The Northern Neonatal Network

A managed clinical network

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Nurse staffing and cot occupancy levels in the Northern Neonatal Network (July – December 2010)

A Report by Martyn Boyd (Network Manager)

Executive Summary

This Report was undertaken as part of the first Northern Neonatal Network annual work plan and to enable a thorough study to be made of the workload activity across all of the 12 Units in the Network and relate this directly to their nurse staffing levels. Recent publications such as the Department of Health (DH) 2009 "Toolkit for High Quality Neonatal Services" have stipulated the Principles which should underpin neonatal care in England and the minimum recommended staffing levels that Units should strive for in relation to the cot occupancies that they cater for. Key to this are the nurse staffing ratios that are clearly defined (Principle 2, page 40-41).

Over the 6-month period from 1st July – 31st December 2010, relevant data was collected and collated in order to enable an objective assessment to be made as to how well or otherwise the Network was doing as measured against this Principle and other recognised and recommended standards such as those first published in 2001 by the British Association of Perinatal Medicine (BAPM). Key questions relating to Unit capacity, commissioned activity and the nurse establishments that each currently has were asked as part of this Report and the data that forms the basis of it enabled them to be answered.

The results point to some serious capacity problems around the Network, particularly in relation to Intensive and High Dependency cots – those required to provide appropriate, high quality care to the sickest and most premature babies born in our region, often at the very borders of viability. There are some wide variations in the way that all Units are staffed, even when separately comparing the four NICUs (Neonatal Intensive Care Units, to the eight lower-dependency SCBUs (Special care Baby Units) in two groups and it is the case that in some Units, recommended minimum staffing levels are only being achieved less than one day in twenty, irrespective of activity variations.

These conclusions lead to this Report's main recommendations being the need for urgent discussion between Commissioners – both those in the PCTs (and in a very short space of time the new GP Commissioning Consortiums that will succeed them) and the regional Specialist Commissioners responsible for intensive care – and the providers of neonatal care, via the Network Board with a view to agreeing on funding extra capacity by way of new cots above and beyond that already under discussion. Failure to do so will mean continuing strains being placed on a Network that is currently struggling to cope with current demand, falling well short of meeting recommended minimum staffing levels and most worryingly, ill-placed to cope with any future increase in demand through a rise in the birth rate, which is already a distinct possibility.

Introduction

This Report was undertaken in order to determine the extent to which current nurse staffing numbers were relating to the minimum levels recommended by BAPM 2001 and 2010 Standards and the DH 2009 Toolkit. The aim was to assess what the deficits in terms of numbers were, but also the impact that current workloads in all 12 Units were having on the nurse staffing as they are presently configured. This also included the need to inform the discussions that are simultaneously occurring with representatives from the Finance departments of the four NICUs in the Network in trying to agree on a regional tariff for neonatal intensive and high dependency care.

The Report is structured in such a way that the Principal questions it seeks to answer are described, outlining the means and methods of data collection and then presented in tabular fashion with appropriate analysis and comment. This then feeds into conclusions and recommendations which it is hoped can be discussed by the Network Board and wider Network stakeholder membership, with a view to stimulating further detailed dialogue amongst all involved in neonatal care as to how the Toolkit Principles and BAPM Standards they relate to can possibly be met.

The data that has informed this Report was collected, collated and presented by Mark Green, Network Data Manager. It specifically relates to the period from 1st July – 31st December 2010, so is therefore as contemporary and comprehensive as possible. It is hoped that Board members and stakeholders in the Neonatal Network welcome this Report and use it as the author intends in order to help further improve standards and care in the Northern Region and North Cumbria, where our NICUs and SCBUs are situated.

Background

In November 2009, on the back of the NAO (2007) Report that had led to the setting up of the Neonatal Taskforce, the DH published the "Toolkit for High Quality Neonatal Services". This provided a comprehensive set of 8 "Principles" that would allow Networks to improve the care given to sick and premature babies and their families. It also provided a "framework" to assist commissioners in that process and a set of audit indicators for each of the Principles to enable the markers of good practice suggested for each to be evidenced.

Of these 8 Toolkit Principles, number 2 - "Staffing of neonatal services", built on the earlier BAPM (British Association of Perinatal Medicine) "Standards for Hospitals Providing Neonatal Intensive and High Dependency Care (2nd edition)" with respect to appropriate staffing levels and ratios according to the level of care required by each baby. These have recently been updated but not significantly altered in the 2010 3rd Edition. Amongst other things, this Toolkit Principle 2 stated (emphasis mine) that;

- Babies requiring special care are looked after with *a minimum of 1:4 staff-to-baby ratio at all times* by either a registered nurse/ midwife or non-registered staff (2.2.5)

- Babies requiring high dependency care are cared for by staff who have completed accredited training in specialised neonatal care or who, while undertaking this training, are working under the supervision of a registered nurse/midwife (QIS). *A minimum of a 1:2 staff-to-baby ratio is provided at all times* (some babies may require a higher staff-to-baby ratio for a period of time). (2.2.6)

- Babies requiring intensive care are cared for by staff who have completed accredited training in specialised neonatal care or who, while undertaking this training, are working under the supervision of a registered nurse/midwife (QIS). *A minimum of a 1:1 staff- to-*

baby ratio is provided at all times (some babies may require a higher staff-to-baby ratio for a period of time). (2.2.7)

In addition, it was also suggested that nursing establishments should be calculated against commissioned activity with a 25% uplift to allow for annual leave, maternity/paternity leave, sickness and training/education (2.2.8) and notably, that there should also be "a nursing co-ordinator on every shift in addition to those providing direct clinical care" (2.2.9)

The Northern Neonatal Network was the last of England's 23 Managed Clinical Networks to formally organise in the manner suggested by BAPM and the Toolkit, so it has only been possible within the last year to undertake an objective assessment of some of the Toolkit Principles. Although there has been discussion and collaboration based on the Network's previous more informal "Consortium" arrangement going back to the late 1980s, there had been no means to measure, for example, nurse staffing to cot occupancies (i.e. activity workloads) in the way that had been done elsewhere, such as the South West region by Dr James Tooley.

To address this and to enable an objective assessment of the current situation to be made and thus provide a means of informing discussions with commissioners for planning purposes, a comprehensive survey was undertaken across the Network. The data obtained from this was then collated and has provided the basis for this Report and its subsequent recommendations.

Purpose

This Report has been produced in order to inform the stakeholders of the Northern Neonatal Network of the current situation, across the geographical region that it serves, in respect of the current nurse staffing establishments and how they relate to the workloads in each Unit. It was undertaken in response to the need for an assessment to be made under the DH 2009 "Toolkit for High Quality Neonatal Services", as part of the Network Objectives for 2010-11 and also to inform the simultaneous discussions that have been ongoing with colleagues in Trust Finance departments and the NESCG (North East Specialist Commissioning Group) who oversee the commissioning of neonatal intensive care across the region and are currently engaged in agreeing on a "regional tariff" for this an thus the future funding mechanism for the specialty.

A key aspect of this has been a discussion at Network Board level about the tariff itself (which was due to be agreed in order for implementation in April 2011 according to DH Guidance issued in Autumn 2010) and also the appropriate Unit(s) to invest further funding for more NIC (Neonatal Intensive Care) capacity because of current pressures within the Network and over-activity against commissioned levels previously set and agreed.

The problem is that it has not previously been possible to undertake an objective assessment of the current nurse to baby staffing levels across all 12 Units in the Network and thus reflect on how funding of neonatal services related to the Principles set out in the Toolkit and also mapping this to the feedback from individual clinicians, senior nurse and managers in them that the levels of activity are seriously over-capacity and no longer meeting agreed safe levels – also defined by the Toolkit. This activity has recently been discussed at Board meetings and as part of the wider discussion with Finance and Specialist Commissioners as to what the picture is in the NICUs, resulting in recent situations that have led to babies having to be transferred out of region because no NIC cots were available in any of our 4 Units. Over the 6-month period being studied, this amounted to 6 babies being transferred to other NICUs outside the Northern Neonatal Network. This is historically very rare and if it becomes anything other than an occasional exceptional pressure, is a potential indicator of under-capacity. Thus this Report was planned to be another important means of further informing that urgent discussion.

Limitations

Although this Report is based on comprehensive data obtained over a 6-month period, it is not without its limitations – and these are acknowledged in the appropriate places. On a general point, it could be argued that the 6-month period used was not "representative" of a more "typical" period and thus any attempt to try and extrapolate the findings for more strategic purposes such as Network capacity needs and workforce planning requirements is to be approached with caution. However, short of trying to undertake the same study using the same methods over a much longer period, perhaps a full year, this is unlikely to yield significantly differing results as the 6 months studied should be reasonably representative and allow for any atypical peaks and troughs of activity.

When it comes, for example, to the nurse staffing numbers, it can be seen that when the raw data is scrutinised from each Unit, these actually vary little from shift to shift and are quite consistent. It is certainly the case that they do not seem to be always linked directly to the cot occupancies and workloads, so they represent what might be deemed a "stable" establishment. Potential variables affecting this are acknowledged in due course however and the adequacy of them to cope with specific workloads is not directly explored as they are the responsibility of individual Trusts and not the Network. Thus, very sick babies requiring maximum intensive care support and occasionally requiring two nurses to look after them are not reflected as such – mainly because it is not possible to determine this from the data used and it is not a direct stipulation in the Toolkit, although it is acknowledged in Principle 2 (2.2.7 as above). Although shift patterns do vary amongst the Units, the approach taken to allow for this by "averaging" should help to minimise, if not eliminate, potential differences caused by this. This is addressed in the next section.

Potential bias is effectively absent from the data because they were either collected "at source" when it comes to the nurse staffing numbers (and these as has just been outlined above, are fairly consistent from shift to shift anyway) or directly from Badger in terms of cot occupancy and care levels and in the case of the latter, these are determined by the system itself and not individual clinicians or nurses. Thus the data upon which the Report is based is robust and lent itself to the analysis, conclusions and recommendations that follow.

This Report does not take account of separate issues such as individual Trust/Directorate/Unit budgets relating to neonatal care and how they are agreed and funded, both in relation to Specialist Commissioning routes via NORSCORE for NIC/HD at the four NICUs and local PCT commissioning for other levels of care, principally at the SCBUs. It is only looking at activity in relation to care levels and the nurses that look after the babies needing it on each shift. Nor does it consider differences in skill mix in relation to nurse staffing numbers. This would have been too complex and is more a matter of local policy and agreement, currently beyond the remit of the Network. What has been considered, are the "numbers" of nurses with hands-on clinical care, but not their job grade/banding or title.

Questions and Methods

The key questions we were seeking to ask and upon which this Report is based, are very straightforward;

1. How many nurses are rostered on each shift in each of the 12 NICUs/SCBUs within the Northern Neonatal Network?
2. What are the cot occupancy and care levels on those Units for the shifts concerned?
3. How do the current nurse staffing levels for those levels of activity compare with those recommended by both the BAPM (2001 & 2010) Standards and the DH (2009) Toolkit?

4. How frequently do our Units meet those recommended staffing levels and what is the gap in terms of the number of nurses required if they were to be met?

From these initial four questions, the data that was needed in order to answer them was obtained by various methods. To determine the number of nurses present on each shift, each of the twelve Units in the Network was manually telephoned by the Data Manager, Mark Green over the course of the period studied; July 1st – December 31st 2010. This was done retrospectively, usually daily and the staff number recorded. This was, crucially, the number of nurses per shift giving clinical care. It included, at those Units where they are employed, Health Care Assistants looking after babies but *not* nursing auxiliaries and others employed in a "support role". Care was taken to factor out anybody without direct hands-on care for the babies, although it is acknowledged that within the four NICUs, the numbers given may include nurses acting as "Team Leader" without direct responsibility for the care of specific babies, much in the way the Toolkit suggests should always be the case anyway.

Once obtained, these nurse staffing numbers were entered onto a spreadsheet. Because different Units have different shift patterns – such as two twelve hour shifts to cover a day in some Units, whilst others use an "early" and "late" shift during the day and others a combination, an "average" was then taken over the 24-hour period for each calendar day. Whilst this then gives "fractions" of a nurse or WTE post and thus is not "physically" possible, it does make calculations easier and also maps across to the other averages used for other data such as funded cots, which is detailed in other places.

The cot occupancy and care levels were taken directly from Badger for each Unit. Thus for any given date over the 6 month period concerned, the number of babies requiring Intensive Care (IC), High Dependency Care (HD) or Special Care (SC) for each of the 12 NICUs and SCBUs was recorded on a separate spreadsheet. These care levels and numbers of babies for each were taken straight from Badger in the 10 Units using the system, but in the case of the 2 North Cumbria Units (Whitehaven and Carlisle), manual figures were supplied. Both sets of data for all Units were therefore comparable and related to care levels according to the BAPM 2001 definitions

There is a particular caveat when it comes to the figures for James Cook University Hospital (JCUH) and Friarage Hospital, Northallerton (FHN), because the activity and other data figures contained within Badger are for "South Tees" and actually an amalgamation of the two. In order to disaggregate these, we relied on "manual figures" of cot occupancies by date and level, recorded for us from FHN and deducted these from the "South Tees" Badger "total" data to give a separate "JCUH" set of figures. Whilst not absolutely perfect, the two sets of figures obtained by this process were thoroughly checked and should be robust enough to allow valid comparisons and for the wider purposes of this Report, but it has to be acknowledged that they are not as "accurate" as those for the other 10 Units as they are not collated on the same "pure" basis straight from Badger.

In order to set about answering the above Question 3, a spreadsheet was set up to determine the number of babies on each Unit on a given day, their care level dependencies and then, according to both the BAPM 2001 Standards and also the Toolkit Principles, how many nurses should be on that shift to meet them. This equates to;

- 1:4 staff-to-baby ratio for babies requiring SC
- 1:2 staff-to-baby ratio for babies requiring HD
- 1:1 staff-to-baby ratio for babies requiring IC
- Supernumerary Team Leader

The data obtained and collated in this way then allowed a direct comparison to be made

between the numbers of nurses on each shift in each Unit would be needed to meet these staffing requirements, with the *actual* number that was on the shift from the staffing survey information. A shortfall if demonstrated from the data could then be quantified by looking at "averages" for each Unit and this would then enable an approximate figure for the number of Whole Time Equivalent (WTE) nurses that would be needed if the recommended staffing levels were to be met. This was calculated according to the standard formula that 5.5 WTE nurses are needed for each IC cot – other dependency levels are apportioned accordingly.[1]

All this data that enabled the four principal questions to be addressed was then further analysed to answer some "secondary" questions that emerged during collation;

5) What are the "average" occupancy levels of each of the 12 Units by their total cot capacities, not taking account of individual baby dependency levels?
6) What are the average occupancy levels of the four NICUs, specifically relating to their "funded" NIC/HD cots? This is of particular importance to NORSCORE and also when considering where further capacity might be needed.
7) How often do the 12 Units breach their total cot capacities?
8) How often do the four NICUs breach their total funded NIC/HD capacity? Again, this is important as it demonstrates the pressures those Units might be facing if this is high.

All the data so obtained in trying to answer these various principal and secondary questions was collated by the Data manager and Network Manager via a series of comprehensive spreadsheets that formed the basis for the results that are presented below in their various formats and included in the appendices where appropriate

Results and Analysis

The nurse staffing survey conducted on a daily basis by the Data Manager was recorded over the period from 01/07-31/12/10. In some Units, the numbers of nurses per shift seemed to vary little. There was a high degree of consistency in the smaller SCBUs especially, where variations were rare, irrespective of the number of babies on the Unit or the levels of care required. There was more variation amongst the four NICUs, but this could be explained partially by proportionality in that their baseline establishments are higher anyway so more variation could be expected, but also they are able to deal in the short term with comparatively larger swings in numbers and dependencies because of their higher establishments.

By taking the cot occupancies in each of the 12 Units directly from Badger or manually supplied (in the case of Carlisle and Whitehaven) and then mapping these across to the number of nurses on each shift, it was possible to obtain a complete picture for the whole period. If these individual days were then added up to give a monthly picture, it is possible to then "average" these for the period for each Unit - in other words, the average numbers of babies on each Unit, for each care level and the average number of nurses on each day to care for them. Obviously this necessitates acknowledging that there are varying shift patterns and that is it not possible to have "fractions of nurses" in reality, but for statistical analysis purposes, they have been left as such. The number of babies for each care level is also calculated on "averages" to one decimal place, although all numbers for the whole six month period are recorded at a higher level – again, it is not physically possible to have a fraction of a baby, but it allows for the analysis that follows. By then comparing these numbers with the *recommended* staffing levels, the tabulated, summarised results are thus;

[1] The figure of 5.5 WTE's per IC cot was used and is fairly standard, but the 2003 DH Working Group also used a figure of 5.75 for their consultation document.

Table 1: Nursing shortfalls of actual against recommended staffing levels

Unit	RVI	JCUH	Sunderland	North Tees	Friarage	Darlington	Durham	Gateshead	South Tyneside	Wansbeck	Carlisle	West Cumberland
IC Babies per day	8.6	5.6	5.2	3.9	0.1	0.5	0.5	0.2	0.1	0.5	0.1	0.0
HD Babies per day	9.1	3.6	2.4	3.3	0.6	0.1	1.0	0.6	0.1	0.8	0.5	0.3
SC Babies per day	11.9	9.8	7.2	8.7	8.1	7.7	5.9	7.2	2.7	7.9	7.7	2.6
Actual nurses per day (mean)	14.3	7.2	6.0	6.7	2.0	2.9	3.0	2.8	2.1	3.5	2.3	2.0
Recommended nurses per day	17.0	10.8	9.2	8.7	3.4	3.5	3.4	3.3	1.8	3.8	3.2	1.8
Nursing deficit per day	2.7	3.6	3.2	2.0	1.4	0.6	0.4	0.5	-0.3	0.3	0.9	-0.2
Extra nurses that need to be employed in Unit to meet recommended staffing levels	15	20	18	11	8	3	2	3	-1	2	5	-1

To calculate these figures;

- Badger data (or manual for North Cumbria) was used – recorded daily, then monthly for each category then further averaged for the whole 6-month period.
- The nurse staffing survey gave numbers of nurses "per shift" – this was averaged per day, then monthly, then further averaged for the whole 6-month period.
- The "recommended nurses per day" was the number needed according to the Toolkit and BAPM – 1:1 IC, 1:2 HD & 1:4 SC + a Team Leader.
- These were *averages* over the course of the day, as cot occupancies and care levels are "per day" and had to be corresponded to accordingly to make sense.
- The "deficit" was calculated by subtracting the actual (mean) nurse numbers from the recommended (mean) nurse numbers.
- The "extra nurses needed" was then calculated by multiplying the deficit by the 5.5 factor as outlined above on page 7 (with the explanatory footnote).

It has to be remembered this is a very broad average across a 6-month period. Also important to note are that in the two cases where there are "negative" numbers, these relate to Units with significantly lower activity levels and where the nurses per shift is often two, which is the lowest feasible number to have, even if only one or two, or even zero babies are actually on the Unit, which the figures show is sometimes the case. They are also rounded to whole numbers and it is not at all suggesting that either Unit is "over staffed" by that number of nurses. However, across the Network, it would certainly be the case from these figures that in order to consistently meet the recommended minimum staffing levels, an extra 85 nurses would have to be employed. These figures do show that from the NICUs, JCUH needs the most nurses to comply with the recommended levels and the Friarage from the SCBUs if this period were taken as typical.

One factor that is not allowed for in these figures, but which needs to be acknowledged in this and other results and tables, is the impact that the transport service has on the figures for the RVI and JCUH. At present, there is no defined budget for transport and the emergency transfers of babies carried out by the teams at these two Units is performed within existing establishments. It is certainly the case that in complex and long-distance transfers – such as from North Cumbria to NICUs on the East coast – can take many hours from the time a call is received requesting transfer

by way of preparation and discussion with the referring Unit, to collecting the baby and returning. In cases where the receiving hospital is not the Team's own Unit, this means an even longer time away from their base.

In reality, this often means a nurse and senior doctor are taken out of the "establishments" for their own Unit for an entire shift. If this was factored into the above, it would certainly require more nurses. Indeed, a full-time supernumerary service would on the basis that the above requirements have been calculated, need 5.5 WTEs if there was a single stand-alone transport service for the Network. Although figures for transfers during the period being studied are not yet available, as a rough guide, the RVI team average 400 transfers per year, which would equate to 200 over this 6 month period, whilst the figures for JCUH are about 160 per year, or 80 over the 6 months studied. Even if the "average" time away from the Unit was "only" 4-5 hours (approximate based on figures from JCUH I have for this period), it still equates to a significant extra burden on already struggling establishments, particularly at JCUH.

There is also a potential impact on the workloads of the SCBUs when it comes to "back transfers" that is not built in here. Smaller Units that run on minimum numbers will almost always have to arrange for a nurse to come in as "extra" for the transport and is the usual reason for delays, not lack of a cot. These delays often further add to pressures for NIC/HD cots, as will be plain from other results. If the above numbers that enabled the recommended levels to always be met were employed at the SCBUs where they are short, the occasions when this happens would be substantially reduced as there would be more flexibility in Unit establishments.

Having established the numbers of nurses needed to have met the recommended levels in each Unit, and effectively addressed Questions 1-3 with the first table, the next thing to assess was the number of times recommended staffing levels *were* met. This would get away from the "average" factor that is inherent in the above, as it would directly relate what the current establishment in each Unit was achieving in relation to the *actual* workloads that were encountered over the 6 month period being studied. It therefore allows for fluctuations in activity, because naturally, at times when Units are "quieter", the number of nurses looking after them according to their dependency levels is much more likely to meet the recommendations, as previously mentioned.

It is important to again bear in mind however, that the data relating to cot occupancies and dependencies from Badger are "per day", whilst the nurse staffing numbers relate to shift patterns and therefore an "average" across that same 24-hour related period. It is impossible to record this any other way because Badger only calculates data according to a day's activity so it means any baby admitted, but subsequently transferred out or dying after a few hours records a "day of activity" for its calculated dependency level in the same way as one present for the whole 24-hour period. Conversely, nurse shift patterns generally relate to 7.5 and/or 12 hours periods that can only be "averaged" for the corresponding period on Badger (but directly linked). This means that there may be a slight discrepancy between the two sets of data. For example, a very "busy" day shift on a SCBU with nurse numbers below the recommended level (because of the delivery then subsequent transfer out to one of the NICUs of a very premature or sick baby) might then be followed by a "quieter" night shift following with the same or more nurses on, but fewer/less sick babies to care for. This should be the exception over such a long period of study and because "averages" are used consistently throughout, should not detract from the results obtained.

So, taking the data already obtained and mapping cot occupancy/dependency levels to the recommended nurse staffing levels as against the actual ones, figures when they were *actually met* for each Unit are obtained thus, the 8 SCBUs first;

Table 2: Number of days recommended staffing levels were met (SCBUs)

Ashington

Meeting BAPM	Yes	No
July	12	19
August	2	29
September	17	13
October	14	17
November	7	23
December	14	17
Totals	66	118
Percentage meeting BAPM	**35.9%**	**64.1%**

Carlisle

Meeting BAPM	Yes	No
July	12	19
August	5	26
September	11	19
October	4	27
November	0	30
December	17	14
Totals	49	135
Percentage meeting BAPM	**26.6%**	**73.4%**

Darlington

Meeting BAPM	Yes	No
July	9	22
August	18	13
September	25	5
October	26	5
November	17	13
December	15	16
Totals	110	74
Percentage meeting BAPM	**59.8%**	**40.2%**

Durham

Meeting BAPM	Yes	No
July	11	20
August	12	19
September	29	1
October	26	5
November	13	17
December	7	24
Totals	98	86
Percentage meeting BAPM	**53.3%**	**46.7%**

Gateshead

Meeting BAPM	Yes	No
July	11	20
August	6	25
September	10	20
October	11	20
November	1	29
December	10	21
Totals	49	135
Percentage meeting BAPM	**26.6%**	**73.4%**

Northallerton

Meeting BAPM	Yes	No
July	1	30
August	0	31
September	6	24
October	9	22
November	9	21
December	1	30
Totals	26	158
Percentage meeting BAPM	**14.1%**	**85.9%**

South Tyneside

Meeting BAPM	Yes	No
July	25	6
August	19	12
September	11	19
October	6	25
November	27	3
December	8	23
Totals	96	88
Percentage meeting BAPM	**52.2%**	**47.8%**

Whitehaven		
Meeting BAPM	Yes	No
July	26	5
August	1	30
September	22	8
October	0	31
November	16	14
December	5	26
Totals	70	114
Percentage meeting BAPM	**38.0%**	**62.0%**

As these summaries demonstrate, there are some Units where recommended nurse staffing levels are quite regularly being met in order to cater for the babies and their dependencies, whilst in some, this happens much less frequently. As opposite ends of this scale, Darlington met the recommended staffing levels to cater for the babies in the six month period being studied on 110 out of 164 days (59.8%), whilst at Northallerton, this was only achieved on 26 days (14.1%). It is certainly quite a wide variation across all eight Units and demonstrates where staffing levels are significantly different according to what recommended levels suggest they should be. There is a definite correlation between the levels of additional nurses needed to meet the recommended levels and the occasions on which the levels were met, as one would expect, but these figures allow the deficiencies to be quantified for the first time.

It is important to acknowledge that there are some factors that can have a direct bearing on staffing levels unrelated to actual activity – principally sickness and maternity levels and it is also going to be the case that due to proportionately smaller nurse staffing establishments, the impact can be more significant, as 1 WTE nurse on long term sick or maternity leave at a smaller Unit is much harder to "absorb" that at another Unit with four or five times the total establishment. In order to thus balance the picture these figures are painting, the following sickness and maternity levels are relevant over the same 6-month period;

Table 3: Average Absence rates (SCBUs)

	Ashington	Carlisle	Darlington	Durham	Gateshead	Northallerton	South Tyneside	Whitehaven	Average
% sickness rate	4.6%	3.2%	8.2%	1.2%	2.0%	7.9%		10.3%	5.3%
% maternity leave			10.0%			8.0%		6.1%	8.0%
Nurse Vacancies (WTE)			0.77		0.85			0	0.54

Unfortunately, data supplied by the SCBUs on the Monthly Dashboards has been incomplete in most cases (signified by the red squares) but what has been supplied and available has been used, with the caveat that the "averages" are not always accurate unless the full 6 months figures have been given. There is also a little uncertainty in some cases where WTEs could have been used instead of the % requested for sickness and maternity leave, but all data available is given here for illustration. In the case of South Tyneside, no Dashboard data has ever been supplied. The figures for Whitehaven, Darlington and Northallerton appear to be accurate %s or WTEs.

Although Darlington seem to have had a proportionately high rate of sickness and maternity leave over the period, it did not seem to have affected the number of times minimum staffing levels were met, but this may have been a factor at both Whitehaven and Northallerton, where both were higher than the Network average. Certainly for smaller Units to be running with sickness/maternity levels substantially higher than comparable Units, it is more difficult to absorb such levels into their own proportionally smaller nursing establishments. The extent to what the effect of lower and Network average levels of absence might have been has not been calculated or further explored, but it is safe

to assume it was a factor.

The same methods were also applied to each of the four NICUs and they show the following in relation to the numbers of days when recommended nurse staffing levels were met over the 6-month period;

Table 4: Number of days recommended staffing levels were met (NICUs)

JCUH

Meeting BAPM	Yes	No
July	0	31
August	0	31
September	3	27
October	4	27
November	0	30
December	1	30
Totals	8	176
Percentage meeting BAPM	**4.3%**	**95.7%**

North Tees

Meeting BAPM	Yes	No
July	7	24
August	14	17
September	11	19
October	12	19
November	1	29
December	10	21
Totals	55	129
Percentage meeting BAPM	**29.9%**	**70.1%**

RVI

Meeting BAPM	Yes	No
July	0	31
August	12	19
September	7	23
October	0	31
November	0	30
December	14	17
Totals	33	151
Percentage meeting BAPM	**17.9%**	**82.1%**

Sunderland

Meeting BAPM	Yes	No
July	0	31
August	0	31
September	3	27
October	0	31
November	0	30
December	5	26
Totals	8	176
Percentage meeting BAPM	**4.3%**	**95.7%**

Again, there is a wide variation here – North Tees met the recommended nurse staffing levels on 55 days out of 164 (29.9%) for their workload/activity levels, whilst both JCUH and Sunderland only achieved them on 8 days (4.3%). This suggests that although there are variations amongst the four Units, and indeed on 70% of all the days *none* of them are meeting recommended staffing levels, at two of them (JCUH and Sunderland), the nurse staffing levels for the workloads and activity they are dealing with are seriously under strength.

As previously highlighted, taking into account the fact that transfers are undertaken by the nurses at JCUH, this deficiency is even more acute on the days they are doing them. This also applies to the RVI, but because they meet the recommended levels more regularly for their workloads (albeit only 17.9% of the time), the pressures are therefore possibly not quite as acute on nursing numbers. The main point is however, that all four NICUs are under-staffed in varying degrees as compared to the recommended minimum levels, seriously so in two cases and it is not unreasonable to ask what the potential impact is over sustained periods of high activity on clinical care, staff morale and staff sickness, absence and turnover, which is beyond the scope of this Report.

In order to demonstrate this over the period being discussed however and the possible extent to which the establishments *were* affected by these factors, as with the figures for the SCBUs above, these are the corresponding numbers for absence rates from the four NICUs;

Table 5: Average absence rates (NICUs)

	JCUH	North Tees	RVI	Sunderland	Average
% sickness rate	5.8%	4.7%	8.60%	15.5%	8.7%
% maternity leave	3%	7.2%	6.20%	2.4%	4.7%
Nurse Vacancies (WTE)	1.8	0.33	6.1	2.3	2.6

There are some rather wide variations here, but it is worth noting that the sickness rate was highest at Sunderland, so it could be argued that over the 6 months, this had a real impact on the nursing establishment and if it had been lower and closer to the "average", the number of days when recommended minimum levels might have been met would possibly have been higher than the 4.3% it actually was.

Whilst this is true of all Units – and again, in the case of the RVI this would have been beneficial (also bearing in mind they had an average of 6.1 WTE posts vacant over the 6 months), the situation at JCUH is not so comparable, because they had the lowest total absences of all Units. In other words, even with a zero absence rate, which is never going to be achieved, would the number of days when recommended levels could have been met have increased substantially, as their rates were comparatively low to begin with? The conclusion one would have to draw here is that the nurse staffing establishment at JCUH as a whole is proportionately lower than the other three NICUs to cope with the workloads they incur. Again, the impact of undertaking transfers on this does need to be considered as an additional pressure.

In order to try and balance the picture that these figures have presented in seeking to answer the four "Principal questions", the data was further examined in order to try and assess both what the average occupancy rates were for each Unit, but more importantly, the degree to which current Unit capacities were being breached – in other words, on how many days during the 6 month period were they each "full" according to their official capacity (as per Appendix 1)? If the "average" total occupancies are examined first, for each of the months being studied, each Unit rate was as follows;

Table 6: Average total cot occupancy levels (all Units)

Average TOTAL occupancies (%)	July	August	September	October	November	December	Average
RVI	101.7	102.4	98.7	99.6	104.4	99.2	101.0
JCUH	84.2	86.3	82.7	73.4	86.5	88.5	83.6
Sunderland	61.6	58.9	59.4	72.8	75.3	58.2	64.4
North Tees	70.5	71.5	65.9	57.8	82.5	69.1	69.6
Northallerton	88.1	92.9	76.3	54.2	48.3	67.1	71.2
Darlington	63.4	63.4	44.4	45.7	54.7	52.4	54.0
UHND, Durham	61.3	65.9	25.8	55.1	62.5	71.8	57.1
Queen Elizabeth, Gateshead	61.5	67.5	57.4	74.9	86.2	75.2	70.5
South Tyneside	32.3	49.5	62.6	57.3	26.3	72.3	50.1
Wansbeck Hospital, Ashington	65.4	80.6	59.0	63.4	73.3	59.7	66.9
Cumberland Infirmary, Carlisle	47.0	54.6	41.7	57.8	70.3	40.6	52.0
Whitehaven	29.0	72.6	36.3	84.5	46.3	56.8	54.3
Average total occupancy by month	63.8	72.2	59.2	66.4	68.1	67.6	66.2

- These levels were calculated by simply totalling ALL cot days (IC + HD + SC) for each Unit then dividing by the number of days in each month

The most obvious statistic of note here is the RVI average total occupancy rates for this period. Of particular concern - for 3 of the 6 months, they actually regularly breached 100% total occupancy and across this as a whole the average was 101%. This is obviously unsustainable, but it is important to acknowledge that measures were taken to address this lack of overall total capacity through the latter part of 2010, so that whilst the number of available low dependency (SC) cots between July–November was only 13, this had risen to 15 for the month of December and by the beginning of February 2011, even further to a new establishment of 18, greatly increasing the overall capacity. It has to be noted however, that funding for these extra 5 cots was provided from within the Trust and not through NORSCORE, as only IC/HD activity is commissioned by them.

As an example of the potential effect of these extra cots on overall total capacity at the RVI, if this number had been available during the 6 months being studied, average total occupancy would have dropped to 86.2%. Whilst still the highest in the Network and also above the recommended level of 80%, it does provide the RVI with the ability to absorb their consistently high level of SC dependent babies, but this may need monitoring to evaluate if these extra 5 cots are enough to meet medium to longer term needs. The only other NICU with an average total occupancy above the 80% level is JCUH, as the figures show.

Interestingly, when these average occupancy levels are examined for the 8 SCBUs, the Units with the highest average figures (principally Northallerton and Gateshead at 71.2 and 70.5% respectively) are the same Units that fail to meet the minimum staffing numbers most often. However, the picture for the Unit with the lowest average occupancy (South Tyneside at 50.1% and Carlisle at 52.0%) when mapped against how often minimum staffing levels was achieved does not directly correlate. The figures would suggest however that average SCBU occupancies, whilst varying between months quite markedly, rarely operate over the suggested "safe" level of 80% occupancy (DH 2009, page 32), so it would not be unreasonable to conclude that the SCBU capacity across the Network is essentially more or less adequate. What is an issue are the variations in staffing levels across them and how far short some of them are when measured against the suggested minimums.

The above table (6) displays the total number of occupied cots (irrespective of care level) against the total Unit capacity. Whilst this is quite helpful in the case of the 8 SCBUs, the situation in respect of the NICUs cannot be held by way of direct comparison. This is because the funding streams for the NICUs rely on agreed activity levels according to their NIC/HD occupancies. This is not directly comparable to SCBUs, where only very short term NIC and HD is undertaken, so cots are not as widely varying in dependency. In contrast, funding streams for SCBUs vary but are usually part of block paediatric/maternity contracts and NOT related to specific agreed/commissioned activity levels.

In order to address this discrepancy, it is necessary in the case of the 4 NICUs to look at the NIC/HD occupancy levels as mapped to their agreed/commissioned cot numbers (see table in Appendix 1 for the numbers used here). This then produces the following;

Table 7: Average total funded cot occupancy levels (NICUs)

Average Funded ITU/HD occupancies (%)	July	August	September	October	November	December	Average
RVI	110.1	98.0	89.8	114.9	112.9	89.5	102.5
JCUH	86.9	88.5	61.8	75.9	104.8	67.3	80.9

Sunderland	108.8	106.0	82.4	98.6	107.1	64.1	94.5
North Tees	159.1	98.2	106.6	130.4	167.3	116.8	129.7
Average funded ITU/HD occupancies	116.2	97.7	85.2	105.0	123.0	84.4	101.9

What is immediately apparent from this table is the significant and consistent over-activity level across the NICUs, particularly the RVI and most notably when North Tees "official" NORSCORE funded NIC establishment (as per Appendix 1, pink column) is considered. Indeed, it is very probably only because of the physical ability to accommodate this "extra" activity and the proportionately better nursing establishments (as per table 1 above, page 8) at North Tees that the babies generating them do not have to be transferred elsewhere, whether that might be within the Northern Network, or even out into another one.

In the case of the RVI however, to be consistently operating at over 100% occupancy for funded NIC/HD activity and *also* consistently exceeding their total actual capacity (as per table 6 and the analysis above), is a matter of serious concern. This is well above the suggested safe level of 80% and because it is the Regional Unit for surgery too, suggests that the anecdotal evidence clinicians have been reporting to the Board for some time by way of difficulties in securing a cot for such purposes is now supported by these figures.

One important caveat to be applied to these figures however, is the fact that at any one time, there are likely to be babies occupying these NIC/HD cots that are not from within the Northern Network area, such as those originating from Yorkshire or occasionally Scotland. This "non-Network activity" is not easily quantifiable from Badger, but the effect it has on the Network needs to be acknowledged, because NORSCORE do not fund it and if the Northern Network is over capacity and this results in Network babies having to be reciprocally transferred out to other Networks, the commissioners are effectively paying twice, as external activity is billed by Networks to the PCT where the baby's mother resides. It is also true that when our own NICUs care for non-Network babies, the money thus generated does not either find its way into their own Unit budgets (at least in full) or back to NORSCORE for re-distribution to the PCTs.

However, whilst this is a "fact of life" and the way the system works, it can also logically be argued that the relatively low amount of non-Network activity provided each year does not account for enough of this over-occupancy to bring levels down to a more acceptable and "recommended" Toolkit limit of 80%. It is also the case that if the total Network NIC/HD capacity was higher, it could more comfortably absorb both its "own" high levels of activity as well as any "external" activity that might be generated – a win/win situation?

The only logical conclusion that can be drawn from these figures is that as far as the 6-month period being studied is concerned – and there is no reason to suspect this was anything other than typical, the current Network capacity for NIC and HD is inadequate and any further rise in the birth rate would have serious consequences for safe and effective care.

One final factor that is worth considering in this respect is to demonstrate the number of times each individual Unit's capacity was breached – in other words, on how many days during the 6-month period did the total number of babies exceed the official total capacity as per Appendix 1 figures? Whilst this bears no relation to nurse staffing numbers (unless there were enough absent for whatever reason to result in cots actually being closed, but the monthly Dashboard returns suggest this was never the case at any time for any Unit), it is an interesting measure to further inform the discussion about the pressures they are under from their total activity levels. Taking account of these total activity levels and measuring them against total Unit capacity (irrespective of cot dependency level), the following figures are obtained for the number of occasions Units went over;

Table 8: Breaches of total cot capacity (all Units)

Breaches of TOTAL capacity	July	August	September	October	November	December	Total
RVI	15	17	10	14	20	7	83
JCUH	0	1	0	0	1	6	8
Sunderland	0	0	0	0	0	0	0
North Tees	0	3	0	0	1	0	4
Northallerton	3	3	0	0	0	0	6
Darlington	0	1	0	0	0	0	1
UHND, Durham	0	0	0	0	0	0	0
Queen Elizabeth, Gateshead	0	1	0	1	7	2	11
South Tyneside	0	0	0	0	0	1	1
Wansbeck Hospital, Ashington	0	1	0	0	2	0	3
Cumberland Infirmary, Carlisle	0	0	0	0	0	0	0
Whitehaven	0	0	0	3	0	0	3
Total Breaches of Capacity by month	18	27	10	18	31	16	120

- These breaches were calculated by counting the number of days in each month that the total number of babies exceeded the official physical capacities of the Units as listed in Appendix 1 (yellow column)

As previously highlighted, over the course of the 6 months being studied, the number of low-dependency (SC) cots increased in the RVI from 13 to 15 and then from the beginning of 2011 to its current total of 18. The effect of this on average total capacity was demonstrated on page 13. In a similar way, if the 18 cots had been available for the whole of the period being studied (i.e. not just the 13 in July – November and then the 15 in December), the new total Unit capacity of 34 cots would only have been breached on 2 days, rather than the 83 they actually were as per table 8.

As the figures show, Gateshead was the most regularly over-full SCBU Unit in the Network, whilst surprisingly, three Units (Sunderland, UHND and Carlisle) were never over total physical/official capacity. As a Network, the total number of SCBU breaches was 27, which whilst clearly not ideal, should not be a major cause for concern, more a matter of discussion as to which individual Units are under-capacity, but this seems, on these figures at least, unlikely to be a major ongoing issue.

As previously however, the four NICUs operate more typically (and of direct interest to NORSCORE), on their NIC/HD capacity. Taking this into account, it was therefore felt appropriate to consider the number of days when these four Units had their *funded* NIC/HD capacity breached as a more accurate way of assessing potential capacity problems. When the number of funded cots for these dependency levels is therefore mapped against the activity on every day over the period, the following results are obtained;

Table 9: Breaches of total funded cot capacity (NICUs)

Breaches of TOTAL FUNDED ITU/HD capacity	July	August	September	October	November	December	Total
RVI	27	11	8	21	22	10	99
JCUH	6	6	2	3	17	0	34
Sunderland	16	15	3	11	15	2	62
North Tees	29	12	18	19	28	21	127
Total Breaches of FUNDED ITU/HD capacity by month	78	44	31	54	82	33	322

- These breaches were calculated by counting the number of days in each month that the total number of babies (Requiring IC or HD) exceeded the official funded capacities of the Units as listed in Appendix 1 (end pink column)

When these figures are analysed, it needs to be remembered that the period being referred to is 6 months, or to be more precise, 184 days. That means in the case of North Tees, when their funded NIC/HD capacity is considered, they were over this on 127 days, which equates to 69% of the time. However, because they operate up to a further four HD cots that are not funded by NORSCORE, when these are taken into account, this drops significantly, but even then with a combined physical (as opposed to funded) capacity of "8.5" NIC/HD cots, they still exceeded this on 28 days. The obvious conclusion there is that even with a further 4 fully funded such cots, over this period they would have breached this extra capacity 15% of the time.

In the case of the RVI, even with their funded NIC/HD capacity of 16 cots, they were over this number on 99 days (53.8%). This is obviously more than on just the "occasional" day and is very suggestive of a more substantial under-capacity and not just due to infrequent spikes in activity. Taken as a Network picture, all four Units are regularly "over-full" – in other words frequently over 100% funded capacity. It is one thing to suggest that "total" capacity is much less frequently breached (as per table 8) for the four NICUs, but the fact is that total cot capacity is not flexible to meet this regular "over-activity" as the staffing ratios for lower level dependency cots is already less than for NIC – the nurses just aren't in the system to be able to consistently "flex up" when this extra activity demands it. It is more logical to conclude, when the various data and figures presented here are combined, that the Network is under-capacity for NIC/HD and that the staffing levels at the Units providing it are struggling to cope with it.

If the figures for the breaches of total funded NIC/HD activity are then further scrutinised and instead of the figures for breaching 100% occupancy of these is reduced to the 80% recommended level, the figures are even more stark;

Table 10: Breaches of 80% total funded cot capacity (NICUs)

Breaches of 80% TOTAL FUNDED ITU/HD capacity	July	August	September	October	November	December	Total
RVI	31	30	21	31	30	24	167
JCUH	23	20	10	12	24	5	94
Sunderland	29	31	16	26	27	7	136
North Tees	29	23	23	19	30	29	155
Total Breaches of 80%FUNDED ITU/HD capacity by month	112	104	70	88	111	65	622

- These breaches were calculated by counting the number of days in each month that the total number of babies requiring IC or HD exceeded 80% of the official funded capacities of the Units as listed in Appendix 1 (end pink column). As an example, this would equate to a notional 12.8 cots for the RVI (16 x 80%) so if 13 were occupied, this was a "breach".

This table clearly shows that all four Units are very frequently working above the 80% recommended ceiling, particularly at the RVI, when on only 17 days out of the 184 being studied were their funded NIC/HD occupancy levels at or below 80%, whilst for North Tees based on their official funding of 4.5 cots, they were at this level on only 29 days. Taken as a whole, both tables 9 and 10 would suggest that there is a serious under-capacity problem within the Network across the four NICUS for NIC and HD care and that current provision is simply not meeting the demand – certainly if the recommended safe ceiling of 80% average occupancy is considered. It is therefore logical to conclude that it is only being "absorbed" because of total cot capacity being utilised regularly – in other words SC cots having to provide IC/HD care despite not being funded to do so,

placing a burden on the Units total capacity as per table 6 and the nurses that are not at recommended minimum levels to cope this over-activity.

These figures do unquestionably support the data in the table in Appendix 2 that demonstrated the current calculated NIC/HD cot shortfall across the Network, based on activity figures prepared for the January 2011 Network Board meeting by Finance. The impact of all this is outlined more fully in the conclusions that follow.

Conclusions

It is both easy and tempting to analyse these figures and make a case from an individual Unit's point of view, but it is more important to try and build a Network-wide picture, because taken together, there are a number of consistent issues being raised that need further discussion. All four of the "principal questions" that were originally postulated and the four secondary ones that emerged from them were effectively answered by the data that was collected, collated and subsequently presented here. From this, it is suggested that the following conclusions can be drawn;

- All 12 Units in the Northern Neonatal Network do not currently meet recommended minimum staffing levels at all times, although occasions when they do varies substantially from only 14.1% of the time, up to 59.8% for the eight SCBUs. For the four NICUs, this is significantly worse, varying between 29.9% at best, to a mere 4.3% of days over the 6-month period studied for two of them.
- Over the 6-month period being studied, this would equate to an extra 85 WTE nurses needing to be employed in order to meet those recommended levels.
- The shortfalls at the two most under-staffed Units on this analysis, not directly taking into account absence levels (which were actually not particularly high anyway and actually amongst the lowest) over this period equated to 20 WTEs for a NICU (at JCUH) and 8WTE at Northallerton (SCBU) in order to meet the recommended levels.
- Absence levels were high enough at some Units to have had an impact on staffing levels (particularly Sunderland and the RVI) but it was not possible to factor this in to the shortfalls against recommended levels, though the numbers needed to meet them would be reduced if the rates were closer to the Network average.
- The transport teams based at the RVI and JCUH are currently "included in establishment" and therefore when transfers are being undertaken, the pressure on these already below-recommended staffing levels at the respective Units is more acutely felt, particularly at JCUH where they more regularly fail to meet the recommended minimum staffing levels more frequently.
- Average total cot occupancies at all eight SCBUs is below the recommended "safe" level of 80%, although on occasions, the workload they are dealing with will make the actual staffing ratios on some days well below recommended levels.
- The number of days when total SCBU Unit capacities are breached is low – with the above, this suggests that Network SCBU capacity is not too low for current needs and effectively meeting demand.
- Average *total* capacity at the NICUs (taking all their cots of all 3 dependency levels into account) was consistently only breached at the RVI, but this is likely to happen much less frequently with the 5 extra SC cots they have now being fully available. However, *funded* NIC/HD capacity *is* being regularly breached in all four Units – and borne out by average funded NIC/HD occupancy rates being way over the 80% recommended levels suggested by BAPM and the Toolkit as per tables 9 and 10.
- Taken together, the overwhelming conclusion that one has to draw from all these tables and the data as collected, collated and presented here in this Report, is that current NIC and HD provision across the Northern Neonatal Network is currently inadequate and not meeting demand. It is suggestive of under-investment in NIC/HD care by way of adequate funding so that demand meets supply within recommended safe levels of both cot occupancy and staffing levels. With the prospect of birth (and thus admission) rates rising and not falling in the future, this would place further burdens on already struggling Network capacity and have serious consequences for patient safety and

standards of care, which are already under threat because of the frequency with which recommended safe levels of cot occupancy and minimum nurse staffing levels across the four NICUs are being breached.

Recommendations

1. The full Report needs to be studied and discussed amongst the Northern Neonatal Network Board and other stakeholders, principally the North East Specialist Commissioning Group with a view to informing a wider discussion about investment in new NIC cot provision.
2. The conclusions above need to be considered in the light of other recent work that has been done by representatives from the four NICU Trust finance teams led by the Specialist Commissioning Team, which have also suggested that capacity for neonatal intensive and high dependency care in the Network is inadequate to cope with current demand, but that the suggested new investment being proposed (1 extra new NIC cot) would be inadequate to meet the over-demand suggested by this Report.
3. A more detailed piece of work needs to be undertaken to provide suitable robust data that can fully quantify the number of extra cots needed in order to consistently bring capacity breaches for funded NIC and HD cots to not only under 100%, which is regularly happening now, but significantly nearer the recommended 80% ceiling.
4. This requires investment in new nurse posts, medical staff as well as equipment, although the latter is probably not proportionate as the evidence for "coping" with current over-capacity despite the risks suggests that it is there anyway. This does however all need scoping and costing more thoroughly.
5. Any increase in nurse numbers to the order being suggested cannot be achieved easily and in the very short term. Therefore, a full workforce planning exercise needs to be undertaken, and this might best be done as a Board sub-group and if not led by, at least with significant input from the Network Educators.
6. A more detailed scoping of current funding of both Level 1 (SCBU) and Level 3 (NICU) Units needs to be undertaken to explore the possible reasons for such wide variation in minimum nurse staffing numbers, but linked to funded establishments and individual Unit budgets – ideally in conjunction with the current work being done by the Finance teams to try and formulate a suitable regional tariff under a Payment by Results system. ALL the work contained in this Report and its subsequent conclusions and recommendations need to be read in the light of making this happen by way of agreeing a suitable tariff.
7. This Report does not take into account the variations in nurse staffing across the 12 Units in terms of banding/grading. Whilst the conclusions drawn are more to do with "numbers" of nurses needed to meet minimum recommended staffing levels, and in light of the fact that funding within the NHS is being squeezed currently, it would be helpful to undertake further work to examine the possibility of using total budgets in ways that increase (to agreed limits) non-registered nurses. It would certainly be interesting to determine the current variances that may exist across Units in terms of nurse banding and the ratios of registered to non-registered nurses, and whether increasing the latter with new funding might be a way of increasing numbers of total clinical nurses more cost-effectively. This should not however be viewed as a potential "cost-cutting exercise", rather a possible means of using total agreed funded budgets differently and more wisely. This should be the subject of further discussion in light of this Reports conclusion that many more nurses are needed in order to meet recommended minimum staffing numbers – the suggestion being that a proportion of these *extra* nurses may possibly be non-registered/Health care Assistants, but not to replace existing posts.

8. Whilst these plans for the required extra capacity will not be cheap, it should not be a reason for not establishing a dialogue and discussion between providers and commissioners to seek to bring about the necessary extra investment and this should be linked more closely to outcomes in line with the current coalition Governments stated aims (DH 2010).
9. This Report was based on actual nurses per shift and then mapped against "recommended" levels needed according to standard definitions and based on the daily workloads of each Unit. The DH 2009 Toolkit includes a "Workforce calculator" that enables actual Unit activity to be entered and this then "automatically" calculates the nurses and cots needed. This does however require a full years set of activity data to be entered, whilst this Report is analysing a 6-month period as this was the duration of the Staffing Survey we wished to link it to in order to demonstrate *actual* staff numbers against "recommended" ones. Other workforce/cot calculators have been devised since, based on discussions amongst Network Managers. It is therefore recommended, if felt appropriate, to compare the results of this Report with a further exercise to utilise these tools as a means of trying to quantify/determine the *number* of further IC cots needed, as this Report does not attempt to calculate that. Rather, it is concentrated on highlighting the shortfall in nurse numbers and capacity pressures as it stands over this 6-month period, but using similar definitions and parameters. The emphasis and basis of this Report is therefore subtly different but equally important and valid.
10. This Report also does not take into account the issue of medical staffing, which is another area where acute pressures are being felt and reported at Board meetings, particularly with regard to middle-grade trainees, for whom transport is a major area of activity and when they tend to take prime responsibility for overseeing. Any extra pressure on middle grade rotas would therefore leave staffing the transport service at risk. Certainly, any extra investment that sees "new" IC cots has implications for medical staffing levels too - and the impact on medical rotas at NICUs and the safe workloads they can sustain, so this should be considered and possibly be the subject of more detailed work if felt appropriate.

Summary

It is acknowledged that the current and more particularly *coming* financial environment in the NHS is going to prove very challenging anyway, let alone with the extra new investment that this Report suggests is critical and urgently required. However, the conclusions above would suggest that it is perhaps through a failure to invest in adequate capacity, that the current very critical situation has arisen. Perhaps for too long and sustained a period, the tendency to rely on paying for IC/HD "over-activity" at agreed marginal rates whilst ignoring the regularity and consistency with which it has occurred year on year (effectively with consistent/regular yearly over activity and very inconsistent yearly under activity across the four NICUs – in other words a very unbalanced state over recent years) has meant supply no longer adequately meets demand. The issue has perhaps been that because the Network was only recently formally organised and managed, it has not till now been possible to undertake the work needed to create a report like this one that would allow a detailed analysis of current data. Now that this has been done, the results and conclusions cannot be ignored.

There is simply not enough capacity in the system across the Northern Neonatal Network to cope with the demands for NIC and HD, if recommended, but most importantly *safe* levels of nurse staffing and cot occupancies are to be met. Although there are similar problems in this respect, but to a lesser extent at some of the SCBUs, (particularly Northallerton over this 6-month period), the

need for this extra investment cannot be ignored. Potentially, this has already been the case for too long now and it is actually a testament to the dedication and hard work, above and beyond, from the clinicians, nurses and other health professionals working in the Units that such excellent standards of care have been possible, despite the extremely high activity levels and comparative shortfalls in acceptable nurse numbers.

However, if the main de facto core aim and adopted mission statement (as highlighted for emphasis below), of the Network is going to continue being a reality and future standards not placed under threat of deterioration, urgent action is needed as outlined above. It is only with such agreement between *all* clinicians, nurses, managers and commissioners that it will be met and the Network will continue to be at the very forefront of providing neonatal care for all babies in the Region and each Unit will continue to be a centre of excellence.

"To give the highest possible standard of safe, effective care to babies and their families."

References

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BAPM. S*ervice Standards for Hospitals providing neonatal care* (3rd Edition, 2010)

Caring for Vulnerable Babies: The reorganisation of neonatal services in England (NAO, 2007)

Equity and Excellence: Liberating the NHS (DH 2010)

Toolkit for High Quality Neonatal Services (DH 2009)

Appendix 1

Current Cot capacity	IC	HD	SC	Total	Funded IC cots
RVI	16	Inc. in IC	13[2]	29	16
JCUH	10	Inc. in IC	12	22	10.5
Sunderland	7	Inc. in IC	17	24	7
North Tees	4	4	14	22	4.5
Northallerton	0	0	10	10	N/A
Darlington	0	0	12	12	N/A
UHND, Durham	0	0	12	12	N/A
Queen Elizabeth, Gateshead	0	0	13	13	N/A
South Tyneside	0	0	9	9	N/A
Wansbeck Hospital, Ashington	0	0	14	14	N/A
Cumberland Infirmary, Carlisle	0	0	12	12	N/A
Whitehaven	0	0	10	10	N/A
Totals	37	4	146	189	38

There is obviously a high degree of flexibility in these totals – and the SC cots for each of the eight SCBUs will include the facility to offer short term CPAP and ventilation prior to transfer so will at times generate IC and HD days that form part of the calculations throughout the Report. North Tees list extra HD cots amongst their total capacity, but these are not funded from NORSCORE. The other 3 NICUS do not identify specific cots for HD – at any one time their cot occupancies within their numbers for IC will typically include a combination of both IC and HD – as these are funded by NORSCORE according to commissioning agreements.

The last column shows the funded IC cot levels that are commissioned by NORSCORE, although in reality, it is the agreed "activity" levels by way of annual IC/HD days that are actually funded, so these cot figures are more of a guideline, although they have been used as the basis for some of the calculations in the Report, as it is not possible to take account of activity levels in the way this relates to funding.

[2] 15 SC cots for the month of December only as detailed on page 14

Appendix 2

Table as circulated by John Anderson (Head of Contracting & Performance, North East Specialised Commissioning Team) on 11/01/11

Comparison of 2009/10 and 2010/11 activity with contract 'ceilings'.

	Cot Days - 2009/10 outturn			Ceiling	Over	Equiv
	ICU	HDU	Total	Capacity	Performance	cots
Newcastle	2677	2641	5318	4453	119%	2.4
Sunderland	1894	304	2198	2118	104%	0.2
South Tees	1623	1007	2630	2932	90%	-0.8
North Tees	886	788	1674	1314	127%	1.0
	Cot Days - 2010/11 forecast			Target	Over	Equiv
	ICU	HDU	Total	Capacity	Performance	cots
Newcastle	2709	2649	5358	4453	120%	2.5
Sunderland	1476	666	2142	2118	101%	0.1
South Tees	1449	1508	2957	2932	101%	0.1
North Tees	904	850	1754	1314	133%	1.2