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Llywodraeth Cymru
Welsh Government

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Christine Chapman
Chair
Children and Young People Committee
National Assembly for Wales

March 2012

Dear Christine

Thank you for your letter of 21 February regarding a number of issues Committee members would like clarified following my written update and the oral evidence given to the Children and Young People Committee on 9 February in respect of the Committee's inquiry into Neonatal Services.

My response to the specific issues raised by Committee members are as follows:

A copy of the full report published in January 2012

As requested, a copy of the latest Neonatal Capacity Review prepared by the Wales Neonatal Network and signed off by the Network's Steering Group in January 2012 is enclosed.

Local Health Boards are now using this report and specific guidance from the Network on what action is needed to update their local neonatal care action plans. My officials will be scrutinising these plans, feeding back to Local Health Boards and monitoring the pace of progress.

Clarification of lines of accountability for the delivery of neonatal services. In your paper, you state that the Network is responsible for monitoring LHBs compliance with the Standards and decisions such as resourcing of neonatal care but its terms of reference make clear that its role is advisory. With each review the Network has presented clear recommendations to LHBs via WHSSC, about what action is required to address the identified service shortfalls and inefficiencies; however they cannot enforce this.

Accountability is clear and lies with individual Local Health Boards which are responsible for planning and securing safe, sustainable, high quality neonatal care for their population. Local Health Boards, however, decided to plan and fund neonatal intensive care and high dependency care provided in Swansea and Cardiff through their joint work on the Welsh

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Health Specialised Services Committee (WHSSC). The Neonatal Network was set up to support and advise Local Health Boards on all aspects of neonatal care, such as by co-ordinating regular reviews of all neonatal care capacity and compliance with national standards on an all-Wales basis and to provide leadership across Wales to drive forward the necessary service improvements. The Network is a sub group of WHSSC.

Detailed information about the action the Welsh Government is taking in conjunction with LHBs and WHSSC to address the staffing shortfalls (in order to comply with the All Wales Neonatal/BAPM Standards), specifically the number of neonatal nurses that will be trained, with clear timescales and lines of accountability to monitor this.

Addressing shortfalls in staffing levels and progressively achieving compliance with national standards is a matter for individual Local Health Boards, working as health communities, where appropriate, and at an all-Wales level through their joint work on WHSSC.

The Wales Neonatal Network has set up a nursing and therapy sub group which has completed a review of the neonatal education and training across Wales. This was circulated to Health Boards with clear recommendations for action.

They have developed an All Wales Framework for Neonatal Nurse Training which is supplemented by a variety of Welsh Government frameworks and guidance such as the Post Registration Career Framework for Nurses in Wales and the Framework for Advanced Nursing, Midwifery, and Allied professions Practice.

The sub group also contributed to the development of a competency framework for neonatal nursing led by the Royal College of Nursing.

Local Health Boards are now using latest information and advice from the Neonatal Network to update their local neonatal care action plans, which must identify action on staffing levels and training. My officials will be scrutinising these updated action plans, feeding back to Local Health Boards and monitoring the pace of progress.

Whether any extra investment will be made available to improve neonatal care, including meeting the cost of increasing the number of neonatal cots (which the Network has estimated needs to be 8-9 per cent of current cot capacity). It is unclear what the estimated financial cost would be to the cost of the cot, equipment and nurses needed to staff the cots need to be taken into account.

The Welsh Government has already provided an additional recurrent £2 million from 2008-2009. The need for additional investment to improve neonatal care across Wales is a matter for Local Health Boards to address through their neonatal care action plans.

Whether any discussions have taken place with the LHBs about the reconfiguration/centralisation of neonatal services in view of the serious concerns raised about patient safety? Also, whilst the delivery of neonatal services is a matter for individual LHBs, are you inclined to intervene given the serious concerns that have been raised about patient safety, particularly in relation to Betsi Cadwaladr?

The configuration of neonatal services across Wales to ensure they are safe, sustainable and high quality now and in the future is a matter for Local Health Boards through their joint planning work through WHSSC and locally. My officials will continue to raise neonatal care as part of our ongoing discussions with Local Health Boards on the wider service reorganisation agenda. This will be an important element of each Local Health Board's updated action plan for neonatal care which my officials will be scrutinising.

The NHS Medical Director, Dr Chris Jones, is ensuring the National Clinical Forum is also fully aware of the safety and quality issues facing neonatal care.

It was suggested by RCPCH that the current commissioning process for neonatal service is not fit for purpose and that better lines of accountability are needed. Could you please explain why the commissioning process is set up in the way it is (for example, WHSSC is responsible for commissioning neonatal care in lead centres but not local units and is responsible for the commissioning of some high dependency capacity but not all), and whether you have any plans to issue guidance to LHBs and WHSSC to encourage joint commissioning of neonatal services.

I have no plans to issue guidance. Accountability for neonatal care is clear and lies with individual Local Health Boards. It is, therefore, Local Health Boards which decide what to plan and fund through their joint work on WHSSC and what will be planned locally. The Neonatal Network is there to support and advise Local Health Boards on all aspects of the planning and delivery of safe, sustainable, high quality neonatal care. Each Local Health Board action plan for improving neonatal care covers the full range of care from what is planned jointly through WHSSC and what is undertaken locally.

I have asked David Sissling to raise with Local Health Board Chief Executives the merits of planning all aspects of neonatal care through their joint work on WHSSC as a means of ensuring rapid and sustained progress with the necessary service improvements.

Kind Regards
Lesley

Lesley Griffiths AC/AM

Y Gweinidog Iechyd a Gwasanaethau Cymdeithasol
Minister for Health and Social Services

NEONATAL CAPACITY REVIEW

JANUARY 2012

OVERVIEW SUMMARY

This summary should be read in conjunction with the main Neonatal Capacity Review, January 2012.

Mark Drayton

Clinical Lead, Wales Neonatal Network

1. INTRODUCTION

Following establishment of the Wales Neonatal Network in late summer 2010, the Network was tasked to perform an initial Network Capacity Review. A preliminary paper was presented to the Steering Group in October 2010 and a final report presented in February 2011. This report made a series of recommendations and, following meetings with Health Boards in Spring/Summer 2011, they were asked to develop action plans to start the process of addressing some of the deficits and dysfunctionalities identified across the neonatal network.

This review follows on from that presented to the Network Steering Group in February 2011. The main difference in this review is that it is founded on a substantial body of activity data collected uniformly and prospectively from all neonatal units in Wales over the whole year for 2011 and 47 consecutive weeks for North Wales. This allows much clearer, more quantitative and robust recommendations to be made on a range of steps needed to be taken by Health Boards to make available capacity match demand for neonatal services.

2. CONTEXT

The review is based on the following underlying themes and principles:

- 2.1 Four health communities have been defined; each should function as a mini network, as far as possible, so that families and babies can receive all their care within their Health Community and close to home.
- **North** (Ysbyty Gwynedd, Ysbyty Glan Clwyd and Wrexham Maelor Hospital)
 - **South West** (Bronglais Hospital, Withybush Hospital, West Wales General Hospital, Singleton Hospital and Princess of Wales Hospital)
 - **South Central** (University of Wales Hospital, Royal Glamorgan Hospital and Prince Charles Hospital)

- **South East** (Nevill Hall Hospital, and Royal Gwent Hospital).
- 2.2 A maximum average cot occupancy standard of 70% for critical care and 80% for low dependency care should be adhered to for effective clinical care. Poorer clinical care and poorer clinical outcomes have been demonstrated in units with mean critical care occupancy above 70%.
 - 2.3 Cot projections are based on 2011 activity collected via the cot locator system and on neonatal population.
 - 2.4 Nurse staffing recommendations are based on the Welsh Government All Wales Standards for Neonatal Care (2008) that reflects UK national guidance.
 - 2.5 Recommendations are based on the existing configuration of neonatal units.

3. KEY OVERALL MESSAGES

Health community specific findings and areas for development are included in the individual chapters and should be referred to in parallel with this Executive Summary.

Many messages apply across Wales and these are summarised below:

- 3.1 The current compliment of 72 effective critical care cots (IC + HD,) across Wales comes close to being adequate to meet the 70% occupancy standard. Clinicians however have persistent problems in gaining timely access to these cots. This is due to the current distribution, utilisation and staffing of existing capacity, together with cot-blocking of high acuity cots by low-acuity babies.
- 3.2 Cot deficits exist in the North Wales Community where cot projections indicate a shortfall of 1 HD cot and in the South Central Community where cot projections indicate a shortfall of 1 IC cot and 3 HD cots.

- 3.3 Capacity pressures are acute across the southern part of the network, with particular pressure in the South Central Community that provides the regional surgical service.
- 3.4 The critical care cot deficit for Wales of 5 cots is modest in relation to the existing capacity of 72, but the clinical impact is high.
- 3.5 A significant part of the Intensive Care (IC) capacity problem relates to an inappropriate distribution of critical care cots leading to local under-utilisation. Occupancies of around 20% for some IC cots are evident in Abergavenny and Bridgend and the Network cannot afford to have such poorly utilised capacity.
- 3.6 Other problems relate to the significant amount of intensive care that is currently being provided outside of the Intensive Care Centres to meet demand that cant be met by the planned capacity, primarily in the Cwm Taf Units, without compliant staffing structures.
- 3.7 Poor cot utilisation is evident at High Dependency (HD) level. This adversely affects the repatriation of infants from the Intensive Care Units back to their local units and affects the Intensive Care Units' ability to receive new referrals. Occupancies of 45% and below are evident

UNIT	% OCCUPANCY
YG Bangor - 2 cots	5%
WH Haverfordwest – 2 cots	31.2%
WWGH Carmarthen - 2 cots	22.8%
R Glam Llantrisant - 4 cots	45.3%
PCH Merthyr - 3 cots	32.7%

The causes of this poor utilisation are twofold:

- Special Care (low acuity) babies are blocking HD cots.
- Clinical competencies are currently insufficient in some units for early repatriation of babies from the Intensive Care Units and to provide good cot utilisation.

3.8 There is wide variation between units in the provision of low dependency cots in proportion to live births. Associated with this is extremely high activity in relation to the number of local deliveries, again a two fold variance. This is demonstrated in special care occupancies of over 85.5% - 174.5% across several units.

3.9 Low acuity babies are persistently occupying high dependency cots in all units across Wales and this is a major contribution to the lack of cot capacity at critical care level.

3.10 Very limited progress has been made to improve compliance with nurse staffing against the All Wales Standards. The nurse deficits by Health Community, expressed as % of a Standard-Compliant establishment are as follows:

North Wales Community	24.2%
South West Community	20.8%
South Central Community	11.8%
South East Community	23.2%

3.11 The neonatal capacity problem in Wales and the associated clinical governance concerns will not resolve until progress is made in addressing this nursing deficit.

3.12 Developing and sustaining the appropriate nursing skill levels in the smaller local/special Units is critical to addressing the capacity problems across all Units.

- 3.13 The greatest current medical staffing problems for Wales relate to the Consultant (Tier 3) and Middle Grade (Tier 2) issues in Betsi Cadwaladr. Ongoing neonatal intensive care is being provided in two of the three North Wales units without a dedicated rota of expert neonatal consultants and without a dedicated rota of Tier 2 staff that have no concurrent general paediatric responsibilities.
- 3.14 The number of trainee slots available to fill rotas is likely to progressively and drastically decrease from 2014 and this will reduce the number of Tier 2 rotas that can be supported. This is likely to require innovative staffing models and service reconfiguration.
- 3.15 Paediatric junior staff recruitment has been difficult in Wales for several years and most if not all units have experienced recurrent gaps in their Tier 1 and Tier 2 rotas. This problem is likely to be particularly severe in March 2012 and there can be no certainty that this will not acutely affect capacity.
- 3.16 Most existing Level 2 neonatal units in Wales do not currently have complete separation of Tier 1 rotas. This separation is now part of the "standard" staffing model under the BAPM 2010 Service Standards, although there is arguably flexibility within the standard in relation to the nature and volume of neonatal care given. Staff with a nursing background may in future deliver traditional medical roles at Tier 1.
- 3.17 The current pattern and delivery of care indicates that there is systematic dysfunctionality and mismatch between demand for and the availability of cots with variability in clinical practice and resource utilisation. This results in diseconomies of scale, clinical governance concerns and difficulties in sustaining robust staffing models with adequately skilled, experienced and supervised clinical teams.
- 3.18 It is important that the Neonatal Network and local clinical teams are engaged in the development of plans

for maternity services and any other plans that involve reconfiguration of services.

- 3.19 The new BAPM service standards for hospitals providing neonatal care (2010) and Categories of Care (2011) should be used by Health Boards to guide future developments and support any reconfiguration plans in Wales.

4. RECOMMENDATIONS

Detailed recommendations, by Health Community, are presented in the Executive Summaries contained in the main body of the Neonatal Capacity Review. Below are high level recommendations that need to be addressed at an all Wales level by Health Boards, WHSSC and Welsh Government.

- Steps must be made to ensure High Dependency (HD) capacity across Wales is actually available for high dependency care. Local neonatal units must make HD cots available and avoid these cots being blocked by low dependency babies. Staffing competencies must be addressed to support the provision of High Dependency care; this will need support from the associated Neonatal Intensive Care Unit.
- If the availability of High Dependency cots can not be improved at local level, the associated cots should be relocated to the central Intensive Care Units, with the associated revenue/staffing resource. Clearly the former option would be preferred, as this ensures the optimum delivery of locality based care.
- The very high occupancy rates at special care level need to be addressed either by steps to reduce low dependency demand and/or investment in extra low dependency capacity. The Network has completed a review of low dependency provision across Wales and a compendium of best practice is available to assist Units in reducing inappropriate demand.

- Unless Health Boards urgently address the Low Dependency occupancy issue, the critical care capacity problem will not be resolved.
- Stabilisation cots must be maintained in each Neonatal Unit to provide short term Intensive care.
- The current under-utilised Intensive Care (IC) cots should be urgently relocated to their associated Neonatal Intensive Care.
- Attention should be given to addressing the IC activity currently delivered by the Cwm Taf Units, as this is not sustainable in the medium or longer term.
- The shortfall in Critical Care cots in the South Central Community needs to be addressed; actions to improve the effective use of current cots across the south part of the Network need to be considered in addition.
- Urgent action is required to address the nursing shortfalls in line with the All Wales Standards to ensure that safe, effective clinical care can be provided.
- Health Boards need to consider the BAPM Service Standards for Hospitals providing Neonatal Care (2010) when planning Tier 1 provision for the standard model for staffing Local Neonatal Units.

5. CONCLUSIONS

Neonatal clinical staff, Neonatal Unit Management Teams, Health Boards and WHSSC are all urged to consider the recommendations and to think about their individual responsibilities in assisting resolution of the current mismatch between demand for and availability of neonatal capacity within the Wales Network.

As neonatal services are delivered in a complex partnership between local stabilisation and low acuity services and more centralised intensive care services (including the CHANTS transport service) it is particularly important that communities work closely together to plan the quantity and distribution of

capacity within their areas, appropriate to their population needs. Agreed and documented clinical pathways and protocols that match the agreed capacity provision should support these plans.

Without such action:

- Families will continue to experience the stress and clinical risk associated with emergency transfers of sick mothers and babies over longer distances than appropriate far too frequently.
- Clinical teams will continue to spend an inordinate amount of time and be inordinately stressed managing risky over-occupancy by trying to find alternative units for mothers and babies or bringing in extra staff in emergencies.
- Sick babies will continue to be managed for too long in units that are not appropriately staffed or experienced for the level of care needed.

NEONATAL CAPACITY REVIEW JANUARY 2012

Mark Drayton
Clinical Lead, Wales Neonatal Network

TABLE OF CONTENTS

TABLE OF CONTENTS.....	2
PREFACE.....	4
Introduction.....	4
1 EXECUTIVE SUMMARY.....	5
1.1 Health Communities.....	5
1.2 Configuration of Units.....	6
1.3 Cot Occupancy Standards.....	6
1.4 Projected Cot Needs.....	7
1.5 Staffing Standards.....	7
1.6 Recommendations.....	7
1.6.1 Critical Care Cot Numbers.....	7
1.6.2 Distribution of Critical Care Capacity.....	8
1.6.3 Low Dependency Pathway Development.....	9
1.6.4 Nurse Staffing.....	10
1.6.5 Medical Staffing.....	10
1.6.6 Service Configuration.....	11
1.7 Conclusion.....	11
2 BACKGROUND.....	13
2.1 This Review in Context.....	13
2.1.2 Capacity Review – Next Steps for the Network.....	14
2.2 Underlying Themes.....	16
2.2.1 Health Communities.....	16
2.2.2 Nurse Staffing.....	18
2.2.3 Medical Staffing.....	19
2.2.4 Service Efficiencies.....	22
2.3.5 Future Proofing.....	25
3 METHODOLOGY.....	27
3.1 Cot Locator Data Collection.....	27
3.2 Cot Number, Nurse Staffing and Birth Statistics.....	27
3.3 Analysis.....	28
3.3.1 Activity.....	28
3.3.2 Occupancy.....	28
3.3.3 Population.....	28
3.3 Recommendations.....	29
4 NORTH WALES.....	30
4.1 North Community.....	30
4.1.1 Executive Summary.....	30
4.1.2 Cot Number Projections.....	33
4.1.3 Cot Numbers and Occupancy.....	36
4.1.4 North Wales Community Action Points.....	39
4.1.5 Staffing.....	40
5 SOUTH WALES.....	43
5.2 South West Community.....	45
5.2.1 Executive Summary.....	45
5.2.2 Cot Number Projections.....	47

5.2.3	Cot Numbers and Occupancy.....	48
5.2.4	Out of Health Community Activity	50
5.2.5	South West Community Development Points	51
5.2.6	Staffing	56
5.3	South Central Community.....	58
5.3.1	Executive Summary.....	58
5.3.2	Cot Number Projections.....	60
5.3.3	Cot Numbers and Occupancy.....	61
5.3.4	Out of Health Community Activity	62
5.3.5	South Central Community Development Points.....	63
5.3.6	Staffing	68
5.4	South East Community.....	71
5.4.1	Executive Summary.....	71
5.4.2	Cot Number Projections.....	73
5.4.3	Cot Numbers and Occupancy.....	75
5.4.4	Out of Health Community Activity	76
5.4.5	South East Community Development Points	77
5.4.6	Staffing	80
APPENDIX 1	- Data Issues.....	83
	How Much Data is Needed for Confident Projections of Activity?	83
	Unmet Demand in Wales.....	85
	The Badgernet Database and Categories of Care.....	86
APPENDIX 2	- Summary of Underpinning Capacity and	
	Activity Data, Jan to Dec 2011.....	89

PREFACE

Introduction

Following establishment of the Wales Neonatal Network in late summer 2010, the Network was tasked to perform an initial Network Capacity Review. A preliminary paper was presented to the Steering Group in October 2010 and a final report presented in February 2011. This report made a series of recommendations and, following initial meetings with Health Boards in Spring/Summer 2011, they were asked to develop action plans to start the process of addressing some of the deficits and dysfunctionalities identified across the neonatal network.

This report follows on from that work and is part of the Network's Work-plan for a biennial review of progress towards addressing the capacity and staffing issues within the Network. The initial Review was performed using very limited data on activity and occupancy and therefore some of the conclusions and recommendations were provisional or indicative. A large body of activity and staffing data has been collected since January 2011 and this has allowed the early recommendations to be reviewed and where appropriate, refined and to be made more specific, quantitative and precise.

The Postgraduate Dean's Department locally and the RCPCH UK nationwide have indicated likely major future reductions in the number of Paediatric trainee staff and service rotas. The Deanery has also alerted HB's to a significant recruitment failure for March 2012 with resulting failure to fill many existing trainee slots. In the mean time, the British Association for Perinatal Medicine has published new Standards for Hospitals Providing Neonatal Care in late 2010 and subsequently new Categories of Care in 2011.

Finally Health Boards throughout Wales have started to engage in discussion over potential reconfiguration of paediatric, maternity and neonatal services.

1 EXECUTIVE SUMMARY

This review follows on from that presented to the Network Steering Group in February 2011. The main difference in this review is that it is founded on a substantial body of activity data. This has been collected uniformly and prospectively from all neonatal units in Wales over the whole year for 2011 and 47 consecutive weeks for North Wales. This allows much clearer, more quantitative and robust recommendations to be made on a range of steps needed to be taken by Units and Health Boards in collaboration with WHSSC to make available capacity match demand for neonatal services.

1.1 Health Communities

The analysis, recommendations and presentation here are based on four geographically determined Health Communities within Wales. These centre on existing or projected (North Wales) Neonatal Intensive Care Units (NICU - Level 3 units in old terminology) and reflect the existing public transport infrastructure and patterns of neonatal patient flow between Special Care and Local Neonatal Units and their nearest NICU. Appropriate provision within each Health Community will optimise safe and family centred, locality based care and follows national professional recommendations. However as the population base of each of these communities is relatively small, neonatal critical care is a low volume/high acuity service and the vast majority of the activity is emergency driven, fluctuations in demand are correspondingly high. This means that even if realistic capacity is structured within each Community, the three Communities in South Wales will need to manage their capacity collaboratively at periods of high demand. Similarly North Wales will need to maintain a relationship with English units to manage peaks of demand, whatever development of neonatal services occurs within North Wales.

There is some repetition of common themes within each Health Community section of this report. This is to help these sections stand alone for the benefit of stakeholders in each community.

However more detail about common themes is provided in Section 2 – Background, which follows

1.2 Configuration of Units

This review is based on the existing configuration of neonatal units, but reference is made to potential capacity and capability benefits of reconfiguration. It is acknowledged that any future reconfiguration may require a change in patient flows and therefore the nature of the effective unit of comprehensive neonatal service delivery (i.e. Health Community). Such reconfiguration might require consideration of a different *distribution* of neonatal capacity between units but overall capacity pressures would largely remain unless actions are taken on the current recommendations. Further loss of effective capacity within any reconfiguration process could actually be a major risk to this capacity-pressured service. This would be particularly likely if reconfiguration is allowed to happen within an emergency scenario (e.g. staffing crisis) rather than a well-planned process supported by appropriate infrastructure changes.

1.3 Cot Occupancy Standards

The cot number recommendations are based on the national cot maximum average occupancy standard of 70%, but accepting a more relaxed 80% standard for low dependency care. While 70% may seem a low occupancy compared with some adult services, it is evidence based, through demonstrated poorer clinical outcomes at higher occupancies, and is a result of the low volume/high acuity and emergency led nature of the service as described in the section on Health Communities above. Future analysis of the new Wales neonatal data-set will examine the relationship by Health Community between average occupancy at different acuity levels and the availability of free capacity for new admissions on a day by day basis. Clearly there is a relationship between the size of an effective unit of comprehensive neonatal service delivery (i.e. Health Community) and acceptable mean occupancy. Smaller service delivery units will require lower mean occupancy rates if they are to cope with peaks of demand.

1.4 Projected Cot Needs

Projected cot numbers to meet the standards at Health Community level are made both on the basis of 2011 past activity and also on a neonatal population basis using summary data from the wider Wales Network. Unlike North Wales, the summary data for South Wales from the cot-locator system is considered to be fairly complete (a relatively small volume of activity is thought to be delivered outside the Network in England). For the North Wales population a significant volume of activity is thought to have been delivered in England and quantification of that activity is not currently available to the Network. Therefore summary data from South Wales alone has been used for the neonatal population based analysis for both the South and the North on an assumption that population based needs should not be vastly different between these two areas of Wales.

1.5 Staffing Standards

The staffing recommendations are based on the Welsh Government All Wales Standards for Neonatal Care (2008) that reflect UK national guidance. The medical staffing recommendations also reflect more recent guidance in "Service Standards For Hospitals Providing Neonatal Care" (3rd edition), BAPM August 2010.

1.6 Recommendations

As discussed above, the primary analyses presented here are by Health Community. Detailed recommendations by Health Community are presented in the Executive Summaries for each Health Community. Some themes cross most or all Health Communities and these are summarised here.

1.6.1 Critical Care Cot Numbers

Despite the fact that clinical staff regularly experience difficulties in finding an available cot for a sick infant or a high-risk mother whose delivery seems imminent, the current 72 effective critical care cot numbers (IC + HD) reported by Health Boards in July 2011, come close to being adequate to meet the 70% occupancy standard. Much of the problem of timely access to an available cot relates to the distribution, utilisation and staffing of existing

capacity, together with inappropriate cot-blocking of high acuity capacity by low-acuity babies.

Exceptions to this general conclusion are in the North Wales Community where cot projections indicate an existing shortfall of 1 HD cot, and in the South Central Community where cot projections indicate an existing shortfall of 1 IC cot and 3 HD cots. The capacity pressures are therefore particularly severe in the South Central Community that provides the regional surgical service as well as serving its local population. Pressures here rapidly spread to other parts of the Southern Network.

The critical care cot deficit for Wales of 5 cots is therefore modest in relation to the existing capacity of 72, but the clinical impact is high. Urgent action is required to address this relatively modest deficit.

1.6.2 Distribution of Critical Care Capacity

Intensive Care

A significant part of the capacity problem relates to an inappropriate distribution of critical care cots leading to local under-utilisation. In particular there are 2 IC cots configured in Bridgend and one in Abergavenny over and above the stabilisation/short-term IC cot required in every obstetric/maternity department. The Bridgend cots had a combined occupancy of 20.5% in 2011 while the Abergavenny cot had occupancy of 21.4%. The Network cannot afford to have such poorly utilised capacity and these cots should be urgently relocated to their associated Neonatal Intensive Care Units.

A different problem exists in the two Cwm Taf units. Due to the capacity pressures in Cardiff, the Merthyr unit delivers a significant number of IC days without a formal IC cot and is not appropriately staffed for such ongoing care. The Royal Glamorgan unit similarly delivers a significant number of IC days with a non-compliant staffing infrastructure all be it with a designated IC cot.

High Dependency

Several smaller units have high dependency cots that are poorly utilised. Such poor utilisation (caused by low-acuity baby cot-blocking and unit capability issues) hinders repatriation of infants

from the intensive care units to free their critical care capacity for new referrals.

Problem areas in this respect are YG Bangor (2 cots - 5% occ), WH Haverfordwest (2 cots - 31.2% occ), WWGH Carmarthen (2 cots - 22.8% occ), R Glam Llantrisant (4 cots - 45.3% occ) and PCH Merthyr (3 cots - 32.7% occ).

The Network cannot afford to have such poorly utilised capacity. Either the HD capacity has to be free'd up for HD care and capability issues addressed (with support from the associated Neonatal Intensive Care Unit) or the HD cots should be relocated to the central Intensive Care Unit (with the associated revenue/staffing resource). Clearly the former option would be preferred so as to deliver optimum locality based care, but if this cannot be achieved a centralised model will need to be adopted.

1.6.3 Low Dependency Pathway Development

The Network data shows a wide range of low dependency (SC) days per 1,000 deliveries demonstrating widely diverse clinical practice and efficiency in use of resource. Many mainly smaller units also show extremely high levels of SC occupancy that is achieved through these low-acuity babies occupying HD capacity.

The units demonstrating the greatest problems are:

YGC Rhyl	97.3% mean occupancy	High Cot Provision
Wrexham Maelor	84.5% mean occupancy	High Cot Provision
WH Haverfordwest	89.2% mean occupancy	High Cot Provision
WWGH Carmarthen	148.6% mean occupancy	~
R Glam Llantrisant	174.5% mean occupancy	Low Cot Provision
POW Bridgend	123.2% mean occupancy	Low Cot Provision
R GH Newport	126.7% occupancy	Low Cot Provision

Units with very high occupancy levels need to address them through one or other or a combination of two routes:

1. Steps to reduce low dependency demand
2. Investment in extra low dependency capacity

The Network through its Low Dependency Sub-Group is providing a resource to all units to assist in reducing inappropriate demand through provision of a compendium of best practice.

Unless units urgently address this LD occupancy issue, the critical care capacity problem will not be resolved.

1.6.4 Nurse Staffing

For many years, nurse-staffing levels have been the major determinant of neonatal unit capacity. The Health Minister signed off in 2008 All Wales Standards including neonatal nurse staffing levels based on BAPM recommendations. Despite this, all Health Boards have made very limited progress towards implementation.

The nurse deficit against the Standards in June 2011 by Health Community and expressed as % of a Standard-Compliant establishment are as follows:

North Wales Community	24.2%
South West Community	20.8%
South Central Community	11.8%
South East Community	23.2%

The deficit is substantial and is present in every Health Board and every unit. Neonatal nurse recruitment is no longer a problem. The lack of funding of posts by Health Boards is a problem. The neonatal capacity problem in Wales and associated clinical governance concerns will not resolve until progress is made in addressing this deficit.

1.6.5 Medical Staffing

The greatest current medical staffing problems for Wales are undoubtedly the Consultant (Tier 3) and Middle Grade (Tier 2) issues in Betsi Cadwaladr. Ongoing neonatal intensive care is being provided in two of the three North Wales units without a dedicated rota of expert neonatal consultants and without a rota of Tier 2 staff that do not have concurrent general paediatric responsibilities. This is a model of care that has virtually ceased elsewhere in the UK and hasn't been provided in South Wales for about 8 years. It is non-compliant with National Standards, and clinical outcomes as far as they can be measured are not reassuring.

Paediatric junior staff recruitment has been difficult in Wales for several years and most, if not all units, have experienced recurrent gaps in their Tier 1 and Tier 2 rotas. We have been warned by the Postgraduate Dean's Department that this problem is likely to be particularly severe in March 2012 and there can be no certainty that this will not acutely affect capacity.

On a longer time-scale, the number of trainee slots available to fill rotas is likely to progressively and drastically decrease from 2014 and this will reduce the number of Tier 2 rotas that can be supported. This is likely to require innovative staffing models and service reconfiguration.

1.6.6 Service Configuration

This is not the right place to discuss service configuration in detail. This is complex and there are multiple links with other services and specialities. However it is clear that future sustainability of neonatal services in Wales and the preservation or enhancement of capacity will be absolutely dependent on reducing the number of neonatal units. It is equally clear that the same reconfiguration will be needed to address service and staffing and training standards and address clinical governance concerns. Reconfiguration is also likely to provide some help in addressing the revenue issues that underlie the current nurse staffing difficulty. References are made throughout this document at points where it is thought that reconfiguration may help resolve challenges.

1.7 Conclusion

Neonatal clinical staff, Neonatal Unit Management Teams, Health Boards and WHSSC are all urged to consider the recommendations in the current report and to think about individual responsibilities in assisting resolution of the current mismatch between demand for and availability of neonatal capacity within the Wales Network. As neonatal services are delivered in a complex partnership between local stabilisation and low acuity services and more centralised intensive care services (including the CHANTS transport service) it is particularly important that communities work closely together to plan the quantity and distribution of capacity within their areas, appropriate to their population needs. Agreed and documented

clinical pathways and protocols that match the agreed capacity provision should support these plans. Without such action:

- Families will continue to experience the stress and clinical risk associated with emergency transfers of sick mothers and babies over longer distances than appropriate far too frequently.
- Clinical teams will continue to spend an inordinate amount of time and be inordinately stressed managing risky over-occupancy by trying to find alternative units for mothers and babies or bringing in extra staff in emergencies.
- Sick babies will continue to be managed for too long in units that are not appropriately staffed or experienced for the level of care needed.
- Most importantly, clinical outcomes for the sickest babies will remain poorer than they could and should be.

2 BACKGROUND

2.1 This Review in Context

There is much background information in the February 2011 Report. This has not been repeated here but is still relevant and further copies of that report are available from the Network team.

Key messages from the first review included:

- There was no major or overall deficit in the number of Intensive Care Cots in Wales despite recurrent problems experienced in getting mothers and babies into units that had free capacity for neonatal critical care.
- There was a major shortfall in the availability of High Dependency Cots to meet occupancy standards across all the Health Communities in Wales that would require investment to address.
- There was a similar major shortfall in the availability of Special Care to meet occupancy standards. It was believed that the demand for these cots should be amenable to a range of solutions, particularly where admission rates were higher than average. The Network has set up a Low Dependency Work-stream to assist Local Health Boards with recommendations to improve the quality and efficiency of low dependency care and reduce demand for cots at this level.
- High occupancy rates evident for both High Dependency and Special Care and their impact on Intensive Care provision is known to be associated with sub-optimal clinical outcomes.
- Babies were being cared for in the wrong level of acuity of cot and there was a persistent problem with High Dependency Babies in Intensive Care cots and Low Dependency Babies in High Dependency cots. This was causing problems in the care pathway across the Network in both South and North Wales.
- The number of staffed cots was considerably less than the number of physical cots. This gave rise to clinical governance concern.
- The number of physical cots had dropped since 2005, particularly in South Central and North areas.

- None of the Health Communities in Wales achieved compliance with the All Wales Neonatal Standards (2008), particularly with regard to nurse staffing.

All of these key messages remain relevant following the current review. A first draft of this current review (based on data from the first 32 weeks of 2011) was presented to the Network Steering Group for discussion in October 2011 and was subsequently distributed widely and discussed individually with each HB. The additional data then available led to minor changes in emphasis from the first review of February 2011 but the key messages remained unchanged, while allowing much better quantification of the issues and of the implications for individual services.

Following wide discussion with clinical and managerial stakeholders throughout Wales between October and December 2011, a number of suggestions have been incorporated. An opportunity to extend the activity dataset, on which the recommendations are based, to a full year for South Wales and 47 consecutive weeks from February 2011 for North Wales has been taken. For those who wish to explore the data further, the raw figures used for much of the analysis are now attached in Appendix 2.

It is pleasing to see initial discussions and actions from Local Health Boards in response to the first report. However much work remains to be done. This work is summarised in the Executive Summary section of this document and in the summaries associated with each Health Community analysis.

2.1.2 Capacity Review – Next Steps for the Network

The analysis presented here is detailed and highlights substantial systematic dysfunctionality, mismatch between demand and availability of capacity. There is also evidence of variability in clinical practice and resource utilisation. However it does have limitations due to the nature of the underlying data set. This data set is primarily a daily snapshot data of occupied and unoccupied cots combined with limited coded information of acuity of care and origin of occupying infant. In other words it is a cot-based rather than an infant based data set. The Badgernet neonatal

database has been in universal use in Health Boards in Wales since the beginning of January 2011. It collects infant based data that has the potential to answer complex unit, community and Network level questions on case-mix, length of stay, type of care and care pathways across different units. Access to this data is important to fully understand the dynamics of neonatal care within the Network. It is anticipated that Network access to this data will be achieved shortly and will allow a more detailed analysis in parallel with the current cot-locator based analysis in the course of 2012. If local staffing resources allow, it may additionally be helpful to collect a uniform prospective Wales data set including shift by shift availability of nursing staff; cot closure due to staffing, infection or other issues; admission refusal and transfers of babies and mothers for non-clinical reasons.

Despite these limitations, the current data is now robust. The information it conveys is, in most instances, clear. The desirability of more detailed information in due course should not be a reason for delaying action to remedy the current situation and the clinical governance risks that are currently experienced throughout the Network.

2.2 Underlying Themes

2.2.1 Health Communities

As in the first iteration of the capacity review, the most important conclusions from this review are presented at Health Community level. The Health Communities have been defined as:

- **North** (Ysbyty Gwynedd, Ysbyty Glan Clwyd and Wrexham Maelor)
- **South West** (Aberystwyth, WH Haverfordwest, WWGH Carmarthen, Swansea Singleton and POW Bridgend)
- **South Central** (UHW Cardiff, R Glam Llantrisant and PC Merthyr)
- **South East** (NH Abergavenny and RGH Newport).

This grouping into functional Health Communities is based on the following:

- A Lead Level 3 unit (Neonatal Intensive Care Unit)
- A group of adjacent Level 2/1 units (Local Neonatal Units and Special Care Units) which should relate naturally to the Lead Unit in terms of critical care patient flows and nursing/medical professional support.
- A small number of babies will need to access Regional or Supra-Regional specialised services outside their own Health Community.

A principle underlying the concept of Health Communities for neonatal services within Wales is that each should function as a mini network and that as far as possible families and babies should receive all their care within their Health Community.

These principles also apply to neonatal services in North Wales, although those services still lack a compliant Neonatal Intensive Care Unit, and appropriate defined critical care patient pathways.

In addition to the community level analysis, with the substantial set of activity data available to us, the report also highlights some anomalies in capacity distribution and utilisation at unit level. Addressing these anomalies is important:

- To support the overall functionality of communities
- To provide care to infants of all acuities as close to home as possible
- To prevent Neonatal Intensive Care Units becoming unnecessarily clogged up with babies of relatively low acuity at the expense of their core critical care work
- To deliver a service with maximum efficiency and cost-effectiveness

It is understood that there are discussions ongoing in several communities within Wales over potential reconfiguration of maternity, neonatal and paediatric services (among others). It is currently unclear what conclusions may be reached in these discussions and if change is proposed, in what time frame it could be safely delivered. The conclusions here are therefore based on the current configuration of Health Communities.

It is important that the network and local paediatricians are engaged in the development of plans for maternity services.

However it is clear that we have a very large number of local/special care units in Wales for the size of delivery population. This results in diseconomies of scale, clinical governance concerns and difficulties in sustaining robust staffing models with adequately skilled, experienced and supervised clinical teams. Reconfiguration, that led to a smaller number of local/special units overall could paradoxically allow a higher level and volume of care to be provided outside the Neonatal Intensive Care Units, in local Neonatal Units and Special care Units. This will lead to improved clinical safety/clinical outcomes and will provide scope for reallocation of resources within organisations, and across organisation where applicable.

More radical centralisation might produce further cost efficiencies but at the potential expense of safety of first-line resuscitation

and stabilisation services and certainly at the expense of being able to provide proper locality based care.

2.2.2 Nurse Staffing

For many years nurse-staffing levels have been the most important determinant of neonatal unit capacity. Poorer clinical care and poorer clinical outcomes have been demonstrated in units with mean critical care occupancy above 70%. Similarly BAPM and All Wales Standards for nurse staffing ratios at each level of acuity are evidence based in relation to clinical process. It is therefore essential that this review of capacity is read and understood in juxtaposition with the work on compliance with the Wales Neonatal Nursing Staffing Standards led by the Neonatal Network Nursing & Therapies Sub-Group chaired by Mrs Joan Foy.

Implementing supposed capacity change without associated changes within the nursing workforce would be pointless. There must be parallel advances in both nurse staffing levels and cot availability if the aims of appropriate, timely and equitable access to care as well as the quality of care and associated improvement in clinical outcome are to be achieved.

Therefore in each section of this review, recommended cot numbers (which will require associated change in nurse numbers to staff to the Standards) are presented together with an analysis of the nurse numbers needed to achieve compliance with Standards for the existing cot complement.

While this review primarily addresses nurse numbers and skill mix, sustaining high level nursing skills in smaller local/special care units also have a major impact on effective capacity.

Skill mix is addressed in detail within the Network Nursing & Therapies Paper presented at the July Network Steering Group and distributed to Heads of Children's Nursing throughout Wales. Strategically, a reduction in the number of local/special care units in Wales is needed to facilitate the sustainability of high dependency care in local units through maintenance of those higher level nursing competencies.

A summary of consolidated nursing establishments for Wales, direct care staff in post and the calculated shortfall on the ground compared with the All Wales 2008 Standards is presented in Table 1 below:

Table 1

All Wales June 2011			WTEs
Total Neonatal Nurse Establishment			460.26
Establishment for Clinical Care		Direct	422.92
Direct Care Staff in Post			400.06
Shortfall of Direct Care Staff in Post to meet All Wales Standards			82.94

Based on cots declared in cot locator

2.2.3 Medical Staffing

Consultant (Tier 3)

Considerable progress has been made since 2005 in Consultant staffing of Neonatal Units in South Wales. The number of neonatologists supports compliant services in each of the Southern Neonatal Intensive Care Units as well as a 12-hour, 365-day consultant delivered neonatal transport service (CHANTS). Unfortunately similar progress has not been made in North Wales where there is a single substantive neonatologist in post supporting 7276 live births compared with 26 posts for 27571 live births (1:1060) in the South.

Although Consultant numbers in the South are adequate for the existing service model, should that model need to change to one where there is greater reliance on resident consultant neonatologists, it is likely that consultant numbers will need to increase further (see below). Similarly any future move from the existing 12-hour to a 24-hour neonatal transport service would have substantial staffing implications.

The adequacy of consultant staffing in the local neonatal units/ special care units has been impossible to quantify because of the difficulty colleagues have had in disaggregating their combined commitments to neonatal and general paediatrics, and the lack of accepted standards.

Tiers 1 / 2 Recruitment

At Tier 2 (middle grade) and Tier 1 (~SHO) levels, recurrent recruitment difficulties have intermittently impacted negatively on both capacity and clinical safety across many units within the Network. It is understood from the Postgraduate Dean's Department, that there will be a particularly severe challenge in March 2012. Health Boards are known to be addressing this challenge currently but it is unclear whether their plans might include emergency unit or cot closure with resultant further acute loss of capacity.

Tiers 1 / 2 Reduced Number of Rotas

In the longer term it is understood that the number of paediatric trainees in Wales (and England) is likely to be progressively but ultimately drastically reduced from 2014 -2015 in line with an assessment of future needs for new and replacement consultant paediatricians. In parallel with this, the Postgraduate Dean wishes to increase the number of trainees (or mixture of trainees, career grade staff and ANNPs) within each rota to improve training opportunities.

The net result of these actions is likely to be a major reduction in the number of medical rotas (Tier 1 and particularly Tier 2) within Wales. The precise number of rotas, their distribution between neonatal and other paediatric rotas and their distribution between the various units in Wales are all currently unclear. It is also unclear exactly how this reduction in the overall number of rotas could be reconciled with any aspirations to establish a Neonatal Intensive Care Unit in the North Community. If these changes were to occur without a major reduction in the number of paediatric and neonatal units in Wales, there would have to be major changes in the medical staffing models to maintain clinical safety and compliance. These might include increased resident presence of consultants out of hours and increased use of ANNP's at both Tier 1 and Tier 2. Long-term reliance on recruitment of

non-trainee sub-consultant medical staff is unlikely to be sustainable.

If neonatal capacity is to be sustained and developed in Wales, clearly Health Boards need to factor this important issue into strategic planning. It is likely that solutions will require both a reduction in the number of units as well as innovative medical staffing models.

Service Standards for Hospitals Providing Neonatal Care (2010)

The new BAPM service standards for hospitals providing neonatal care (2010) are intended to apply both in England and Wales although they are yet to be formally adopted in Wales. However the Network Steering Group agreed in November 2011 that it was appropriate to start using the new nomenclature in Wales and that these service standards (which are more detailed than the previous 2001 Standards and the All Wales Standards 2008 that are largely derived from them) should be used to guide future developments and reconfiguration plans in Wales. It is likely that the Network will seek formal adoption in Wales in parallel with the introduction of the new Categories of Care (2011) later in 2012.

A medical staffing challenge within this new guidance is that a "standard" model for Local Neonatal Units (Level 2) includes for Tier 1: "Rotas should be EWTD compliant and have a minimum of 8 staff who do not cover general paediatrics in addition." Many existing neonatal units in Wales that regard themselves as operating at Level 2 do not currently have complete separation of Tier 1 rotas. HB's and Health Communities need to factor in this newly defined medical staffing standard when considering future configuration plans for neonatal services. However the 2010 Service Standards document does recognise that "across the UK the nature and volume of neonatal care performed in local neonatal units shows great variation" and it may be appropriate that we have a discussion in Wales during the coming months as to whether it might be appropriate for our particular circumstances for some future smaller Local Neonatal Units to have only partial separation of Tier 1 rotas.

2.2.4 Service Efficiencies

It is acknowledged that these are extremely challenging times for Local Health Boards to implement service improvements no matter how important they are. It is therefore appropriate for all stakeholders from both clinical and managerial disciplines to explore to what extent service improvements can be facilitated by increased efficiency and changes to the model of delivering care.

Neonatal Transport

The CHANTS neonatal transport service whose development was led by Dr. Jean Matthes became operational in South Wales in January 2011. There is no doubt that this service has had a major positive impact on getting the right baby to the right place at the right time and in a safe fashion. It has been a major step in improving the flow of babies through appropriate planned clinical pathways within South Wales and has therefore improved both quality of care and efficiency of use of our limited resource.

Cot Location

At the same time, a new cot locator system was designed and introduced in both North and South Wales. As well as being a cornerstone for the Network in collecting data and better understanding neonatal activity and patient flows throughout Wales, it has provided a rapid, visual tool to allow clinicians based in referring and receiving units, as well as the CHANTS team to identify potentially free capacity, to identify babies that might be ready for repatriation and to some extent to equalise workload between units. This has undoubtedly improved communication and efficiency within the service.

Service Configuration

Looking forward, this review makes reference to potential efficiencies as well as quality improvement that might result from service reconfiguration (see Heath Communities section above and the Future Proofing section of Appendix 1 below). However a detailed analysis of service reconfiguration is beyond the scope of this review.

In the detailed sections of the review below, capacity exceeding demand is highlighted in several units and the reasons and potential solutions explored. When the Network is so frequently

under severe occupancy stress, under-utilised capacity at any level of acuity is an unacceptably inefficient waste of resource.

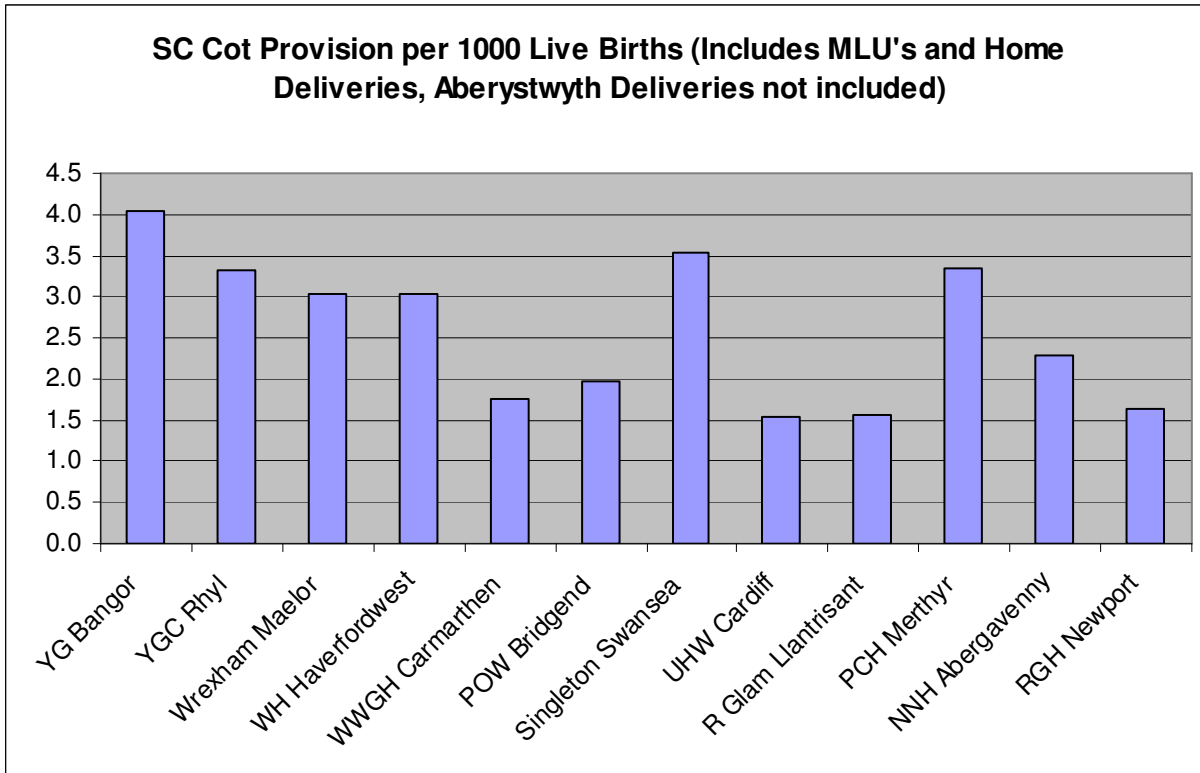
Demand Management

Demand management is an important aspect of improving efficiency in most parts of the health service. Within an emergency led critical care service, there are limited opportunities for demand management. For the most part, if a baby requires critical care its provision is not negotiable. Most clinicians are already focussed on strategies to normalise care at the earliest opportunity – come off respiratory support, establish enteral feeding etc., and there is a constant process of reviewing clinical policy in the light of current evidence with these ends in mind.

Unfortunately in the neonatal world, success at the critical care end – avoidance of death – actually increases demand for service as it is usually many weeks before a small baby emerging from intensive support will be ready for home.

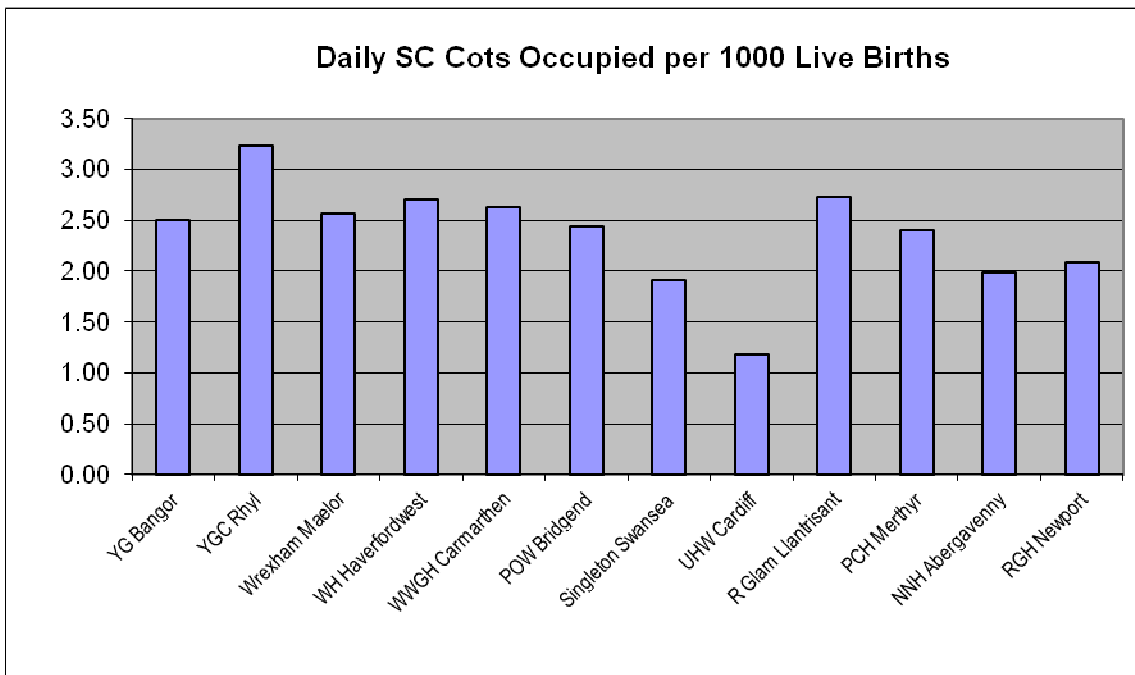
It is at the low dependency end of the spectrum of neonatal care that there is greater potential for demand management. This is demonstrated by the wide (well over two-fold) variation from unit to unit in the provision of **cots** for low dependency care, see Chart 1 below.

Chart 1



This is also reflected in low dependency **activity** delivered on neonatal units in proportion to the number of local deliveries, again a more than two-fold variance spread that cannot be appropriate.

Chart 2



Units that have lower usage of special care cots are likely to employ admission avoidance / early discharge policies, although for some this may reflect necessity due to a very low provision of low dependency cots. However this performance should demonstrate to all units what is achievable.

Where low dependency occupancy is regularly above 100% on a day-to-day basis, these babies have to be cared for in high dependency cots. This picture of low dependency activity above would appear to suggest widespread and major systematic dysfunctionality and inefficiency with low dependency babies inappropriately occupying higher dependency cots. In contrast to critical care, the best and most achievable solution is unlikely to be solely more low dependency cots and nurses. Avoidance of elective early birth, use of alternative strategies to neonatal unit admission and improving discharge planning processes should not only improve efficiency but may also have a major positive impact on high quality family centred care.

To assist Health Boards and their clinical teams in setting standards and planning low dependency care, the Network has established a task and finish Low Dependency sub-group under the chairmanship of Dr. James Moorcraft. Although this is work in progress, clinical staff will already be well aware of some of the local issues and solutions and Local Health Boards are urged to start a process of local review of practice immediately. Those units having the greatest issues over low dependency cot provision and activity are evident from the charts above.

The charts above are reproduced in each Health Community section following for ease of reference when discussing local services.

2.3.5 Future Proofing

The projections made here are based on current activity and make no attempt to compensate for future changes in neonatal population size or other demographic factors. However it is noted that the birth rate in Wales has been rising at between 2 and 3% a year over the last decade and has been projected to continue rising until the end of the current decade. In addition, preterm

survival rates have improved and as most deaths occur in the early days of life, improved survival results in an increased neonatal unit workload.

3 METHODOLOGY

3.1 Cot Locator Data Collection

This iteration of the Wales Neonatal Network Capacity & Staffing Review relies heavily on occupancy data derived from the daily Cot Locator returns. Between 0800 and 1000 each morning in both North and South Wales, information is collected onto pre-formatted MS Excel templates re the number of babies in each unit, their acuity of care and the location of their "home hospital". The acuity of care is defined by the BAPM (2001) Categories of Care and coded primarily by unit nursing staff. The completed templates are circulated daily by CHANTS to all units in the Network to assist in acute capacity management. At Network level, this provides daily snapshots of unit and Network activity that are then aggregated in Excel to provide weekly summaries of Network activity for both North and South. The weekly summaries are in turn aggregated within MS Excel into a progressively populated annual analysis tool.

This method of data collection and analysis has the advantage of not creating an additional workload for clinical teams beyond that which is helpful in day-to-day management of capacity. At Network level, as the data is accumulated progressively and automatic spreadsheet based formulae and graphs are applied, time-consuming and error-prone re-calculation is kept to a minimum, and additional modelling formulae can be added to the analysis tool at any time as circumstances dictate.

3.2 Cot Number, Nurse Staffing and Birth Statistics

The analysis tool is also dependent for denominator data on cot number and birth statistic information. The former is derived from a standard proforma questionnaire with detailed data definitions, sent to each HB at the time of each review. For the current review this was sent out in June 2011. The field used for most cot number related calculations is the "Effective Cot Number" at each acuity level and reflects what each unit believes it is in practice operating at on average over the relevant period taking into account all relevant issues including staffing. Because of computational complexity, no attempt is made to adjust that number day-by-day or week-by-week and reliance is placed on

units to make an assessment of their average cot provision. It should be noted that ABM HB had made a downward assessment of their 2 Unit's capacities at the time of the first draft of the current review but they have since revised the numbers up again and it is the latter numbers which are used in the current draft. Birth statistics information has been extracted from the All Wales Perinatal Survey Annual Report for 2010. Although 2011 data is not yet available, the predicted differences from 2010 data are small.

Nurse staffing data is also reported by HB's on the standard proforma questionnaire and analysed by the Nursing and Therapies Sub-Group using the same cot number denominator data.

3.3 Analysis

3.3.1 Activity

From this data it is straightforward to calculate from the activity figures the number of cots at each acuity level that would have been needed to allow the services to operate safely and effectively at mean 70% occupancy for Intensive and High Dependency Care and 80% occupancy for Low Dependency Care. The required number of cots at each acuity level has been rounded up to the nearest whole number. Comparison of Community level analysis results with Unit level analysis results highlights diseconomies of small scale in terms of required cots to meet standards.

3.3.2 Occupancy

Occupancy on a daily, weekly and cumulative basis is similarly simply calculated. Each unit is assumed to have one stabilisation or crash cot that has not been counted in the intensive care numbers for the purposes of occupancy analysis.

3.3.3 Population

In addition to the analysis by Health Community of capacity required based on activity delivered during 2011, a parallel analysis is presented of activity in relation to neonatal population size. This is a population based health needs assessment and is intended to explore any differences between Health Communities

which might relate to local case-mix, cross boundary patient flows or divergent clinical management.

Much of the raw data on which the current analysis has been based is attached in this draft of the review at Appendix 2.

3.3 Recommendations

Where the findings from the activity and population based analysis are broadly similar, firm immediate recommendations have been made.

Where there is substantial unexplained disparity between past activity based projections and population based projections, recommendations have been more guarded pending attempts to better understand the disparity.

4 NORTH WALES

4.1 North Community

There have been pleasing changes in the effective cot numbers reported in July 2011 compared with October 2010. Although some of these changes may only reflect a re-appraisal of existing capacity, there does appear to be a new focus on providing critical care (especially high dependency care), an improvement in nurse staffing and a more realistic matching of capacity to need.

Table 2

	YG Bangor		YGC Rhyl		Wrexham Maelor		North Wales	
	October 2010	July 2011	October 2010	July 2011	October 2010	July 2011	October 2010	July 2011
IC	0	0	2	3	1	2	3	5
HD	0	2	0	2	4	4	4	8
SC	11	9	10	8	4	8	25	25

4.1.1 Executive Summary

1. Although a significant volume of critical care activity from North Wales is currently delivered in England, capacity already appears to exist for the IC component of this activity to be delivered within North Wales and still meet occupancy targets.
2. Both the provision of Low Dependency (Special Care) cots and activity passing through those cots is inappropriately high (see Charts 1 and 2 above).
3. The three North Wales units have the poorest performance of all units in Wales in this respect, delivering more than 2 ½ times the volume of low level care of the most efficient unit in Wales. This suggests a very traditional model of care with insufficient use of alternative pathways to unit

admission for low acuity care. As well as inadequately addressing family centred care, this high volume of low acuity care is likely to be a factor in blocking access for babies requiring critical care and is likely to divert nursing resource away from the provision of critical care. Anecdotally, it is also known that this activity is making it difficult to release nurses for training and refocus on high dependency care. The Health Board needs to initiate a programme to redesign low dependency care in its 3 units.

4. Despite recent improvement, there is still a modest under provision of high dependency care in North Wales. An appropriate provision could be internally resourced if active steps are taken to reduce the numbers and length of stay of low acuity babies.
5. North Wales has a proportionately higher nursing deficit than any other community in Wales (26.5 w.t.e. or 24.2% workforce deficit in July 2011). This needs addressing urgently in the interests of clinical safety.
6. The greatest single problem in sustaining intensive care capacity within North Wales is the non-compliant medical staffing model. Ongoing intensive care is being provided in two separate units, neither of them with sufficient throughput for the development or maintenance of the necessary clinical skills to promote good clinical outcomes. Neither unit is able to provide dedicated neonatal middle grade staff 24/7 – this is a requirement for a Level 3 Neonatal Intensive Care Unit. The other units in Wales have met this standard for many years. Although the dedication and skill of the general paediatricians contributing to neonatal care is these two units not in doubt, the provision of only one consultant neonatologist for nearly 7,300 deliveries is highly unreasonable for a Health Board aspiring to provide ongoing neonatal intensive care in 2011. This has led to a lack of leadership within the speciality of neonatology and is denying babies access to an appropriate level of care. A final requirement for a Neonatal Intensive Care Unit is separation of out of hour's rotas at consultant

level, something that has been achieved in the rest of Wales for about 8 years.

7. BCUHB needs to make an urgent decision as to whether it is willing and able to reconfigure its services to provide a sustainable single Neonatal Intensive Care Service within North Wales. This will require substantial investment and/or re-investment at a difficult economic time. It will also require a redeployment of Tier 2 medical staff to a dedicated neonatal rota at a time when recruitment is struggling and the future number of trainees and rotas at this level is projected to fall drastically within Wales. Should this be thought to be unachievable, ongoing neonatal intensive care should be formally commissioned within England together with a retrieval service for acutely sick babies. This would leave BCUHB to concentrate on developing quality high and low dependency services on a locality basis.

4.1.2 Cot Number Projections

Activity analysis and the projection of cot numbers needed to provide a comprehensive neonatal service for North Wales has presented particular challenges.

Initially activity data made available from North Wales was incomplete. However considerable effort by the North Wales team has now provided the Network with 47 complete and consecutive weeks of activity data from the North Wales cot locator from mid February 2011. For the purposes of this report and comparability with the South, those activity figures have been extrapolated to 52 weeks.

Unlike the situation in South Wales, a significant volume of neonatal activity for North Wales residents is thought to have been provided in England during 2011. Unfortunately it has so far not proved possible to accurately quantify this activity from English data sets.

For this reason, the projections for North Wales have been made in two ways:

1. Using extrapolated North Wales 2011 activity data and applying the 70% occupancy standard for critical care and 80% standard for special care (see Section 3 – Methodology above). For the reasons discussed above, it is known that these projections will underestimate the population need for neonatal cots.
2. Using activity figures derived from the South Wales population and applying these to North Wales in proportion to the number of live births. There is no reason to suppose that the proportionate population needs in North Wales differ greatly from those for other parts of Wales.

Using South Wales 2011 data, the following table shows the number of cots needed per 1,000 deliveries at each level of acuity to achieve 70% occupancy for critical care and 80% occupancy for special care. (A "Crash Cot" for each unit is additional to these

figures). For comparability the cots used in UHW Cardiff to deliver the regional and surgical service have been discounted because for North Wales this service is delivered in Liverpool.

Table 3

	Cots needed / 1,000 Deliveries (Excl Surgery)
IC	0.66
HD	1.22
SC	2.41

Projected Cot Needs in North Wales **excluding a crash/stabilisation cot in each unit** are therefore as below (rounded up to the nearest whole number):

Table 4

	IC	HD	SC
Existing Cot Numbers July 2011	5	8	25
Projected numbers to meet occupancy standards based on actual 2011 Activity*	4	6	29
Projected numbers to meet occupancy standards based on delivery population ⁺	5	9	18

* As they are based on North Wales 2011 activity, this row of projections assume no change in current patterns of Wales neonatal care provided in England.

⁺ As they are based on the number of live births in North Wales and **South** Wales 2011 activity, this row of projections assume that the great majority of neonatal care apart from surgery would be provided in North Wales

The cot number projections here reflect the situation that would apply if all activity were delivered in a single unit.

For the purposes of future capacity planning and assuming that a Neonatal Intensive Care Service will be developed within North Wales, it is suggested that the lower row of projections are used.

Currently the activity is delivered across 3 units in Wales and also a proportion in England, with consequent diseconomies of scale. For illustrative purposes only (these are not Network preferred models), the approximate capacity implications of three different configuration models are shown below:

Scenario 1 YG Bangor all local SC, 50% local HD; GC all IC for YG Bangor and GC, all local HD and 50% HD for YG Bangor, all local SC; Wrexham Maelor all services for local deliveries (this might approximately equate to the situation by the end of this year as YG Bangor develops a HD capability)

Scenario 2 YG Bangor all local HD and SC; GC all IC for GC, YG Bangor and Wrexham Maelor, all local HD and SC; Wrexham Maelor all local HD & SC

Scenario 3 YG Bangor all local HD and SC; GC no service; Wrexham Maelor all services for GC and Wrexham Maelor areas + IC for YG Bangor

Table 5

	Current Provision	Scenario 1	Scenario 2	Scenario 3
	IC:HD:SC	IC:HD:SC	IC:HD:SC	IC:HD:SC
YG Bangor	0:2:9 + crash	0:2:6 + crash	0:3:6 + crash	0:3:6 + crash
YGC Rhyl	3:2:8 + crash	3:5:6 + crash	5:3:6 + crash	-
Wrexham Maelor	2:4:8 + crash	2:4:7 + crash	0:4:7 + crash	5:7:13 + crash
All North Wales	5:8:25 + 3 crash	5:11:19 + 3 crash	5:10:19 + 3 crash	5:10:19 + 2 crash

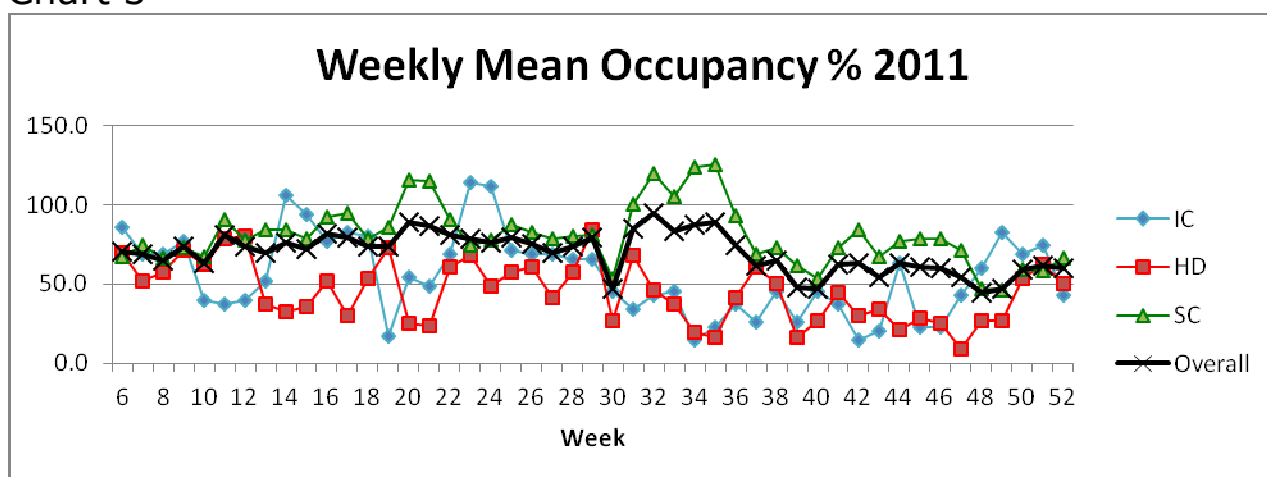
- No allowance has been made for improved efficiency in use of special care cots (see Section 2.2.4 "Service Efficiencies" above and Section 4.1.4 below) apart from matching in North Wales the South Wales current mean performance for

minimising admission. Achieving this standard would deliver up 6 less special care cots, the staffing of which could be re-invested in increasing HD provision by 2 or 3 cots. If SC admission minimisation were to match the performance of the most efficient units in South Wales, the need for SC cots could be reduced by a further 5.

4.1.3 Cot Numbers and Occupancy

The chart and table below use the July 2011 cot numbers and the 47 consecutive weeks activity data made available from North Wales for 2011.

Chart 3



Similar to the Health Communities in the South, the chart demonstrates a high level of variability in occupancy from week to week. Unlike the South, peaks of activity cannot be buffered to adjacent Communities within the Network. Even if North Wales develops a Neonatal Intensive Care Unit, it will inevitably be reliant on English units to assist at times of high activity.

Table 6

	Cot Numbers July 2011			Mean Occupancy % Jan – December 2011			
	IC	HD	SC	IC	HD	SC	All Acuties
YG Bangor	0	2	9	Stab only	5.0	61.9	52.0
YGC Rhyl	3	2	8	54.0	98.3	97.3	87.5

Wrexham Maelor	2	4	8	54.7	39.1	84.5	67.2
North Community	5	8	25	55.2	45.4	80.5	69.8

The low occupancy in YG Bangor and high occupancy in YGC Rhyl is likely to be due to current limitations in capabilities/competencies at High Dependency level in YG Bangor leading to overload of the YGC Rhyl service. Although, YG Bangor are in the process of skilling up to deliver HD care in their 2 declared HD cots, in practice only 33 HD cot days were delivered in Bangor during 2011. Hopefully current plans will resolve this issue during 2012.

Coded HD activity in North Wales is overall lower than expected for the population size. This is reflected in the projected number of HD cots needed on the basis of actual activity (6) and the projected number based on population size (9). Some of this difference may be due to HD activity currently delivered in England, but it is likely that there are additional factors responsible including coding issues. The disparity is higher in Wrexham where despite having twice the HD cot provision and a slightly higher number of births compared with Rhyl, coded HD activity is about 20% less.

The existing 5 IC cots are projected to be adequate to meet the 70% occupancy standards for the population size. Current occupancy of these cots is low (54.0% and 54.7% for Rhyl and Wrexham respectively). It is expected that providing preterm survival rates are good, repatriation of all non-surgical activity delivered in England would bring that occupancy up to approaching 70%. The ability to repatriate this activity safely is dependant on having adequate nursing levels and skills (see Section 4.1.5 below).

The very high occupancy of 80.5% at SC level is seen elsewhere in the Network but given the current high provision of SC cots in North Wales (see Chart 1), this reflects a greater problem than elsewhere (see discussion below).

Chart 1

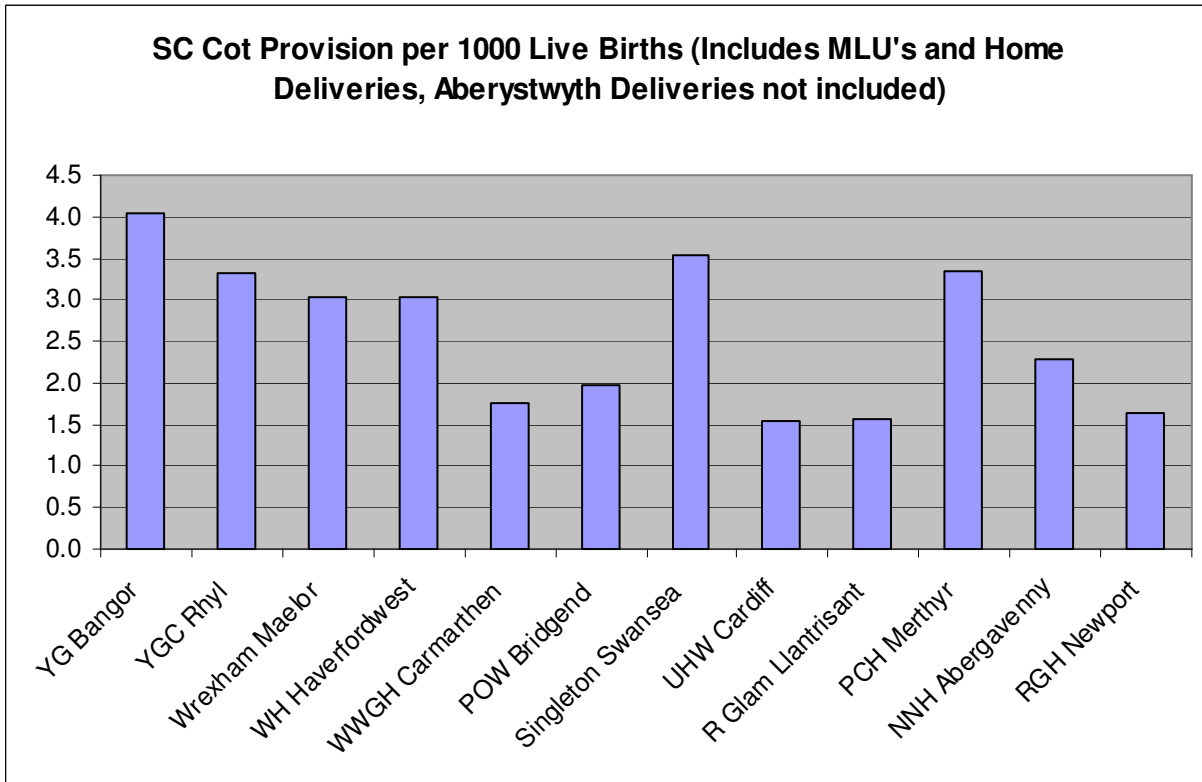
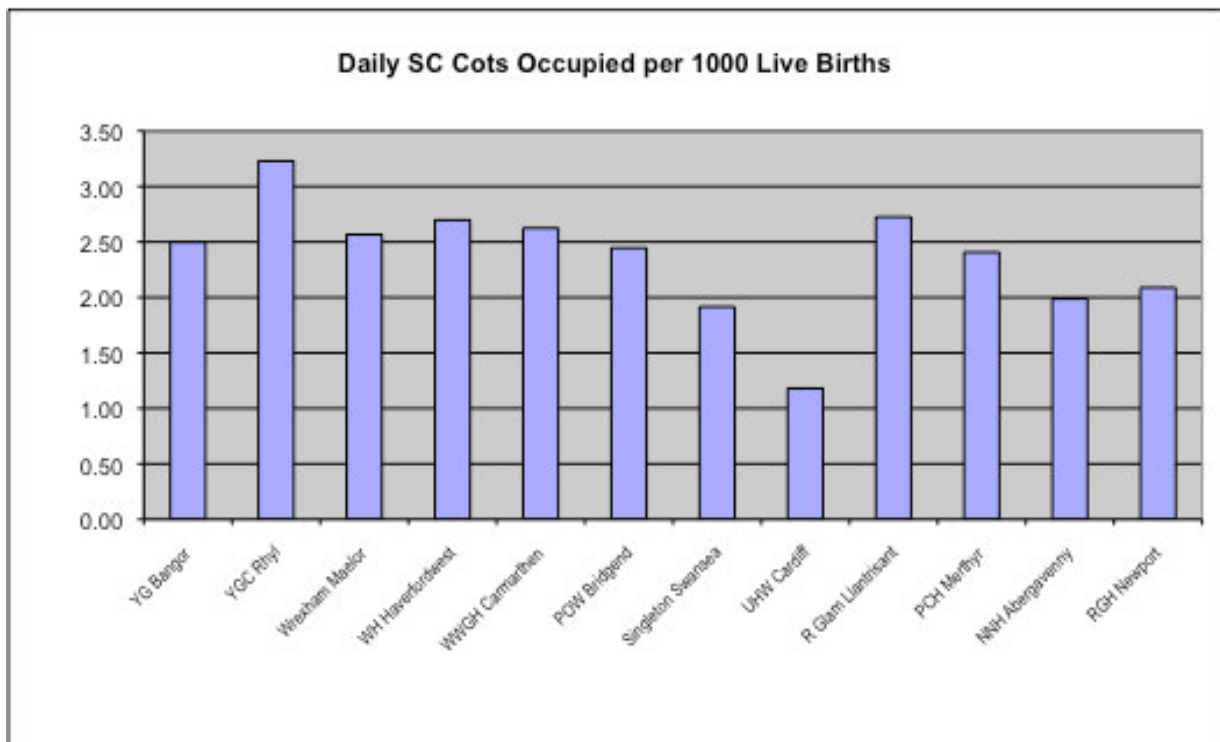


Chart 2



4.1.4 North Wales Community Action Points

Intensive Care

The HB has sufficient neonatal IC capacity to provide for its local population apart from times of peak demand when assistance from England will inevitably be required. However there is insufficient critical mass to divide that IC capacity safely or efficiently between two sites. The critical factors in sustaining IC capacity in North Wales are the medical and nursing staffing issues discussed in Section 4.1.5 below, and to a lesser extent the excessive low dependency activity that potentially prejudices the availability of the critical care capacity in both Rhyl and Wrexham.

High Dependency

Demand for extra HD capacity in North Wales has not been demonstrated by the 2011 activity data set. HD care has not been historically well identified in North Wales. Separate HD cots have only recently been identified in YGC Rhyl, and YG Bangor is only now developing a HD capability. Population based analysis suggests that HD activity should be higher than what has been recorded in North Wales. It seems likely that HD activity is currently being under-identified, and that HD demand will increase as the service develops.

The current distribution of HD capacity between the 3 units with not dissimilar delivery rates is illogical, with YG Bangor having 2 cots and 5% occupancy, YGC Rhyl having 2 cots and 98.3% occupancy while Wrexham Maelor has 4 cots and 39.1% occupancy. The occupancy rates may to some extent equalise as Bangor develops its HD capability.

The long-term sustainability of providing HD care on 3 sites is doubtful in relation to both critical mass and Tier 1 and 2 medical staffing.

Low Dependency

YG Bangor has the highest number of low dependency cots per 1,000 live births of any unit in Wales. The other two North Wales units also fall above the 50th centile for relative low dependency cot provision.

Even with this high provision of low dependency capacity, occupancy is still high at 80.5% overall for the Community, and marginally above the 80% standard. Thus low dependency activity per 1,000 live births is higher in this Community than in any other in Wales.

High low dependency activity represents clinically unnecessary separation of mother and baby during critical early days or weeks of life. It may represent unnecessary medicalisation or prolongation of medicalisation. It is suggestive of an outmoded style of care. High low dependency activity in conjunction with poor nurse staffing levels takes a scarce neonatal nursing resource away from the provision of high acuity care.

The Network Low Dependency Sub-Group has explored factors associated with high levels of low dependency activity. A paper is being brought to the Network Steering Group in January 2012 describing the elements of best practice in this area. Some of these elements can be implemented without extra resource implications and some could be resource saving. Others such as implementation of transitional care at the mother's bedside and outreach nursing services require service redesign and may have modest resource implications.

There is a need for service modernisation at this end of the acuity spectrum in the North Community with a view to reducing low dependency activity in parallel reducing the provision of low dependency cots and the fostering of a greater focus on higher acuity care. The potential for a reduction in LD cot numbers is at least 6 across the community to match the current mean activity rates in the South, and potentially at least a further 4 cots could be lost if efficiency were to match that of the most efficient unit in Wales and still meet the 80% occupancy standard.

4.1.5 Staffing

Nursing

The following table summarises the shortfall in direct clinical care staff to meet the All Wales Standards 2008, based on the existing cot numbers and configuration. Should the cot provision be adjusted in line with recommendations above, there will be

corresponding but relatively minor changes in the number of nursing staff needed to meet the All Wales Standards.

The future distribution of these staff between units will depend on how the overall service is configured.

Table 7

North Wales June 2011	
	WTEs
Total Neonatal Nurse Establishment	87.5
Establishment for Direct Clinical Care	84.0
Direct Care Staff in Post	83.0
Shortfall of Direct Care Staff in Post to meet All Wales Standards 2008	26.5

The indicative shortfall by unit is shown below:

Table 8

	WTEs
YG Bangor	6.51 (25.5%)
Glan Clwyd	6.99 (16.3%)
Wrexham Maelor	13.0 (31%)
Overall	26.5 (24.2%)

Proportionately, the level of nursing shortfall is greater than for any other Health Community in Wales. The poor staffing levels are known to be making it difficult to release staff for much needed professional development. They are likely to impact on capacity and the ability of units to take on additional activity currently provided in England. Such low staffing levels are known to be associated with poorer clinical outcomes. This is a cause for clinical governance concern.

Medical

Medical staffing is not compliant with national standards for the provision of ongoing neonatal intensive care in either YGC Rhyl or Wrexham Maelor.

There is currently a single consultant neonatologist in post within BC, and unlike most of the rest of the UK, general paediatricians

provide the majority of neonatal medical care including that of the sickest infants. If the HB is to continue providing ongoing intensive care it needs urgently to develop a dedicated neonatal rota of specialist consultants as exist in the three South Wales Neonatal Intensive Care Units.

Also required for a compliant intensive care service is a Tier 2 medical rota completely separate from that provided for the care of older children. This does not currently exist. The development of such a rota will be challenging in the context of the predicted reduction in the number of trainees and overall number of rotas in Wales.

At Tier 2 (middle grade) and Tier 1 (~SHO) levels, recurrent recruitment difficulties have intermittently impacted negatively on both capacity and clinical safety in North Wales as well as elsewhere in the Network. We understand from the Postgraduate Dean's Department that there will be a particularly severe challenge in March 2012, when there will be barely enough trainee doctors at Tier 2 to cover 2 rotas across the three acute hospitals in North Wales.

5 SOUTH WALES

Within South Wales, ABMU is the only Health Board that has declared any changes to their effective neonatal capacity since their October 2010 return. The changes are tabulated below:

Table 9

	Swansea Singleton		POW Bridgend	
	Oct 2010	July 2011 (Revised)	Oct 2010	July 2011 (Revised)
IC	5	5	1	2
HD	6	4	3	3
SC	15	15	7	5
Total	26	24	11	10

It is understood that apart from some short term nursing staffing difficulties, there has been no real change to capacity in either ABMU unit over this period, and that the revised numbers reflect a reappraisal of existing capacity against the Network definitions of "Effective Capacity".

The July 2011 numbers have been used for the purpose of this analysis.

The table below presents the summary findings from this review for the South Wales part of the Network.

Table 10

	Effective Cot Numbers, July 2011	Care days delivered January to December 2011	Mean Occupancy January to December 2011	Number of Cots Needed to Deliver 70% Occupancy for Critical Care (IC + HD) and 80% Occupancy for Special Care
IC	22	4,972	61.9%	20
HD	37	10,019	74.2%	40
SC	59	19,725	91.6%	68

A "Crash Cot" (Stabilisation Cot) capable of delivering short-term intensive care needs to be maintained in each unit in addition to these figures.

No allowance has been made for improved efficiency in use of special care cots (see section "Service Efficiencies" above). For SC, the apparent deficit should at least in part be addressed by admission / length of stay reduction.

No allowance has been made for Wales babies inappropriately cared for in England.

No allowance has been made for potential remodelling of the surgical pathway in UHW Cardiff (see South Central section below).

The cot number projections here reflect the situation that would apply if all activity were delivered in a single unit. In the real world, this activity is delivered in 9 units with consequent diseconomy of scale over and above the need to keep a crash cot in each unit.

5.2 South West Community

5.2.1 Executive Summary

1. Both Health Boards are advised to urgently address the shortfall in nurse staffing numbers against the All Wales Standards. Poor nurse staffing ratios are known to be associated with poorer clinical outcomes including infection rates. They are also major determinants of effective capacity.
2. ABMU is strongly supported in its plans to redeploy the two intensive care cots (over and above the crash cot) currently in POW Bridgend to Swansea Singleton. 20.5% occupancy of this capacity is unacceptably inefficient in the context of overall Network capacity pressures.
3. ABMU is advised to dis-establish 3 or 4 of the 15 special care cots currently considered to be part of the unit's effective capacity and re-assign the nursing establishment currently associated with these cots to improve compliance with the All Wales Neonatal Nurse Staffing Standards. These "extra" cots are rarely if ever used and overall SC occupancy in Swansea of 54.3% is inappropriate in the wider context.
4. Hywel Dda is supported in its consideration of strategic options to facilitate development of a sustainable local unit capable of providing a wider range of neonatal services than at present. Failure to do so is likely to lead to further centralisation of services away from the LHB area
5. Hywel Dda and ABMU are urged to work collaboratively together to develop a comprehensive model for delivery of neonatal services in South West Wales. The guiding principal should be the delivery of care as close to home as possible and achieving this is likely to require support from the Neonatal Intensive Care Unit to allow better services to be developed and sustained within Hywel Dda. If the scope of these services in Hywel Dda is to include a full range of high

dependency care, careful attention should be given to achieving a sustainable and compliant staffing model.

6. Local and Special Care units within the health community are asked to develop local action plans to reduce low dependency admission rate and length of stay. Supporting work is being done at Network level but early planning and action is needed at local level including work with maternity, paediatric and nursing colleagues in acute and community settings.
7. In addition to the strategic planning referred to in bullets 3 and 4 above, immediate action is needed from the Neonatal Intensive Care Unit in Swansea to support the Hywel Dda units with their existing neonatal services to allow earlier repatriation of Hywel Dda babies.

5.2.2 Cot Number Projections

As described in the Methodology (Section 3), cot numbers needed in the South West Community to meet the 70% and 80% occupancy standards have been calculated in two different ways:

1. Using actual activity delivered within the Community in 2011
2. Using activity from the entire South Wales Network (excluding surgical activity in UHW Cardiff) with an assumption that the proportionate need for neonatal care in relation to birth rate within the community is similar to that throughout South Wales.

The rationale for this method of analysis is fully explained in Section 3.3.

The projected cot numbers needed to meet the maximum occupancy standards are tabulated below.

Table 11

	IC	HD	SC
Cot Numbers Oct 2010	6	13	29
Cot Numbers July 2011 (Revised)	7	11	27
Projected numbers to meet occupancy standards based on actual 2011 Activity	6	10	28
Projected numbers to meet occupancy standards based on delivery population	7	13	26

- A "Crash Cot" (Stabilisation Cot) capable of delivering short-term intensive care needs to be maintained in each unit in **addition** to these figures
- No allowance has been made for improved efficiency in use of special care cots (see section 2.2.4 "Service Efficiencies" above and Section 5.2.5 Low Dependency (Special) Care below) apart from matching within the community the mean performance for low acuity admission avoidance of the South Wales Network

- No allowance has been made for Wales babies inappropriately cared for in England (but the numbers are thought to be small for this community)

It can be seen that actual critical care activity delivered in the South West Community during 2011 (and therefore projected critical care cot need) has been significantly lower than would be predicted for the population size. There has been a progressive reduction in activity in this Community over the year (see Chart in Section 5.2.3 below). This has meant that the cot projections based on actual activity have had to be revised down from the capacity review previously discussed by the Network Steering Group that included activity only to August 2011.

The reasons for this reduction in activity, which appears to date from about May, are unclear. During the last 6 weeks of the year the Singleton unit closure to new admissions due to infection control issues will have contributed. Earlier in the year short-term nursing shortages in Singleton may have led to some displacement of critical care activity out of the Community. Otherwise, the differences over time may solely reflect random variation in activity in a small emergency led speciality.

For the purposes of forward planning, it is suggested that the population based cot projections are the more robust measure of need pending the collection of data over a longer time period.

5.2.3 Cot Numbers and Occupancy

AMBU has re-appraised its effective number of neonatal cots on two occasions since October 2010. These reappraisals appear to reflect a changed approach to interpretation of the Network's definition of "effective number of cots on average available". It is understood that apart from some short-term nurse staffing difficulties, and a period at the end of 2011 when the unit closed to some new admissions due to infection control issues, there has been no real change to capacity in either ABMU unit over this period. When making their assessment of effective capacity Local Health Boards have to balance their availability of cots and resultant occupancy against their level of compliance with the All

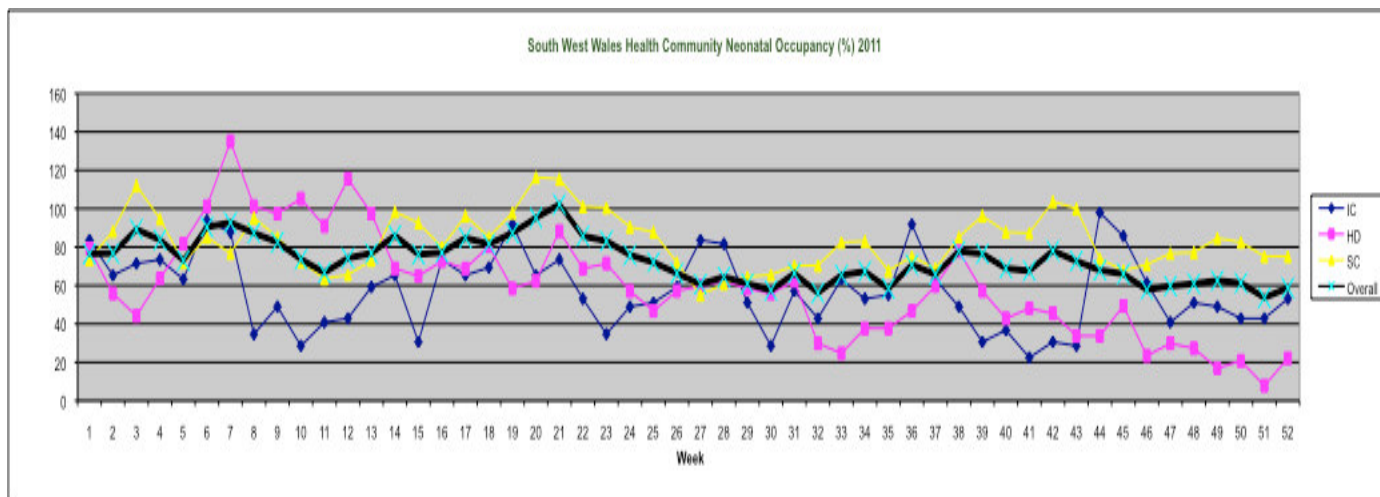
Wales Nurse Staffing Standards – a judgement call. Different Local Health Boards and units are liable to make varying judgements.

Table 12

	Cot Numbers July 2011 (Revised)			Occupancy % Jan – December 2011		
	IC	HD	SC	IC	HD	SC
WH Haverfordwest	0	2	4	Stab only	31.2	89.2
WWGH Carmarthen	0	2	3	Stab only	22.8	148.6
Swansea Singleton	5	4	15	69.6	94.5	54.3
POW Bridgend	2	3	5	20.5	57.1	123.2
South West Community	7	11	27	57.1	59.7	82.7

The fluctuation of occupancy over time within the community is displayed in the Chart 3 below

Chart 4



As described in the section above, there has been a progressive reduction in activity and therefore occupancy over the course of 2011. However, the fluctuations in demand at all levels of acuity are high and this presents challenges that can probably only be

met by cooperation between communities at times of activity peak.

The critical care occupancy pressures that had been apparent in this Community earlier in the year substantially ameliorated as the year progressed, and overall mean IC and HD occupancy levels easily meet the occupancy standards. Overall SC occupancy levels for the Community fall just above the 80% standard.

What is apparent from the Table above is that at unit level data, there is evident major internal inequity of capacity distribution and utilisation (occupancy). This is addressed in Section 5.2.5 below.

5.2.4 Out of Health Community Activity

According to Cot-Locator data (50 weeks analysis), 8.3% of the South East Health Community's overall activity relates to babies whose mothers are not resident within the Community i.e. cross-boundary flow. This figure may slightly underestimate the true cross-boundary activity as in common with units across Wales, this data field was probably not accurately filled in during the early weeks of cot-locator implementation. In future, access to the Badgernet data set should allow a more detailed analysis of cross-boundary activity.

In future it will also be useful to see what proportion of care of babies of mothers resident in the South West Community is delivered within the community. The cot-locator analysis tool does not currently support that particular analysis, but again access to the Badgernet data set should allow clarification.

5.2.5 South West Community Development Points

1. Intensive Care

Two cots for ongoing intensive care are currently configured in POW Bridgend. These are not being well utilised (20.5% occupied) and POW Bridgend does not meet the staffing criteria for safe provision of ongoing intensive care. It is understood that AMBU plan shortly to relocate these cots (with an appropriate nursing establishment) to Swansea Singleton where they can be better and more safely utilised. This should help access to capacity. Any pressure on IC cot availability in the South West Community during 2010 is likely to be traceable to the lack of utilisation of the apparently existing IC capacity in Bridgend.

The reappraisal upwards of existing IC cot numbers by ABMU following the first draft of this review together with the lower activity levels seen in the second six months of 2010 mean that the Network no longer needs to recommend at the present time a further increase in IC capacity in the South West. Reconfiguration of the existing capacity should provide adequate access. However the reappraisal of cot numbers does impact adversely on the adequacy of existing nurse numbers for safe provision of care. This is discussed in Section 5.2.6 below.

2. High Dependency Care

There is a major imbalance in HD occupancy between the 4 units. WH Haverfordwest and WWGH Carmarthen have occupancies of only 31.8% and 22.8% respectively, while Swansea Singleton and POW Bridgend have occupancies of 94.5% and 57.1%% respectively. This demonstrates that there is poor access to locality based HD care in the Hywel Dda units and that HD capacity there is being used very inefficiently. This appears to have worsened in the course of 2011. The implications for the Neonatal Intensive Care Unit in Swansea Singleton is that babies are not getting back to local units soon enough and therefore IC

capacity is prejudiced effectively due to blocking of IC cots by HD babies

The reasons for this situation are at least twofold:

Both WH Haverfordwest and WWGH Carmarthen have very high admission rates/LOS for Low Dependency infants (see Chart 2 in the Low Dependency section below). This is impairing their ability to use their HD cots appropriately due to blocking by low acuity infants

The Hywel Dda units have been slow to adopt some HD modalities of care including parenteral nutrition and more modern non-invasive respiratory support. This limits the opportunity for Neonatal Intensive Care units to get babies back for step-down locality care.

This imbalance is a major source of dysfunctionality, as the overall provision of HD capacity within the South West Community is adequate to meet demand (see Section 5.2.2 above). Resolution could be achieved either by centralising most HD care to Swansea Singleton where it could be more effectively utilised or alternatively implementing programmes in Hywel Dda to reduce low dependency occupancy and to properly implement locality base high dependency care. The latter approach is clearly desirable in terms of delivering as much care close to home as possible, meeting political, professional, managerial and public aspirations.

However there are substantial challenges to the implementation of compliant local high dependency care in Hywel Dda. It is also worth noting that at least some Hywel Dda HD activity will in all models need to be delivered in Swansea as part of step-down arrangements following Intensive Care.

The primary challenges within Hywel Dda are the gaining and maintenance of HD skills and experience together with the development of sustainable staffing models (compliant with standards) for medical and nursing staff. The skills issue will require substantial support from the Community Neonatal Intensive Care Unit in Swansea Singleton. Appropriate staffing

models will only be possible should the units reconfigure to allow staffing levels to support sustainable delivery of a full range of HD services. Even with such reconfiguration, a compliant medical model may be difficult to achieve in relation to Tier 1. See the discussion in Section 2.2.3, Service Standards for Hospitals Providing Neonatal Care above. This fully compliant medical model at Tier 1 may be at least as difficult to achieve in future in Bridgend unless there is reconfiguration.

The Network is aware of reconfiguration plans within Hywel Dda which the HB hope will move them towards the provision of sustainable locality based high and low dependency neonatal care. However the detail of these plans has not yet been shared with the Network to allow a view to be taken on whether they will deliver appropriate capacity within the overall Network context, and whether they are professionally sustainable and compliant with standards.

The Network welcomes the meeting that has recently taken place between Hywel Dda and ABMU to discuss Community plans for neonatal services. However our understanding is that this still falls well short of the sharing of visions and joint planning which are necessary for the Community to develop a coherent neonatal strategy. Nowhere is this more important than the approach to the provision of high dependency neonatal care.

3. Low Dependency (Special) Care

The distribution of SC cots and activity within the community is very unbalanced. While Swansea Singleton's occupancy of its 15 SC cots is only 54.3%, WH Haverfordwest, WWGH Carmarthen and POW Bridgend have unacceptable occupancies of 89.2, 148.6 and 123.2% respectively. The latter three units all have substantial scope to improve efficiency by reducing their admission rates and LOS for low acuity care (see Section 2.2.4, "Service Efficiencies" above and Charts 1 & 2 below)

Chart 1

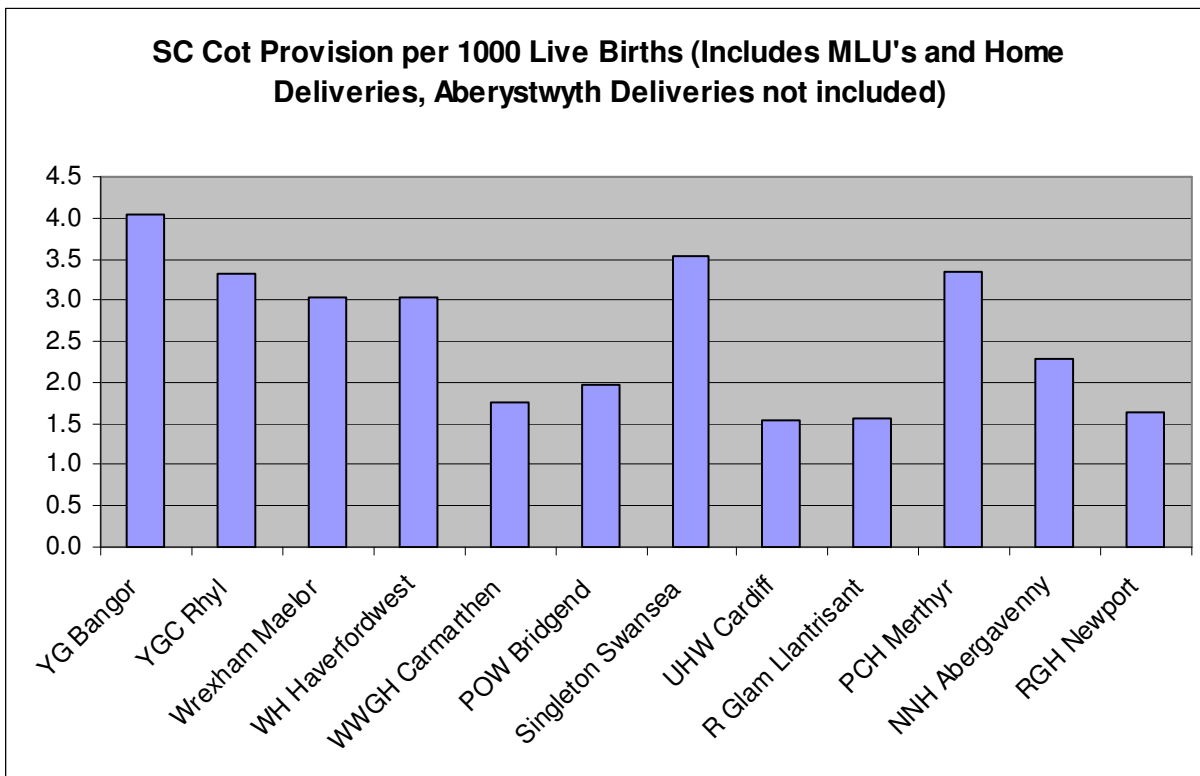
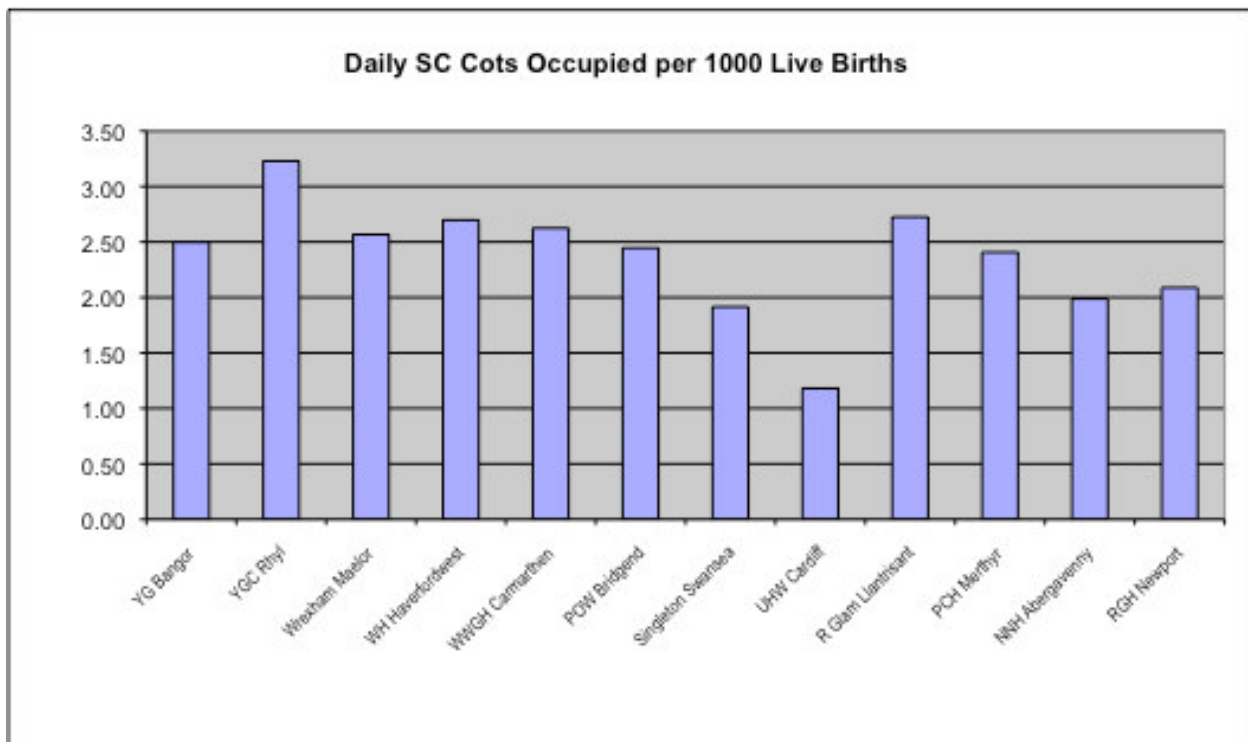


Chart 2



The number of SC cots in Swansea Singleton exceeds the needs of the neonatal population – the highest in Wales per 1000births with the exception of YG Bangor. These cots are not being well utilised (Swansea Singleton’s SC utilisation rate per 1000 births is commendably modest). There is opportunity for a reduction in the number of SC cots and for the released resource to be redeployed to improve compliance with the All Wales Neonatal Nursing Standards.

Summary

Notwithstanding the discussions and agreement that are necessary between the two Health Boards in this Community over the future distribution of HD cots (and thus the balance between Swansea and Carmarthen/Haverfordwest/Bridgend), an indicative configuration that would provide maximum locality based care (excluding crash cots) might be as in the table below. These would:

- Match current population needs
- Meet occupancy standards
- Provide locality access to care below IC
- Require improved low dependency efficiencies only to the current mean for all units in South Wales

Table 13

	IC	HD	SC
WWGH Carmarthen/WH Haverfordwest	0	4	9
Swansea Singleton	7	6	11
POW Bridgend	0	3	6

If on the other hand if units were to take up the challenge of reducing SC activity further to match the most efficient in Wales, at least another 20% drop in SC cots could be achieved to assist with meeting nurse staffing standards and critical care development.

5.2.6 Staffing

Nursing

The following table derived from the work of the Nursing and Therapies sub-group summarises the shortfall in direct clinical care staff to meet the All Wales Standards 2008, based on the existing cot numbers and configuration.

Table 14

South West Community June 2011			
			WTE's
Total Neonatal Nurse Establishment			123.61
Establishment for Direct Clinical Care			115.34
Direct Care Staff in Post			111.29
Shortfall of Direct Care Staff in Post to meet All Wales Standards 2008			29.21
Shortfall as % of Nursing Establishment Needed to Meet All Wales Standards			20.8%

The indicative shortfall by unit is shown below:

Table 15

	WTEs	% of the Direct Care Establishment Needed to Meet All Wales Standards
Swansea Singleton	12.85	18.1%
POW Bridgend	10.26	29.3%
Glangwilli	3.50	21.2%
Withybush	2.60	14.4%

These figures reflect the number of cots units have told us they were effectively and on average working to in 2011. Should the cot provision be adjusted in line with recommendations above, there will be corresponding changes in the number of nursing staff needed to meet the All Wales Standards. In particular, the excessive number of SC cots in Swansea referred to in Section 5.2.5 above would if reduced help ABMU towards reaching the Standards. The apparent large nursing deficit in Bridgend is

largely a function of the two poorly utilised IC cots established there. Movement of these cots to Swansea would alter the balance in the deficit between the two ABMU units, but the overall deficit in terms of WTE would be unchanged without appropriate staffing investment by the HB.

Both Health Boards need urgently to develop plans to improve their direct care nursing establishments and meet the All Wales Standards if capacity and clinical safety concerns are to be resolved.

Medical

The medical staff establishment is currently compliant at all levels with 2001 and 2008 standards for service delivery within a Neonatal Intensive Care Unit.

However, two potential challenges to future medical staffing compliance have recently become known and in common with some other neonatal units in Wales these could pose a threat to the sustainability of existing capacity.

In the short term, there has been a recruitment failure in Wales for trainees in paediatrics working at Tier 2 (middle grade) level. The Postgraduate Dean's Department has told us that in March 2012 there are only sufficient trainees to fill 2 of the 3 existing Tier 2 rotas for general and neonatal paediatrics in ABMU. ABMU is known to be addressing this problem, but the Network does not currently know whether there will be any immediate consequence for compliance and neonatal capacity.

The important medium to long-term challenges to Tier 2 and Tier 1 staffing have been described in Section 2.2.3 above and whatever the solutions, there are likely to be implications for this neonatal Health Community.

The implications of the 2010 Service Standards for Hospitals Providing Neonatal Care need to be considered with reference to Hwylw Dda's strategic plans for neonatal services and also Bridgend (see Section 2.2.3).

5.3 South Central Community

5.3.1 Executive Summary

1. Physical constraints in the UHW Cardiff unit will need to be addressed if both the capacity needs of the local population and of the regional surgical service are to be appropriately delivered. The Network is aware of and supports short-term proposals that would provide an extra 2 low dependency cots. However, a more radical physical re-provision is considered necessary to fully address the capacity issues described here.

2. Both Local Health Boards and their clinical teams need to work collaboratively to improve North/South flows of patients and to equalise the high dependency occupancies between the three units.

3. Agreed clinical pathways should be developed in UHW Cardiff (and between UHW Cardiff and other units in South Wales) for the ongoing management of babies with long-term problems, particularly those requiring prolonged parenteral nutrition.

4. Cwm Taf is recommended to examine the causes of the high volume of low acuity activity in its units and implement a plan to improve local efficiency. Work in progress by the Low-Dependency Stream sub-group should provide support. This should improve access to existing HD capacity for HD activity. In addition to this work Cwm Taf may need to consider a modest expansion in SC capacity at the R Glam Llantrisant.

5. Even if actions in points 2, 3 and 4 above are effective, there is still likely to be a shortfall in HD provision to achieve compliance with 70% occupancy at HD level. The health community as a whole needs to consider how to address the shortfall.

6. Compliance with the All Wales Nurse Staffing Standards 2008 is overall better in this community than some others in the Network, but progress remains to be made and current financial pressures should not allow the situation to deteriorate. The

current staffing situation in PCH Merthyr appears to be particularly poor and Cwm Taf is recommended to take action to address this.

5.3.2 Cot Number Projections

As described in the Methodology (Section 3), cot numbers needed in the South Central Community to meet the 70% and 80% occupancy standards have been calculated in two different ways:

1. Using actual activity delivered within the Community in 2011
2. Using activity from the entire South Wales Network (excluding surgical activity in UHW Cardiff) with an assumption that the proportionate need for neonatal care in relation to birth rate within the community is similar to that throughout South Wales. The surgical activity provided in Cardiff has then been added back in.

The rationale for this method of analysis is fully explained in Section 3.3.

The projected cot numbers needed to meet the maximum occupancy standards are tabulated below.

Table 16

	IC	HD	SC
Cot Numbers July 2011	8	17	20
Projected Numbers to Meet Occupancy Standards based on actual 2011 Activity	9	19	24
Projected Numbers to Meet Occupancy Standards based on Delivery Population + Requirements for Surgery	9	20	28

- A "Crash Cot" (Stabilisation Cot) capable of delivering short-term intensive care needs to be maintained in each unit in addition to these figures
- No allowance has been made for improved efficiency in use of special care cots (see Section 2.2.4 "Service Efficiencies" above and "Low Dependency" in Section 5.3.5 below) apart from matching within the community the mean performance for low acuity admission avoidance of the entire South Wales Network

- No allowance has been made for Wales babies inappropriately cared for in England (but the numbers are thought to be small for this community)

5.3.3 Cot Numbers and Occupancy

C&V and Cwm Taf Health Boards have reported no change in cot numbers from October 2010. A summary of these cot numbers and of occupancy is shown in the table below.

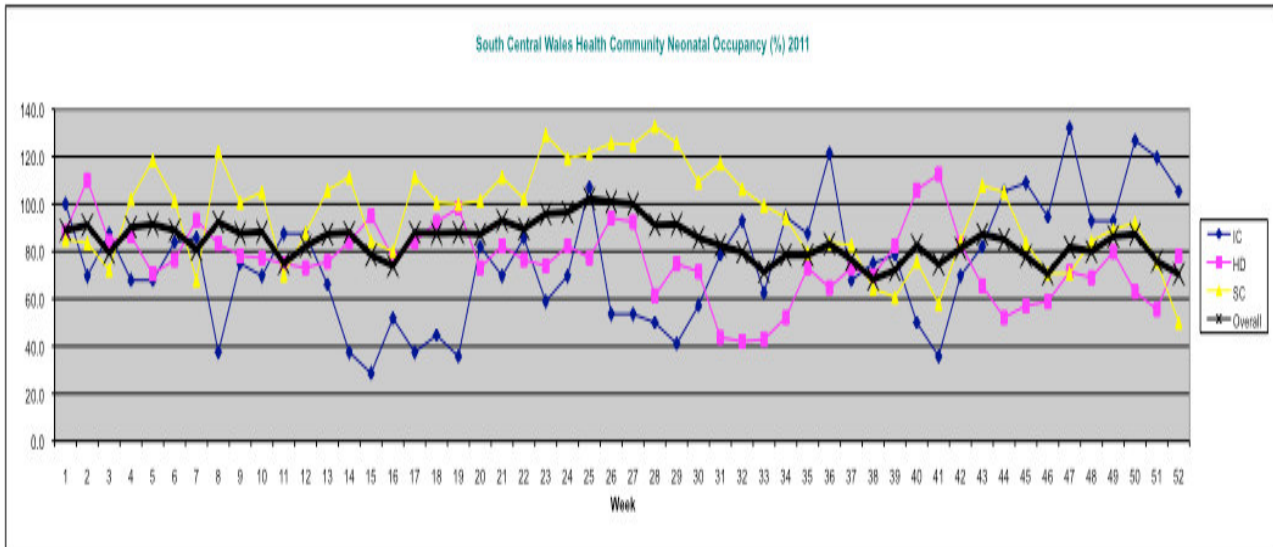
Table 17	Cot Numbers July 2011			Occupancy % Jan – December 2011		
	IC	HD	SC	IC	HD	SC
UHW Cardiff	7	10	10	66.6	101.5	77.2
R Glam Llantrisant	1	4	4	76.9	45.3	174.5
PCH Merthyr	0	3	6	Stab only	32.7	72.2
South Central Community	8	17	20	75.5	76.1	95.2

It is noted that although PCH Merthyr only has a stabilisation cot for the provision of short term IC, in practice 221 IC days were delivered there in 2011. This is far greater than either Abergavenny or Bridgend, both of which currently do have cots for ongoing IC. This level of IC delivery in a local neonatal unit without formal IC provision is undesirable and suggests that more than short-term IC is currently being provided locally due to capacity pressures within the Community.

As the largest of the health communities both in terms of population and number of care days (including the regional surgical service), the variability in occupancy is slightly less than the other health communities but is still high, particularly for IC.

This is shown in chart 5:

Chart 5



As with the other health communities, this variability presents challenges that can probably only be met by cooperation between communities at times of peak activity.

The provision of IC capacity within the community is one cot less than would have been needed in 2011 to meet the 70% occupancy standard. There are even greater pressures within this community at both HD and SC acuities with 76.1% and 95.2% occupancy respectively. There is also a major imbalance between units in terms of occupancy at HD and SC level suggesting that

It is apparent from the Table above that at unit level data, there is also evident major internal inequity of capacity distribution and utilisation (occupancy) for HD and SC. This is addressed in Section 5.3.5 below.

5.3.4 Out of Health Community Activity

According to Cot-Locator data (50 weeks analysis), 16.7% of the South Central Health Community's overall activity relates to babies whose mothers are not resident within the Community i.e. cross-boundary flow. This is substantially higher than for other Health Communities and a large proportion of those babies were in Cardiff as a result of the regional surgical services. The figure may slightly underestimate the true cross-boundary activity as in

common with units across Wales, this data field was probably not accurately filled in during the early weeks of cot-locator implementation. In future, access to the Badgernet data set should allow a more detailed analysis of cross-boundary activity.

In future it will also be useful to see what proportion of care of babies of mothers resident in the South Central Community is delivered within the community. The cot-locator analysis tool does not currently support that particular analysis, but again access to the Badgernet data set should allow clarification

5.3.5 South Central Community Development Points

Intensive Care

The IC cot (additional to the required stabilisation cot) located at the Royal Glamorgan Hospital is well utilised (occupancy 76.9%) but does not meet the 2010 BAPM staffing criteria for provision of ongoing intensive care. Physical constraints within the existing neonatal intensive care unit in UHW Cardiff do not readily allow the number of IC cots to be increased in the immediate future. A reduction in IC capacity within the community secondary to closure of the Royal Glamorgan IC cot would lead to an even higher and excessive number of out of community referrals, and also to prejudice access to the regional surgical services in UHW Cardiff.

It is suggested that, as there is a Consultant Neonatologist at the Royal Glamorgan Hospital, an agreed limited ongoing neonatal intensive care service continues as at present for the immediate future.

Of greater concern is the 221 IC days being delivered in PCH Merthyr that would equate to an IC cot at 61% occupancy. In the interests of clinical governance and compliance with standards, the majority of that activity should be delivered in a neonatal intensive care unit.

In the context of the existing unit configuration, C&V should look at future redevelopment of its neonatal unit to allow most of the IC activity currently delivered in the Cwm Taf units to be provided in UHW Cardiff, and to address the shortfall of one IC cot within

the South Central Community. This would take the UHW unit from its current 7 cots to 9 and would allow the unit to better meet the needs of the local population and the regional surgical service.

Alternatively, should current regional reconfiguration discussions favour consolidation of obstetric/neonatal services to the North and West of Cardiff on a single site covering populations currently served by Merthyr/R Glam/Bridgend, there might be sufficient critical mass for the commissioning of a Local Neonatal Unit (Level 2) on that site providing an agreed limited range of neonatal intensive care, without the need to increase IC capacity in Cardiff.

Should it be considered by C&V and Cwm Taf Health Boards to be inappropriate or impossible to plan either of these future developments to allow provision of sufficient IC capacity in compliant units within the Community, consideration should be given to commissioning the extra activity out of the Community. This might be in RGH Newport and/or Swansea Singleton (subject to an ability to increase IC capacity in either of these units). It is the view of the Network Clinical Lead that these options are second best, as appropriate locality access to care would be prejudiced.

The alternative strategy of commissioning some neonatal IC through PICU is problematic due to the need for specific neonatal competencies for the safe delivery of care, the seasonal nature of available PICU capacity, the lack of step down HD care for these babies within PICU and cross infection concerns particularly during the winter respiratory virus season.

High Dependency Care

The overall occupancy within the community of 76.1% is excessive and leads to clinical safety concerns. 3 extra HD cots within the community would be required to deliver this activity to the 70% standard.

There is also a major imbalance between levels of occupancy of existing HD cots between the three units, with UHW Cardiff running at 101.5% occupancy, Royal Glamorgan at 45.3%

occupancy and PCH Merthyr at 32.7% occupancy (although the low HD occupancy for PCH Merthyr is partially balanced by the 221 IC days delivered). This is an unacceptably poor use of existing HD resource and contributes to clinical risk in UHW Cardiff through blocking access to IC cots (due to overflow) and leads to a poorer than necessary locality based service for the Cardiff population.

There appears to be scope for better management of North/South patient flows within this community. Current impediments may include issues of nurse training and competencies within Cwm Taf, blocking of HD cots by low acuity babies in Cwm Taf (see below), excessive IC delivery within HD cots at PCH Merthyr and cultural inertia within both Health Boards. The issues need to be fully explored, managed and monitored on a collaborative basis between the two Health Boards. The foundations for this work have been laid within the last 6 months, but tangible results with changed patient flows have yet to be realised.

About 4 cots worth of HD activity in UHW Cardiff (at nominal 100% occupancy) relates to the regional surgical services. Many of these patients have very long lengths of stay with gut failure and prolonged parenteral nutrition. They frequently occupy capacity inappropriately far beyond the neonatal period which might be considered 28 days after the due date. There are recurrent problems in transferring these infants in timely fashion to the Children's Hospital for Wales or to local health communities due to a lack of appropriately resourced and/or professionally accepted clinical pathways for ongoing care. If these pathways could be developed, this might reduce the need for an extra 3 neonatal HD cots within the community by at least 50%.

Low Dependency (Special) Care

With an overall SC occupancy of 95.2%, it is evident that low acuity activity is a major factor contributing to dysfunctional use of capacity within this community. The level of over-occupancy is particularly dramatic at the Royal Glamorgan Hospital at 174.5%, while PCH Merthyr's occupancy is appropriately compliant at 72.2%. This difference in occupancy within Cwm Taf is largely due to a marked difference in the SC cot provision per 1,000

deliveries between the two units – 3.3 per 1,000 for PCH Merthyr and 1.6 for Royal Glamorgan. Why the provision is so different within the same LHB is unclear, and it may be appropriate for Cwm Taf to consider increasing the number of SC cots at the Royal Glamorgan Hospital (but also see next paragraph).

Chart 1

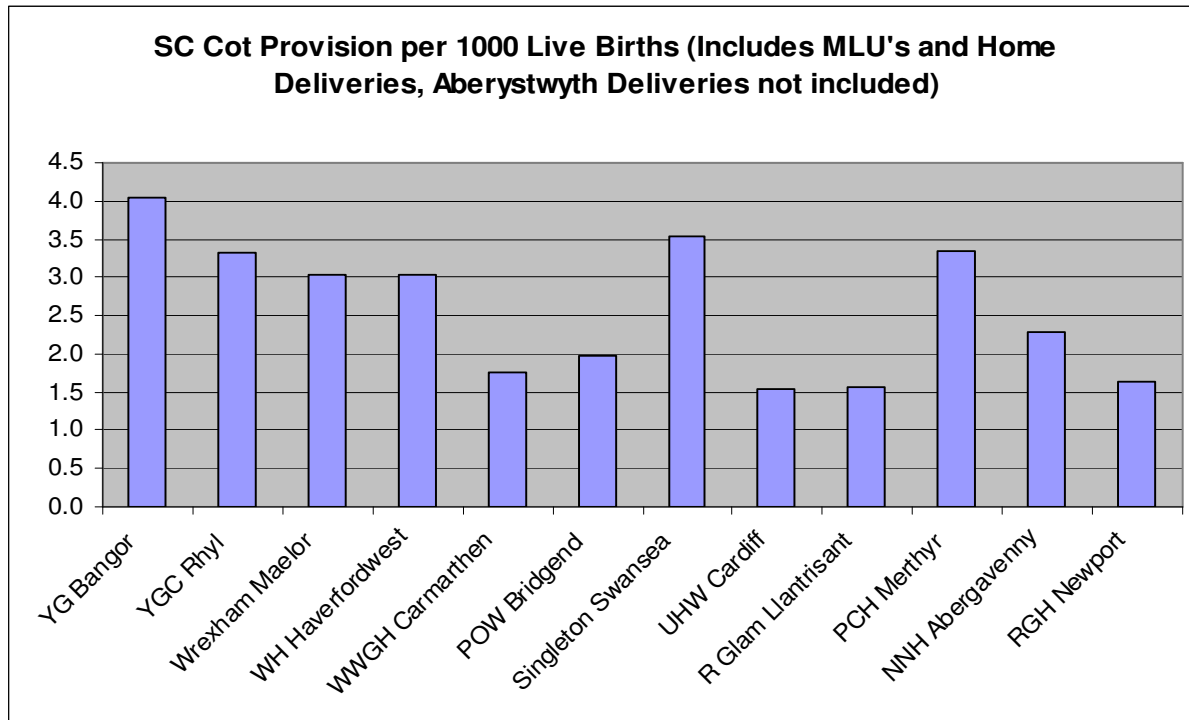
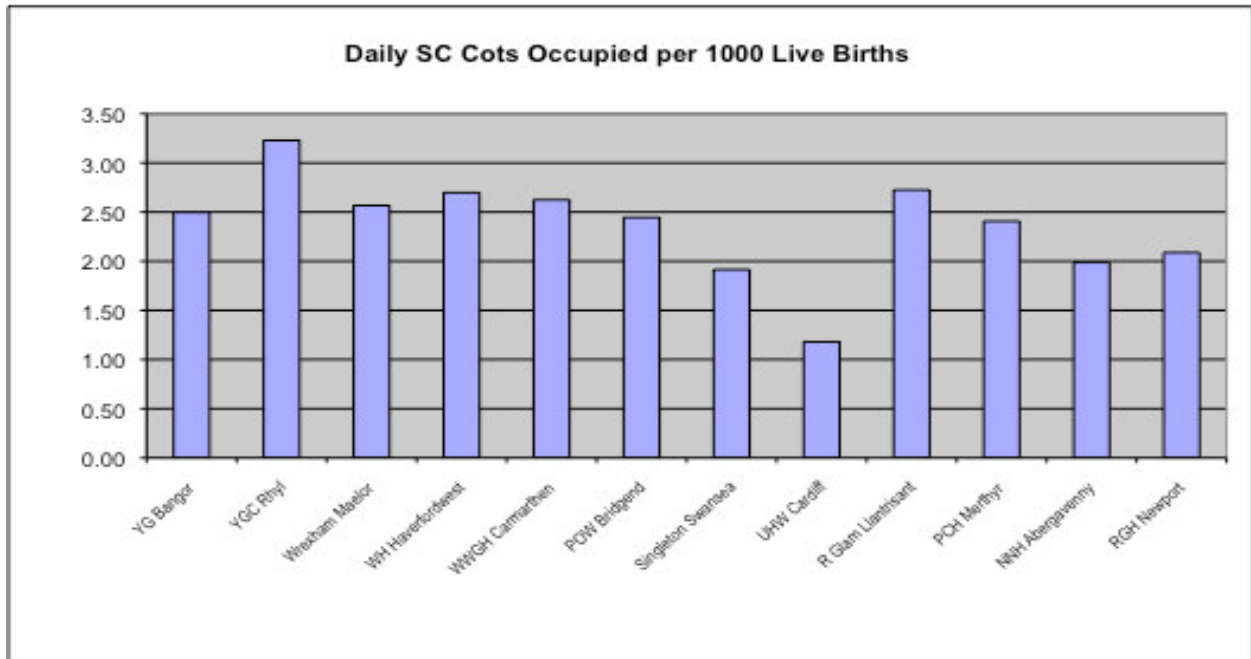


Chart 2



Both Cwm Taf units have higher than average for South Wales daily average low dependency activity per 1,000 deliveries at 2.41 for PCH Merthyr and 2.72 for the Royal Glamorgan. This compares with 1.18 per 1,000 deliveries at UHW Cardiff. The high activity level is particularly surprising at the Royal Glamorgan where transitional care off the neonatal unit (not recorded in these figures) is provided. The reasons for this are not apparent

within the data available to the Network and need to be explored locally. It does appear that there may be ample scope to improve efficiency of low acuity care in both Cwm Taf units, and doing so would be likely to improve availability of HD cots with substantial capacity benefit both to the South Central Community and to the Network as a whole.

The SC occupancy at UHW Cardiff was particularly high during the earlier part of 2011 and through blocking higher acuity capacity this was contributing to the problems of access to critical care for both the South Central Community and the Network at large. This activity reduced in the later part of 2011 and at a year average of 77.2% was just compliant with the 80% standard. UHW Cardiff has the most efficient use of low dependency capacity in relation to number of deliveries in Wales (1.18 cot days/1,000 deliveries) but also has amongst the lowest SC cot provision in Wales per 1,000 deliveries (1.6/1,000). It seems unlikely that much further efficiency in use of SC capacity will be achievable in UHW Cardiff. It is understood that there are internal refurbishment plans that would provide an additional 2 SC cots. If this work is implemented it is likely that this will help avoid blocking HD capacity at times of peak demand.

5.3.6 Staffing

Nursing

The following table derived from the work of the Nursing and Therapies sub-group summarises the shortfall in direct clinical care staff to meet the All Wales Standards 2008, based on the existing cot numbers and configuration.

Table 18

South Central Community June 2011	
	WTEs
Total Neonatal Nurse Establishment	155.34
Establishment for Direct Clinical Care	144.8
Direct Care Staff in Post	129.69
Shortfall of Direct Care Staff in Post to meet All Wales Standards 2008	17.31

The indicative shortfall by unit is shown below

Table 19

	WTEs
UHW Cardiff	9.1(8.6% Direct Care Establishment)
R Glam Llantrisant	1.86(6.2% Direct Care Establishment)
PCH Merthyr	6.35(24% Direct Care Establishment)

As in the rest of Wales, none of the units in the South Central Community are compliant with the All Wales Neonatal Nurse Staffing Standards 2008. Although the absolute shortfall is highest in UHW Cardiff, proportionately to the size of service, the shortfall is far higher in PCH Merthyr. Although Cwm Taf may be able to enhance its staffing levels by flexible use of its workforce and intermittent use of bank staff, it is unlikely that this enhancement is sufficient to make up the large shortfall. Staffing levels need to be audited further using one of the nursing acuity tools that are currently being explored by the Nursing and Therapies Sub Group. Should the cot provision be adjusted in line with recommendations above, there will be corresponding changes in the number of nursing staff needed to meet the All Wales Standards.

Medical

The medical staff establishments in C&V and Cwm Taf are currently compliant at all levels with 2001 and 2008 standards for service delivery within a Neonatal Intensive Care Unit and local Neonatal Units respectively.

However, two potential challenges to future medical staffing compliance have recently become known and in common with some other neonatal units in Wales these could pose a threat to the sustainability of existing capacity within the Community.

In the short term, there has been a recruitment failure in Wales for trainees in paediatrics working at Tier 2 (middle grade) level. The Postgraduate Dean's Department has told us that in March 2012 there are only sufficient trainees to fill 1 of the 2 existing Tier 2 rotas for general and neonatal paediatrics in Cwm Taf. Cwm Taf is known to be addressing this problem, but the Network does not currently know whether there will be any immediate consequence for compliance and neonatal capacity.

The important medium to long-term challenges to Tier 2 and Tier 1 staffing have been described in Section 2.2.3 above and whatever the solutions, there are likely to be implications for this neonatal Health Community.

The implications of the 2010 Service Standards for Hospitals Providing Neonatal Care need to be considered with reference to Cwm Taf's strategic plans for neonatal services (see Section 2.2.3).

5.4 South East Community

5.4.1 Executive Summary

1. Aneurin Bevan HB should confirm disestablishment of the IC cot in NHH Abergavenny as it is under-utilised, does not meet the standards for ongoing intensive care and contributes to the severe nurse staffing deficits within the community against Wales Standards.
2. The Network and HB need, in collaboration, to explore why critical care activity in the South East Community appears to be relatively high compared with the other Health Communities in South Wales relative to population size. This needs to happen before confident recommendations can be made for future critical care cot numbers to serve this community.
3. A local assessment should be made of whether there is any scope for reducing low dependency activity in the light of the Low Dependency Sub-Group report. If no further improvements can be made, the HB will need to invest in 4 to 5 extra special care cots (with associated nursing staff) to bring the mean occupancy levels within the 80% standard and avoid low dependency babies blocking critical care cots.
4. Even following disestablishment of the NHH Abergavenny IC cot there will be a need for further investment in nursing staff to bring the service into compliance. Indicative numbers of the existing shortfall are provided but further work through the Network Nursing and Therapies Sub-Group using a nursing acuity tool may help to define this more precisely in the context of flexible shift and bank and agency staff usage.
5. The Network needs to perform a more detailed assessment of cross-boundary flows for this and other Health Communities. This will be best done through access to the Badgernet data set.
6. The HB will need to consider the implications of the BAPM Service Standards for Hospitals Providing Neonatal Care 2010

as they relate to medical staffing of Local Neonatal Units and Abergavenny.

7. ABHB needs to include neonatal services in its ongoing discussions with neighbouring Health Board's over potential reconfiguration. These discussions should include the intentions of C&V UHB in relation to provision of adequate neonatal critical care capacity for the South Central Community and any implications for the ABHB. When the precise medium to long-term plans from the Postgraduate Deanery become apparent as they relate to Tier 2 and 1 rotas in ABHB, these will also need to be factored in to sustainability and strategic planning of capacity.

5.4.2 Cot Number Projections

As described in the Methodology (Section 3), cot numbers needed in the South East Community to meet the 70% and 80% occupancy standards have been calculated in two different ways:

3. Using actual activity delivered within the Community in 2011
4. Using activity from the entire South Wales Network (excluding surgical activity in UHW Cardiff) with an assumption that the proportionate need for neonatal care in relation to birth rate within the community is similar to that throughout South Wales.

The rationale for this method of analysis is fully explained in the Methodology section. There is considerable variability in activity over time (see Occupancy Chart below). Local clinicians tell us that IC activity in the South East was uncharacteristically low in the early part of 2011. Although averaging activity over 52 weeks smooths out much time-related variance, the South East Community's delivered activity is only 26% of the total activity for South Wales and so variability over time is a greater issue for the South East than for the South Network as a whole.

Table 20

	IC	HD	SC
Cot Numbers July 2011	7	9	12
Projected numbers to meet occupancy standards based on actual 2011 Activity	6	12	17
Projected numbers to meet occupancy standards based on delivery population	5	8	16

Note

- A "Crash Cot" (Stabilisation Cot) capable of delivering short-term intensive care needs to be maintained in each unit in addition to the figures above
- No allowance has been made for improved efficiency in use of special care cots (see Section 2.2.4 "Service Efficiencies")

above, and Section 5.4.5 Low Dependency (Special) Care below) apart from matching within the community the mean performance for low acuity admission avoidance of the South Wales Network

- No allowance has been made for Wales babies inappropriately cared for in England (but the numbers are thought to be small for this community)

It can be seen from the above table that despite concern that critical care activity had been uncharacteristically low early in 2011, IC and HD activity for all of 2011 has actually been higher than the projected numbers, based on the mean South Wales figures for the population size. These findings have been discussed with the South East Community team but the reasons for the discrepancy are not immediately obvious.

Potential reasons for the discrepancy could include among others:

- Inherent higher healthcare needs for the South East neonatal population. These might for example be associated with higher social deprivation.
- Improved early outcomes for very preterm infants. Improved survival in the early days of life leads to ongoing increased demand for all levels of neonatal care.
- Higher incidence of chronic lung disease
- Net inward cross Community boundary patient flow (but see Section 5.4.4 below)
- Differences in Obstetric or Paediatric clinical practice.

Currently the Network has no data to support any of these theoretical possibilities.

However the substantial disparity between the two approaches to projections of needed critical care cot numbers limits the immediate recommendations that can be made. Further work is needed to try to inform the process. Access to the Badgernet data set across the Network may help explore this in more detail.

5.4.3 Cot Numbers and Occupancy

Aneurin Bevan HB has reported no change in cot numbers since October 2010. A summary of these cot numbers and of mean occupancy is shown in the table below.

Table 21

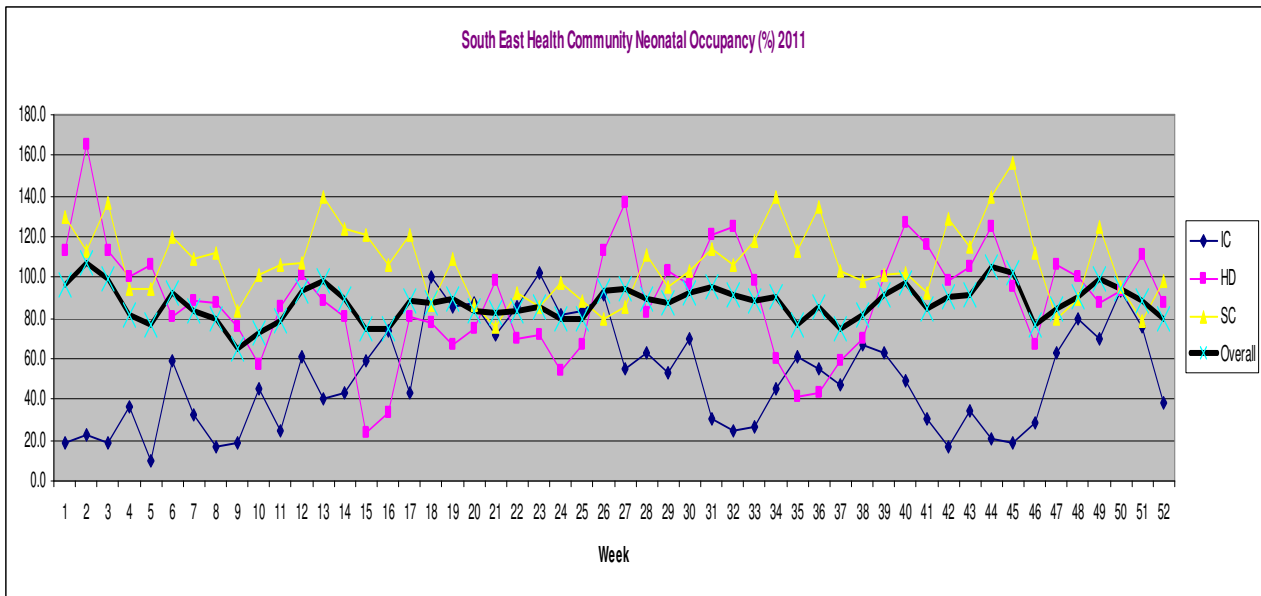
	Cot Numbers July 2011			Mean % Occupancy 2011 (52 weeks)		
	IC	HD	SC	IC	HD	SC
RGH Newport	6	7	6	56.8	83.2	126.7
NHH Abergavenny	1	2	6	21.4	109.3	87.1
South East Community	7	9	12	51.8	89.0	106.9

Occupancy is an important service parameter as:

- There are standards for maximum occupancy (70% although the Network has accepted a higher maximum occupancy of 80% for low dependency care).
- Mean occupancies in excess of 70% are known to be associated with poorer clinical outcomes and therefore lead to concerns over clinical safety.
- Mean critical care occupancies in excess of 70% lead to a high frequency of unit closure that in turn leads to clinical governance concern.
- Mean occupancies of staffed cots that are well below 70% suggest there may be service inefficiency.

As this is an emergency led service, variability in occupancy is important as well as average occupancy. This is shown in the cart below:

Chart 6



Variability in occupancy is proportionate to the size of service and so it can be seen that the South East Community has somewhat higher variability than other Health Communities in South Wales. The variability is greatest for Intensive Care cots as these are fewer in number than other acuities. This variability presents challenges that even with appropriate capacity provision could only be met by cooperation between communities at times of activity peak.

The excessive occupancy pressures within the South East Community are clearly at HD and SC level.

This is the only Health Community in Wales where 2011 data suggests a mean overprovision of IC cots for the activity delivered.

5.4.4 Out of Health Community Activity

According to Cot-Locator data (50 weeks analysis), 4.1% of the South East Health Community's overall activity relates to babies whose mothers are not resident within the Community i.e. cross-boundary flow. This figure may slightly underestimate the true cross-boundary activity as in common with units across Wales, this data field was probably not accurately filled in during the early weeks of cot-locator implementation. In future, access to

the Badgernet data set should allow a more detailed analysis of cross-boundary activity. However early indications are that, compared with the other southern communities, the South East is not performing a large amount of out of community activity (see Section 5.4.2 above).

In future it will also be useful to see what proportion of care of babies of mothers resident in the South East Community is delivered within the community. The cot-locator analysis tool does not currently support that particular analysis, but again access to the Badgernet data set should allow clarification.

5.4.5 South East Community Development Points

1. *Intensive Care*

Whether analysed on the basis of actual recorded activity or on the basis of what would be predicted for this size of population, the provision of IC cots in the South East Community appears high. Part of the explanation for this is the IC cot established for ongoing intensive care in NHH Abergavenny, which is additional to the stabilisation cot. This cot had occupancy in 2011 of only 21.4%, which represents inefficiency. Furthermore, NHH Abergavenny does not appear to meet the staffing criteria for safe provision of ongoing intensive care. The Network has discussed with the Health Board the potential disestablishment of this cot at the earliest opportunity with the nursing resource re-invested to improve compliance with the All Wales Nurse Staffing Standards (see below). ABHB is understood to be in agreement with this recommendation.

The current figures also suggest that there is an overprovision of one IC cot in RGH Newport for the size of population served. However as discussed above, the actual activity delivered in 2011 was higher than predicted for reasons that are currently unclear, and this high IC activity matches current IC cot provision. It is also possible that implementation next year of the new 2011 Categories of Care may redefine a small amount of HD care as IC. In the context of overall Network capacity pressures particularly in the adjacent South Central Community and pending a better understanding the reasons for this relatively

high activity it would be prudent to await further activity data collection (including better identification of out of area activity) before firm recommendations are made.

This may be particularly important if the South Central Community is unable to resolve its capacity problems adequately to serve their local population, and extra critical care needs to be commissioned out of community.

2. High Dependency Care

Looking at the occupancy variability over the year (see Chart above), there is an apparent reciprocal relationship over time between IC and HD activity. Typically when IC activity/occupancy is high, HD activity/occupancy is low. This relationship is also identifiable in the Chart displaying all South Wales data. Although this is an unexpected observation, and is not fully understood, it may reflect a fixed total critical care capacity that can to a degree be flexed between IC and HD. It may additionally or alternatively reflect the normal clinical pathway where progression of infants from IC to HD means that periods of high IC activity are liable to be followed days or weeks later by periods of high HD activity.

Population based projections from the 2011 data suggest that the existing HD provision should be adequate for the size of the local population. However the high HD occupancy rates in both South East units are noted (mean 89%). As for IC, in the context of overall Network capacity pressures and pending a better understanding of the reasons for this relatively high activity it would be prudent to await further activity data and analysis before firm recommendations are made. In particular, if the South Central Health Community is unable to increase its provision of critical care cots for its local population, that needed capacity might have to be provided further afield, possibly by increasing HD provision in the South East.

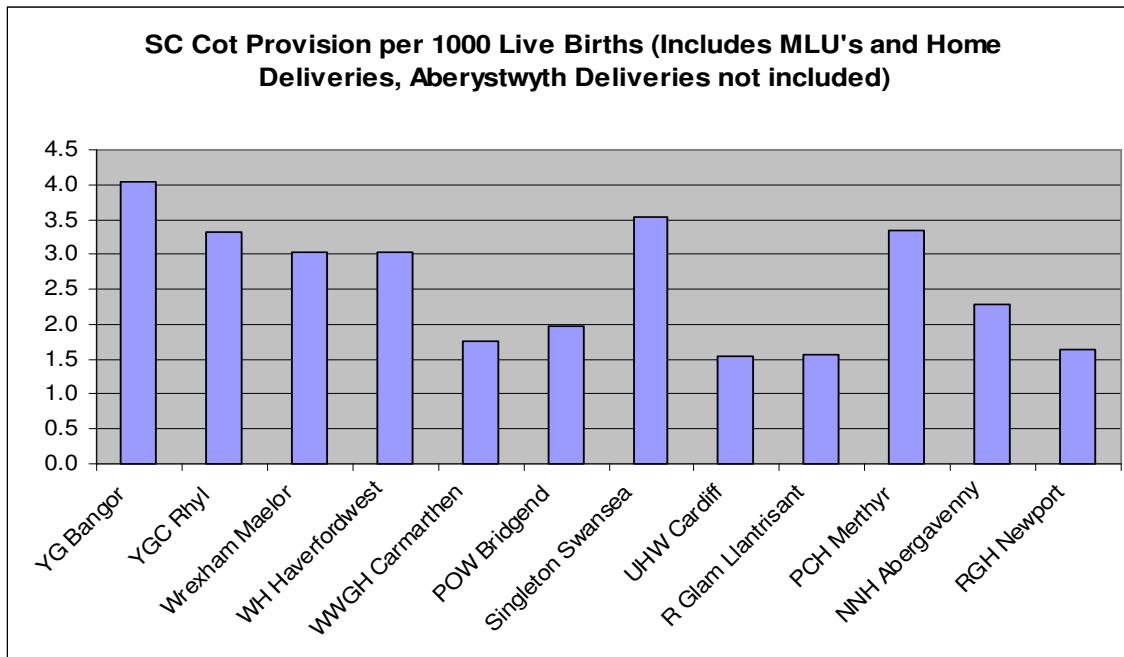
3. Low Dependency (Special) Care

As with other parts of the Network, there are severe over-occupancy pressures within the South East for low acuity babies,

with occupancies of 126.7% and 87.1% for RGH Newport and NHH Abergavenny respectively.

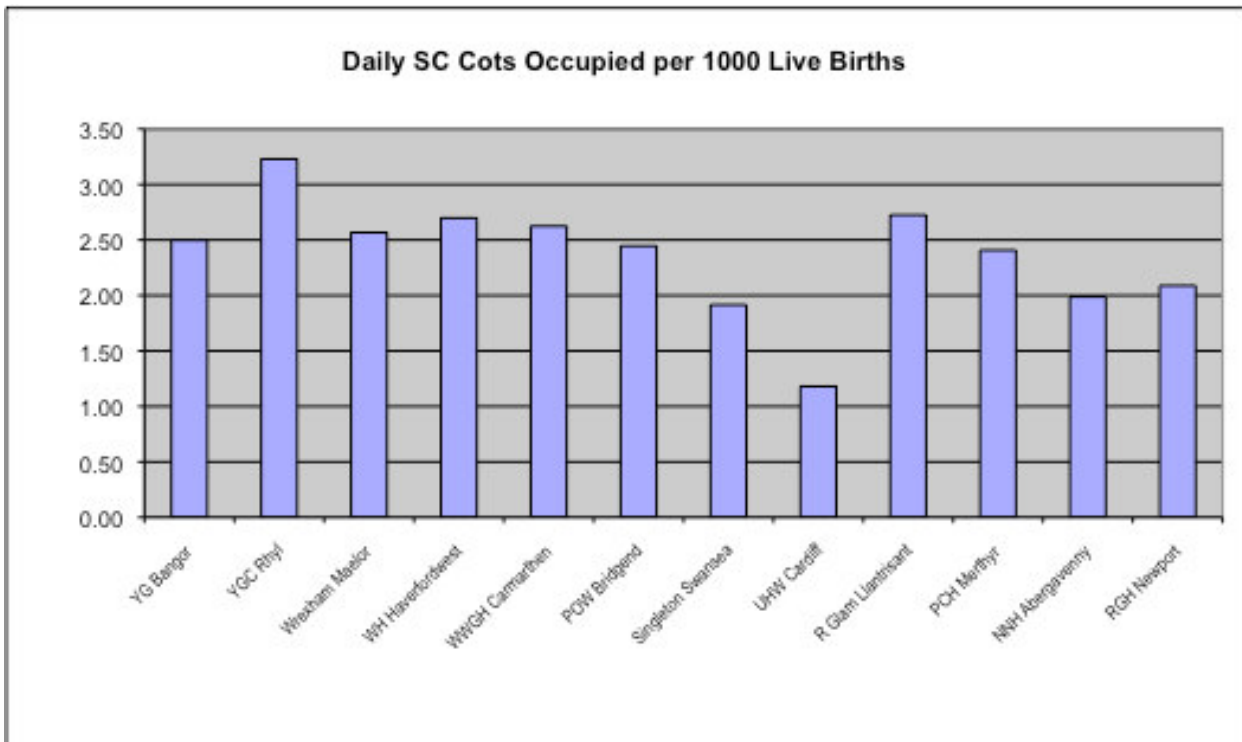
RGH Newport has a relatively low provision of SC cots per 1,000 deliveries compared with other units in Wales (see Chart 1 below).

Chart 1



Like NHH Abergavenny, it also had fairly average SC activity per 1,000 deliveries in 2011.

Chart 2



It is known that there is some flexibility of management of low dependency activity between these two units. As with the rest of Wales, the South East Community is encouraged to look to see whether any efficiencies could be made to reduce demand for low dependency capacity. The Low Dependency sub-group under the chairmanship of Dr. James Moorcraft has produced a compendium of best practice that may help the HB in this work. However it is acknowledged that there may be limited scope for such efficiencies within this Health Community, and it is likely that investment in new SC capacity will be needed to bring occupancy rates down to 80% and meet the notional deficit of 4 to 5 SC cots. The HB will need to make a judgement based on their expectations of their own demand management programme as to exactly how much new capacity should be commissioned to meet the occupancy standard, and where it should be located.

5.4.6 Staffing

Nursing

The following table summarises the shortfall in direct clinical care nursing staff to meet the All Wales Standards 2008, based on the existing cot numbers and configuration

Table 22

South East Community June 2011			
			WTE's
Total Neonatal Nurse Establishment			96.81
Establishment for Direct Clinical Care			78.8
Direct Care Staff in Post			76.08
Shortfall of Direct Care Staff in Post to Meet All Wales Standards 2008			22.92

The indicative shortfall by unit is shown below:

Table 23

	WTE's
RGH Newport	12.08 (16.2%)
NHH Abergavenny	10.84 (40.1%)

These figures show that the South East Community has a very high proportionate shortfall in nursing staff in relation to the All Wales Nurse Staffing Standards 2008. Although the HB may be able to enhance its staffing levels by intermittent use of bank and agency staff, it is unlikely that this enhancement is sufficient to make up the large shortfall. Staffing levels need to be audited further using one of the nursing acuity tools that are currently being explored by the Nursing and Therapies Sub Group. In the meanwhile, these low staffing levels remain a concern in relation to clinical safety. Disestablishment of the inappropriate IC cot at NHH Abergavenny would improve compliance with the standards, but further investment will still be needed to achieve compliance.

Medical

The medical staff establishment is currently compliant at all levels with 2001 and 2008 standards for service delivery within a Neonatal Intensive Care Unit.

However, two potential challenges to future medical staffing compliance have recently become known and in common with

some other neonatal units in Wales these could pose a threat to the sustainability of existing capacity.

In the short term, there has been a recruitment failure in Wales for trainees in paediatrics working at Tier 2 (middle grade) level. The Postgraduate Dean's Department has told us that in March 2012 there are only sufficient trainees to fill 2 of the 3 existing Tier 2 rotas for general and neonatal paediatrics in the South East Community. ABHB are known to be addressing this problem, but the Network does not currently know whether there will be any immediate consequence for compliance and neonatal capacity.

The important medium to long-term challenges to Tier 2 and Tier 1 staffing have been described in Section 2.2.3 above and whatever the solutions, there are likely to be implications for this neonatal Health Community.

The implications of the 2010 Service Standards for Hospitals Providing Neonatal Care need to be considered with reference to Abergavenny (see Section 2.2.3).

APPENDIX 1 - Data Issues

How Much Data is Needed for Confident Projections of Activity?

The first iteration of the Capacity Review had available very limited Network data for only 8 days of activity, and therefore although some general conclusions were drawn on occupancy and desirable cot numbers, these had to be guarded. Unlike adult critical care services, neonatal activity is almost entirely emergency driven and so is subject to marked fluctuation in demand over time. These fluctuations determine the requirement for mean critical care occupancy levels no higher than 70% to allow peaks of demand to be safely managed. The fluctuations also mean that activity needs to be averaged over time for data to be representative. This becomes more important as data is disaggregated from Network to Community and to Unit level. This is one of the reasons that where possible, analysis has been performed at Network (or North/South Network) level and the implications then extrapolated to Communities and Units on the basis of the relative size of neonatal population.

Network activity monitoring and analysis for 2011 took place on a continuous and rolling cumulative basis, and so the projected cot numbers were liable to change slightly over time. This report uses data from the 52-week period from 3rd January 2011 to 1st January 2012 inclusive.

Data returns were complete for the Southern part of the Network. Consistent and complete data collection for North Wales started on Week 6 of 2011 and so data analysis for this part of the Network is limited to 47 consecutive weeks.

For the South Network, the data represents 34,834 patient days. Of these days 4,972 were at IC level, 10,019 at HD level and 19,725 at SC level. By Health Community, the breakdown was 12,019, 13,881 and 8,934 for South West, South Central and South East respectively.

Marked weekly fluctuation in activity can be seen in Chart 7 below.

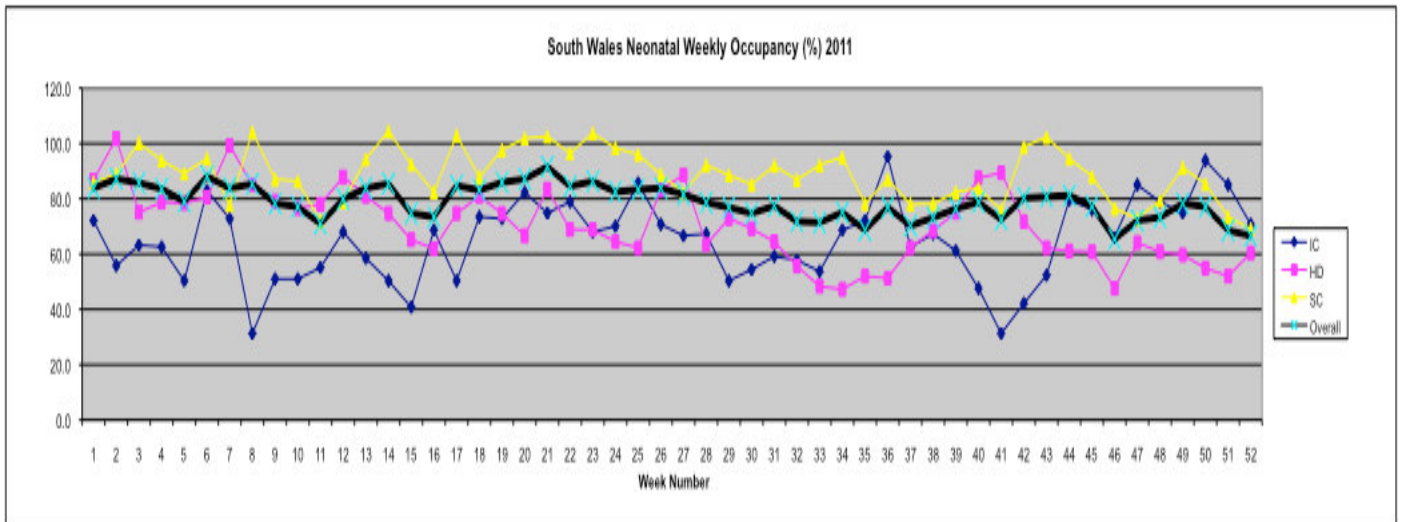


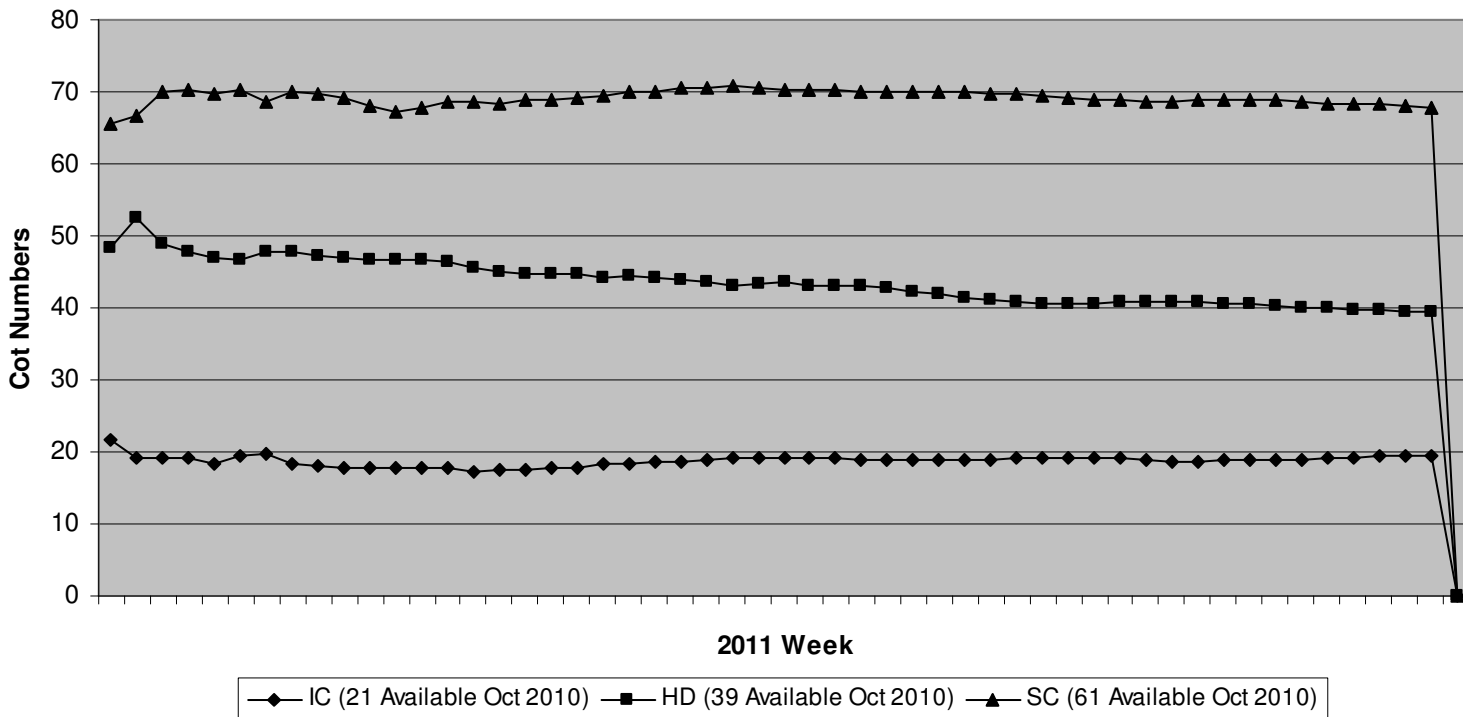
Chart 7

The fluctuations are obviously even larger on a daily basis. There is a suggestion of a trend for reduced High Dependency activity over the year to date but reasons for this are not clear and this is liable to be a chance observation rather than a sustained trend.

The impact of these demand-fluctuations on the cumulative calculation of the Network level number of cots required to provide appropriate mean occupancies are demonstrated in Chart 8.

**South Wales Progressive Projection Based on 2011 Activity
of Cot Numbers Needed to Meet Occupancy Standards
(70% Critical Care, 80% Special Care)**

Chart 8



It is evident that after 52 weeks data collection, the projected cot numbers needed are becoming quite stable and are unlikely to change markedly as additional data is collected over the next year. As mentioned above, analysis using Health Community and Unit level data alone is liable to show greater variance due to demand fluctuation over time.

Unmet Demand in Wales

Some activity relating to Welsh babies is delivered in England and is not represented in this data. For residents of the South and Mid Wales/England **border** areas this pathway is **not** inappropriate. In addition a small number of infants transfer for clinically appropriate reasons from both North and South for supra-regional care (including surgery in the North). Inappropriate transfers from the South for care in England do occur due to

capacity constraints but neonatal activity resulting from such transfers is thought to be very low in comparison to the Wales activity analysed here, and probably would have a minimal impact on the cot number projections required to meet demand, reported here. Unfortunately exhaustive attempts to use other data sources to measure this activity in England have so far failed. We are exploring the possibility of collecting this information prospectively with maternity service colleagues.

Activity delivered in England for **North** Wales babies is by contrast relatively high and may be around 25% of all neonatal critical care activity for North Wales residents. Because of this and the incomplete data set received from North Wales, projections of demand for neonatal cots for the North Wales population have been made proportionately to the South on the basis of relative delivery population size.

The Badgernet Database and Categories of Care

Data has been collected throughout Wales using the new Badgernet Neonatal Database since the beginning of 2011. Although this system was centrally funded and acquired with the intention of providing a detailed, complete and consistent source of anonymised all Wales data that could be used for service planning purposes, issues of Health Board business data confidentiality were not fully resolved by the end of 2011. The implications of this are that this complete data-set was still not available to the Network when this report was finalised, and thus Badgernet has not been used for this analysis.

On an assumption that this source of information will be available in future, the following observations are made:

- It is known from comparisons between the Cot Locator data and data-sets that have been made available to the Network that Badgernet relatively over-estimates IC and SC activity and underestimates HD activity compared with the Cot Locator despite both systems supposedly using the BAPM (2001) Categories of Care. While it is likely that Badgernet is more accurately coding according to the BAPM (2001) categories, it is also likely that local unit nurses are using

their knowledge and experience when completing the Cot Locator returns, and are making a more helpful assessment of the acuity of care needed by individual babies. This information may therefore more accurately predict the need for cot numbers at each acuity level.

- With changing technology, knowledge and practice on neonatal units, it is widely considered that BAPM (2001) Categories of Care have become less fit for purpose in defining acuity of care and therefore the level of nursing input needed by infants as they progress through units. For this reason, the BAPM has been revising the definitions. These definitions were published in August 2011 but have yet to be widely adopted. It is expected that Badgernet will shortly be able to code using new and old systems in parallel. Although pilot work has been done in England, the full impact of this change is unclear.
- As Badgernet records days (and part days) of care for each infant, while the Cot Locator records numbers of babies on each unit receiving care at a particular point of each day, occupancy data derived from Badgernet will be a few percent higher than that derived from the Cot Locator. It is debatable which system would provide the more accurate measure of activity/ workload.

This analysis is based on the only full data source available to the Network and on 2001 definitions. It is anticipated that not until summer 2012 will the Network be in a position to fully define what the impact of new category of care definitions and the new Badgernet database will have. In the meanwhile, it is believed that the data presented here is robust for the purposes of projecting cot numbers.

The recommendations here are based on the current configuration of services although reference is made to advantages of efficiency and improvement to local services that could flow from reconfiguration. Service reconfiguration requires complex planning and where it occurs will have interactions with many other services, not least Maternity and General Paediatric

Services. A lead on reconfiguration will clearly not come solely from Neonatal Services but there is a willingness and wish from the Neonatal Network to support and be engaged in reconfiguration discussions. The impact of any such reconfigurations on neonatal patient flows, effective Health Communities, critical mass and sustainability will need assessment and would impact on the distribution of capacity within the Network.

These projections should therefore be regarded as minimum recommendations for Local Health Boards based on current activity and configuration of services.

APPENDIX 2 – Summary of Underpinning Capacity and Activity Data, Jan to Dec 2011

See Section 3 Methodology for Data Sources and Definitions

Neonatal Service	Live Births 2010 Including nearby MLU's & Home Deliveries	Existing IC Cots	Existing HD Cots	Existing SC Cots	IC Cot Days	HD Cot Days	SC Cot Days	All Cot Days
YG Bangor (47 weeks data)	2232	0	2	9	15	33	1834	1882
YGC Rhyl (47 weeks data)	2412	3	2	8	533	647	2562	3742
Wrexham Maelor (47 weeks data)	2632	2	4	8	360	514	2223	3097
All North Wales (47 weeks data)	7276	5	8	25	908	1194	6619	8721
YG Bangor (data extrapolated to 52 weeks)	2232	0	2	9	17	37	2029	2082
YGC Rhyl (data extrapolated to 52 weeks)	2412	3	2	8	590	716	2835	4140
Wrexham Maelor (data extrapolated to 52 weeks)	2632	2	4	8	398	569	2459	3426
All North Wales (data extrapolated to 52 weeks)	7276	5	8	25	1005	1321	7323	9649
Aberystwyth	605	0	0	0	0	0	0	0
WH Haverfordwest	1323	0	2	4	9	227	1299	1541
WWGH Carmarthen	1699	0	2	3	30	166	1623	1824
POW Bridgend	2519	2	3	5	149	623	2242	3024
Singleton Swansea	4251	5	4	15	1267	1376	2963	5630
South West Community	10397	7	11	27	1455	2392	8127	12019
UHW Cardiff	6543	7	10	10	1697	3693	2811	8228
R Glam Llantrisant	2561	1	4	4	280	660	2540	3489
PCH Merthyr	1800	0	3	6	221	357	1577	2164
South Central Community	10904	8	17	20	2198	4710	6928	13881
NHH Abergavenny	2628	1	2	6	78	796	1902	2785
RGH Newport	3642	6	7	6	1241	2121	2768	6149
South East Community	6270	7	9	12	1319	2917	4670	8934
All North Wales	7276	5	8	25	1005	1321	7323	9649
All South Wales	27571	22	37	59	4972	10019	19725	34834
All Wales	34847	27	45	84	5977	11340	27048	44483

- Live Births in MLU's and the community are ascribed to the nearest neonatal centre
- The 326 live births in Powys have been arbitrarily ascribed to NHH Abergavenny. While this over-estimates the Powys deliveries draining into the South East Community, the absolute numbers are so small as to make very little analytic difference.