SAL disability	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	4
No. with visual impairment not corrected with glasses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

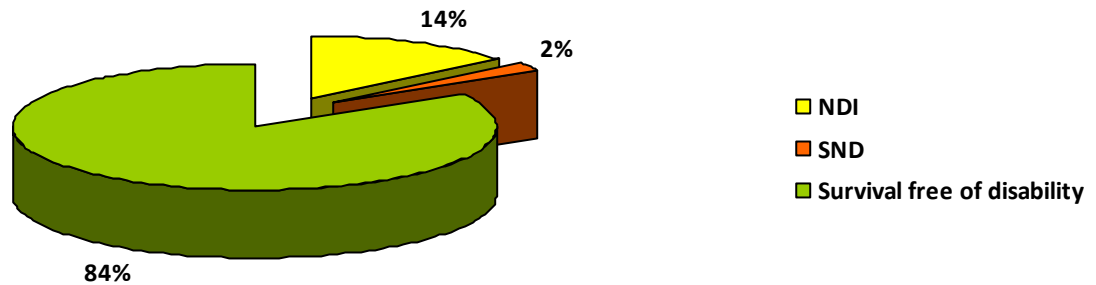
Inquiry into Neonatal Care

**Overall outcome (2006-2008) (<32 weeks or <1500 grams at birth): (% admitted for intensive care)**

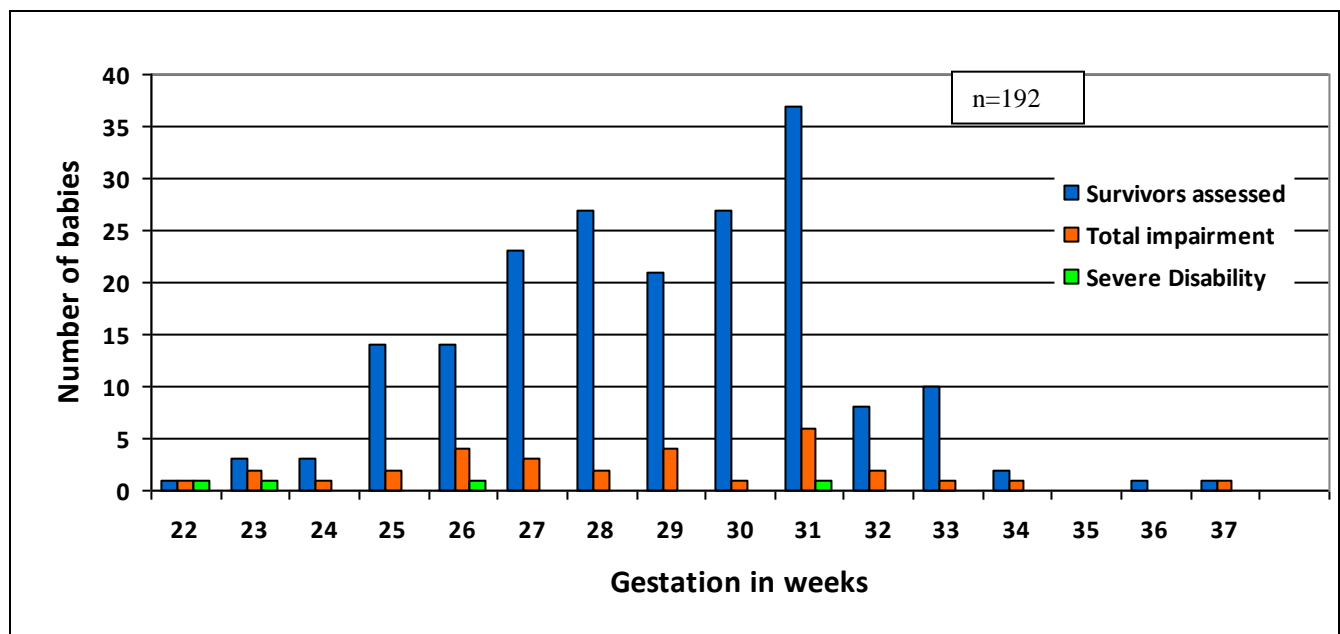
Evidence from Abertawe Bro Morgannwr University Health Board



**Cumulative outcome in survivors assessed at 2 years CGA (%) (2006-08) (n=192)**

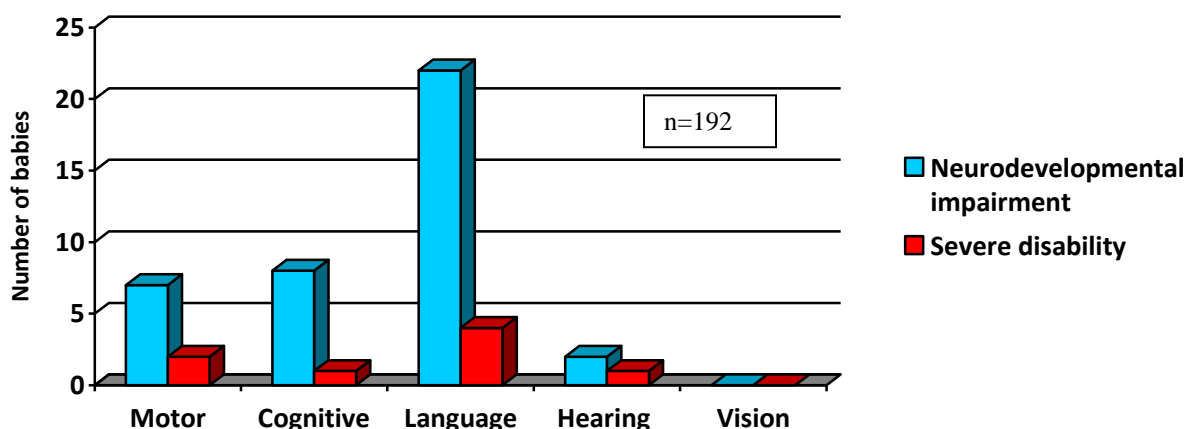


**Disability in survivors assessed by gestation (2006-2008):**

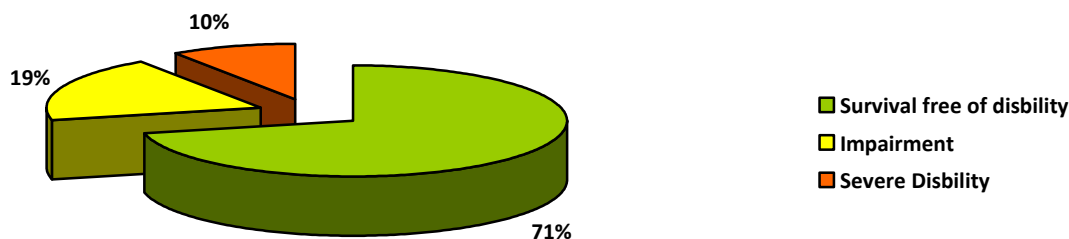


Inquiry into Neonatal Care

**Pattern of Impairment or Disability (2006-2008): (A few babies had more than one domain of involvement)** City Health Board



**Cumulative outcome in survivors assessed in extremely preterm (22-25 weeks) (2006-08)**



**Other Health Outcomes in survivors assessed: (2006-2008) (n=192)**

System	Morbidity in survivors assessed - No. (%)	Description of morbidities identified (number of children)
Congenital Malformations	11 (5.7)	Cardiac (5), Hypospadias (2), Duplex kidneys, Amniotic bands, Absent radius and thumb, Left lung sequestration
Respiratory	35(18.2)	Hyperactive airway (wheezy), poor exercise intolerance, tracheostomy (1)
Gastrointestinal and Nutrition	16(8.3)	Constipation, Poor growth, GORD, Gluten free diet (1)
Neurology other than CP	5 (2.6)	Ventricular reservoir (1), Seizure (3) - 2 febrile convulsions, 1 idiopathic; Down's syndrome
Hearing	3 (3.8)	Moderate loss fully corrected (2) Severe loss - not fully correctable (1)
Vision	0 (0)	7 babies had some issues - refractive errors requiring glasses but fully correctable , squint, nystagmus, astigmatism

**Involvement of specialist therapist at 2 years CGA (2006-2008):**

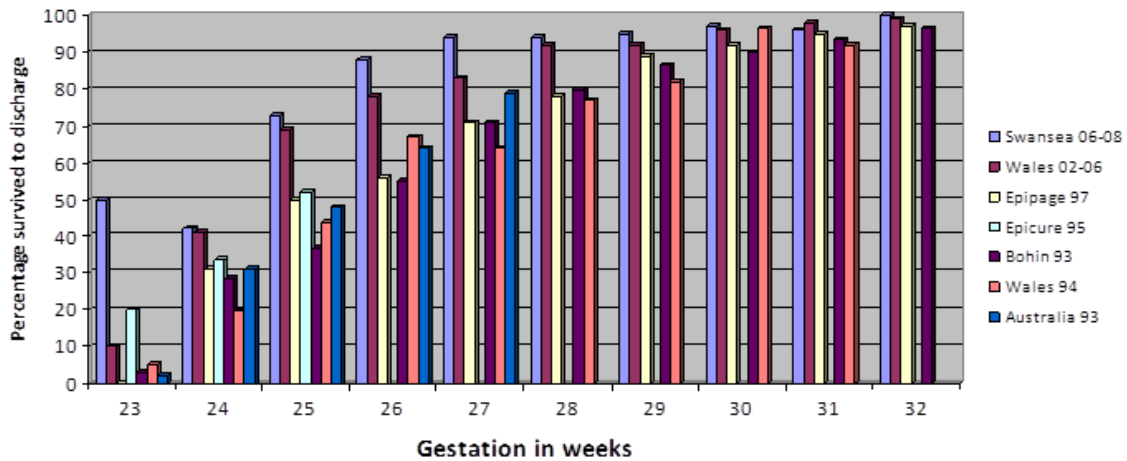
- 46 babies (22.8%) were considered eligible for referral to therapists
- 10 already with multidisciplinary Child Development Team (CDT)
- 31 referrals to Speech and Language Therapist (SALT) (16.5%)
- 7 referred to physiotherapist, 3 referred to dietitian

## **Neurodevelopmental Outcomes**

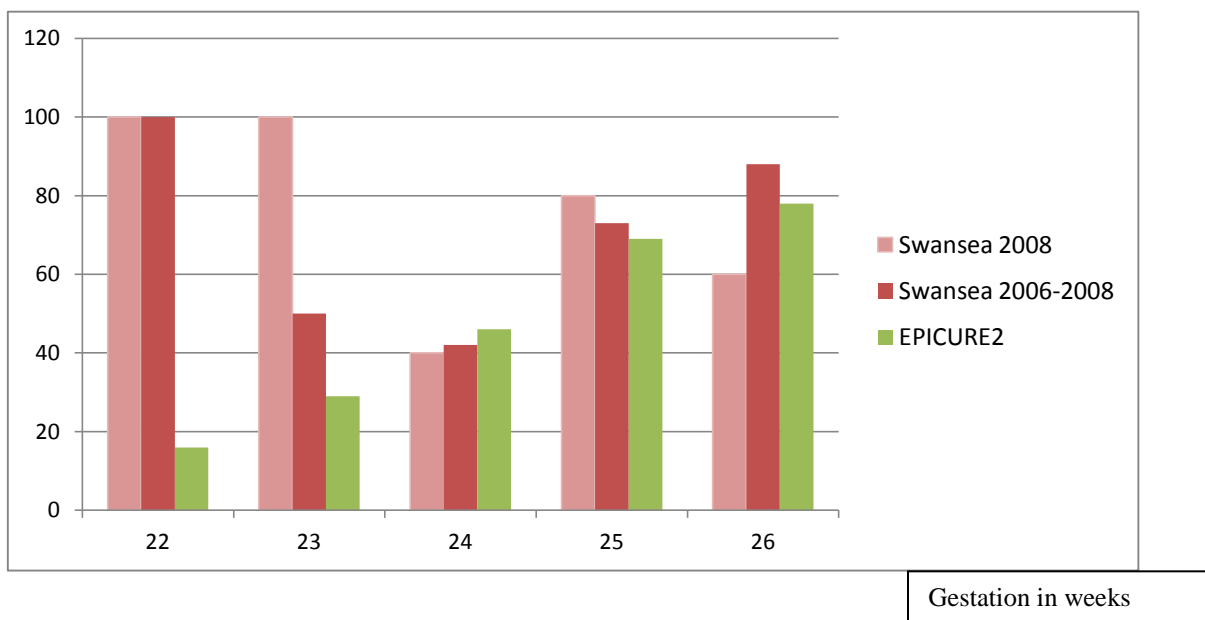
*Outcome of babies admitted to intensive care in 2006-2008*



**Survival by gestation at discharge:**



**Survival by gestation at discharge (% admitted for intensive care)**



**Long term outcomes of extreme prematurity (2-4 years of age)**

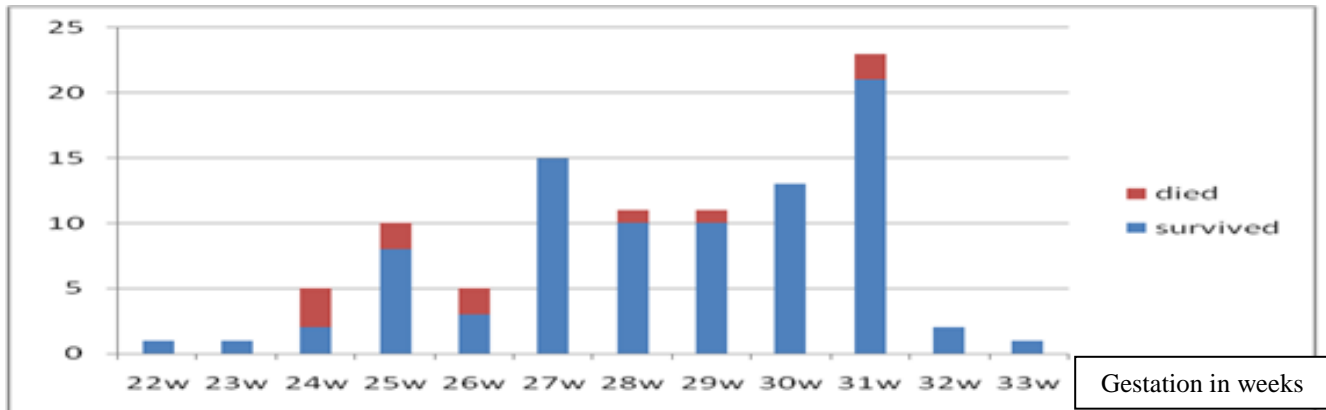
Outcome	Swansea 2006-2008	<u>Epicure</u> <u>1995</u>	<u>Minnesota</u> <u>1986-2000</u>
Time of assessment	24 months	30 months	47.5 months
Survival free of disability	71%	49%	63%
Moderate disability	19%	24%	17%
Severe disability	10%	24%	20%

**Health Outcome data for babies admitted for intensive care in 2008**

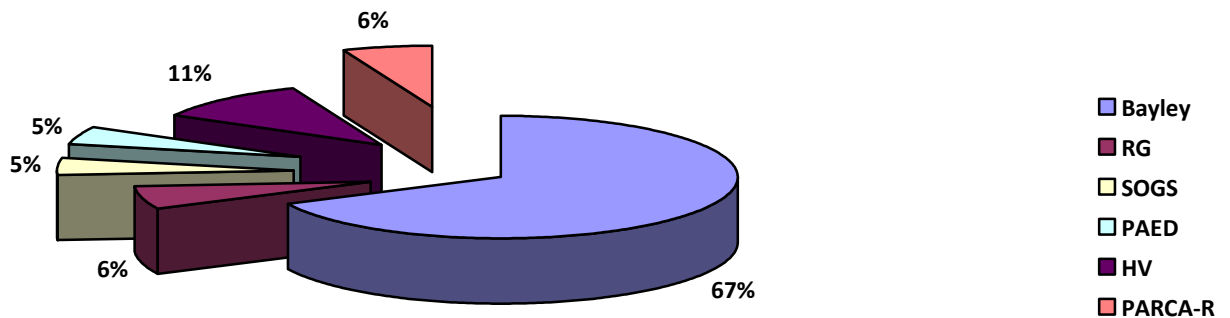
**(<32 weeks OR <1500gms)**

Outcome	Number (%)
Admitted for intensive care	98
Survived to discharge	87(88.8%)
Survived at 2 years corrected age	87(88.8%)
Contactable (% of surviving children)	65(74.7%)
Information available	65(74.7%)
Death or Disability at 2 years CGA (% admitted for intensive care)	22 (22.4%)
Total Neurodevelopmental Impairment at 2 years CGA (% of children assessed)	11 (16.9%)
Neurodevelopmental Impairment only (NDI) (% of children assessed)	9(13.8%)
Severe neurodevelopmental disability (SND) (% of children assessed)	2(3 %)
Survival free of Neurodevelopmental Impairment (% of children assessed)	54 (83.0%)

**Survival at 2 years by gestation (2008):**



**Type of assessments (2008):**



**Outcome by gestation 2008:**

<b>Gestational age at birth</b>	<b>22w</b>	<b>23w</b>	<b>24w</b>	<b>25w</b>	<b>26w</b>	<b>27w</b>	<b>28w</b>	<b>29w</b>	<b>30w</b>	<b>31w</b>	<b>32w</b>	<b>33w</b>	<b>34w</b>	<b>35w</b>	<b>36w</b>	<b>37w</b>	<b>Total</b>
Number of admissions for intensive care	1	6	12	26	26	32	35	39	37	56	10	13	2	1	1	1	298
No.(% admissions) of survival to discharge	1(100)	3(50)	5(42)	19(73)	23(88)	30(94)	33(94)	37(95)	36(97)	54(96)	10(100)	13(100)	2(100)	1(100)	1(100)	1(100)	269
No. of deaths between discharge and 2 yrs of age	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	3
No.(% admissions) of survivors at 2 yrs	1(100)	3(50)	4(33)	19(73)	23(88)	29 (91)	33(94)	36(92)	36(97)	54(96)	10(100)	13(100)	2(100)	1(100)	1(100)	1(100)	266
No.(% ) of survivors where information available for outcome at 2 yrs	1(100)	3(100)	3(75)	14(74)	14(61)	23(79)	27(82)	21(58)	27(75)	37(69)	8(80)	10(77)	2(100)	0(0)	1(100)	1(100)	192
No(% of admission) of Death or Neurodevelopmental Impairment	1 (100)	5(83)	9(75)	9(35)	7(27)	6(19)	4(11)	7(18)	2(5)	8(14)	2(20)	1(7)	1(50)	0(0)	0(0)	1(100)	63
No. (% of survivors evaluated) of Neurodevelopmental Impairment (SND + NDI)	1(100)	2(67)	1(33)	2(14)	4(29)	3(13)	2(7)	4(19)	1(4)	6(16)	2(20)	1(10)	1(50)	0(0)	0(0)	1(100)	31
Neurodevelopmental impairment(NDI) only (% of survivors evaluated)	0(0)	1(33)	1(33)	2(14)	3(21)	3(13)	2(7)	4(19)	1(4)	5(13)	2(20)	1(10)	1(50)	0(0)	0(0)	1(100)	27
Severe neurodevelopmental disability(% of survivors evaluated)	1(100)	1(33)	0(33)	0(0)	1(7)	0(0)	0(0)	0(0)	0(0)	1(3)	0(0)	0	0(0)	0(0)	0(0)	0(0)	4

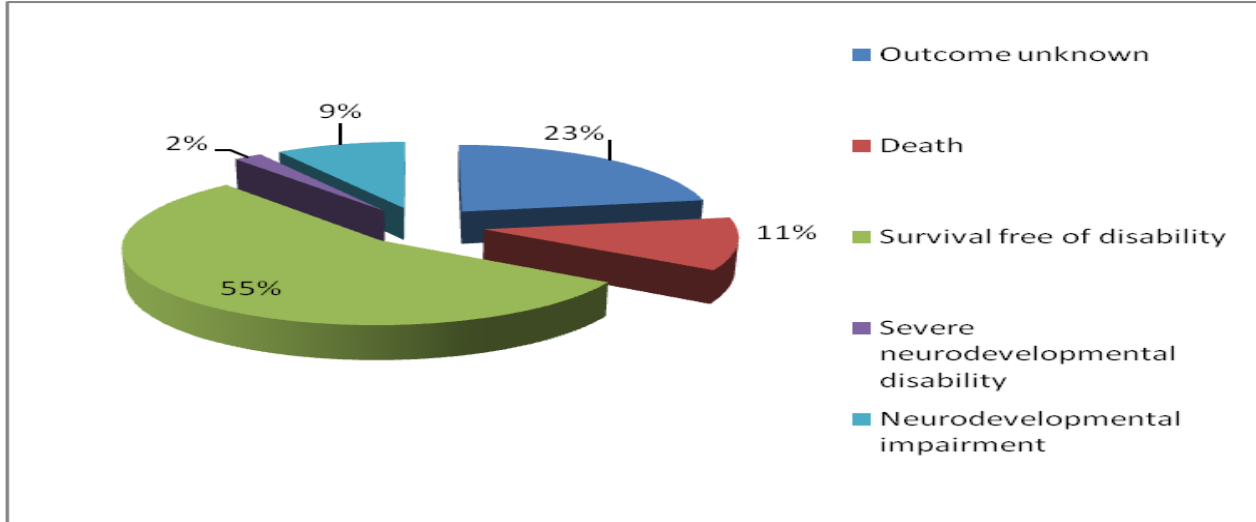
**Pattern of impairment / disability at 2 years for 2008: Total No. of babies 11 (16.9%)**

Gestational age at birth	22w	23w	24w	25w	26w	27w	28w	29w	30w	31w	32w	33w	34w	35w	36w	37w	Total
No. with definite CP	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	4
Motor delay GMFCS 2	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
Motor delay GMFCS 3-5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Cognitive <2SD	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Cognitive <3SD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. with hearing aids but not severe hearing impairment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. with severe hearing impairment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. with SAL impairment	1	0	0	1	1	2	0	3	0	1	0	0	0	0	0	0	9
No. with severe SAL disability	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
No. with visual impairment not corrected with glasses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

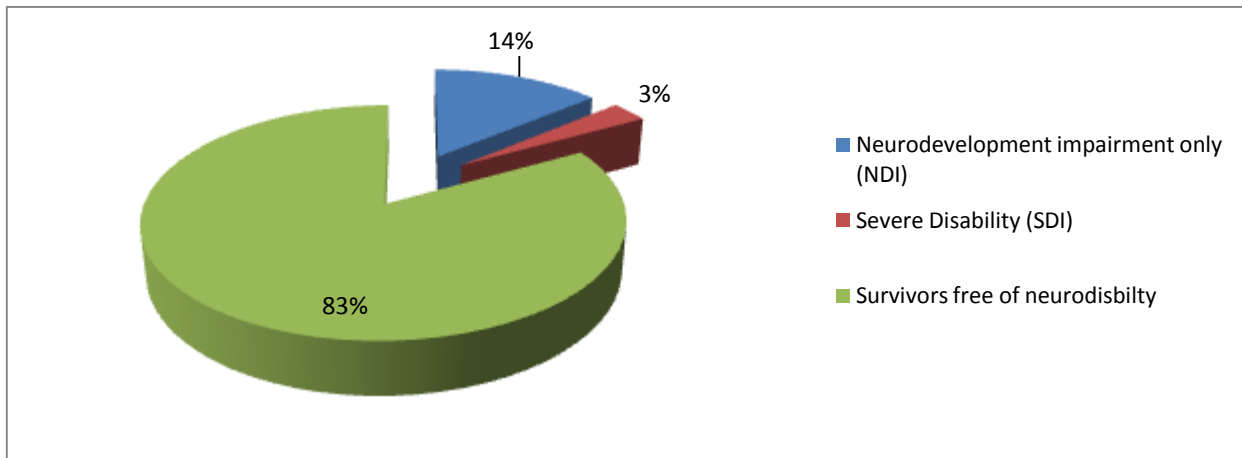
Inquiry into Neonatal Care

**Overall Outcome (2008) (<32 weeks or <1500 grams at birth): (% admitted for intensive care)**

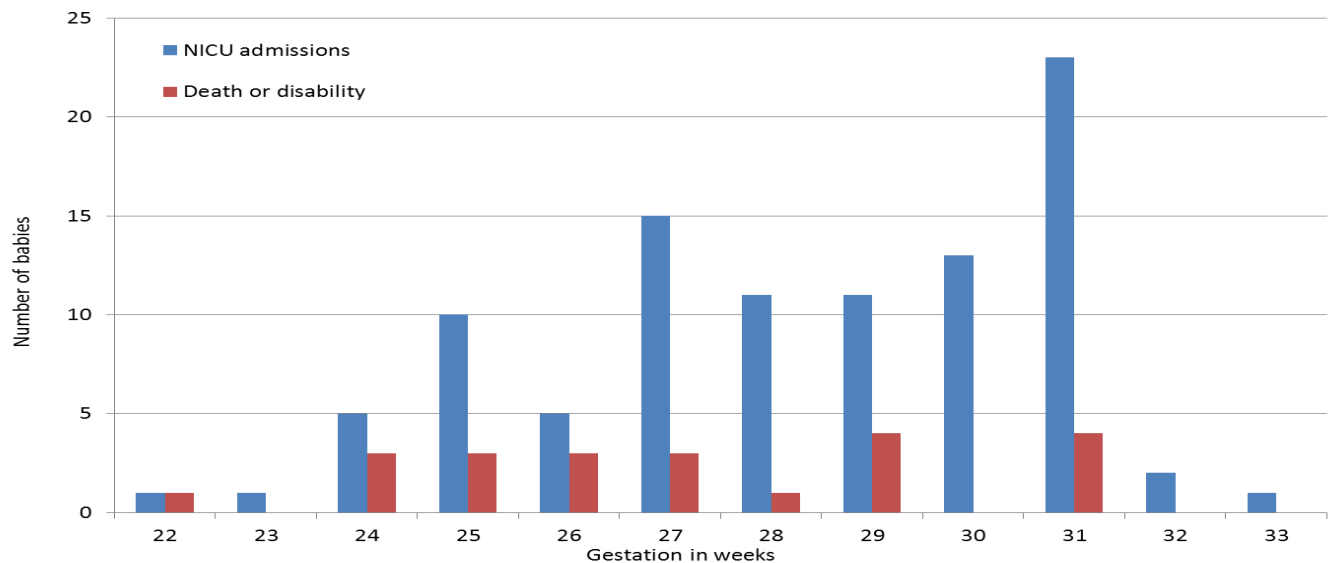
Evidence from Abertawe Bro Morgannwr University Health Board



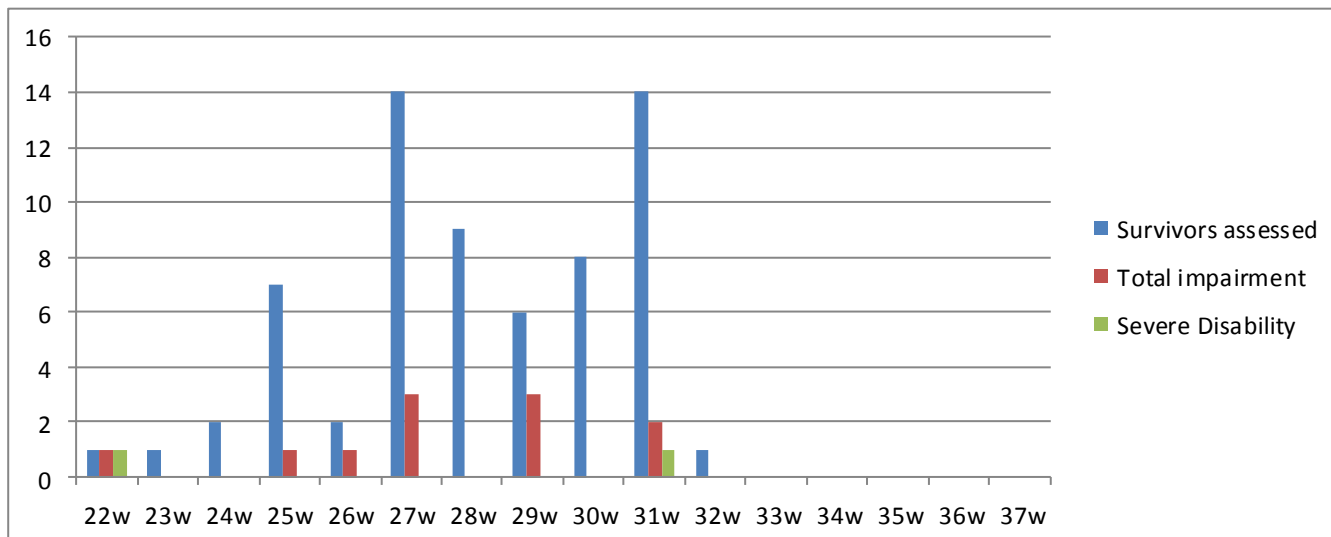
**Outcome in survivors assessed at 2 years CGA (%) (2008) (n=65)**



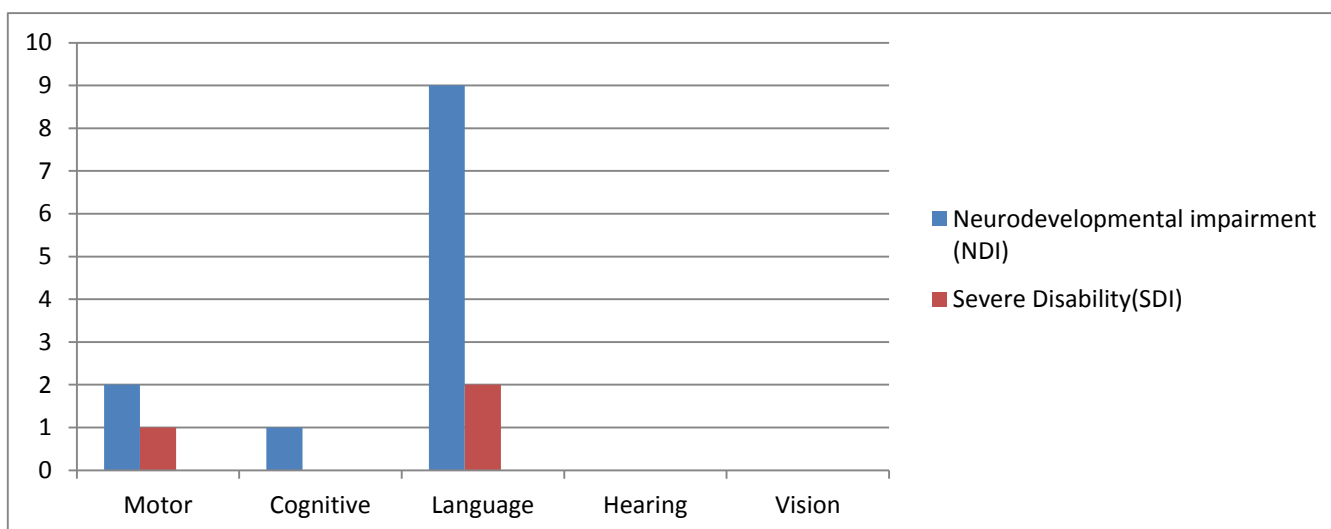
**Outcome 2008: death or disability by gestation**



**Disability in survivors assessed by gestation (2008):**



**Pattern of Impairment or Disability (2008):**

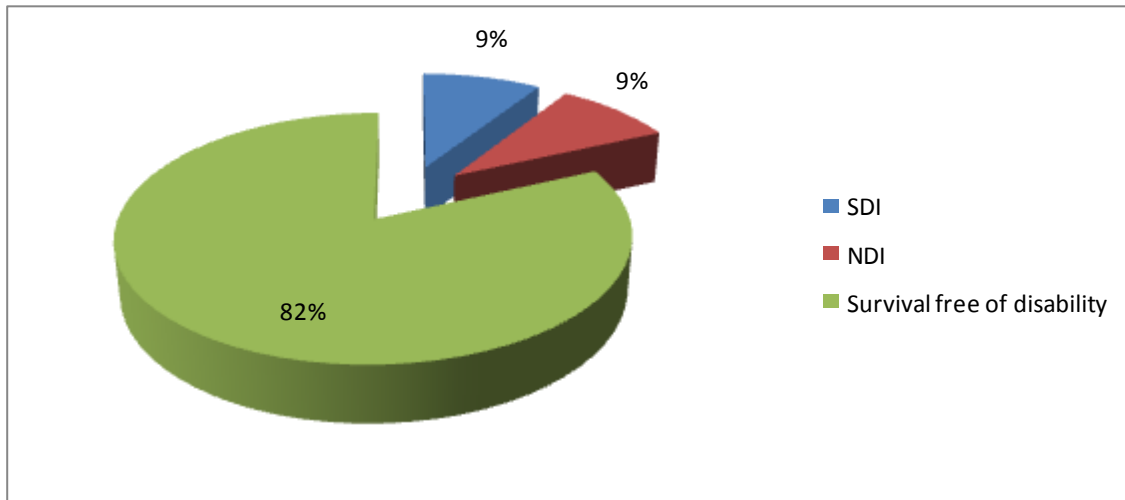


**Developmental domain scores (2008)**

Domain	Mean	Median	Standard Deviation
Cognitive	102.93	105	15.58
Language	95.2	94	12.8
Motor	100.7	100	14.41

Inquiry into Neonatal Care

**Outcome in survivors assessed in extremely preterm (22-25 weeks) (2008)** Abertawe Bro Morgannwr University Health Board



**Other Health Outcomes in survivors assessed: (2008) (n=65)**

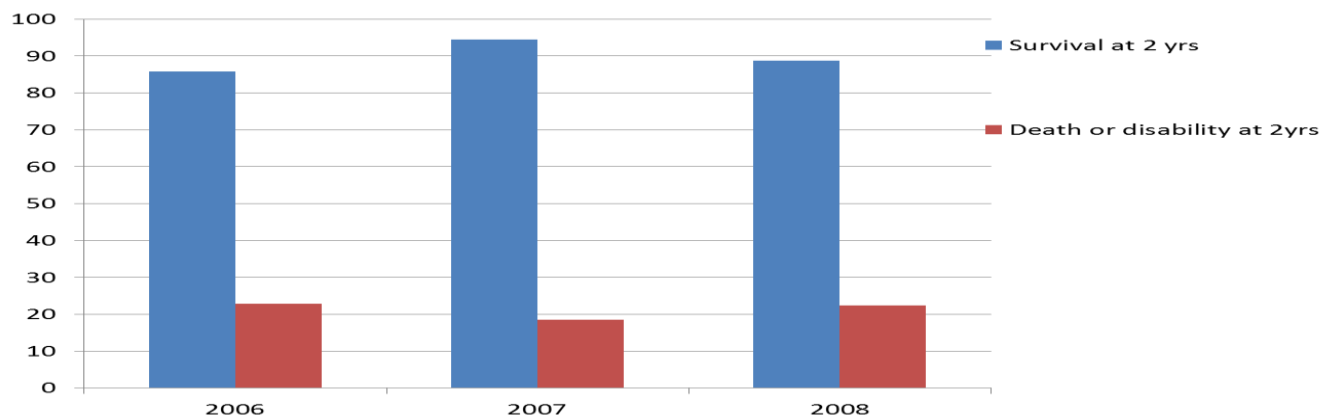
System	Morbidity in survivors assessed - No. (%)	Description of morbidities identified (number of children)
Congenital Malformations	5(7.7)	Hypospadias, ASD, Tetralogy of Fallot, WPW syndrome, Left lung sequestration
Respiratory	12(18.5)	Hyperactive airway (wheezy), poor exercise intolerance
Gastrointestinal and Nutrition	2(3%)	Poor growth
Neurology other than CP	1(1.5)	Down's syndrome
Hearing	0 (0)	None
Vision	0 (0)	Squint (2)

**Involvement of specialist therapists at 2 years CGA (2008):**

- 17 eligible for referral to therapists
- 5 already with CDT
- 3 referrals to physiotherapist
- 10 referred only to SALT
- 1 referred to dietician
- 3 referred to ENT
- 2 referred to occupational therapists

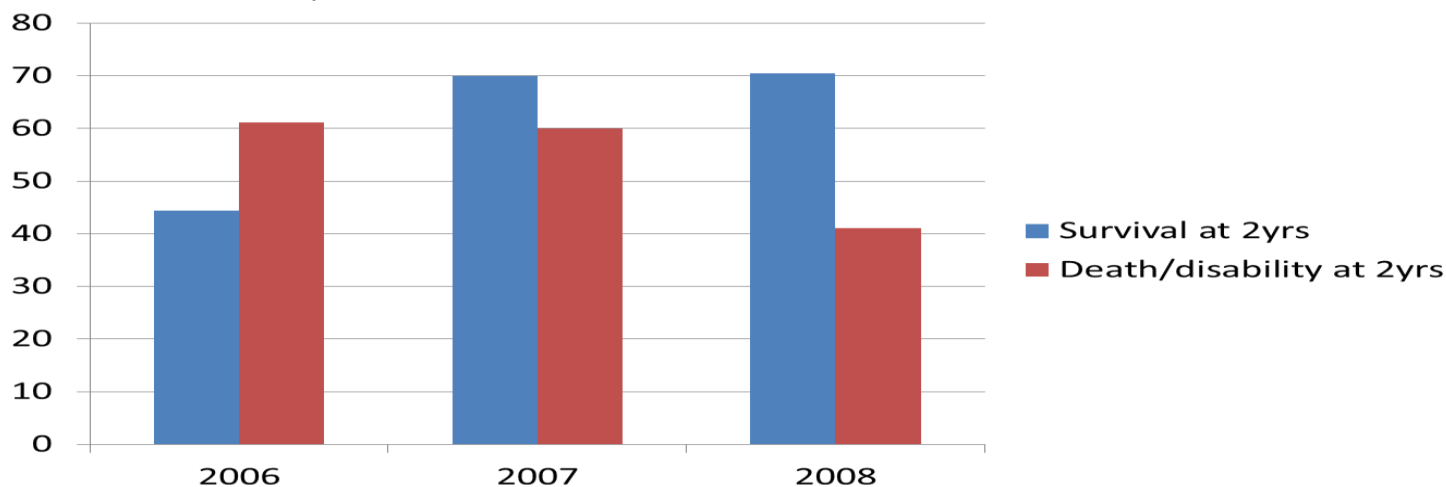
**Singleton experience in <32 wks/ 1.5 kg bw**

**Survival and death/disability rate (% of NIC adm)**



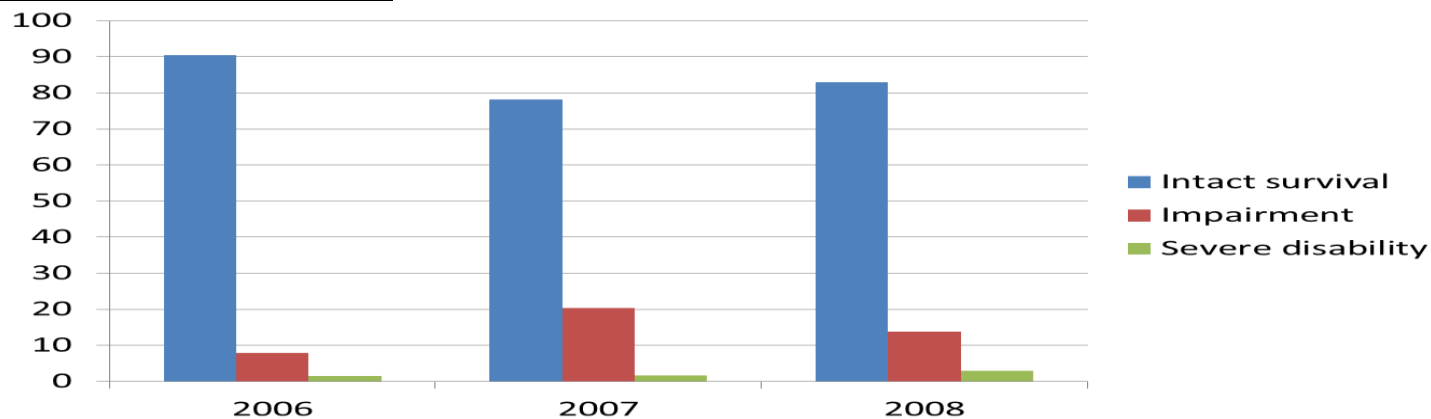
**Singleton experience in extreme prematurity <26 wks**

**Survival and death/disability rate (% of NIC adm)**



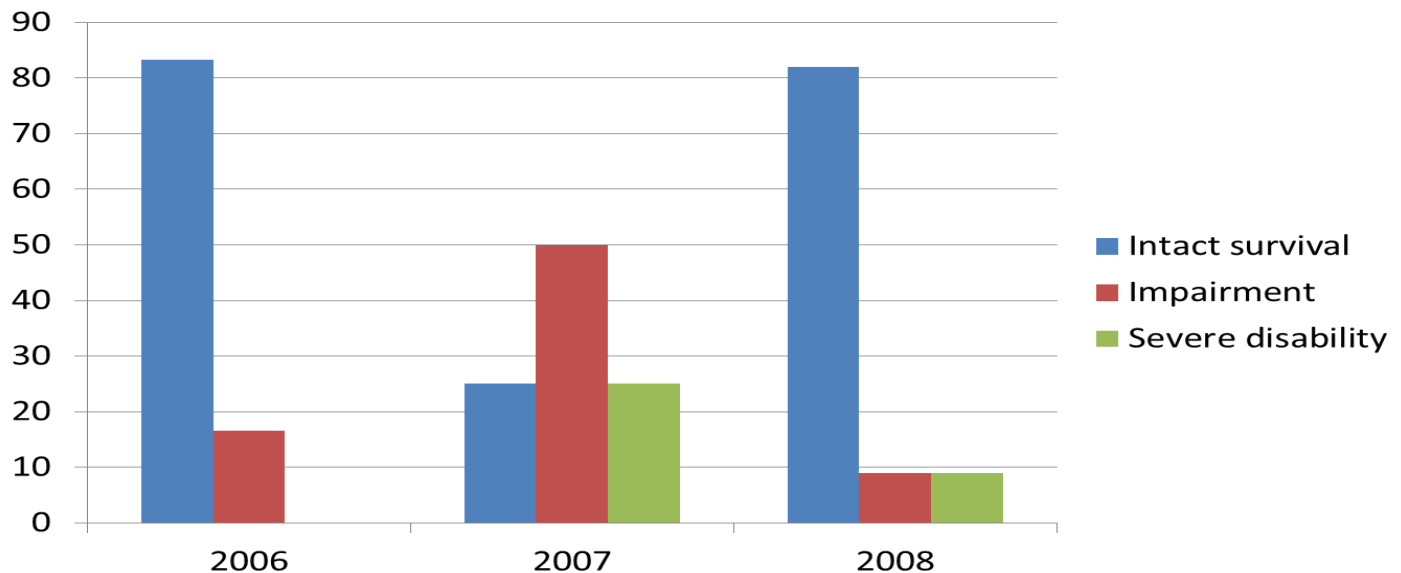
**Singleton experience in <32 wks/ 1.5 kg bw**

**Outcome (% of survivors assessed)**





**Singleton experience in extreme prematurity <26 wks**  
**Outcome (% of survivors assessed)**



## Conclusions

- Survival is 89% (% admitted for intensive care) in this high risk cohort of <32 wks/1.5 kg bw
- Majority of survivors do well – 83% disability free survival in the above group
- 22.4% of this high risk group either died or had some degree of neurodevelopmental impairment
- Composite outcome of death or disability has remained fairly consistent over the last three years: around 20% with minor variations in the above group
- Around 70% survival in <26 wks, improved from 2006 (45%)
- Death or disability rate in <26wks is falling: from around 60% in 2006-2007 to 41% in 2008
- Combined death or disability falls sharply after 26 weeks gestation
- Extreme prematurity group - cumulative long term outcome is comparable and possibly better than EPICURE
- Language delay is the commonest domain of abnormality at 2 years followed by motor impairment. One might argue that assessment of cognitive domain is difficult at this age
- Major visual impairment is rare
- Respiratory morbidity (18.5%) is very common in survivors.

## **Swansea Neonatal Transfer Service**

**Dr. Sujoy Banerjee, Sister Marcia Jordan**

### **Background:**

The Swansea Neonatal Transfer Service was operational for several years as an ad-hoc specialist service from its base at Singleton Hospital. It ceased operation in January 2011, when newborn transfer service in Wales was taken up by the dedicated CHANTS service. During its operational years, the ‘Swansea Neonatal Transport Team’ managed retrievals to Singleton Hospital of newborns requiring ‘step up’ intensive care from level 1 and level 2 units across South West Wales. The team also managed transfer of babies from Singleton Hospital who required specialist surgical, cardiac and other tertiary level services. It also provided a ‘step down’ service where babies who no longer require intensive care at Singleton Hospital were transferred back to their home units.

The service was provided by a team of trained neonatal nurses and neonatal middle grade doctors and supervised by the on call neonatal consultant for the unit. The generic Welsh Ambulance Service Vehicles were used for neonatal transfer. The service was led locally by Dr. Sujoy Banerjee, Consultant Neonatologist, and Sister Marcia Jordan. This was an ad-hoc service with no dedicated personnel or funding and medical and nursing staff were provided ‘off floor’ from the unit to facilitate transfer of ill newborns.

The team had two dedicated neonatal transfer equipment systems built and developed in-house with support from the Medical Physics Department. The equipment could provide full intensive care on transport including mechanical ventilation, CPAP and facilities for intensive monitoring.

Regular training sessions on neonatal transport and equipments were provided in-house as part of the neonatal teaching schedule. Clinical data on transport was recorded on pre-designed medical and nursing transfer forms that then formed part of the clinical notes. Essential data points were entered on to a database as per the BAPM Neonatal Transport Minimum Dataset. Annual audits were undertaken to evaluate efficiency and safety of this service and published as part of the unit’s annual report. Anonymised data was submitted every year to the UK Neonatal Transport Interest Group to benchmark our service outcomes with other dedicated neonatal transfer teams across the U.K.

**Activities in 2010:**

**Teams undertaking neonatal transfers:**

<b>Team</b>	<b>Total Numbers</b>
Transfer - Any team	<b>193</b>
Singleton Team	<b>133</b>
Other Hospitals	<b>59</b>
Specialist Team (ECMO)	<b>1</b>

**Transfers undertaken by Singleton Team:**

Retrievals	<b>36</b>
Transfer Outs	<b>24</b>
Local Transfers	<b>25</b>
Back Transfers	<b>48</b>
<b>Total</b>	<b>133</b>

**Hospitals from where unplanned step up retrievals undertaken (Singleton Team) (All Intensive care transfers):**

<b>Hospitals</b>	<b>No. of Babies</b>
Haverfordwest	<b>7</b>
UHW	<b>0</b>
Bridgend	<b>16</b>
West Wales General	<b>5</b>
Aberystwyth/Bronglais	<b>5</b>
Bristol	<b>0</b>
Merthyr	<b>0</b>
Morrison	<b>1</b>
Royal Glamorgan	<b>2</b>
<b>TOTAL</b>	<b>36</b>

**All transfers into the unit 2010**

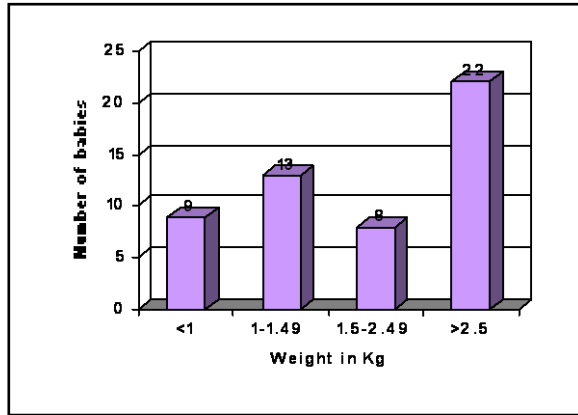
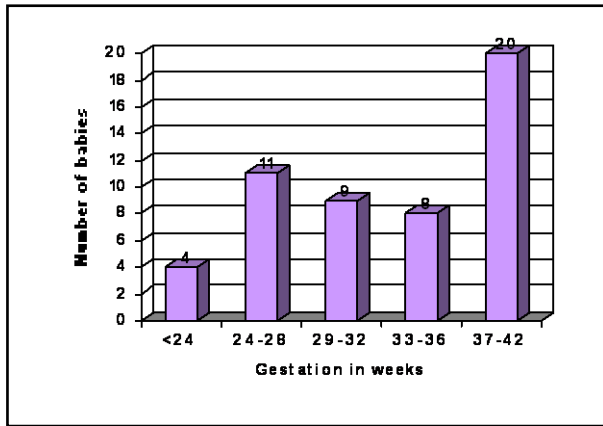
By Place	No. of Transfers	Transferred By	
		Singleton	Other
Bridgend	20	15	5
Bristol	13	1	12
Bronglais, Aberystwyth	5	5	0
Glangwili (WWG, Carmarthen)	5	5	0
Leicester	1	0	1
Morrison	13	13	0
Neath Port Talbot	2	0	2 (Paramedic)
Royal Glamorgan	2	2	0
Royal Gwent, Newport	1	0	1
UHW	17	5	12
Withybush, Haverfordwest	8	7	1
<b>TOTAL:</b>	<b>87</b>	<b>53</b>	<b>34</b>

**All transfers out of the unit 2010**

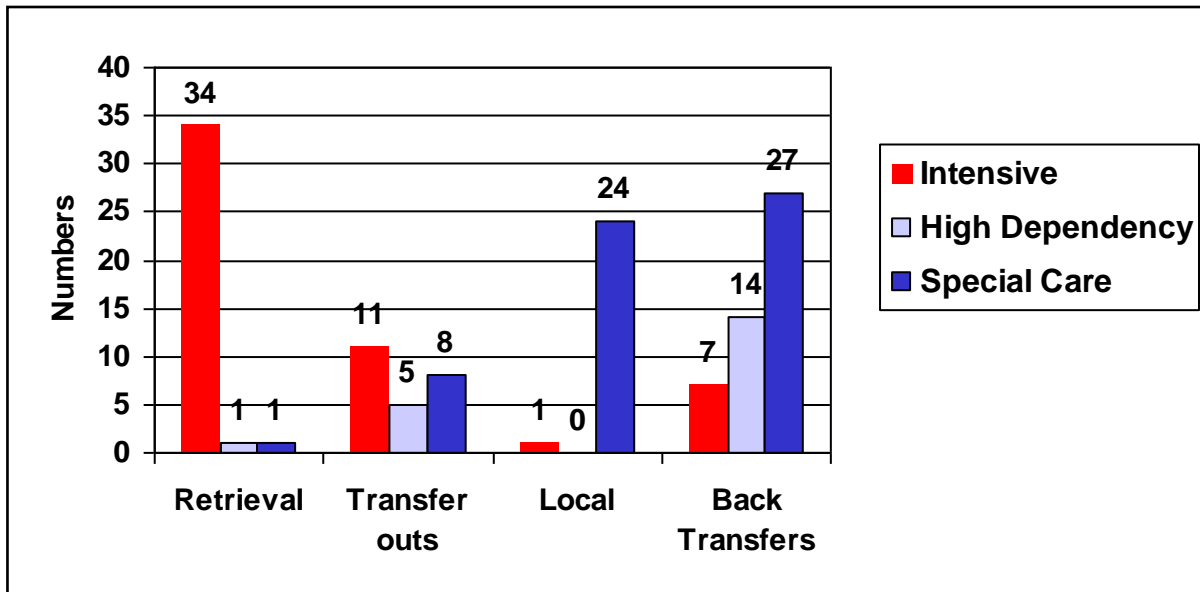
By Place	No. of Transfers	Transferred By	
		Singleton	Others
Basildon	1	1	0
Bridgend	27	18	9
Bristol	8	4	4
Glangwili (WWG, Carmarthen)	10	7	3
Leicester	1	0	1
Morrison	18	18	0
Oxford	1	0	1
Prince Charles, Merthyr	2	2	0
Royal Glamorgan	1	1	0
Shrewsbury	1	0	1
UHW	20	19	1
Withybush, Haverfordwest	12	8	4
Worcester	2	0	2
<b>TOTAL:</b>	<b>104</b>	<b>78</b>	<b>26</b>

- Care withdrawn in one case in referring hospital before transfer was completed. This is included in statistics.
- Two babies were transferred by Singleton Team between centres other than Singleton Hospital.

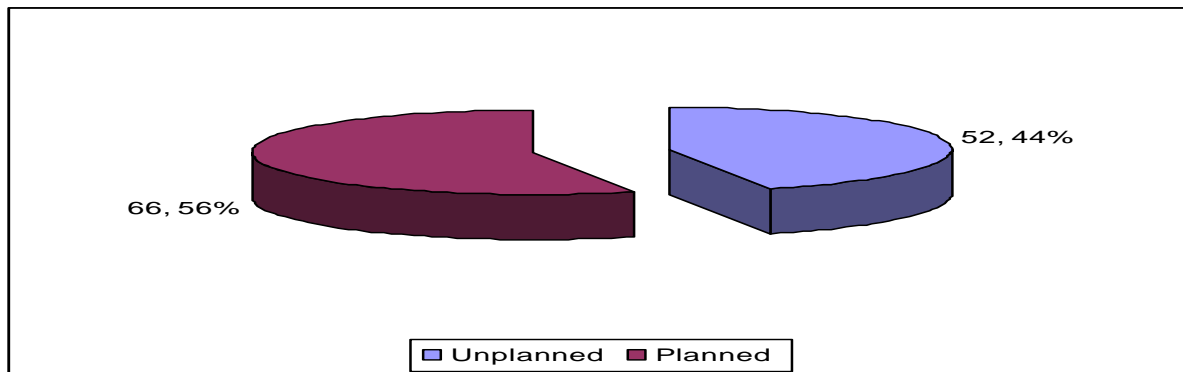
**Demographics: Gestation and Birth weight (Unplanned by Singleton Team) 2010**



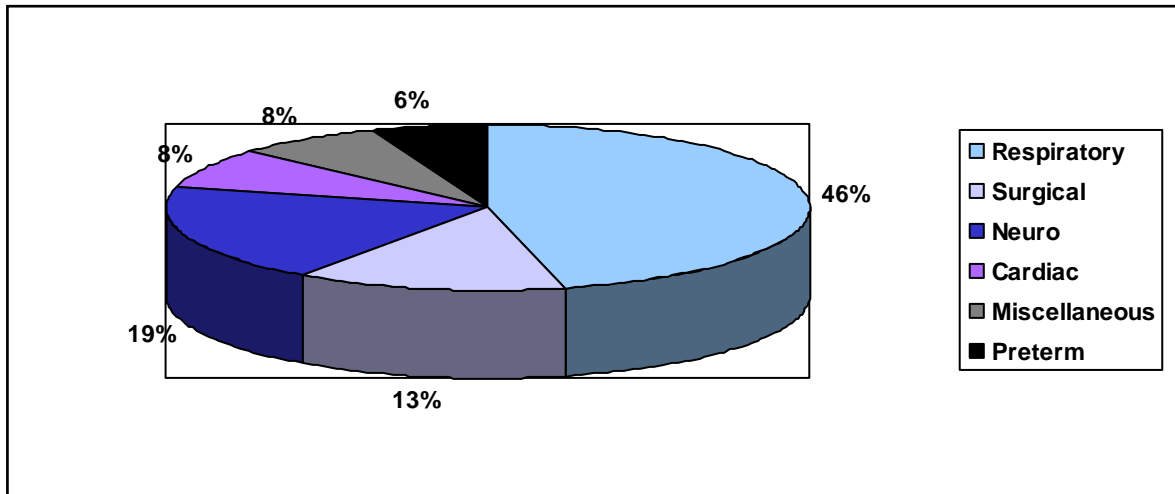
**Intensity of care on transport (All Transfers by Singleton Team):**



**Type of Transfer:**

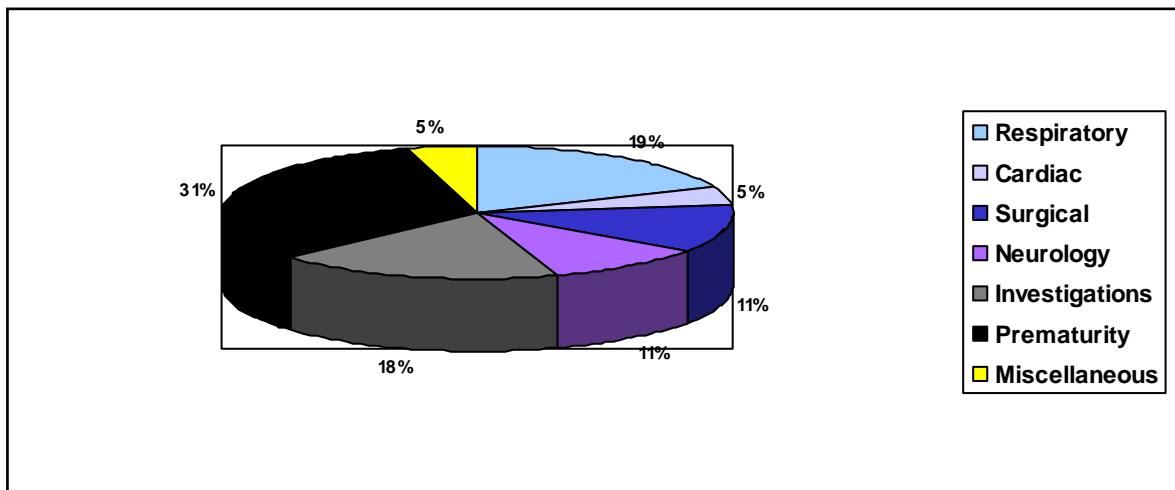


**Diagnosis at Transfer (Unplanned transfers by Singleton Team):**



\*\* Acute Capacity reason – 5, HIE 10 (Therapeutic hypothermia 6)

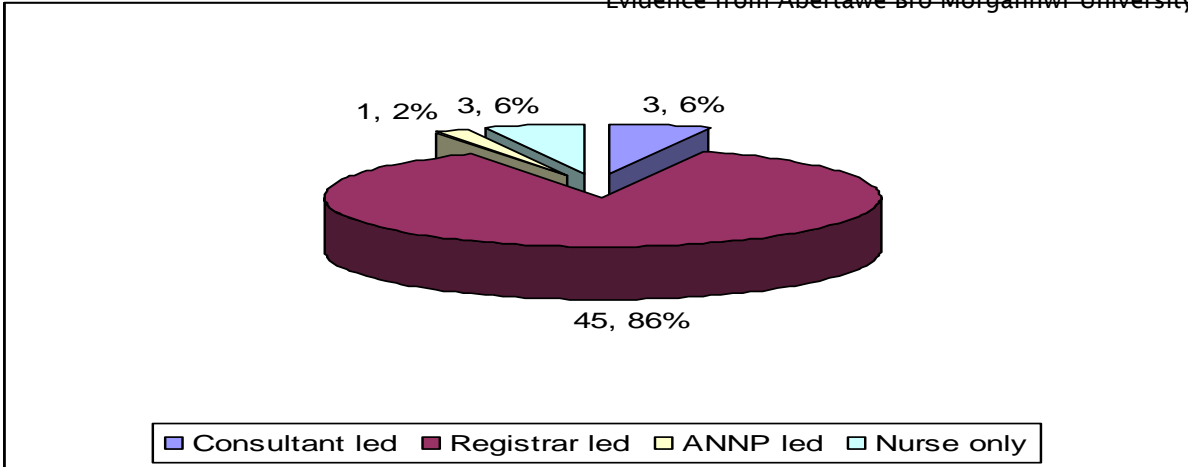
**Diagnosis at Transfer (All Transfers by Singleton Team)**



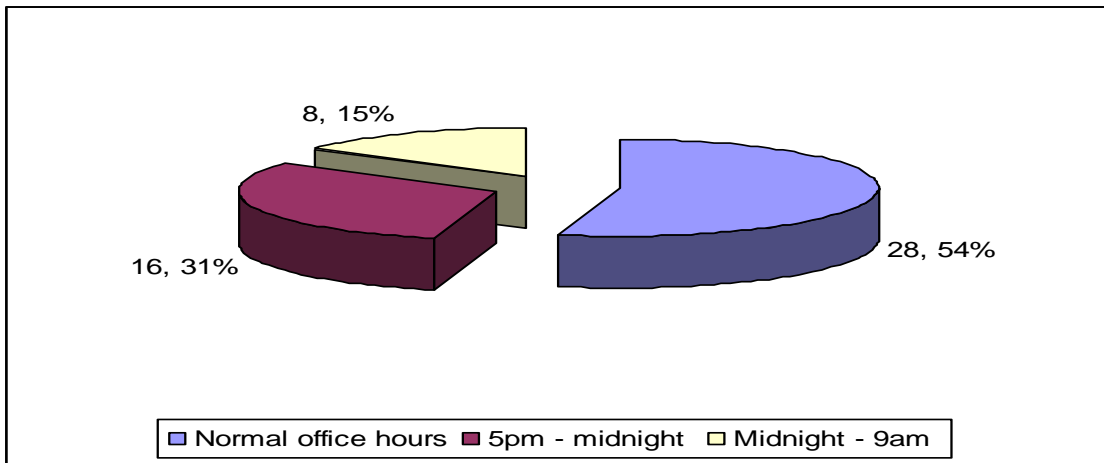
**Composition of team (Unplanned transfers by Singleton Team):**

Inquiry into Neonatal Care

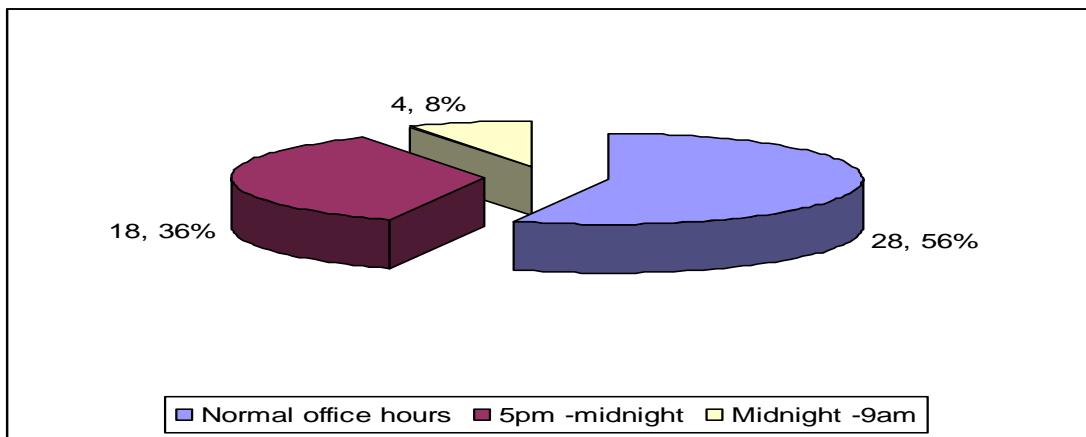
Evidence from Abertawe Bro Morgannwg University Health Board



**Time of referral (Unplanned):**



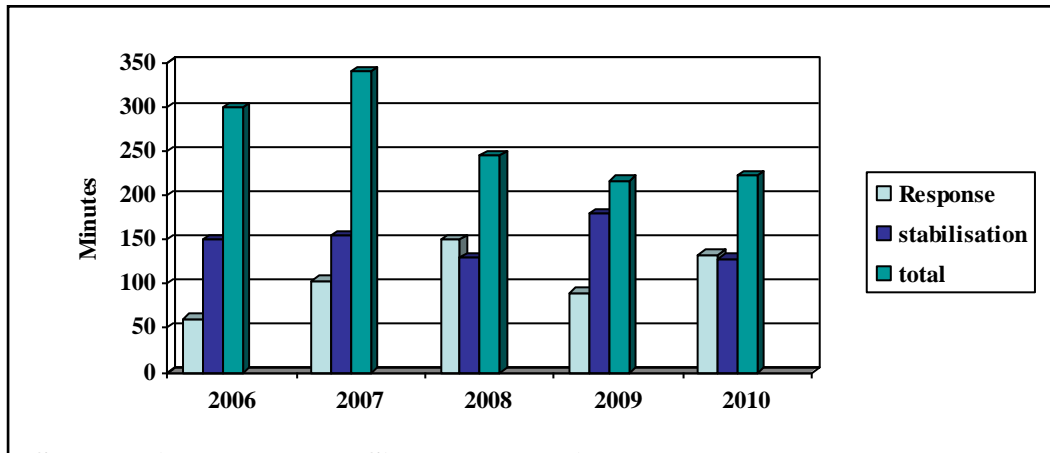
**Time of Despatch (Unplanned):**



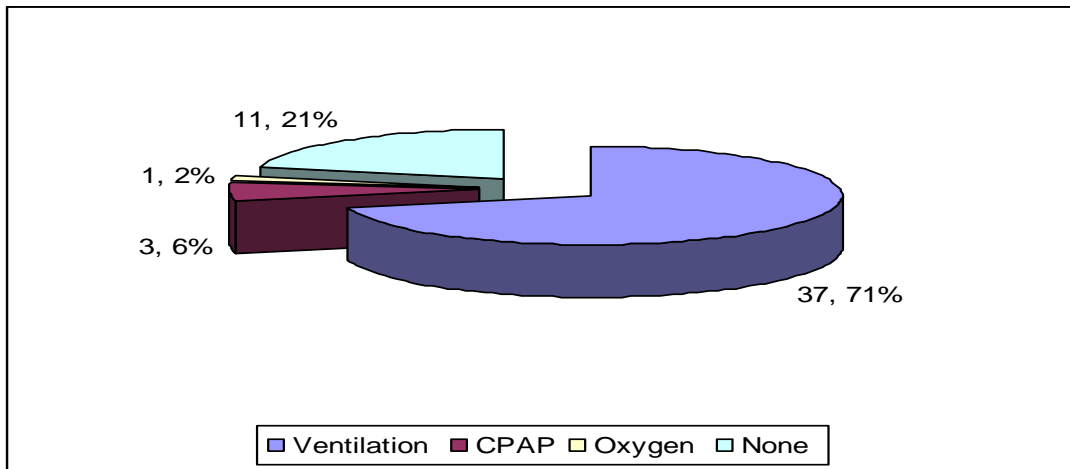
\*\* Missing data 2

**Transfer Times:**

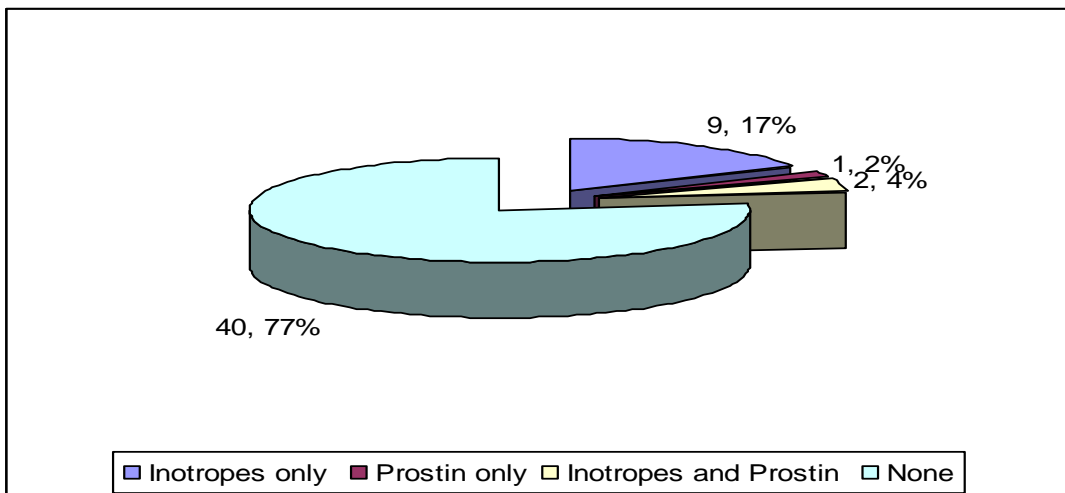




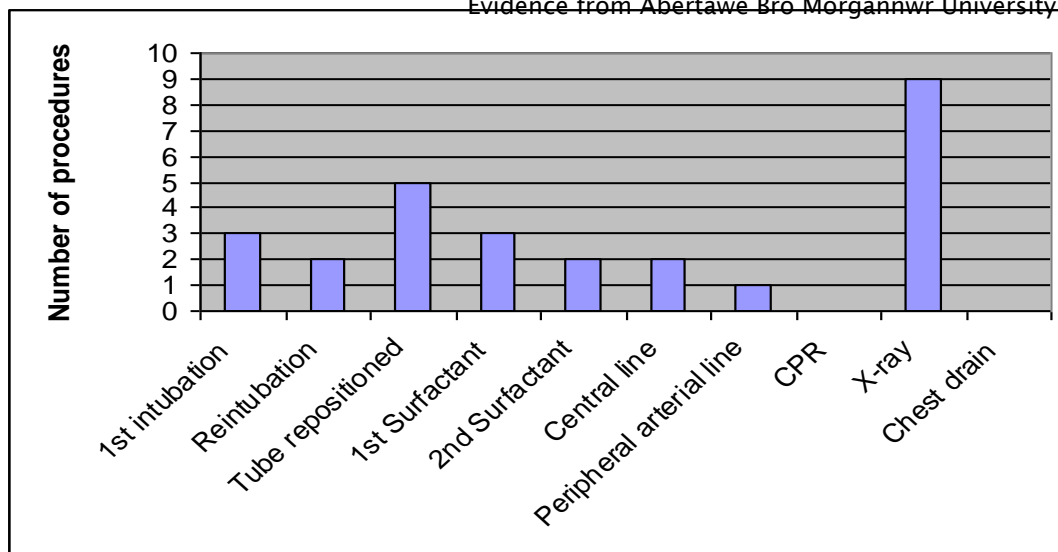
**Respiratory Support (Unplanned by Singleton Team)**



**Cardiovascular Support (Unplanned by Singleton Team):**



**Major Clinical Procedures by Transport Team (Unplanned):**



### Adverse incidents:

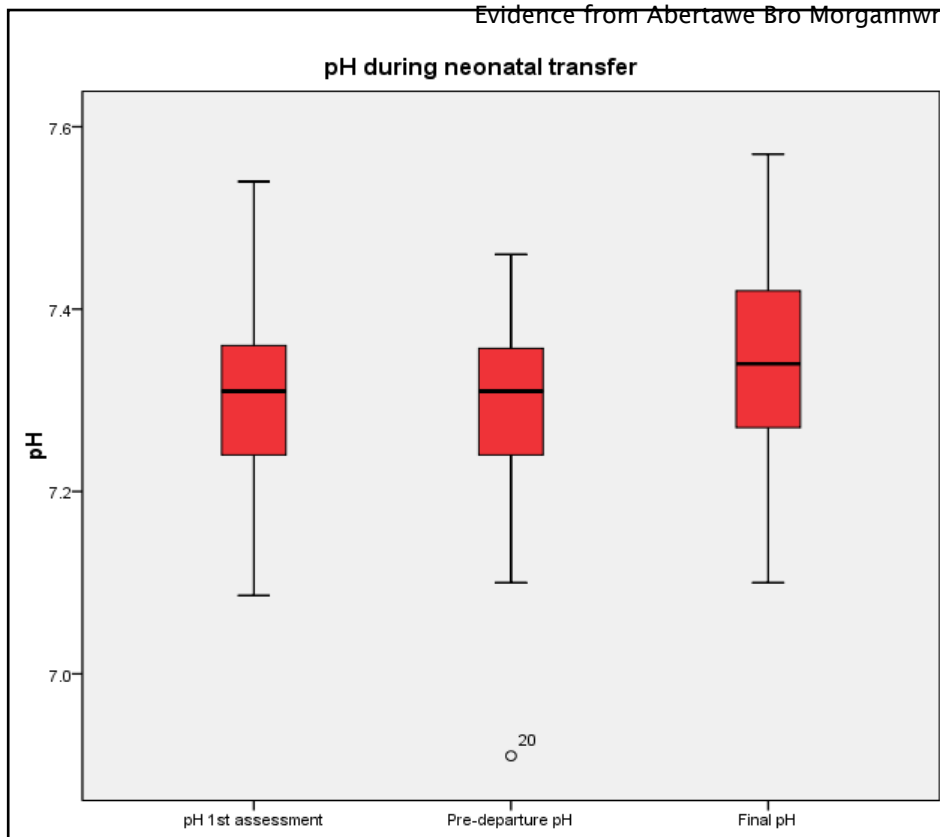
#### Clinical:

- 1 death at referring hospital – Severe HIE deteriorated – Not retrieved
- 1 unintended hypothermia (34.8C, Retrieved from A&E, Arrival Temp 29C, Difficult airway 29/40 weeks gestation)
- 6 out of 52(13.4%) unplanned cases developed temperature >37.5C
- 4 babies had temperature  $\geq 38C$  , Maximum temperature during transfer 38.7 C – 1 related to prostin
- 1of 6 babies transferred for therapeutic hypothermia had inadequate temperature monitoring and was too warm on arrival
- UVC dislodged in referring hospital (2)

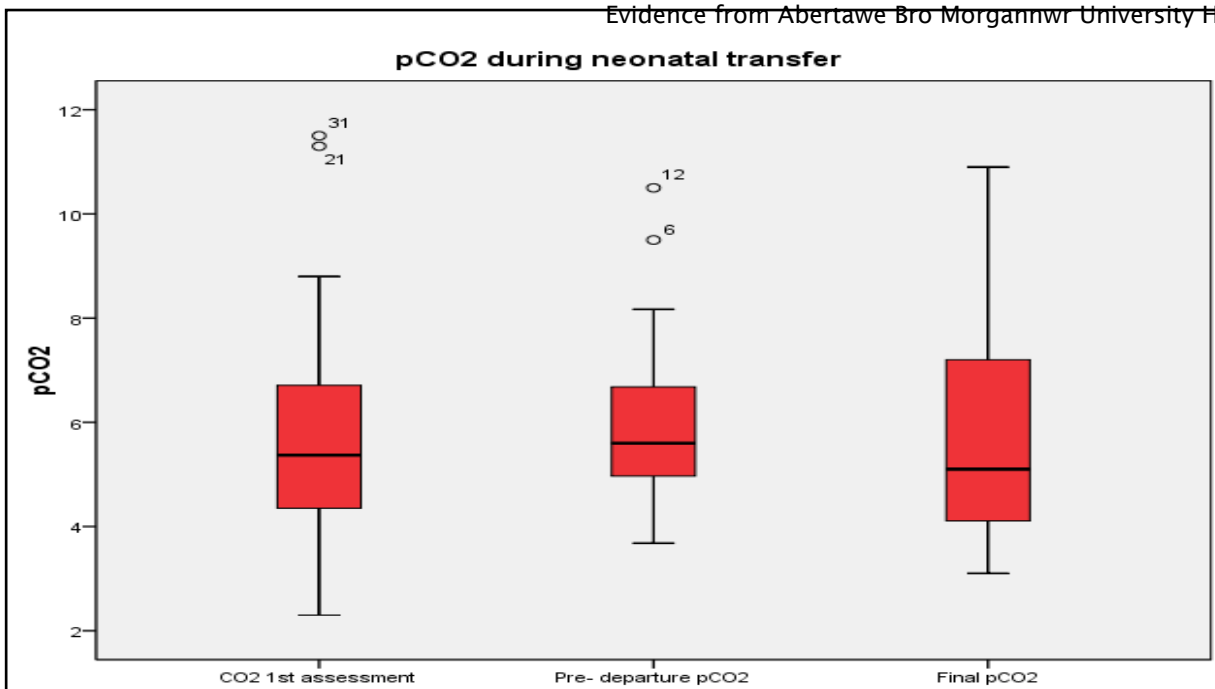
#### Technical:

- Ambulance power issues – loose connection, one requiring restarting the engine
- Ambulance suspension failure
- Wrong ambulance, delay with ambulance for elective transfers
- No harm in any case

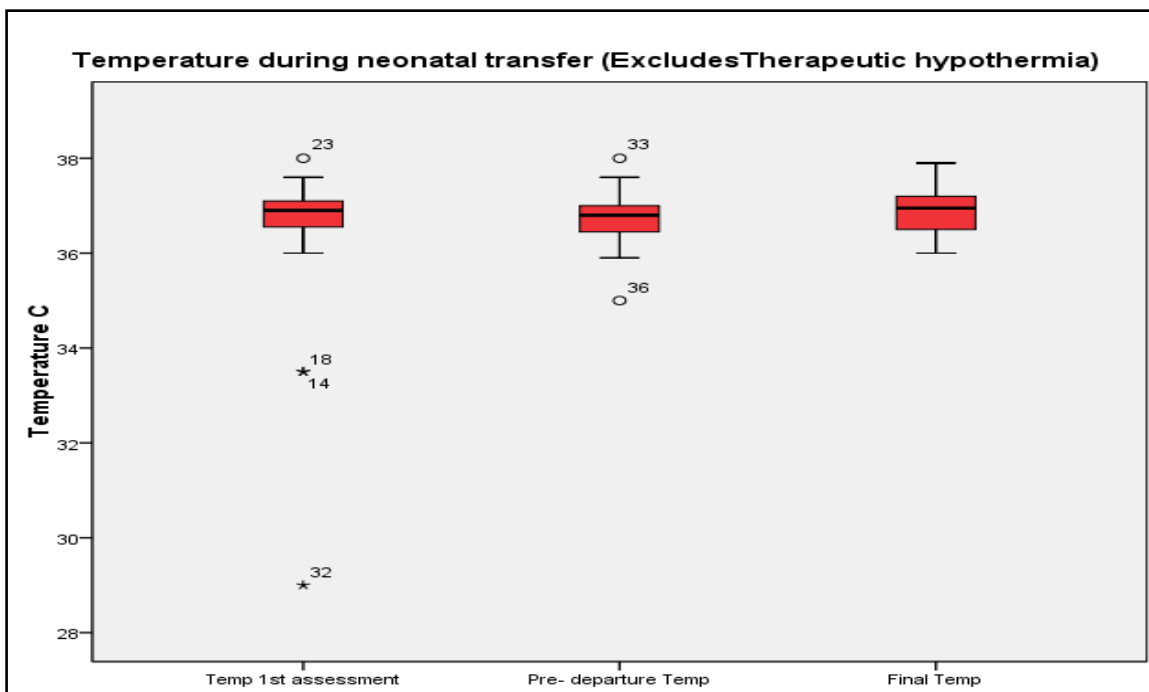
### Ph during transfer:



### CO<sub>2</sub> during Transfer



**Temperature during transfer (excluding therapeutic hypothermia)**



**\*\* Only 2 of the 6 babies undergoing passive cooling reached target temperature before arrival to treatment centre.**

**Benchmarking**

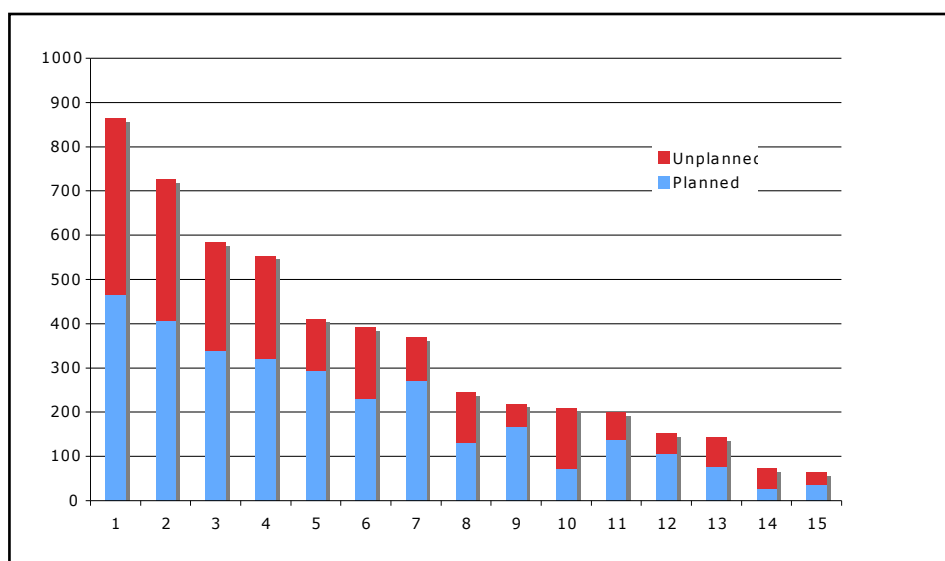
Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwr University Health Board

Anonymised data for the **first six months of 2010** was submitted to the UK Neonatal Transport Interest Group for benchmarking outcomes with other established and dedicated neonatal transport teams. Swansea Neonatal Transfer Team compared favourably with other UK teams. Differences in despatch and transfer times, gestation of babies transferred and type of respiratory support on transfer could be explained by geography and composition of local neonatal units as well as reliance on generic ambulance services for retrievals. Swansea neonatal transfer team is represented by No.15 in the following graphs.

	Planned	Unplanned	Total
1 London	54%	46%	864
2 West Midlands	56%	44%	727
3 KSS	58%	42%	582
4 ANTS	58%	42%	553
5 Embrace	72%	28%	411
6 Greater Manchester	59%	41%	392
7 Scotland W	73%	27%	369
8 CenTre	54%	46%	244
9 Cheshire & Mersey	77%	23%	218
10 NR NCL	35%	65%	209
11 Scotland SE	69%	31%	199
12 Scotland N	70%	30%	151
13 Lancs & Sth Cumbria	53%	47%	143
14 Middlesbrough	37%	63%	73
15 Swansea	55%	45%	64
	59%	41%	5199

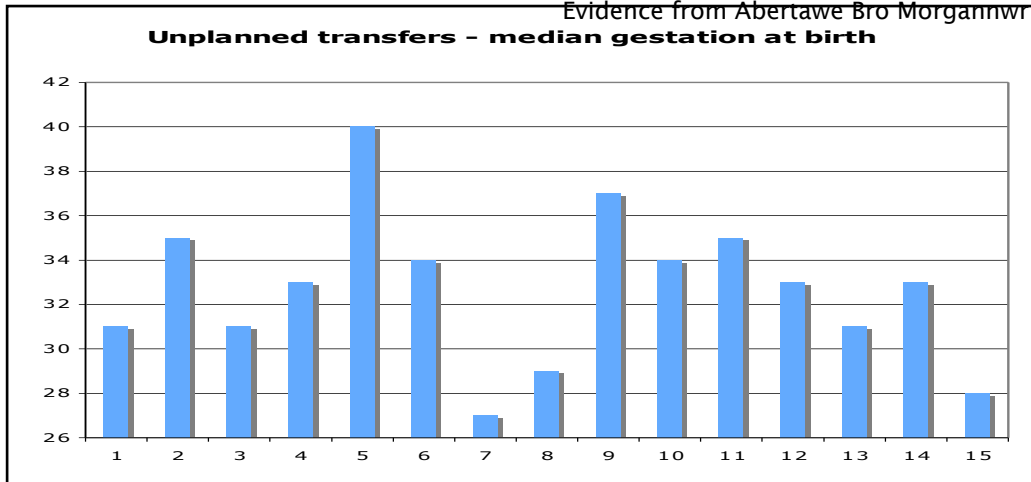
**Transfer by type (Planned and unplanned)**



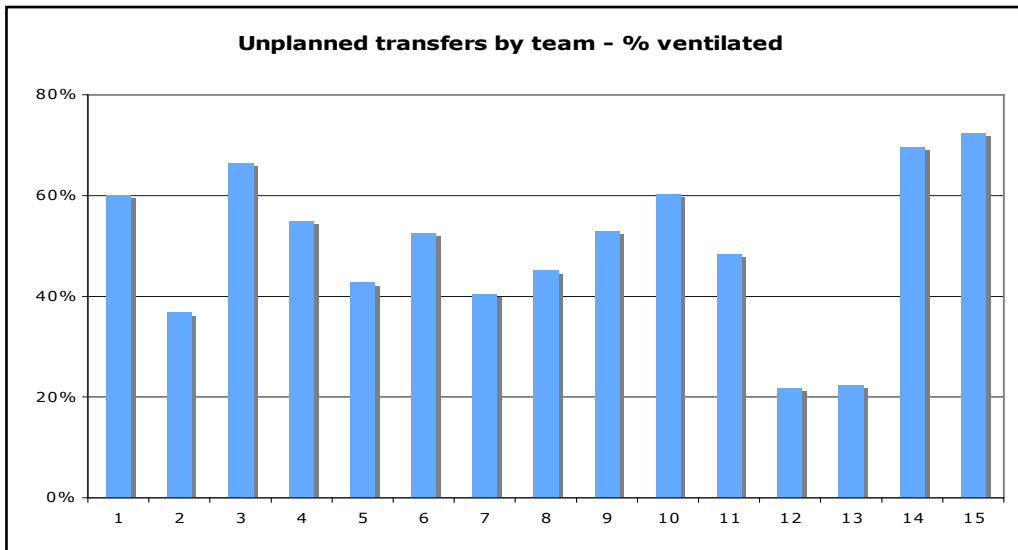
**Median gestation at birth by teams (Unplanned Transfers)**

Inquiry into Neonatal Care

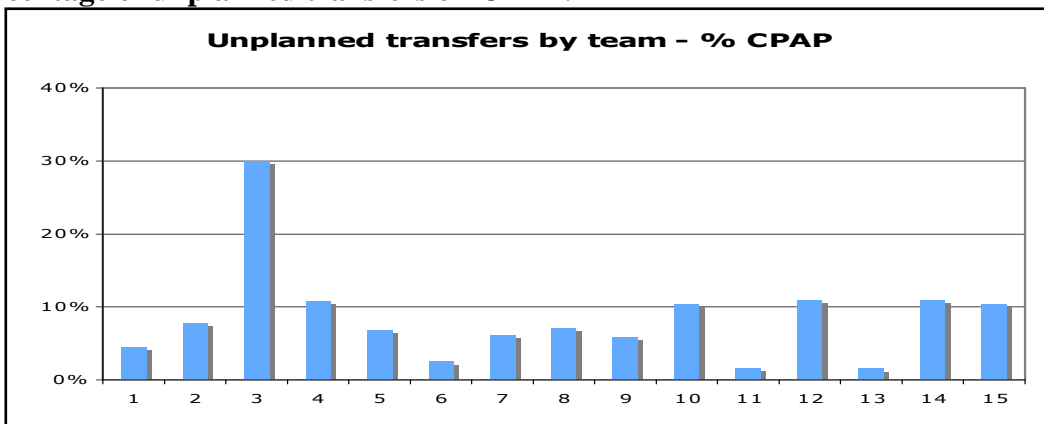
Evidence from Abertawe Bro Morgannwg University Health Board



**Percentage of unplanned transfers on ventilator:**



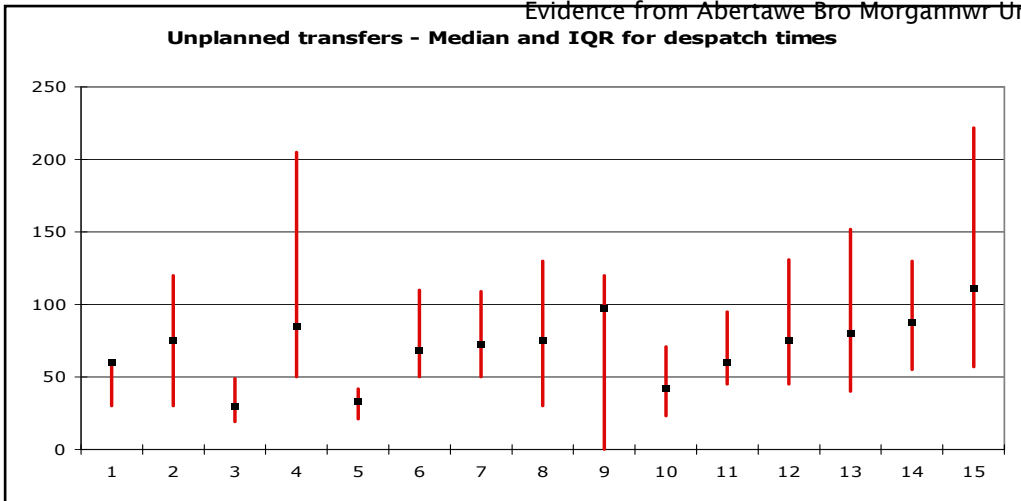
**Percentage of unplanned transfers on CPAP:**



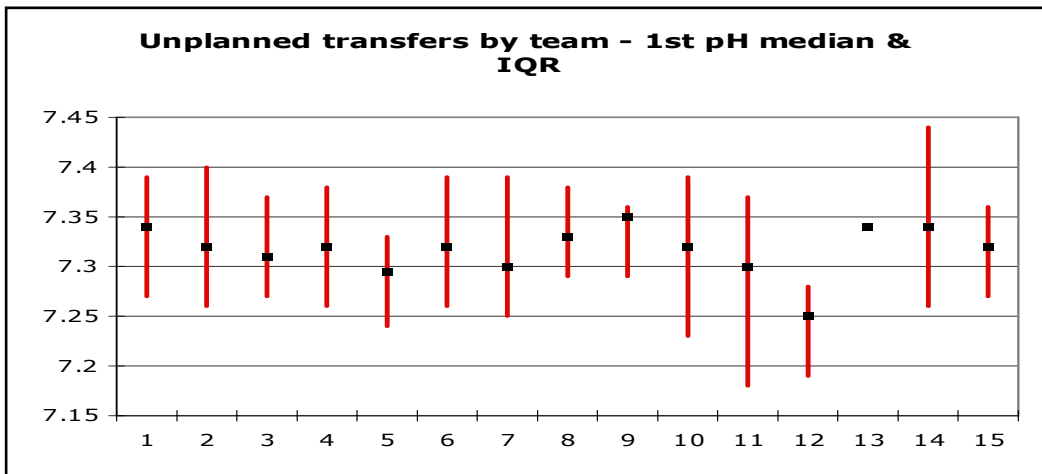
**Despatch times by teams (Unplanned Transfers)**

Inquiry into Neonatal Care

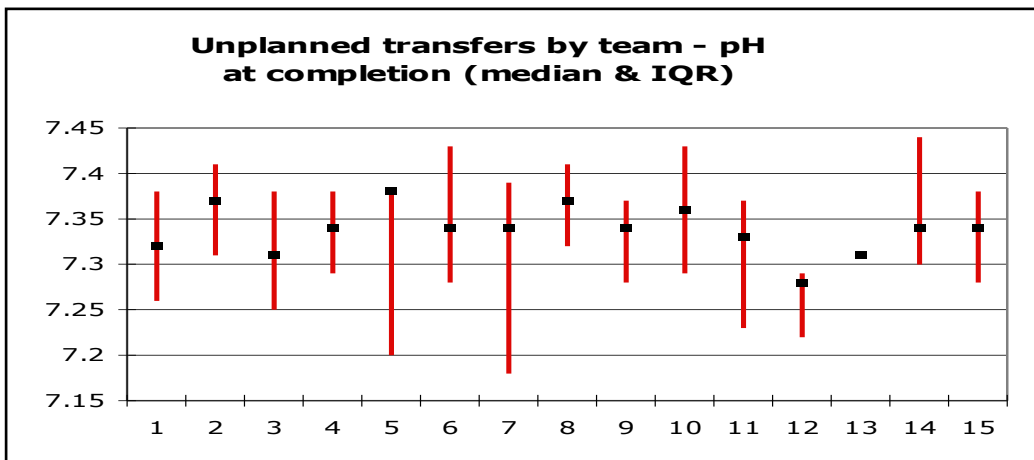
Evidence from Abertawe Bro Morgannwg University Health Board



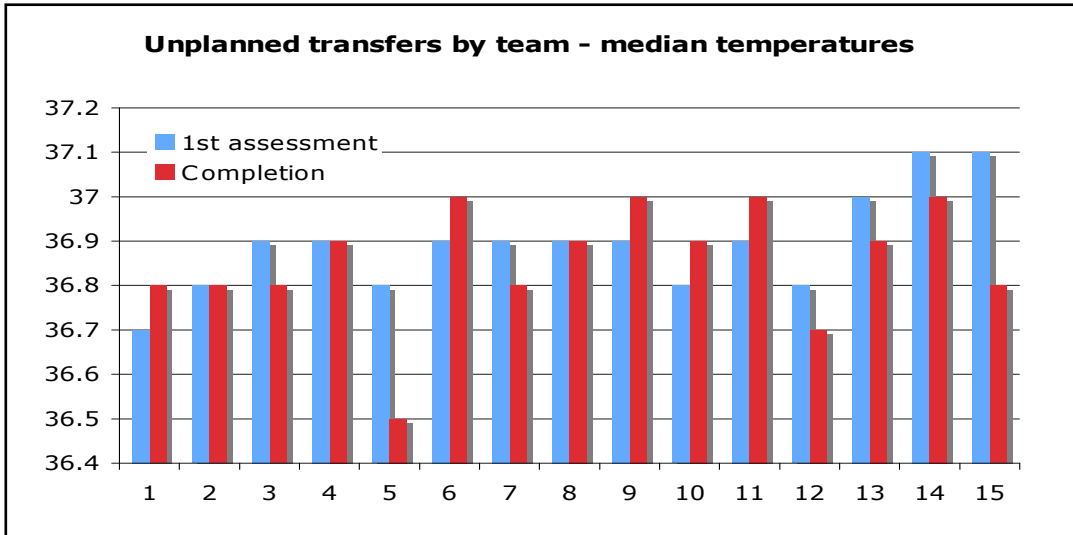
**pH at first assessment (Unplanned Transfers)**



**pH on completion (Unplanned transfers)**

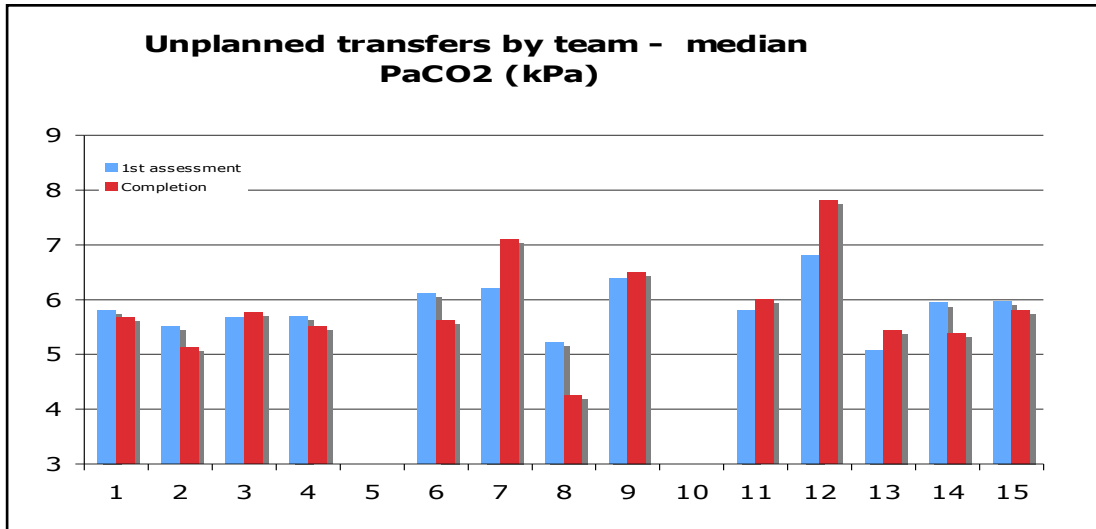


**Temperature on transport (Unplanned Transfers excluding therapeutic hypothermia)**



Doubling of referral due to HIE – 60% of HIE referred cooled

**pCO<sub>2</sub> on transport (Unplanned transfers)**





## Conclusions:

- The ad-hoc Swansea Neonatal Transfer Service was safe during its operation but created strain on the staffing levels of the neonatal unit. It was mainly a registrar/nurse delivered service. Majority of transfers were undertaken during office hours and rest usually by midnight.
- It benchmarked favourably on clinical parameters with dedicated neonatal transfer teams across the UK.
- The differences in despatch times and respiratory support on transfer were influenced by the geography and composition of the local neonatal units as well its reliance on the generic ambulance service.
- There is scope to improve the effectiveness of passive cooling during transfer for therapeutic hypothermia. Inadvertent hyperthermia in 13% of babies should be avoided.

Dr. Jean Matthes	MB, BCh, MD, FRCP, FRCPC, Consultant Neonatologist
Dr. Carol Sullivan	BM, BCh, MA, FRCP, FRCPC, Consultant Paediatrician
Dr. Geraint Morris	MB, BCh, MRCP (UK), MRCPC, Consultant Paediatrician
Dr. Sujoy Banerjee	MBBS, DCH, MD, MRCP (UK), MRCPC, Consultant Neonatologist
Dr. Maha Mansour	MB, BCh, MRCP (UK), MRCPC, Consultant Neonatologist
Dr. Arun Ramachandran	MBBS, MD, MRCPC, Consultant Neonatologist

### **REGISTRARS**

#### **February 2010 - August 2010**

Malini Ketty	Jatin Mistri
Suresh Gowda	Arun Sadasivam
Amit Kandhari	Shreedhar Nittur
Huma Mazhar	

#### **September 2010 - February 2011**

Malini Ketty	Jatin Mistri
Suresh Gowda	Jamie Evans
Alok Sharma	Danladi Abubaker
Rebecca Balfour	

### **ADVANCED NEONATAL NURSE PRACTITIONERS**

Clare Barrow

Kate Richards

### **SENIOR HOUSE OFFICERS**

#### **February 2010 - August 2010**

Lekshmy Prasad  
Rebecca Balfour  
Rachel Morris  
Rasna Singh  
Angeles Torres  
Sarika Goel  
Shabeena Hayat

#### **September 2010 - February 2011**

Arshdeep Bhatti  
Francesca Morgan  
Jaya Parasuraman  
Lekshmy Prasad  
Ankita Jain  
Gemma Trays

**8A Grade** Wendy Davies (WTE 1)

**Band 7**

Janette Allen (WTE 1.0)	Angela Pieniazek (WTE 1.0)	Katie Swain (WTE .60)
Dawn Jones (WTE .96)	Claire Price (WTE 1.0)	Lynwen Tregembo (WTE .64)
Marcia Jordan (WTE .88)	Gail Smith (WTE .80)	Sheila Waters (WTE 1.0)
Helen James (WTE 1.0)		

**Band 6**

Name	WTE	Name	WTE	Name	WTE
Flordeliza Auro	1.0	Sarah Lewis	.96	Heather Snow	.40
Rhian Bevan	.64	Sarah Lewis	.64	Karen Taylan	1.0
Vicky Burrage	1.0	Melani Gabales	1.0	Pat Taylor	.64
Llinos Cox	1.0	Hayley Michael	.64	Joanne Thomas	.80
Karen Davies	.72	Elsie Quimpan	1.0	Helen Radford	.72
Sue Davies	.96	Ruth Morgan	.60	Rhian Vaughan	.40
Deborah Griffiths	.92	Deborah Owen	.50	Deborah Verbeck	.96
Sarah Hughes	.64	Catrin Phillips	.72	Marie Whiles	.64
Debra Jones	.80	Gaynor Poptani	.80	Allison Lewis	1.0
Gaynor Jones	.96	Diane Roberts	.40	Julie Williams	.96
Val Jones	1.0	Lil Saunders	.80	Deborah Joseph	.64
Julia Kennedy	.96	Anne Seward	1.0		

Deborah Owen (WTE .50) - Research Nurse  
 Karyn Phillips (WTE.80) - Practice Development Nurse - Neonatal  
 Gemma Davies (WTE 1.0) - ANNP Secondment

### Band 5

Name	WTE	Name	WTE	Name	WTE
Jocelyn Bermudez	1.0	Anne Richards	.32	Siân Hughes	.64
Jessica Beynon	.80	Jo Honey	1.0	Gemma Fortte	1.0
Sharon Birch	.64	Madge Williams	.53	Zoe Jessop	.96
Claire Evans	1.0	Rebecca Heaney	1.0	Sue Edwards	1.0
Gemma Martin-Dyer	1.0	Stephanie Cannell	1.0	Marcia Halfpenny	1.0
Shelly Morris	.60	Nia McNeil	1.0	Liz Kift	1.0
Caroline Szulik	1.0	Rhiannon Jago	.80	Holly Morgan	1.0

### Band 4

Name	WTE	Name	WTE
Cheryl Tobin	.48	Sharon Phillips	.64
Rebecca Salisbury	1.0	Gemma Dyer	1.0
Emma Renshaw	.80		

Cheryl Tobin (WTE .48) - Community Secondment

Name	WTE	Neonatal Modules	NLS Certified	Additional Qualification
<b>ANNPs</b>				
Clare Barrow	1.0	Yes	Yes	R.G.N.R.M A19, B.Sc. in Neonatology M.Sc. in Philosophy & Ethics in Health Care, Clinical Leaders Course, Transport Course, Generic Instructors Course, Teaching & Assessing/998 Mentorship (5 days) Research and Critical Thinking Counselling courses
Kate Richards	1.0	Yes	Yes	BSc (Hons) in Neonatal Studies. Research & Critical Appraisal. RGN. R.N. Adult. RM. Teaching in Clinical Practice M.Sc. in Advanced Clinical Practice (pending). Mentorship Managing in Healthcare Healthcare informatics
<b>BAND 8A</b>				
Wendy Davies	1.0	Yes	Yes	R.G.N. R.M. Teaching & Assessing/998 ENB 405 Cert. of Professional Practice Clinical supervision Research & Critical Appraisal. Management Supervisory Skills. Open University Course P553 “A Systematic Approach to Nursing Care”.

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board

<b>BAND 7</b>				
Sheila Waters	1.0	Yes	Yes	R.G.N. R.M. P.G.C.E Cert. Ed. M.Sc. in Health Promotion Management Course Transport Course, ANNP Teaching & Assessing/998 Module 9 Training, Research & Critical Thinking, P.G.C.E.
Gail Smith	.8	Yes	Yes	R.N. Child R23 Clinical Leaders Course Teaching & Assessing Empower Ward Sisters
Janette Allen	1.0	Yes	Yes	S.R.N. S.C.M. BA in Humanities Teaching & Assessing/998 Research & Critical Thinking
Marcia Jordan	.88	Yes	Yes	R.G.N. R.M. Generic Instructor Course (NALS) Teaching & Assessing Research & Critical Appraisal Supervisor Management 1 + 2 Common Core Neonatal Transport Course
Dawn Jones	.96	Yes	Yes	R.G.N. S.E.N. Women in Management Teaching & Assessing/998 Legal & Professional Issues in Health Care Neonatal Transport Course
Angela Pieniazek	1.0	Yes	Yes	R.G.N. R.M. Common Core. Clinical Leaders Course Teaching & Assessing/998 Law in Healthcare. Management (Diploma)
Katie Swain	.60	Yes	Yes	R.G.N Clinical Leaders Course Transport Course Teaching & Assessing/998 1 day mentorship Communication/HIV Assertiveness courses IV Cert

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board

<b>BAND 7 (Con't)</b>				
Lynwen Tregembo	.64	Yes	Yes	S.E.N. R.G.N. R.M. Diploma in Nursing M.Sc. in Nursing with Research & Critical Thinking Teaching & Assessing/998 Clinical Supervision Course Diploma in Supervisory/ Management. Neonatal Transport Course
Claire Price	1.0	Yes	Yes	R.G.N. R.S.C.N. Advanced Diploma in Child Development. B.A. (Hons) Humanities. Transport Course Teaching & Assessing Research & Critical Thinking
Cheryl Morgan	1.0	Yes	No	R.G.N., R.S.C.N., B.Sc. Community Teaching & Assessing Research & Critical Thinking Mentorship
<b>BAND 6</b>				
Flordeliza Auro	1.0	Yes	Yes	R.G.N. B.Sc. in Nursing Transport Course Mentorship (5 days) S.C.B.U./H.D.U. Neonatal Module
Rhian Bevan	.64	Yes	Yes	R.G.N. Teaching & Assessing
Vicky Burrage	1.0	No	No	R.G.N. R.S.C.N. S.E.N. B.Sc. Community Children's Nursing Common Core, Research & Critical Thinking
Llinos Cox	1.0	Yes	Yes	R.G.N. N.D. Nursery Nursing Mentorship in Practice (1 year) Microbiology Infection Control Course Teaching & Assessing
Karen Davies	.72	Yes	Yes	R.G.N. Transport Course Teaching & Assessing/998

<b>BAND 6 (Con't)</b>				
Sue Davies	.96	Yes	Yes	R.G.N. R.M. Orthopaedic Nursing Cert Common Core, Transport Course Ward Based Instructors Course Manual Handling
Deborah Griffiths	.92	Yes	Yes	R.G.N R.N. Child 'S.C.M.' Teaching and Assessing/998 Research & Critical Thinking
Sarah Hughes	.64	Yes	Yes	R.N. Child Research & Critical Thinking
Debra Jones	.80	Yes	Yes	Diploma in Nursing. B.Sc. (Hons) Degree Aids & H.I.V. related diseases - Certificate Level. Common Core, Mentorship Teaching & Assessing. Research & Critical Appraisal
Gaynor Jones	.96	Yes	Yes	R.N. (Child). Diploma in Nursing, Mentorship S.C.B.U./H.D.U. Neonatal Module
Val Jones	1.0	Yes	Yes	R.G.N. ENB405 Mentorship Research & Critical Appraisal
Julia Kennedy	.96	Yes	Yes	R.G.N. R.M. Common Core. Teaching & Assessing. Neonatal Transport Course
Allison Lewis	1.0	Yes	Yes	S.E.N. Conversion course R.G.N. A systematic approach to Nursing care. Common Core Research & Critical Appraisal Neonatal Transport Course
Sarah Lewis	1.0	Yes	Yes	R.G.N. Common Core Module. Promoting Learning in Health Care Practice (Diploma). Research & A (Diploma). Clinical Leaders



<b>BAND 6 (Con't)</b>				
Sarah Lewis	.64	Yes	Yes	R.G.N. R.S.C.N. Common Core Research & Critical Care. Introduction to Counselling Course Neonatal Transport Course
Melani Gabales	1.0	Yes	Yes	R.G.N. Mentorship (5 days) S.C.B.U./H.D.U. Neonatal Module
Hayley Michael	.64	Yes	Yes	R.N. (Child) Diploma in Nursing (Child) Neonatal Transport Course
Elsie Quimpan	1.0	Yes	Yes	R.G.N. B.Sc. in Nursing
Ruth Morgan	.60	Yes	Yes	R.G.N. Teaching and Assessing/998
Deborah Owen	.50	Yes	No	R.G.N. Diploma in Professional Practice. Common Core, Law & Ethics. Research & Critical Appraisal, Teaching & Assessing Introduction to Counselling Course Neonatal Transport Course Clinical Supervision
Catrin Phillips	.72	Yes	Yes	R.G.N.
Karyn Phillips	0.8	Yes	Yes	R.G.N. R.M. Common Core. Clinical leaders course Research and critical thinking Module 9 training IV Cannulation S.D. Teaching & assessing (998) M.Sc. in Health Promotion Neonatal Transport Course
Gaynor Poptani	.80	Yes	Yes	R.N. (Child). Diploma in nursing
Diane Roberts	.40	Yes	Yes	R.G.N., S.C.M., M.Sc., Teaching & Assessing Mentorship

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board

<b>BAND 6 (Con't)</b>				
Lil Saunders	.80	Yes	Yes	R.N. R.M. Diploma in Nursing Bachelors Degree in Nursing. Teaching & Assessing. Neonatal Transport Course
Anne Seward	1.0	Yes	Yes	S.E.N. - Common Core Certificate level. E.N. Conversion - R.N. Management Module Teaching & Assessing (Diploma) Mentorship
Heather Snow	.40	Yes	Yes	R.M. Common Core
Karen Taylan	1.0	Yes	Yes	R.G.N. B.Sc. in Nursing S.C.B.U./H.D.U. Neonatal Module
Pat Taylor	.64	Yes	Yes	R.G.N., R.M. S.E.N. Common Core Neonatal Transport Course
Joanne Thomas	0.88	Yes	Yes	R.G.N. Teaching & Assessing. City & Guilds (7307) Research & Critical Thinking.
Helen Radford	.72	Yes	Yes	R.G.N. R.M. Teaching and Assessing Research and Critical Thinking
Rhian Vaughan	.40	Yes	Yes	R.G.N., R.M., Teaching & Assessing/998 Neonatal Transport Course
Deborah Verbeck	.96	Yes	Yes	R.G.N. Child Protection Course
Marie Whiles	.64	Yes	Yes	R.N. Child S.C.B.U./H.D.U. /I.T.U. Neonatal Module
Julie Williams	.96	Yes	Yes	Diploma in Nursing (Child Branch) ENB 405. Transport Course
Gemma Davies	1.0	Yes	Yes	N.L.S. Instructors Course R.N. Child Branch S.C.B.U./H.D.U. /I.T.U. Neonatal Module
Deborah Joseph	.64	Yes	Yes	Teaching & Assessing Neonatal Transport Course

Inquiry into Neonatal Care

Evidence from Abertawe Bro Morgannwg University Health Board

<b>BAND 5</b>				
Jocelyn Bermudez	1.0	Yes	Yes	R.G.N. B.Sc. in Nursing Mentorship S.C.B.U./H.D.U. Neonatal Module
Jessica Beynon	0.8	Yes	Yes	R.N. Child
Sharon Birch	0.64	No	Yes	R.N. Child
Claire Evans	1.0	No	Yes	R.N. Child
Gemma Martin-Dyer	1.0	No	Yes	R.N. Child
Shelly Morris	.60	Yes	Yes	R.S.C.N. Counselling Course S.C.B.U./H.D.U. Neonatal Module
Caroline Szulik	1.0	No	Yes	R.N. Child
Ann Richards	.32	Yes	Yes	R.G.N., S.E.N.
Jo Honey	1.0	Yes	Yes	R.N. Child B.Sc. Nursing (Child Branch) Teaching & Assessing Mentorship S.C.B.U./H.D.U. Neonatal Module
Madge Williams	.53	No	Yes	S.E.N.
Rebecca Heaney	1.0	No	Yes	B.Sc. Child Branch
Stephanie Cannell	1.0	Yes	Yes	B.Sc. Child Branch
Nia McNeil	1.0	Yes	No	B.Sc. Child Branch
Rhiannon Jago	1.0	Yes	No	B.Sc. Child Branch
Siân Hughes	.64	Yes	No	B.Sc. Child Branch
Gemma Fortte	1.0	Yes	Yes	B.Sc. Child Branch
Zoe Jessop	.96	Yes	No	B.Sc. Child Branch
Marcia Halfpenny	1.0	No	Yes	
Liz Kift	1.0	No	Yes	
Holly Morgan	1.0	No	Yes	
Sue Edwards	1.0	Yes	Yes	
<b>BAND 4</b>				
Cheryl Tobin	.96	No	No	N.N.E.B.
Sharon Phillips	.64	No	No	N.N.E.B.
Rebecca Salisbury	1.0	No	No	N.N.E.B.
Gemma Dyer	1.0	No	No	N.N.E.B.
Emma Renshaw	.80	No	No	N.N.E.B.

*Circulation list:*

Jean Matthes  
Carol Sullivan  
Geraint Morris  
Sujoy Banerjee  
Maha Mansour  
Arun Ramachandran  
James Moorcraft  
Pinki Surana  
Cathy Dowling  
Siân Passey  
Jenny Sanders  
Wendy Davies  
Carl Verrecchia  
Myriam Bonduelle

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Maha Mansour  
Arun Ramachandran  
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Pinki Surana  
Cathy Dowling  
Siân Passey  
Jenny Sanders  
Wendy Davies  
Carl Verrecchia  
Myriam Bonduelle