



National Neonatal Audit Programme 2015 Annual Report on 2014 data

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Royal College of Paediatrics and Child Health,
National Neonatal Audit Programme

RCPCH
Royal College of
Paediatrics and Child Health
Leading the way in Children's Health

National Neonatal Audit Programme 2015 Annual Report on 2014 data

**Royal College of Paediatrics and Child Health
On behalf of the NNAP Project Board**

Commissioned and sponsored by the
Healthcare Quality Improvement Partnership (HQIP)
as part of the National Clinical Audit Programme

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We also acknowledge the contribution made towards the development of this report by colleagues within the invited reviews, policy and workforce teams at the RCPCH.

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* Individual unit level 2014 results and full outlier analyses are available from December 2015 on the NNAP pages of the RCPCH website at: www.rcpch.ac.uk/nnap

Foreword



Professor Anne Greenough
Vice President Science and Research
Royal College of Paediatrics and Child Health

As a neonatologist I, as do my colleagues in multidisciplinary teams in all neonatal units, strive to provide the highest quality of care to the babies we care for – they deserve it. Essential to providing such care is assessing the results, and where necessary, making improvements. Key to such a process is comprehensive and robust data that are readily available and easily understandable to all stakeholders: including parents, neonatal practitioners and commissioners of the service. The National Neonatal Audit Programme (NNAP) was established eight years ago to provide such data. Over that period, there have been increases in the recording of data and improvements in key outcomes. In England and Wales, we now have an unequalled source of data to further improve outcomes. Neonatal practitioners should be congratulated on their input into the NNAP, often providing these data with no additional resource. This year, the report has been written to be more meaningful to a much wider audience and I am grateful to the NNAP team and the NNAP board for all their efforts to bring this about.



Dr Alan Fenton
President
British Association of Perinatal Medicine

Quality of care is now firmly on the NHS agenda and includes both quality improvement and patient safety, which are essentially two aspects of the same process. The National Neonatal Audit Programme (NNAP) was established to assess consistency of neonatal care in specified domains and to identify areas for improvement in relation to service delivery and outcomes of care.

Over the last 8 years the programme has come a long way towards these goals in terms of achieving widespread engagement from neonatal professionals and obtaining completeness of data, despite the lack of additional resource for ensuring data quality at local level. England and Wales are now unequalled in having information on all babies admitted to a neonatal service being entered onto a single electronic database.

This latest Annual Report marks a departure in style from previous reports and goes a long way towards helping inform neonatal professionals about unwanted variation in practice. The report also clarifies the limitations of the data and clearly sets out opportunities for using the results to benchmark and inform quality improvement. The shift in emphasis away from a 'league table' approach addresses some of the challenges that inevitably arise from any assessment of performance or quality and will encourage professional engagement.

It is becoming clear that collaboration in quality improvement produces better results than if it is undertaken in an isolated manner. A major future challenge for the NNAP is that it should continue to evolve to ensure that the questions it addresses are relevant and will produce data on which to base standards. From a 'coalface clinician's' viewpoint it is equally important that NNAP links with the myriad of other quality initiatives nationally to which clinicians are obliged to submit data. To achieve this will require continued dialogue with both neonatal professionals and those that commission neonatal services.



Ms Caroline Davey
Chief Executive
Bliss

Every baby admitted into a neonatal unit deserves the highest quality care, and in striving to deliver this we must continue to capture and make effective use of data to drive continuous improvement. It is therefore heartening to see, in this 8th annual NNAP report, the many areas of improvement in neonatal care in recent years. There is much more to do, however, as the report also highlights unacceptable variations in care across regions, as well as more widespread areas for improvement.

It is particularly notable that, while consultation with parents has increased, far too many parents still don't have a consultation with a senior member of the neonatal team within their baby's first 24 hours on the unit. This must change. Parents are their baby's primary carers and it is imperative that they are fully informed and involved in their baby's care from the moment they enter the unit. Neonatal staff must also recognise their obligation to consider the long-term impact of being born early or sick on babies as they develop – the starting point for which must be the two-year follow up for early pre-term babies. For many babies born early, time on the neonatal unit is only the start of a journey on which they may face ongoing health, developmental and educational challenges. However, with this data not even recorded for nearly half of babies at two years of age, we are letting down those babies and missing a significant opportunity to offer further support for their development. We are also missing out on a vital source of information to allow us to evaluate and drive change in neonatal care.

Bliss' most recent policy report, based on evidence from neonatal units across England, brought into sharp relief the significant pressures facing many neonatal services, in particular in relation to both nursing and medical staffing capacity. We are therefore under no illusions about the challenging circumstances in which neonatal staff work every single day, and this NNAP report provides further evidence of the need for sufficient investment in neonatal services. For all babies born premature or sick, the care they receive in their first minutes, hours, days and weeks is critical to determining their outcomes and giving them the best chance of life. We must make sure that we are delivering the highest quality care for all of them.

1. Executive Summary

Welcome to this 8th annual report of the National Neonatal Audit Programme (NNAP), produced by the Royal College of Paediatrics and Child Health (RCPCH).

Amongst the stark lessons provided by the Kirkup Investigation in March 2015, a key message was the urgent need for consistent and comprehensive monitoring of neonatal services at all levels. While Kirkup focused on the exceptional circumstances in a maternity care setting in Morecambe Bay which may have led to the unnecessary deaths of eleven babies and one mother, the investigation stressed the importance of timely record keeping, adherence to professionally accepted standards of practice and the importance of consistent monitoring of all neonatal services provided for babies and their mothers.

The NNAP was established in 2006 to support professionals, families and commissioners in improving the provision of care provided by neonatal services which specialise in looking after babies who are born too early, with a low birth weight or who have a medical condition requiring specialist treatment. Through its annual comparison of all levels of neonatal units in England and Wales against professionally agreed standards – unique in its scope internationally, the NNAP is well-positioned to highlight where standards of care are being met, and to sound the alarm for areas in need of improvement. The NNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP), funded by NHS England and the Welsh Government and delivered by the RCPCH.

This audit report of 2014 data covers nine measures of processes of care and one outcome measure. Of the key findings and recommendations, two demand particular attention:

- Follow-up at two years of age of pre-term babies – No two year health data at all was recorded for 46% of babies, a major concern given that developmental delay could be missed, only to become apparent later in childhood.
- Consultation with parents – The rate of timely consultation with parents has increased over the past two years (89% in 2014 vs 84% in 2013) however, one in ten parents were still not recorded as having had a consultation with a senior member of the neonatal team within 24 hours of their baby's admission to the neonatal unit.

Key recommendations by audience are displayed in Appendix B on page 60 of this report.

Overall, this 2014 report notes striking improvements in the completeness of data entered by units for eligible babies since 2006, along with noted improvements in the quality of aspects of neonatal care over the same period.

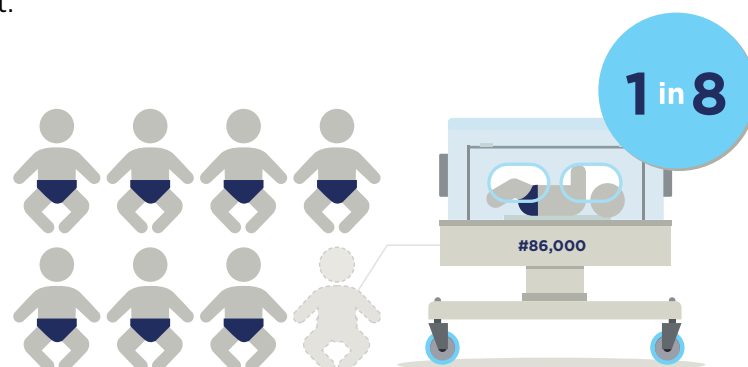
The report also identifies variation in 2014 across regional neonatal Operational Delivery Networks (ODN) which must be addressed in order to ensure that high quality care is available to families across all services and in all regions.

With high rates of data completeness the audit now has the opportunity to move towards capturing a more complete picture of neonatal care by adding measures of the organisation and structure of neonatal services, staffing levels and increase its focus on some of the specific outcomes of neonatal care.

The next year will bring further consultation on the introduction of neonatal mortality reporting to the audit. The NNAP will also consider how it should respond to any key findings and recommendations from the reports of the NHS England National Maternity Review and Scottish Maternity and Neonatal Services Review, to be published in late 2015 and mid 2016 respectively.

2. Key Findings and Recommendations

Approximately 700,000 babies are born each year in England and Wales and of these nearly 1 in 8, or more than 86,000, will be admitted to a Neonatal Unit (NNU) which specialises in looking after babies who are born too early, with a low birth weight or who have a medical condition requiring specialist treatment.



Monitoring the standard of care provided by specialist neonatal units is essential to informing efforts to give all babies the best possible chance of surviving and reaching their full potential. The RCPCH does this through the National Neonatal Audit Programme (NNAP) which encourages individual NNU, regional networks and the nation as a whole, to deliver the very highest levels of care to babies and families by measuring against standards described by professional organisations.

The NNAP measures care based on data provided annually by all three levels of neonatal unit (Special Care Unit, Local Neonatal Unit, and Neonatal Intensive Care Unit). By identifying the areas which require improvement, the audit informs action planning at a unit and network level, whilst helping hospital management, commissioners and policymakers to prioritise future funding and support.

NNAP 2014 audit measures

The NNAP currently focuses on the following areas of neonatal care:

- Temperature on admission
- Antenatal steroids
- Retinopathy of Prematurity (ROP) screening
- Mother's milk at discharge
- Consultation with parents
- Neonatal unit transfers
- Clinical follow-up at 2 years of age
- Recording of bloodstream and cerebrospinal fluid cultures
- Prevalence of Central Line-associated Bloodstream Infections (CLABSI)
- Disturbance of neurological function (encephalopathy)

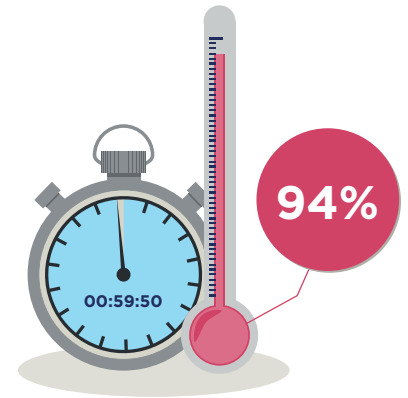
The following key findings and recommendations are based on the analysis of the data provided by NNUs for all 98,840 completed episodes, involving 86,287 babies, admitted to eligible neonatal units and discharged from neonatal care in England and Wales during the calendar year of 1 January to 31 December 2014.

Acknowledging improvements

As the following key findings show there have been improvements in the adherence to the standards for the NNAP audit measures over the years. The NNAP has also observed a great increase in the rates of data entry for eligible babies by neonatal units since its inception and unit staff should be congratulated for their current levels of engagement and diligence in recording data. Increases shown in adherence to standards have been influenced by these improvements in data completeness, as seen in the tables within section 5.10 of this report.

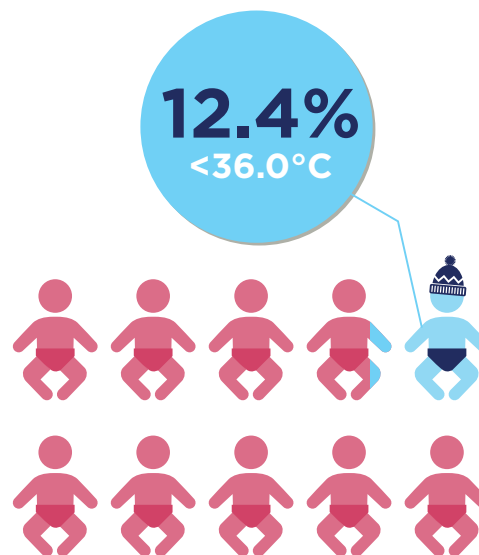
2.1 Temperature on admission

Low admission temperature has been associated with an increased risk of illness and death in pre-term infants. It is essential that NNUs maintain a high level of vigilance for hypothermia, an easily preventable condition, even in vulnerable newborns.



Key Findings

- Ninety-four percent of all babies less than 29 weeks gestation at birth were recorded as having had their temperature measured within an hour of birth (table 1.1).
- Whilst this figure remains unchanged from 2013, it has risen markedly from 78% in 2008 (table 1.3).
- Two out of the fifteen neonatal networks still have rates of less than 90% (87% and 88% respectively) for this measure (table 1.2).
- Where temperatures were measured, more than one baby in ten (12.4%) had a temperature below 36.0°C within an hour of birth (table 1.4).



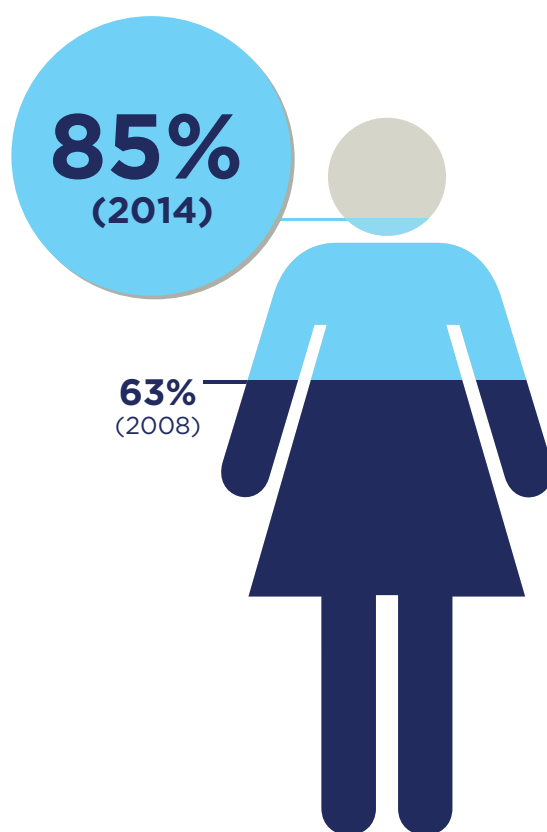
Key Recommendations

- Neonatal units should maintain a high level of vigilance in preventing admission hypothermia by adopting professionally accepted techniques such as the use of occlusive wraps, radiant warmers, hats and adjusting the temperature of delivery rooms to ensure that babies are warm on admission.
- Units experiencing problems with admission hypothermia should review their adherence to accepted care practices after each hypothermic admission.
- Neonatal networks, Health Boards and Trusts should proactively address any low levels of adherence and encourage the sharing of best practice, facilitate quality improvement and closely monitor performance against this measure.

Full 2014 results and tables for Temperature on Admission are found on pages 26 to 27.

2.2 Antenatal steroids

Antenatal steroids are given to women by obstetricians to reduce the chance that their baby is affected by respiratory distress syndrome, and constitute the most powerful health promotion tool in neonatal care. When given to the mother prior to preterm birth they reduce the risk of the baby dying and of several serious complications of prematurity. Predicting preterm delivery is not always straightforward, and in addition women may deliver too rapidly for antenatal steroids to be administered.



Key Findings

- At a national level, 85% of the mothers of babies born between 24 and 34 weeks of gestation were recorded as having received one or more doses of antenatal steroids (table 2.1), a considerable increase from 63% in 2008 (table 2.3).
- Network performance varies considerably, ranging from 77% to 92% (table 2.2).

Key Recommendations

- Neonatal units with rates of antenatal steroid administration of less than 85% should urgently consider their clinical care pathways with their obstetric colleagues, and review the antenatal course of mothers not given steroids to see whether best practice was followed and if opportunities to do so were missed.
- Neonatal networks and commissioners should review antenatal steroid administration for their populations, and provide support for any units whose administration rates could be improved.

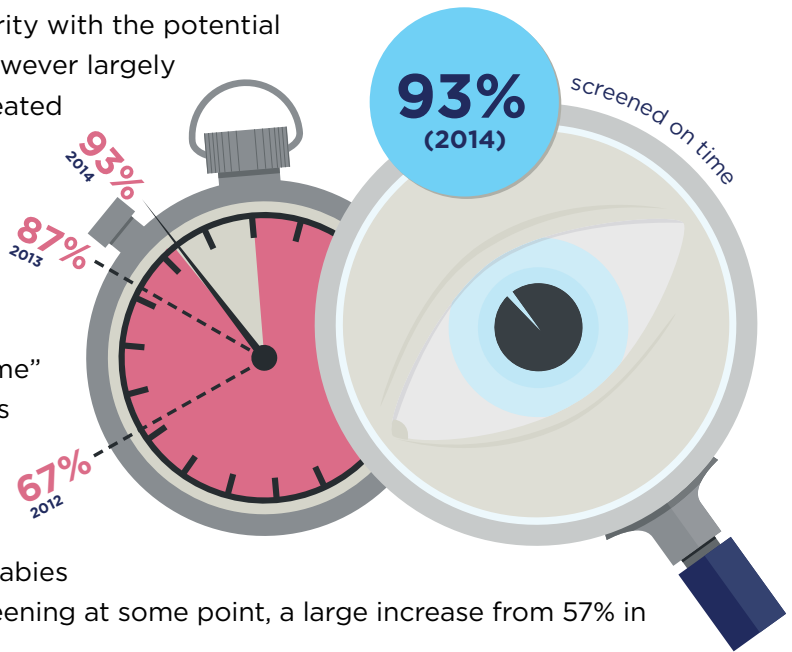
Full 2014 results and tables for Antenatal Steroids are found on pages 28 to 29.

2.3 Retinopathy of Prematurity (ROP) screening

Retinopathy is a complication of prematurity with the potential to result in visual loss or blindness. It is however largely preventable if babies are screened and treated on time in line with national guidelines.

Key Findings

- Nationally, 93% of eligible babies were recorded as screened “on time” in accordance with the timeframes set out in the national guideline (table 3.1), an increase from 67% in 2012 and 87% in 2013.
- Ninety-seven percent of eligible babies were recorded as having ROP screening at some point, a large increase from 57% in 2008 (table 3.3).
- Babies born at less than 32 weeks gestation were more likely to be screened at some point than those born after 32 weeks (99% compared to 94%) (see 2014 ROP outlier analysis available online).
- Units with poor data completeness for ROP screening (available data for <90% of eligible babies: classified as ‘non-participant’ in the outlier analysis) also had high levels of late screening. 16% of babies born at less than 32 weeks gestation were screened late compared to 3% in units with available data for 90% and above (see 2014 ROP outlier analysis available online).
- At a network level, the proportion of eligible babies who were not screened on time ranges from 3% in the best performing network to 20% in the worst (table 3.2).



Key Recommendations

- Neonatal units should critically review their 2014 ROP results and identify whether failure to screen eligible babies at an appropriate time was the result of clinical circumstances, organisational failings or administrative errors.
- Units identified as “non-participant” should carefully review their clinical and recording processes for ROP screening in babies less than 32 weeks gestation.
- All neonatal units should aim to achieve the standard of 100% “on time” screening of eligible babies and should review their clinical and organisational pathways in discussion with their ophthalmology colleagues.
- Neonatal networks should offer support and the sharing of best practice to any units with low ROP screening adherence rates.

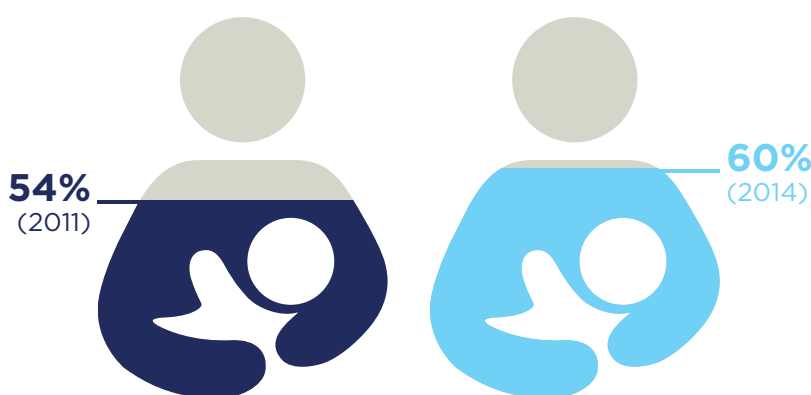
Full 2014 results and tables for Screening for ROP are found on pages 30 to 33.

2.4 Mother's milk at discharge

Mother's milk offers significant health benefits to pre-term infants, including a reduction in infection and gut pathologies and longer term health and neurodevelopmental outcome.

Key Findings

- Sixty percent of eligible babies were receiving their mother's milk, either exclusively or with another form of feeding, at the time of their discharge from neonatal care. There was no difference in the results between different levels of neonatal units (table 4.1).
- Feeding with mother's milk at discharge has risen slightly over the past four years to the current rate of 60% from 54% in 2011 (table 4.3).



Key Recommendations

- Neonatal units with low rates of breastmilk feeding at discharge should review their practices, and conduct a quality improvement intervention involving clinical teams and parents to encourage higher rates.
- Neonatal networks should review breastmilk administration rates within their units, and consider facilitating the sharing of good practice across their units.

Full 2014 results for Mother's Milk at Discharge are found on pages 34 to 36.

2.5 Consultation with parents

The parents of the babies admitted for care in neonatal units find themselves in a difficult and stressful situation, feeling that they have very little control in, or input towards, the care of their baby. It is therefore crucial that neonatal unit staff take the time to explain to parents how their baby is being cared for and also listen to parents, try to understand how they are feeling and respond to any questions that they may have.

Key Findings

- For 89% of babies there was a documented conversation between parents and a senior member of the neonatal team within 24 hours of admission (table 5.1). This represents an increase from 84% in 2013 (table 5.3), but still leaves more than 1 in 10 parents without a record of a timely consultation.

Key Recommendations

- Neonatal units with low rates of consultation with parents should critically review their processes of both communicating with parents and recording the details of communications. They should make contact with other units achieving better results in order to gain insight into effective practices that they might adopt.
- Units should make use of guidance on parent involvement in their baby's care which is readily available in the Bliss Baby Charter Standards.
- Neonatal networks should review the consultation rates of their units, and where these are low they should offer targeted support to facilitating and recording communication with parents.

The NNAP recognises that there is no single question which could adequately capture every aspect of consultation with parents and that this area includes complex and subjective issues. Consideration will be given to how to capture more complete and useful information in future years.

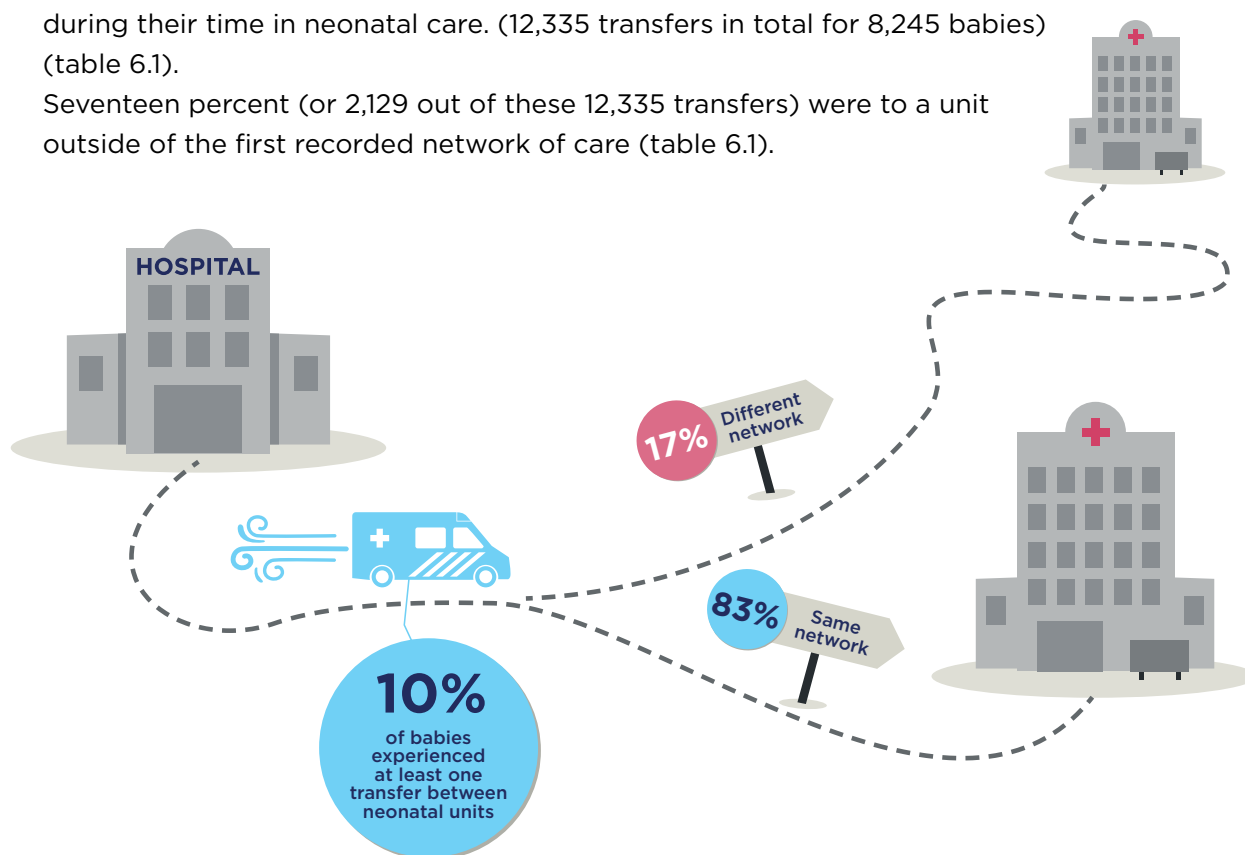
Full 2014 results and tables for Consultation with Parents are found on pages 37 to 39.

2.6 Neonatal unit transfers

In England and Wales neonatal care is provided by three different levels of unit. There are times where a baby may need to be transferred to another unit that has a level of care that is more appropriate to his or her needs at the time. Where a transfer to a more appropriate level of unit is required the transfer should, wherever possible, be within the same neonatal network. Babies and families should have access to the neonatal services their baby needs as close to home as possible.

Key Findings

- Ten percent of babies (8,245/86,264) were moved at least once from one unit to another during their time in neonatal care. (12,335 transfers in total for 8,245 babies) (table 6.1).
- Seventeen percent (or 2,129 out of these 12,335 transfers) were to a unit outside of the first recorded network of care (table 6.1).



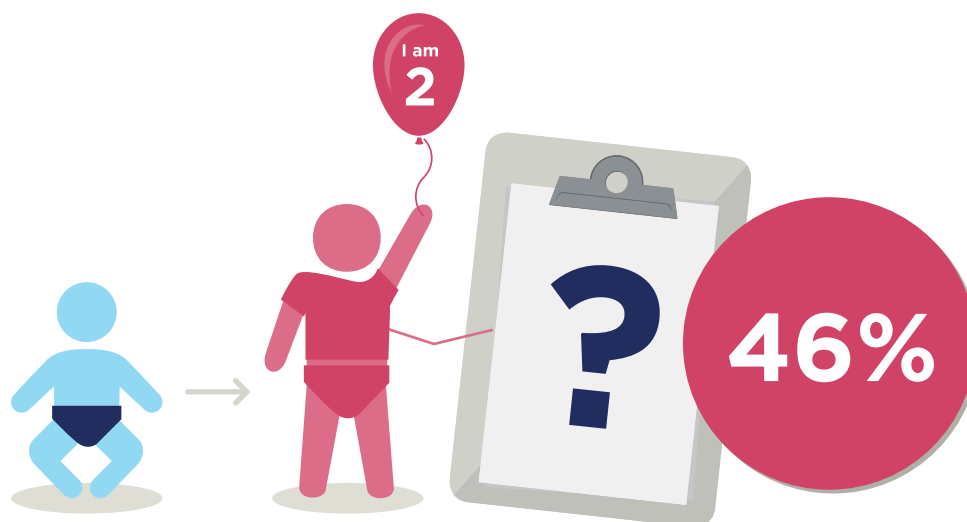
Key Recommendations

- Neonatal networks should review the rate of transfers of babies within their network on at least a quarterly basis to assess the reason for transfers and determine whether they result from insufficient clinical capacity. They should report these findings to relevant commissioning bodies.
- Commissioners should act to minimise clinically unnecessary transfers and take transfers into account when reviewing neonatal unit cot capacity.
- The NNAP should work with stakeholders to identify whether the audit should measure how neonatal transfers impact on parental travel time.

Full 2014 results and tables for Neonatal Unit Transfers are found on pages 40 to 42.

2.7 Clinical follow-up at 2 years of age

Pre-term infants are at high risk of neonatal mortality and adverse developmental outcomes. It is important that the development of very pre-term babies who were admitted to a neonatal unit is monitored by a paediatrician or neonatal consultant after their discharge from the neonatal unit.



Key Findings

- No 2 year follow up health data at all was recorded for 46% (1683/3656) of eligible babies, an unacceptably high rate given its clinical importance in obtaining a standardised assessment of developmental outcome (table 7.1).
- For 33% (1,204/3,656) of babies no reason for the lack of 2 year follow up data was recorded (table 7.1).

Key Recommendations

- Neonatal units should have facilities and personnel to conduct and record neonatal follow up at 2 years of age, for those babies born before 30 weeks gestation, in order to identify neurodevelopmental and other disability.
- Neonatal units should arrange appropriate follow up for babies discharged home, and make arrangements for data capture through (i) identification of eligible babies at discharge, (ii) a mechanism for tracking families through transfers for neonatal care or follow up and change of address and (iii) obtaining information for those who don't attend follow up.
- Specialist Commissioners and Health Boards should ensure that their contractual arrangements with NHS units include adequate incentives for neonatal follow up in line with current Neonatal Critical Care Service Specifications.

Full 2014 results and tables for Clinical follow up at 2 years of age are found on pages 43 to 47.

2.8 Recording of bloodstream and cerebrospinal fluid (CSF) cultures

Bloodstream infections are associated with increased mortality and each such infection is associated with an increase in the chances of neurodevelopmental disability in pre-term infants.

Key Findings

- 61,275 blood and cerebrospinal fluid (CSF) cultures were recorded from 98,840 admissions to neonatal units in 2014, with the recording of blood and CSF cultures up by a third since 2013 (table 8.1).
- The 2014 results suggest that, on average, less than one blood or CSF culture was performed per baby admitted.

Key Recommendations

- NHS Trusts and Health Boards should provide regular blood culture listings from laboratory systems to their neonatal units to enable clinical teams to validate data entry.
- Neonatal units should develop robust systems to ensure comprehensive capture of data on blood and CSF cultures.

Full 2014 results and tables for Recording of bloodstream and cerebrospinal fluid (CSF) cultures are found on pages 48 to 53.

2.9 Disturbance of neurological function (encephalopathy)

Key Finding

- Denominator data was not available to conduct analysis for this measure on 2014 data. The NNAP is now working with the Personal Demographics Service (PDS) to gain access to anonymised data and denominator data which will enable auditing of this measure.

2.10 Data management

While all neonatal units in England and Wales now record NNAP data using the same electronic system, "Badger", few neonatal units have designated resources or personnel for data management.

Key Recommendations

- Taking note of the Case Study on page 19 of this report, neonatal service commissioners should give incentives to high quality data management for national audit and benchmarking and support the provision of staff at a network and unit level with responsibilities for data capture and analysis.
- Regardless of their grade or job title, the individual(s) who are given the responsibility for managing NNAP data should be supported with training, agreed processes to follow and adequate time within their job plan to undertake and complete this work.

3. Impact and future direction of the NNAP

3.1 Impact

Since its establishment in 2006 the NNAP has achieved and maintained a high level of engagement from clinical teams. There was once a variety of systems used for capturing data on neonatal care, and varying degrees of engagement with those disparate systems. Clinical teams and Clevermed collaborated to establish and promote the Standardised Electronic Neonatal Database (SEND) and Badger systems. Neonatal unit engagement with the NNAP has undoubtedly provided further stimulus for adopting and using a single system used by all neonatal services.

This is very likely, in itself, to lead locally to better scrutiny of processes of care, and nationally to a move towards collaborative quality improvement based on national standards.

The NNAP has created an internationally unique system with all units caring for sick and pre-term infants entering data into a single electronic system used for clinical and benchmarking information.

3.2 Future

Quality improvement

Quality improvement will be encouraged by the NNAP through more timely and detailed reporting to units and networks, sharing best practice and continued consultation with stakeholders. The NNAP will also engage with the British Association of Perinatal Medicine as it develops its own quality improvement strategy.

The NNAP will work closely with Neonatal Operational Delivery Networks and the Neonatal Critical Care Clinical Reference Group to ensure the audit measures complement their work and provide them with meaningful information which they can use to monitor standards and encourage quality improvement.

Measuring neonatal service structure and staffing levels

The Project Board will consider whether the NNAP should widen its scope and incorporate the auditing of the standards of the organisation and structure neonatal services and staffing levels into the programme.

Mortality reporting

The Maternal, Newborn and Infant Clinical Outcome Review Programme's *Perinatal Mortality Surveillance Report* on UK Perinatal Deaths for births from January to December 2013 was launched on 10 June 2015. The report highlighted overall improvement in the rates of stillbirths and neonatal deaths whilst identifying a wide variation in results across the UK.

The NNAP will conclude a consultation on the feasibility of reporting mortality rates to discharge in neonatal services, and how such work could best compliment the work on perinatal mortality undertaken by the Maternal, Newborn and Infant Clinical Outcome Review Programme.

Participation of Scottish Neonatal Units

Negotiations are being undertaken with the Scottish Clinical Outcomes and Measures for Quality Improvement (COMQI) Group which should allow for the participation of Scottish neonatal units in the NNAP in time for 2016 data entry.

New NNAP measures

The NNAP plans to introduce new measures for 2016 data entry covering:

- The identification of the number of live born babies born at <30 weeks gestation admitted to a neonatal unit who were exposed to antenatal magnesium within 24 hours of birth.
- An additional measure of Central Line-associated Bloodstream Infections (CLABSI).

4. Case Study: Thames Valley & Wessex Neonatal Operational Delivery Networks (ODNs)

Team Members: Service Improvement Manager/Data Analyst, Kujan Paramanantham
Network Manager, Teresa Griffin

Background: Neonatal Operational Delivery Networks (ODN) in England and Wales provide advice on neonatal services to Health Boards, Trusts and Commissioners. Thames Valley & Wessex Neonatal ODN has achieved a high level of data completeness and adherence to NNAP standards of care for 2014.

Neonatal clinicians in Thames Valley & Wessex Neonatal ODN had always believed that they were adhering to the NNAP standards but poor data completeness meant that this confidence could not be reflected through analysis.

Boundaries: Thames Valley & Wessex Neonatal ODN operates across the two patient pathways and 15 neonatal units shown below.



“Kujan was appointed Service Improvement Manager/Data Analyst in 2011. Together with Teresa, the Network Management Team, which includes the Network Clinical Leads and the unit staff, he developed a Network Dashboard that includes data for CQUIN, NNAP Standards, BAPM Care Levels and quality measures with benchmarking of neonatal units and Red-Amber-Green ratings.

The dashboard results are distributed to the neonatal multi-professional teams, provider senior managers, specialised commissioners and provider data entry personnel. It is also placed on the Network’s website. The dashboard is also presented as ‘a standing item’ at Clinical Forum meetings which are attended by representatives from all provider Trusts, facilitating discussion and highlighting of trends/data entry issues.

The dashboard (extract from a monthly RAG rated network benchmarking report shown below) has ensured provider units at both clinical and management level benchmark and review their data/outcome measures on a regular basis, and highlighted the performance that the NNAP data reflects.

Neonatal Network Dashboard: September Cumulative data: % (eligible babies in brackets)

Period:	NNAP							Other						
	CY2015	CY2015	CY2015	CY2015	CY2015	CY2015	CY2015	FY1516	FY1516	FY1516	FY1516	FY1516	FY1516	FY1516
Unit	First Consultation within 24hrs	Antenatal Steroids Given	Temp. Taken within 1hr (<39/40)	Breast Milk at Discharge Borne (<33/40)	ROP Screen On Time / Within Window	2 YR Follow Up Assessment Performed (Babies Born Jul 12-Jun 13)	2 YR Follow Up Data entered (Babies Born Jul 12-Jun 13)	Term Admissions	Mothers Milk Day after admission <31 weeks	Mothers Milk Day after admission 31-34 weeks	Admission Temperature < 36.5°C (<34/40, admitted within an hour of birth, inborn)	Admission Temperature < 36.5°C (<34/40, admitted within an hour of birth, inborn)	Singletons <27/40, Multiples <28/40, Infants <800g	Number of In Unit Deaths
X	93% (158)	81% (43)	75% (4)	67% (12)	88% (8)	7% (15)	13% (15)	62% (130)	33% (3)	25% (28)	5% (20)	35% (20)	1	0
X	99% (128)	79% (39)	80% (5)	63% (8)	93% (14)	100% (6)	100% (6)	57% (119)	50% (4)	59% (27)	0% (13)	15% (13)	1	0
X	100% (555)	91% (191)	100% (58)	62% (58)	95% (84)	64% (33)	82% (33)	43% (404)	42% (67)	73% (95)	4% (121)	31% (121)	24	4
X	100% (48)	88% (8)	100% (1)	N/A	94% (18)	50% (8)	100% (8)	67% (58)	N/A	50% (4)	0% (4)	0% (4)	0	2
X	98% (223)	89% (61)	75% (8)	59% (22)	96% (26)	68% (19)	84% (19)	55% (168)	67% (9)	41% (34)	0% (23)	17% (23)	2	0
X	100% (349)	90% (148)	94% (47)	57% (54)	97% (78)	74% (35)	86% (35)	45% (255)	15% (46)	27% (63)	0% (85)	8% (85)	23	2
X	98% (337)	85% (80)	100% (5)	59% (29)	90% (41)	29% (42)	50% (42)	60% (288)	57% (7)	52% (64)	4% (50)	34% (50)	1	0
X	97% (279)	86% (77)	93% (14)	74% (35)	98% (41)	83% (24)	92% (24)	53% (221)	38% (8)	67% (48)	0% (38)	5% (38)	6	0
X	97% (346)	80% (104)	100% (46)	57% (44)	99% (68)	73% (33)	97% (33)	54% (263)	30% (23)	45% (40)	0% (57)	11% (57)	22	3
X	100% (180)	95% (39)	100% (2)	65% (17)	100% (23)	69% (13)	85% (13)	58% (144)	50% (4)	58% (24)	9% (23)	30% (23)	1	0
X	97% (66)	94% (18)	100% (2)	42% (12)	100% (12)	100% (9)	100% (9)	39% (54)	67% (3)	33% (9)	0% (8)	13% (8)	0	0
X	89% (133)	84% (57)	75% (4)	80% (20)	82% (22)	60% (10)	60% (10)	33% (104)	64% (11)	68% (37)	0% (29)	10% (29)	0	1
X	96% (150)	92% (39)	100% (2)	64% (14)	100% (8)	70% (23)	83% (23)	54% (136)	0% (2)	36% (25)	0% (15)	13% (15)	0	0
X	100% (331)	83% (82)	100% (2)	52% (27)	97% (35)	63% (24)	96% (24)	57% (219)	42% (12)	58% (45)	0% (35)	9% (35)	0	2
X	100% (285)	88% (91)	100% (10)	69% (36)	91% (43)	0% (21)	14% (21)	48% (215)	10% (10)	47% (53)	5% (43)	26% (43)	5	2
Thames Valley	99% (1779)	88% (513)	98% (84)	61% (172)	94% (247)	44% (147)	67% (147)	52% (1352)	42% (105)	57% (295)	3% (276)	26% (276)	32	9
Wessex	97% (1789)	86% (564)	94% (126)	63% (216)	96% (274)	70% (168)	82% (168)	51% (1426)	30% (114)	47% (301)	1% (288)	13% (288)	54	7
TV & Wessex	98% (3568)	87% (1077)	96% (210)	62% (388)	95% (521)	58% (315)	75% (315)	52% (2778)	36% (219)	52% (596)	2% (564)	20% (564)	86	16

RAG RATINGS: Set by Network

RED	< 90%	< 70%	< 95%	< 50%	< 85%	< 65%	< 75%	< 30%	< 45%	> 10%	> 30%
AMBER	90%	70%	95%	50%	85%	65%	75%	30%	45%	10%	30%
GREEN	97%	80%	100%	60%	95%	75%	85%	50%	60%	3%	10%
LOW DENOMINATOR	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
NNAP Guidance:	100%	85%	100%	100%	100%	100%	100%	0%	0%	0%	0%

NOTE

BadgerNet is a live system and subject to change
DENOMINATOR (eligible babies) represented in brackets.
All data is cumulative (FY1516: Apr-Sep, CY2015: Jan-Sep)
Data accurate as of date of extraction

The importance of complete and accurate data entry has been included in the programme for biannual network leadership study days for senior nurses. Examples of areas where the dashboard has helped improve practice are:

- Provision of parental nutrition within 48 hours for infants <29 weeks gestation
- Timeliness of Retinopathy of Prematurity (ROP) screening
- Optimising admission temperatures

Presenting the results of analysis via the dashboard has helped demonstrate the importance to clinical staff of the benefits to patient care and service delivery that result from high quality, reliable recording.

Thames Valley & Wessex Neonatal ODN have shown what can be achieved with a dedicated analyst, management support, leadership and clear communication. They can be rightly proud that in 2014 NNAP data was available for almost 100% of eligible babies."

Do you have any achievements that you would like to share?

The NNAP project board would like to thank Kujan and Teresa for helping to develop this case study.

If members of any other neonatal units or networks would like to share the details of any successful quality improvement activities or examples of best practice with the neonatal community via the NNAP then please contact the NNAP project team on 020 7092 6170/6168 or at: nnap@rcpch.ac.uk to discuss this further.

5. 2015 NNAP report based on 2014 data

Introduction

The NNAP was set up by the Department of Health to support healthcare professionals, families and commissioners to improve the provision of neonatal care. The audit commenced in 2006 with the first NNAP report, published in 2007 covering the admission of babies to 107 Neonatal Units (NNUs) in England, with Wales coming on board in 2012. Participation in the NNAP has grown significantly since then, with 174 neonatal units across England and Wales having contributed data to this report. It is hoped that Scottish neonatal units will join in time for 2016 data entry and discussions for the future involvement of units in Northern Ireland are also under way. The NNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP), funded by NHS England and the Welsh Government and delivered by the Royal College of Paediatrics and Child Health (RCPCH).

5.1 Aims of the NNAP

The key aims of the audit are:

- To assess whether babies admitted to NNU in England and Wales receive consistent care in relation to the NNAP audit measures, and high quality care as measured by adherence to a set of agreed guidelines and standards.
- To identify areas for quality improvement in NNUs in relation to delivery and outcomes of care.

This year's report relates to 98,840 completed episodes involving 86,287 babies discharged from neonatal care during the calendar year of 1 January to 31 December 2014.

5.2 Case ascertainment

Data for the NNAP analyses are extracted from the National Neonatal Research Database (NNRD) held at the Neonatal Data Analysis Unit (NDAU). The NNRD contains a predefined set of variables (the National Neonatal Dataset) obtained from the electronic neonatal patient records of each participating NHS Trust. Data are downloaded from the Badger3 and BadgerNet patient record systems used in NNUs and transferred to NDAU with Trust Caldicott Guardian approval.

Every baby admitted to the NNU would be expected to be entered on this system, and would also be eligible for inclusion in NNAP; the audit therefore achieves 100% case ascertainment in participating organisations. Babies receiving special care in transitional care or postnatal wards can also be entered.

For this report, the cohort comprises all babies with a final discharge from neonatal care from 1 January to 31 December 2014.

5.3 NNAP audit measures

The 2014 NNAP Audit Measures were:

- Do all babies of less than 29 weeks gestation have their temperature taken within an hour after birth?
- Are all mothers who deliver babies between 24 and 34 weeks gestation inclusive given any dose of antenatal steroids?
- Are all babies with a gestational age at birth <32 weeks or <1501g at birth undergoing first Retinopathy of Prematurity (ROP) screening in accordance with the current national guideline recommendations?
- What proportion of babies of <33 weeks gestation at birth are receiving any of their mother's milk when discharged from a neonatal unit?
- Is there a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission?
- Are all babies accessing neonatal services treated in their own network (except where clinical reasons dictate)?
- Are rates of normal survival at two years comparable in similar babies from similar neonatal units? (*In 2014 we are auditing babies of <30 gestation at birth*)
- What percentage of babies admitted to a neonatal unit have:
 - (a) one or more episodes of a pure growth of a pathogen from blood
 - (b) one or more episodes of a pure growth of a pathogen from CSF
 - (c) either a pure growth of a skin commensal or a mixed growth with ≥ 3 clinical signs at the time of blood sampling
- What percentage of babies of 35 weeks gestation or more have an encephalopathy within the first three calendar days of birth?
- How many bloodstream infections are there on a NNU per 1000 days of central line care?

5.4 Neonatal unit participation

There were 174 neonatal units (NNU) in operation in England and Wales during 2014; all of which contributed data for this report. Full details of the NNU which provided 2014 data are listed in Appendix A.

5.5 Data completeness

For the 2014 data, quarterly reports were produced by the NNAP project team and disseminated to all neonatal units in order to provide regular updates on their data completeness. Following the dissemination of the final quarterly report for 2014 data, NNU were provided with details of potential outlier status based on provisional data. All NNU were provided with a summary report of their 2014 data in May 2015 and given a final opportunity to review and amend their 2014 data on the Badger system by 16 June. The final 2014 data download for this report was extracted from Badger after the reviewing process had closed on 16 June 2015.

5.6 Data analysis

The 2014 download included 98,840 completed episodes involving 86,287 babies discharged in 2014. The number of babies eligible for each audit question varies depending on the gestational age covered by the question and the episode of care under consideration.

In addition, numerators may vary from figures extracted locally; for example, in the analysis of the consultation with parents question, some babies born, first admitted and discharged in 2014 may not appear in the analysis because the baby had a subsequent episode which continued into 2015. By the same reasoning, there are some episodes which finished during 2013 that were used for the 2014 data analysis. NDAU conducts NNAP analyses using the age of the baby in minutes from birth, as opposed to calendar days, for reasons relating to patient anonymity. This can result in minor variations in the numerators for age critical fields, such as the timing of ROP screening.

5.7 Denominator data

Perinatal denominator data are required from Health Boards and Trusts to enable the neonatal encephalopathy question ("What percentage of babies more than or equal to 35 weeks gestation have an encephalopathy within the first 3 calendar days of birth?") to be answered. The NNAP is now working with the HSCIC to gain access to the required denominator data from the Personal Demographics Service (PDS).

5.8 Neonatal unit designations

The NNAP asks neonatal units and networks to let the project team know if their unit designation changes at any time. The Department of Health (2009) *Toolkit for High Quality Neonatal Services* defined the different levels of neonatal unit as follows:

- Special care units (SCUs) provide special care for their own local population. Depending on arrangements within their neonatal network, they may also provide some high dependency services. In addition, SCUs provide a stabilisation facility for babies who need to be transferred to a neonatal intensive care unit (NICU) for intensive or high dependency care, and they also receive transfers from other network units for continuing special care.
- Local neonatal units (LNUs) provide neonatal care for their own catchment population, except for the sickest babies. They provide all categories of neonatal care, but they transfer babies who require complex or longer-term intensive care to a NICU, as they are not staffed to provide longer-term intensive care. The majority of babies over 27 weeks of gestation will usually receive their full care, including short periods of intensive care, within their LNU. Some networks have agreed variations on this policy, due to local requirements. Some LNUs provide high dependency care and short periods of intensive care for their network population. LNUs may receive transfers from other neonatal services in the network, if these fall within their agreed work pattern.

- Neonatal intensive care units (NICUs) are sited alongside specialist obstetric and fetal-maternal medicine services, and provide the whole range of medical neonatal care for their local population, along with additional care for babies and their families referred from the neonatal network. Many NICUs in England are co-located with neonatal surgery services and other specialised services. Medical staff in a NICU should have no clinical responsibilities outside the neonatal and maternity services.

5.9 Outlier analysis

Reporting at a unit level is part of a transparency process, designed so that best practice can be identified and shared and the quality of care improved. There will inevitably be a small number of units whose results show them as outliers for specific process measures (i.e. results are shown to be outside the expected range for that particular process).

However, it is crucial all stakeholders and organisations understand that while units could have outlying results, this does not automatically mean there are performance issues. There are a number of other factors which should be considered:

- Data may have been entered incorrectly or is simply missing for a particular measure. Therefore ensuring that data is entered completely and accurately is key.
- There may be an unusual or complex patient casemix, which cannot be adjusted for risk or performance issues.

Where verified results do show units to be outlying for specific processes, this should be seen as the beginning of a quality improvement process. Evidence from other specialties clearly shows that publication in this way, and the subsequent analysis of data and processes leads to and has a positive impact on results.

The four NNAP audit measures for which outlier analysis on 2014 NNAP data were undertaken are:

- The measurement of temperature within an hour of birth*.
- Screening for Retinopathy of Prematurity (ROP).
- Consultation with parents by a senior member of the neonatal team within 24 hours of admission.
- Proportion of babies receiving maternal breastmilk at hospital discharge.

*For the temperature question the NNAP has increased the sample size by combining data from both 2013 and 2014 in order to give more statistical power to the analysis given the small numbers available at individual neonatal unit level for 2014 alone.

To be eligible for inclusion in the 2014 data outlier analysis for the above four audit measures a unit had to have entered data for at least 90% of eligible babies.

The full methodology and results for the 2014 data outlier analysis are available online via the NNAP website: www.rcpch.ac.uk/nnap

5.10 Full 2014 National, Network and Year on Year Results

This section provides results at a network and national level as well as results across audit years. Individual unit level results and full outlier analyses can be viewed on the NNAP website at: www.rcpch.ac.uk/nnap

Temperature on admission

NNAP audit measure: Do all babies <29 weeks gestation have their temperature taken within an hour after birth?

It is important to take a baby's temperature on admission to the neonatal unit. Hypothermia has long been associated with increased mortality and morbidity, and in a recent randomised trial hypothermia caused increased morbidity. Hypothermia is easily preventable even in vulnerable newborns.

Standards

98-100% of babies should have their temperature taken within an hour of birth. For temperatures taken within an hour of birth:

- 90% should be within a range of 36.6°C to 37.5°C
- 10% should be within a range of 36.0°C to 36.5°C

Source of Standard: NNAP Board

Results

There were **3,109** babies born at a gestational age of <29 weeks reported by **167** NNU. Of these babies, **94%** had their temperature measured within the first hour of birth (Table 1.1). Where the standard was not met, it was mostly on account of late measurement. Babies with missing or 'unknown' temperature measurement details accounted for **1%** of data, whilst less than **1%** of eligible babies were confirmed as having no temperature measurement taken after admission. Infants with missing, "not taken" and late temperature measurements had similar gestations to those with complete data. The first temperature measurement was between 36.0°C and 37.5°C for **75%** of babies who had their temperature measured within an hour of birth (Table 1.4). The excess of hypothermic babies born in "other" locations (accident and emergency departments etc.) is unsurprising. The fact that less than half of babies are admitted with a temperature within target range is disappointing, and an opportunity for further quality improvement in this important area.

For the following tables 1.1, 1.2 and 1.4 responses are assigned to "Other" if the mother delivered at home, in transit, in an unknown location or in a non NNAP unit. Temperature details for these births were taken from the NNU of first admission.

Table 1.1

Babies born in England and Wales at a gestational age <29 weeks with their temperature taken within the first hour of birth, infants are assigned to their place of birth.

NNU level	Number of eligible NNU	Number of eligible babies	Time of temperature measurement (from birth)			
			Within an hour (as % of eligible babies)	After an hour	Not taken after admission	Missing/unknown data
Other*	–	31	22 (71%)	5	2	2
SCU	36	151	135 (89%)	15	1	0
LNU	82	885	837 (95%)	39	1	8
NICU	49	2042	1940 (95%)	72	5	25
Total	167	3109	2934 (94%)	131	9	35

Table 1.2

Babies born in England and Wales at a gestational age <29 weeks with their temperature taken within the first hour of birth, by neonatal ODN of birth.

Neonatal ODN of birth	Number of eligible babies	Time of temperature measurement (from birth)			
		Within an hour (as % of eligible babies)	After an hour	Not taken after admission	Missing/unknown data
Other*	31	22 (71%)	5	2	2
East of England Neonatal ODN	233	220 (94%)	11	0	2
Midlands South West Newborn Neonatal ODN	157	137 (87%)	15	1	4
North Central & North East London Neonatal ODN	299	278 (93%)	18	0	3
North West London Neonatal ODN	152	146 (96%)	3	0	3
North West Neonatal ODN	407	390 (96%)	10	1	6
Northern Neonatal ODN	150	143 (95%)	4	1	2
Peninsula & Western Neonatal ODN	196	173 (88%)	21	0	2
South East Coast Neonatal ODN	216	202 (94%)	10	2	2
South London Neonatal ODN	216	210 (97%)	6	0	0
Staffordshire, Shropshire and Black Country Neonatal ODN	136	127 (93%)	7	0	2
Thames Valley & Wessex ODN (Thames Valley)	116	116 (100%)	0	0	0
Thames Valley & Wessex ODN (Wessex)	134	134 (100%)	0	0	0
Trent Perinatal & Central Newborn Neonatal ODN	247	234 (95%)	9	2	2
Wales	114	104 (91%)	5	0	5
Yorkshire & Humber Neonatal ODN	305	298 (98%)	7	0	0
Total	3109	2934 (94%)	131	9	35

Table 1.3

Comparison to temperature audit results in previous NNAP reports.

NNAP data year	Number of eligible NNU	Number of eligible babies	Percentage with temperature taken within an hour of birth	Percentage with missing/unknown temperature data
2008	130	2647	78%	12%
2009	165	3230	63%	26%
2010	169	3380	83%	2%
2011	164	2786	90%	8%
2012	169	3016	89%	5%
2013	170	2908	93%	2%
2014	167	3109	94%	1%

Table 1.4

Temperature values for babies born in England and Wales at a gestational age of <29 weeks who had their temperature taken within an hour of birth. Infants are assigned to their place of birth.

NNU level	Number of eligible NNU	Number of eligible babies	Temperature values (°C)				
			<32.0	32.0-35.9 (as % of eligible babies)	36.0-36.5 (as % of eligible babies)	36.6-37.5 (as % of eligible babies)	>37.5 (as % of eligible babies)
Other*	–	22	3	9 (41%)	5 (23%)	4 (18%)	1 (5%)
SCU	35	135	0	21 (16%)	42 (31%)	56 (41%)	16 (12%)
LNU	83	837	0	112 (13%)	225 (27%)	385 (46%)	115 (14%)
NICU	49	1940	1	219 (11%)	520 (27%)	952 (49%)	248 (13%)
Total	167	2934	4	361 (12%)	792 (27%)	1397 (48%)	380 (13%)

Temperature on Admission "Low performing outlier" units

No units were identified as a low performing outlier for 2014 for this NNAP audit measure.

Temperature on Admission "Non-participant" units

Two units had less than 90% of data for eligible babies entered for this audit measure and were therefore confirmed as "non-participants" for this measure and not included in the 2014 outlier analysis.

Antenatal steroids

NNAP audit measure: Are all mothers who deliver babies between 24 and 34 weeks gestation inclusive given any dose of antenatal steroids?

Antenatal steroids are given to women by obstetricians to reduce the chance that their baby is affected by respiratory distress syndrome, and constitute the most powerful health promotion tool in neonatal care. When given to the mother prior to preterm birth they reduce the risk of the baby dying and of several serious complications of prematurity. Predicting preterm delivery is not always straightforward, and in addition women may deliver too rapidly for antenatal steroids to be administered.

Standard: 85% of mothers who deliver babies between 24 and 34 weeks gestation inclusive should receive a dose of antenatal steroids

Source of Standard: NNAP Board

Results

There were **17,170** eligible mothers identified from data submitted for **19,657** babies by **173** neonatal units. Records for **28** babies were excluded from analysis because their data lacked sufficient detail to identify their mother, or were inconsistent.

At least one dose of antenatal steroids was administered to **85%** of mothers who delivered babies between 24 and 34 weeks gestation (Table 2.1). Antenatal steroids were not administered in **15%** of cases and steroid data were missing or unknown for **1%** of babies.

The lower rates of administration of antenatal steroids in maternity units allied to special care units may be attributable to differences in case mix.

For the following tables 2.1 and 2.2 responses are assigned to "Other" if the mother delivered at home, in transit, in an unknown location or in a non NNAP unit. Steroid details for these births were taken from the NNU of first admission.

Table 2.1

Mothers in England and Wales who delivered their babies between 24 and 34 weeks and received ANY dose of antenatal steroids; mothers are assigned to the place of birth.

NNU level	Number of eligible NNU	Number of eligible mothers	Steroids given (as % of all eligible mothers)	Steroids not given	Missing/ unknown data
Other*	–	238	78 (33%)	156	4
SCU	42	1953	1567 (80%)	349	37
LNU	82	7161	6164 (86%)	951	46
NICU	49	7818	6708 (86%)	1052	58
Total	173	17170	14517 (85%)	2508	145

Table 2.2

Mothers in England and Wales who delivered their babies between 24 and 34 weeks and received ANY dose of antenatal steroids by neonatal ODN of birth.

Neonatal ODN of birth	Number of eligible mothers	Steroids given (as % of all eligible mothers)	Steroids not given	Missing/unknown data
Other*	238	78 (33%)	156	4
East of England Neonatal ODN	1426	1244 (87%)	175	7
Midlands South West Newborn Neonatal ODN	897	691 (77%)	160	46
North Central & North East London Neonatal ODN	1517	1300 (86%)	192	25
North West London Neonatal ODN	712	654 (92%)	55	3
North West Neonatal ODN	2146	1861 (87%)	275	10
Northern Neonatal ODN	832	711 (85%)	115	6
Peninsula & Western Neonatal ODN	1194	961 (80%)	223	10
South East Coast Neonatal ODN	1197	1031 (86%)	165	1
South London Neonatal ODN	1029	883 (86%)	138	8
Staffordshire, Shropshire and Black Country Neonatal ODN	690	582 (84%)	107	1
Thames Valley & Wessex ODN (Thames Valley)	628	548 (87%)	79	1
Thames Valley & Wessex ODN (Wessex)	729	658 (90%)	70	1
Trent Perinatal & Central Newborn Neonatal ODN	1443	1187 (82%)	239	17
Wales	732	651 (89%)	78	3
Yorkshire & Humber Neonatal ODN	1760	1477 (84%)	281	2
Total	17170	14517 (85%)	2508	145

Table 2.3

Comparison to antenatal steroid audit results in previous NNAP reports.

NNAP reporting year	Number of eligible NNU	Number of eligible mothers	Percentage with any antenatal steroids given	Percentage with missing data
2008	129	9066	63%	30%
2009	167	16031	70%	7%
2010	173	16895	75%	4%
2011	164	15716	76%	3%
2012	173	16576	80%	2%
2013	176	16992	83%	1%
2014	173	17170	85%	1%

Retinopathy of Prematurity (ROP) screening

NNAP audit measure: Do all babies <1501g or a gestational age of <32 weeks at birth undergo the first Retinopathy of Prematurity (ROP) screening in accordance with the current guideline recommendations?

Retinopathy is a complication of prematurity with the potential to result in visual loss or blindness. Blindness from ROP is largely preventable if babies are screened and treated on time in line with national guidelines.

Standards: 100% of eligible babies should receive ROP screening within the time windows for first screening recommended in the guidelines:

- If the infant's gestational age at birth is less than 27 weeks, the first screening should be between 30⁺⁰ and 30⁺⁶ weeks corrected gestation inclusive.
- If the infant's gestational age at birth is greater than 26 and <32 weeks, ROP screening should be at or after four weeks, and before five weeks of age.
- If the infant's gestational age is ≥32 weeks but with a birth weight <1501g, ROP screening should be at or after four weeks, and before five weeks of age.
- All babies <32 weeks gestational age or birth weight <1501g should have their first ROP screening examination prior to discharge.

Source of Standard: National standard (RCPCH, RCOphth, BAPM and Bliss, *Guideline for the Screening and Treatment of Retinopathy of Prematurity*, 2008)

Note: In interpreting the national standards for this NNAP analysis, the Project Board has decided that a baby will be seen as having had ROP screening "on time" if:

- A baby who was discharged before the ROP screening window opened had their first screening conducted prior to discharge, or;
- A ROP screen takes place within the ROP screening window, before or after discharge.

The NNAP Project Board has also agreed to allow an extra week either side of the ROP screening window as in the table below:

Gestational age at birth (completed weeks)	ROP screening windows	
	National Guideline ROP screening window	NNAP ROP screening window
<27	30 ⁺⁰ to 30 ⁺⁶ weeks corrected gestational age inclusive	29 to 31 weeks corrected gestational age inclusive
≥27	4 to 5 weeks from birth (21-35 days)	3 to 6 weeks from birth (21-42 days)

Results

There were **8,835** babies born with a birth weight <1501g or with a gestational age at birth <32 weeks in NNAP contributing NNU. Of these babies, **15** were excluded because they did not have a recorded episode of care in a NNU until after the closure of the ROP screening window. A further **27** babies were excluded because they were transferred to non-neonatal units before, or during, the ROP screening window. Finally, **569** babies were excluded because they died before the closure of the screening window and had not been screened. This left **8,224** babies eligible for ROP screening from 173 NNU.

Including post-discharge screenings, **97%** of eligible babies had at least one screening for ROP recorded, while **93%** of babies were screened 'on time' in accordance with current NNAP criteria, including **11%** of babies who were screened "on time" after neonatal discharge.

Of the remaining babies, **4%** were first screened after the closure of the screening window, and **1%** were only screened before the screening window opened. There were no screening data available for **3%** of eligible babies.

Table 3.1

ROP screening for babies born <1501g or gestation at birth <32 weeks by NNU level in England and Wales.

NNU level	Number of eligible NNU	Number of eligible babies	Number of babies with a known ROP screening (as % of all eligible babies)	Screened on time			Screened early (as % of all eligible babies)	Screened late (as % of all eligible babies)	Number of babies with no screening data (as % of eligible babies)
				During care	After discharge	Total (as % of all eligible babies)			
SCU	42	806	762 (95%)	605	110	715 (89%)	9 (1%)	38 (5%)	44 (5%)
LNU	82	3372	3280 (97%)	2712	440	3152 (93%)	20 (1%)	108 (3%)	92 (3%)
NICU	49	4046	3955 (98%)	3406	380	3786 (94%)	32 (1%)	137 (3%)	91 (2%)
Total	173	8224	7997 (97%)	6723	930	7653 (93%)	61 (1%)	283 (3%)	227 (3%)

Table 3.2

ROP screening for babies born <1501g or gestation at birth <32 weeks by neonatal ODN.

Neonatal ODN	Number of eligible babies	Number of babies with a known ROP screening (as % of all eligible babies)	Screened on time			Number of babies with no screening data (as % of eligible babies)
			During care	After discharge	Total (as % of eligible babies)	
East of England Neonatal ODN	683	674 (99%)	558	99	657 (96%)	9 (1%)
Midlands South West Newborn Neonatal ODN	408	398 (98%)	330	51	381 (93%)	10 (2%)
North Central & North East London Neonatal ODN	784	748 (95%)	642	67	709 (90%)	36 (5%)
North West London Neonatal ODN	384	373 (97%)	315	54	369 (96%)	11 (3%)
North West Neonatal ODN	1006	987 (98%)	854	99	953 (95%)	19 (2%)
Northern Neonatal ODN	387	373 (96%)	300	33	333 (86%)	14 (4%)
Peninsula & Western Neonatal ODN	551	507 (92%)	424	60	484 (88%)	44 (8%)
South East Coast Neonatal ODN	571	563 (99%)	462	65	527 (92%)	8 (1%)
South London Neonatal ODN	616	612 (99%)	500	79	579 (94%)	4 (1%)
Staffordshire, Shropshire and Black Country Neonatal ODN	320	310 (97%)	284	21	305 (95%)	10 (3%)
Thames Valley & Wessex ODN (Thames Valley)	304	303 (100%)	255	31	286 (94%)	1 (0%)
Thames Valley & Wessex ODN (Wessex)	330	327 (99%)	281	36	317 (96%)	3 (1%)
Trent Perinatal & Central Newborn Neonatal ODN	701	683 (97%)	549	105	654 (93%)	18 (3%)
Wales	348	320 (92%)	261	35	296 (85%)	28 (8%)
Yorkshire & Humber Neonatal ODN	831	819 (99%)	708	95	803 (97%)	12 (1%)
Total	8224	7997 (97%)	6723	930	7653 (93%)	227 (3%)

Table 3.3

Comparison to ROP audit results in previous NNAP audits.

NNAP reporting year	Number of eligible NNU	Number of eligible babies	Number of babies with a known ROP screening (as % of all eligible babies)	ROP Screening known			Number of babies with no screening data (% of eligible babies)
				On time (as % of eligible babies)	Early (as % of eligible babies)	Late* (as % of eligible babies)	
2008	148	3414	1936 (57%)	–	–	–	1478 (43%)
2009	167	7913	5336 (67%)	2098 (27%)	1859 (23%)	1379 (17%)	2577 (33%)
2010	171	8235	5853 (71%)	4777 (58%)	308 (4%)	768 (9%)	2382 (29%)
2011	164	7887	6460 (82%)	5310 (67%)	233 (3%)	917 (13%)	1427 (18%)
2012	173	7996	6312 (79%)	5319 (67%)	122 (2%)	871 (11%)	1684 (21%)
2013	175	8000	7497 (94%)	6995 (87%)	70 (1%)	432 (5%)	503 (6%)
2014	173	8224	7997 (97%)	7653 (93%)	61 (1%)	283 (3%)	227 (3%)

**For data from 2008-2011 inclusive all screenings that occurred after the time of final neonatal discharge were considered as 'late' and cannot therefore be directly compared to those from 2012 to 2014.*

Retinopathy of Prematurity (ROP) "Low performing outlier" units

Two units were identified as low performing outliers for this NNAP audit measure.

Retinopathy of Prematurity (ROP) "Non-participant" units

Thirteen units had less than 90% of data for eligible babies entered for this audit measure and were therefore confirmed as "non-participants" for this measure and not included in the 2014 outlier analysis.

Mother's milk at discharge

NNAP audit measure: What proportion of babies <33 weeks gestation at birth were receiving any of their own mother's milk at discharge to home from a neonatal unit?

Mother's milk offers significant health benefits to pre-term infants, including a reduction in infection and gut pathologies and longer term health and neurodevelopmental outcome.

Standard: No defined standard, audit measure is used for benchmarking

Source of Standard: NNAP Board

Only babies who had a final discharge to 'home' at the end of their first episode of care are included in this analysis, i.e. all the babies included in this question were admitted to and stayed in only one NNU before being discharged home.

Results

Of the **10,204** babies born in NNAP NNU at less than 33 weeks there were **5,942** babies born <33 weeks reported by 169 NNU who met the criteria for inclusion in this question.

Daily data summaries for the last or penultimate day of care indicated that **60%** of eligible babies were receiving mother's milk, exclusively or with another form of feeding, at the time of their discharge from neonatal care. Of the remaining babies, **39%** were recorded as receiving others types of feeding* at discharge and **1%** had no feeding data available from the last or penultimate day of care.

This question concentrates on non transferred babies so that unit level analysis can attribute this outcome to unit processes. However, in doing so **40%** of otherwise eligible babies are excluded from the analysis, which remains a limitation of this quality improvement metric.

**Other types of enteral feeds that could be selected were; "Formula", "Donor expressed breast milk" and "Nil by mouth".*

Table 4.1

Babies born <33 weeks and receiving any of their mother's milk when discharged from a neonatal unit by NNU level.

NNU level	Number of eligible NNU	Number of eligible babies	Enteral feeds at the time of discharge		
			Feeding with any mothers milk (as % of eligible babies)	Feeding without mother's milk (% of eligible babies)	Missing data (% of eligible babies)
SCU	38	398	244 (61%)	153 (38%)	1 (0%)
LNU	82	2696	1662 (62%)	1030 (38%)	4 (0%)
NICU	49	2848	1664 (58%)	1113 (39%)	71 (2%)
Total	169	5942	3570 (60%)	2296 (39%)	76 (1%)

Table 4.2

Non-transferred babies born <33 weeks and receiving any of their mother's milk when discharged from a NNU by neonatal ODN.

Neonatal ODN	Number of eligible babies	Enteral feeds at the time of discharge		
		Feeding with any mother's milk (as % of eligible babies)	Feeding without mother's milk (as % of eligible babies)	Missing data (as % of eligible babies)
East of England Neonatal ODN	532	361 (68%)	171 (32%)	0 (0%)
Midlands South West Newborn Neonatal ODN	274	155 (57%)	113 (41%)	6 (2%)
North Central & North East London Neonatal ODN	469	348 (74%)	119 (25%)	2 (0%)
North West London Neonatal ODN	223	178 (80%)	45 (20%)	0 (0%)
North West Neonatal ODN	752	363 (48%)	328 (44%)	61 (8%)
Northern Neonatal ODN	259	126 (49%)	132 (51%)	1 (0%)
Peninsula & Western Neonatal ODN	429	278 (65%)	149 (35%)	2 (0%)
South East Coast Neonatal ODN	432	273 (63%)	159 (37%)	0 (0%)
South London Neonatal ODN	439	333 (76%)	105 (24%)	1 (0%)
Staffordshire, Shropshire and Black Country Neonatal ODN	249	125 (50%)	123 (49%)	1 (0%)
Thames Valley & Wessex ODN (Thames Valley)	215	139 (65%)	76 (35%)	0 (0%)
Thames Valley & Wessex ODN (Wessex)	280	179 (64%)	101 (36%)	0 (0%)
Trent Perinatal & Central Newborn Neonatal ODN	489	258 (53%)	231 (47%)	0 (0%)
Wales	257	117 (46%)	138 (54%)	2 (1%)
Yorkshire & Humber Neonatal ODN	643	337 (52%)	306 (48%)	0 (0%)
Total	5942	3570 (60%)	2296 (39%)	76 (1%)

Table 4.3

Comparison to mother's milk at discharge results in previous NNAP audits.

NNAP year	Number of eligible NNU	Number of eligible babies	Enteral feeds at the time of discharge		
			Feeding with any mothers milk (as % of eligible babies)	Feeding without mother's milk (% of eligible babies)	Missing data (% of eligible babies)
2011	159	5578	3007 (54%)	2438 (44%)	133 (2%)
2012	169	5678	3271 (58%)	2371 (42%)	36 (<1%)
2013	170	5920	3509 (59%)	2393 (40%)	18 (<1%)
2014	169	5942	3570 (60%)	2296 (39%)	76 (1%)

Mother's milk at discharge "Low performing outlier" units

One unit was identified as a low performing outlier for this NNAP audit measure.

Mother's milk at discharge "Non-participant" units

Two units had less than 90% of data for eligible babies entered for this audit measure and were therefore confirmed as "non-participants" for this measure and not included in the 2014 outlier analysis.

Consultation with parents

NNAP audit measure: Is there a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission?

The parents of the babies admitted for care in neonatal units find themselves in a difficult and stressful situation, feeling that they have very little control in, or input towards, the care of their baby.

It is therefore crucial that staff on the neonatal unit take the time to communicate with parents to explain how their baby is being cared for and listen to parents and understand how they are feeling and respond to any questions that they may have.

Standard: For 100% of neonatal unit admissions there should be a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission

Source of Standard: NNAP Board

Results

There were **86,264** first episodes of care reported by **174** NNU that were considered for this question. Babies who were not categorised as receiving HRG 1, 2 or 3 on a NNU during their first day of care, or who were admitted for less than 12 hours, were excluded from the analysis; this left **52,372** episodes eligible for the audit question.

A senior member of the neonatal team consulted parents or carers within 24 hours of admission for **89%** of eligible episodes. Consultations that occurred before admission, or more than 24 hours after admission, were recorded in **5%** of eligible episodes.

No consultation occurred for **3%** of eligible episodes and data on consultations was either missing or 'unknown' for **3%** of eligible episodes.

Table 5.1

Number of parents and/or carers of babies seen by a senior member of the neonatal team within 24 hours of admission by NNU level.

Unit level	Number of eligible NNU	Number of eligible babies	Time of first consultation with parents and/or carers (from admission)				
			Within 24 hours (% of eligible episode)	After 24 hours	Before admission	No consultation	Missing/unknown data
SCU	42	6785	5875 (87%)	186 (3%)	281 (4%)	167 (2%)	276 (4%)
LNU	83	23423	21031 (90%)	558 (2%)	486 (2%)	624 (3%)	724 (3%)
NICU	49	22164	19579 (88%)	707 (3%)	367 (2%)	807 (4%)	704 (3%)
Total	174	52372	46485 (89%)	1451 (3%)	1134 (2%)	1598 (3%)	1704 (3%)

Table 5.2

Number of parents and/or carers of babies seen by a senior member of the neonatal team within 24 hours of admission by neonatal ODN.

Neonatal ODN	Number of eligible babies	Time of first consultation with parents and/or carers (from admission)			
		Within 24 hours (% of eligible episode)	After 24 hours	Before admission	No consultation
East of England Neonatal ODN	5488	5078 (93%)	128	107	82
Midlands South West Newborn Neonatal ODN	2802	2296 (82%)	102	114	130
North Central & North East London Neonatal ODN	4865	4268 (88%)	124	146	142
North West London Neonatal ODN	2179	1881 (86%)	62	83	39
North West Neonatal ODN	6554	5668 (86%)	383	39	358
Northern Neonatal ODN	2169	1969 (91%)	38	75	43
Peninsula & Western Neonatal ODN	3792	3001 (79%)	138	196	178
South East Coast Neonatal ODN	3901	3593 (92%)	67	46	89
South London Neonatal ODN	3406	3080 (90%)	103	71	80
Staffordshire, Shropshire and Black Country Neonatal ODN	1953	1689 (86%)	43	75	73
Thames Valley & Wessex ODN (Thames Valley)	2178	2168 (100%)	5	0	0
Thames Valley & Wessex ODN (Wessex)	2368	2349 (99%)	6	0	13
Trent Perinatal & Central Newborn Neonatal ODN	3528	3174 (90%)	79	54	86
Wales	2359	1887 (80%)	34	82	113
Yorkshire & Humber Neonatal ODN	4830	4384 (91%)	139	46	172
Total	52372	46485 (89%)	1451	1134	1598
					1704

Table 5.3

Comparison to first consultation results in previous NNAP audits.

Year	Number of eligible NNU	Number of eligible episodes	Time of first consultation with parents and/or carers (from admission)			
			Within 24 hours (% of eligible episode)	After 24 hours (% of eligible episodes)	Before admission (% of eligible episodes)	Missing*/unknown data (% of eligible episodes)
2008	169	29438	16538 (56%)	-	-	11859 (40%)
2009	167	57203	25704 (45%)	6254 (11%)	Excluded from analysis	10599 (19%)
2010	172	60183	40199 (67%)	2514 (4%)	Excluded from analysis	17470 (29%)
2011	164	50469	34450 (68%)	2289 (5%)	5858 (11%)	7872 (16%)
2012	174	54409	42792 (79%)	1754 (3%)	4165 (8%)	5698 (10%)
2013	176	50757	42807 (84%)	1386 (3%)	2273 (4%)	4291 (8%)
2014	174	52372	46485 (89%)	1451 (3%)	1134 (2%)	3302 (6%)

**For the purpose of comparison with previous years, all episodes categorised as 'no consultation' in 2012, 2013 and 2014 data are included under the 'Missing/unknown data' heading.*

Consultation with parents "Low performing outlier" units

No units were identified as low performing outliers for this NNAP audit measure.

Consultation with parents "Non-participant" units

Fifteen units had less than 90% of data for eligible babies entered for this audit measure and were therefore confirmed as "non-participants" for this measure and not included in the 2014 outlier analysis.

Neonatal unit transfers

NNAP audit measure: Are all babies who require transfer out of a unit kept within their own network, except where clinical reasons dictate otherwise?

In the UK, neonatal care is provided by three different levels of unit. There are times where a baby may need to be transferred to another unit that has a level of care that is more appropriate to his or her needs at the time. Where a transfer to a more appropriate level of unit is required the transfer should, wherever possible, be within the same neonatal network. Babies and families should have access to an appropriate level of neonatal service that is as close to home as possible.

Standard: At least 90% of transfers within the baby's first network of care

Source of Standard: NNAP Board

Results

There were a total of **86,287** babies eligible for inclusion in the NNAP 2014 audit. Of these babies, **23** have been excluded from this question as their complete episodic data, including their first episode of care, was not available for analysis. This analysis was conducted using the remaining **86,264** babies who had complete episodic data.

From these **86,264** babies, there were a total of **12,335** transfers involving **8,245** babies. This means that **10%** of babies experienced at least one transfer during their time in neonatal care. Of these transfers **83%** were within the first known network of care and **17%** were to another neonatal network. Please note that NNAP have not determined which babies were born within their "own" network. Instead the analysis was based on the number of babies who were transferred between different NNU, and the neonatal networks to which those units belonged.

A transfer within network is one where the baby is transferred to a hospital within the first known network of care. Conversely, a transfer outside a neonatal network is one where a baby is transferred to a NNU that did not belong to the first network of care.

Table 6.1

Transfer of babies out of network of first care by provider of first admission for babies discharged in 2014.

Neonatal network	Eligible babies	Number of eligible babies transferred (as % of eligible babies)	Total number of transfers for these babies	Transfers within network (as % of all transfers)	Transfers outside of network (as % of all transfers)	Reason for transfer out of network		
						Cardiac care	Surgical care	Other* reason
Bedfordshire and Hertfordshire	3219	195 (6%)	319	212 (66%)	107 (34%)	1	32	74
Cheshire and Merseyside	2927	251 (9%)	343	292 (85%)	51 (15%)	0	1	48
Eastern	6056	472 (8%)	662	553 (84%)	109 (16%)	4	11	94
Greater Manchester	3439	531 (15%)	783	723 (92%)	60 (8%)	0	4	56
Kent	3079	256 (8%)	417	300 (72%)	117 (28%)	5	57	55
Lancashire and South Cumbria	1694	166 (10%)	266	196 (74%)	70 (26%)	2	40	28
London – North Central	3822	335 (9%)	445	279 (63%)	166 (37%)	1	16	149
London – North East	4137	663 (16%)	1061	926 (87%)	135 (13%)	10	24	101
London – North West	2627	427 (16%)	626	502 (80%)	124 (20%)	4	11	109
London – South East	2134	260 (12%)	379	285 (75%)	94 (25%)	1	2	91
London – South West	3569	205 (6%)	319	227 (71%)	92 (29%)	2	4	86
Midlands – Central	3152	361 (11%)	547	428 (78%)	119 (22%)	0	11	108
Midlands – South West	5071	363 (7%)	490	414 (84%)	76 (16%)	1	5	70

Table 6.1 continued on page 42

Table 6.1 (continued)

Neonatal network	Eligible babies	Number of eligible babies transferred (as % of eligible babies)	Total number of transfers for these babies	Transfers within network (as % of all transfers)	Transfers outside of network (as % of all transfers)	Reason for transfer out of network		
						Cardiac care	Surgical care	Other* reason
Midlands North Staffordshire, Shropshire and Black Country Newborn Network	4364	195 (4%)	278	200 (72%)	78 (28%)	0	8	70
North Trent	3631	289 (8%)	421	335 (80%)	86 (20%)	10	6	70
Northern	3577	475 (13%)	686	673 (98%)	13 (2%)	2	1	10
Peninsula - South West	2568	217 (8%)	309	221 (72%)	88 (28%)	3	38	47
South Central (North)	2525	318 (13%)	491	417 (85%)	74 (15%)	5	8	61
South Central (South)	3371	333 (10%)	482	439 (91%)	43 (9%)	0	1	42
Surrey and Sussex	3992	407 (10%)	631	492 (78%)	139 (22%)	8	35	96
Trent	2742	328 (12%)	528	406 (77%)	122 (23%)	4	9	109
Wales	2711	345 (13%)	542	509 (94%)	33 (6%)	1	0	32
Western	7460	442 (6%)	677	590 (87%)	87 (13%)	0	2	85
Yorkshire	4397	411 (9%)	633	587 (93%)	46 (7%)	0	5	41
Total	86264	8245 (10%)	12335	10206 (83%)	2129 (17%)	64	331	1732
								2

*Other reasons that could be selected were "continuing care", "specialist care" and "other".

Clinical follow-up at 2 years of age

NNAP audit measure: Are rates of normal survival at two years comparable in similar babies from similar neonatal units?

Pre-term infants are at high risk of neonatal mortality and adverse developmental outcomes. It is important that the development of very pre-term babies who were admitted to a neonatal unit is monitored after their discharge from the neonatal unit. The purpose of this follow up is to detect significant medical or developmental problems attributable to pre-term delivery, and arrange appropriate treatment. Such follow up is also important to facilitate quality improvement in neonatal care. NICE guidance is being developed as to what form follow up should take, but at present the *National Neonatal Service Specification for Critical Care* mandates that follow up should be undertaken at 2 years corrected age.

Standard: 100% of babies admitted to a neonatal unit should have a documented clinical follow up at 2 years corrected age

Analysis: (a) number of babies with some/all health data entered
(b) number of babies lost to follow up
(c) number of babies who died after discharge
(d) number of babies with no data entered
(e) number of babies classified as mildly/moderately/severely impaired

Source of Standard: NNAP Board

NNAP audited the number of eligible babies born at a gestational age of <30 weeks for whom a two year (corrected post term) health status follow-up has been partially or fully completed. Follow up data were available up to March 2015, and babies born during the 12 month period of July 2011 to June 2012 were selected, as these babies could have been expected to have had a follow up appointment by the end of 2014.

Details of the classifications for impairment used in this analysis can be viewed in the full online version of this report.

Results

There were **3,656** babies <30 weeks gestation born between July 2011 and June 2012 who survived and were discharged from a NNU to home, to a ward or to foster care.

(a) **54%** had some/all health data entered
(b) **13%** were lost to follow up or were not assessed for other reasons
(c) **20** babies were reported to have died after discharge
(d) **46%** of babies had no follow up data entered at all
(e) Of the **1973** babies with health data entered, **45%** had no neurodevelopmental impairment, **17%** had mild/moderate impairment, **18%** had severe impairment and **20%** had insufficient data to determine the impairment category.

Table 7.1

Clinical follow up data recorded at 2 years of age for **3,656** babies <30 weeks gestation born between July 2011 and June 2012 who survived and were discharged from a NNU to home, to a ward or to foster care.

Year	Eligible babies	Some health data entered = 54%				No health data entered = 46%			
		Impairment not determinable	No impairment	Mild/moderate impairment	Severe impairment	Lost to follow up	Not assessed for other reason	Died post discharge	No data entered at all
2014	3656	392 (11%)	889 (24%)	337 (9%)	355 (10%)	80 (2%)	379 (10%)	20 (1%)	1204 (33%)
Total	3656	1973/3656 (54%)				1683/3656 (46%)			

Table 7.2

Neurodevelopmental outcomes and health data completeness from two year (corrected post term) health follow up recorded by neonatal ODN, babies born <30 weeks gestation between July 2011 and June 2012 who survived to discharge from neonatal care.

Neonatal ODN of final discharge	Eligible babies	Some health data entered				No health data entered				
		Impairment not determinable	Impairment determinable	No impairment	Mild/moderate impairment	Severe impairment	Lost to follow up	Not assessed for other reason	Died post discharge	No data entered at all
East of England Neonatal ODN	279	28 (10%)	109 (39%)	64 (23%)	15 (5%)	30 (11%)	4 (1%)	28 (10%)	2 (1%)	108 (39%)
Midlands South West Newborn Neonatal ODN	216	16 (7%)	71 (33%)	43 (20%)	9 (4%)	19 (9%)	11 (5%)	14 (6%)	2 (1%)	102 (47%)
North Central & North East London Neonatal ODN	384	28 (7%)	145 (38%)	69 (18%)	45 (12%)	31 (8%)	2 (1%)	20 (5%)	0 (0%)	189 (49%)
North West London Neonatal ODN	187	11 (6%)	87 (47%)	55 (29%)	21 (11%)	11 (6%)	14 (7%)	21 (11%)	0 (0%)	54 (29%)

Table 7.2 continued on page 45

Table 7.2 (continued)

Neonatal ODN of final discharge	Eligible babies	Some health data entered					No health data entered			
		Impairment not determinable	Impairment determinable	No impairment	Mild/moderate impairment	Severe impairment	Lost to follow up	Not assessed for other reason	Died post discharge	No data entered at all
North West Neonatal ODN	486	43 (9%)	200 (41%)	96 (20%)	45 (9%)	59 (12%)	8 (2%)	47 (10%)	2 (0%)	186 (38%)
Northern Neonatal ODN	206	41 (20%)	91 (44%)	58 (28%)	18 (9%)	15 (7%)	0 (0%)	15 (7%)	2 (1%)	57 (28%)
Peninsula & Western Neonatal ODN	236	30 (13%)	81 (34%)	44 (19%)	19 (8%)	18 (8%)	3 (1%)	14 (6%)	0 (0%)	108 (46%)
South East Coast Neonatal ODN	247	24 (10%)	115 (47%)	72 (29%)	24 (10%)	19 (8%)	2 (1%)	42 (17%)	2 (1%)	62 (25%)
South London Neonatal ODN	281	28 (10%)	126 (45%)	66 (23%)	30 (11%)	30 (11%)	8 (3%)	18 (6%)	2 (1%)	99 (35%)
Staffordshire, Shropshire and Black Country Neonatal ODN	171	32 (19%)	77 (45%)	37 (22%)	19 (11%)	21 (12%)	0 (0%)	14 (8%)	0 (0%)	48 (28%)
Thames Valley & Wessex ODN (Thames Valley)	157	16 (10%)	95 (61%)	49 (31%)	23 (15%)	23 (15%)	13 (8%)	31 (20%)	1 (1%)	1 (1%)
Thames Valley & Wessex ODN (Wessex)	135	10 (7%)	110 (81%)	70 (52%)	24 (18%)	16 (12%)	0 (0%)	12 (9%)	1 (1%)	2 (1%)
Trent Perinatal & Central Newborn Neonatal ODN	293	29 (10%)	101 (34%)	63 (22%)	17 (6%)	21 (7%)	6 (2%)	64 (22%)	3 (1%)	90 (31%)
Yorkshire & Humber Neonatal ODN	378	56 (15%)	173 (46%)	103 (27%)	28 (7%)	42 (11%)	9 (2%)	39 (10%)	3 (1%)	98 (26%)
Total	3656	392 (11%)	1581 (43%)	889 (24%)	337 (9%)	355 (10%)	80 (2%)	379 (10%)	20 (1%)	1204 (33%)

Table 7.3

Respiratory and gastro-intestinal outcomes and health from two year (corrected post term) health follow up recorded by neonatal ODN, babies born <30 weeks gestation between July 2011 and June 2012 who survived to discharge from neonatal care.

Neonatal ODN of final discharge	Eligible babies with health data entered	Respiratory				Gastro-intestinal			
		Impairment not determinable	No impairment	Mild/moderate impairment	Severe impairment	Impairment not determinable	No impairment	Mild/moderate impairment	Severe impairment
East of England Neonatal ODN	137	24	109	1	3	27	107	2	1
Midlands South West Newborn Neonatal ODN	87	8	75	3	1	6	80	1	0
North Central & North East London Neonatal ODN	173	14	155	3	1	17	149	3	4
North West London Neonatal ODN	98	3	93	1	1	2	90	4	2
North West Neonatal ODN	243	21	211	5	6	21	212	5	5
Northern Neonatal ODN	132	33	97	1	1	31	98	0	3
Peninsula & Western Neonatal ODN	111	19	87	2	3	14	93	2	2
South East Coast Neonatal ODN	139	10	124	0	5	11	125	2	1
South London Neonatal ODN	154	24	123	3	4	26	117	7	4
Staffordshire, Shropshire and Black Country Neonatal ODN	109	12	91	4	2	11	95	2	1

Table 7.3 continued on page 47

Table 7.3 (continued)

Neonatal ODN of final discharge	Eligible babies with health data entered	Respiratory				Gastro-intestinal			
		Impairment not determinable	No impairment	Mild/moderate impairment	Severe impairment	Impairment not determinable	No impairment	Mild/moderate impairment	Severe impairment
Thames Valley & Wessex ODN (Thames Valley)	111	9	100	2	0	13	94	4	0
Thames Valley & Wessex ODN (Wessex)	120	7	111	1	1	7	110	2	1
Trent Perinatal & Central Newborn Neonatal ODN	130	15	108	3	4	11	110	7	2
Yorkshire & Humber Neonatal ODN	229	37	186	2	4	37	173	6	13
Total	1973	236	1670	31	36	234	1653	47	39

Table 7.4

Comparison to clinical follow-up at 2 years of age results in previous NNAP audits.

Year	Eligible babies	Some health data entered				No health data entered			
		Impairment not determinable	Impairment determinable	No impairment	Mild/moderate impairment	Severe impairment	Lost to follow up	Not assessed for other reason	No data entered at all
2012	2967	228 (8%)	1004 (34%)	568 (19%)	215 (7%)	221 (7%)	46 (2%)	120 (4%)	1559 (53%)
2013	3488	350 (10%)	1201 (34%)	676 (19%)	270 (8%)	255 (7%)	31 (1%)	310 (9%)	1586 (45%)
2014	3656	392 (11%)	1581 (43%)	889 (24%)	337 (9%)	355 (10%)	80 (2%)	379 (10%)	1204 (33%)

Recording of bloodstream and cerebrospinal fluid (CSF) cultures

NNAP audit measure: What percentage of babies admitted to a neonatal unit have:

- (a) one or more episodes of a pure growth of a pathogen from blood;**
- (b) one or more episodes of a pure growth of a pathogen from CSF;**
- (c) either a pure growth of a skin commensal or a mixed growth with ≥ 3 clinical signs at the time of blood sampling?**

Bloodstream infections are associated with increased mortality and prolonged length of hospital stay and each such infection is associated with an increase in the chances of neurodevelopmental disability in pre-term infants.

Measuring bloodstream infection in NNAP depends on the entering of blood culture data and the entry of data on contemporaneously recorded clinical signs present at the time of blood culture being taken.

Standard: No defined standard, audit measure is used for benchmarking

Source of Standard: NNAP Board

Results

There were **98,840** admissions and **86,287** babies reported from 174 NNU who were included in this question. A total of **61,275** blood and CSF cultures were recorded for these babies; pathogens results, including 'no growth' were entered for **84%** of cultures.

The results for each section of the analysis were:

- (a) **0.5%** of all babies had a blood culture result recorded with a pure growth of a pathogen.
- (b) **0.01%** of all babies had a positive CSF culture result recorded with a pure growth of a pathogen.
- (c) For blood cultures, **0.1%** of babies had a growth of a skin commensal with three or more clinical predefined clinical signs, and **0.01%** a mixed growth with three or more predefined clinical signs.

The results of this analysis suggest that there is a significant level of missing data. It is reasonable to speculate that even the aggregate number of blood cultures per baby is an underestimate, not least because there are less recorded blood cultures than there are babies admitted. This is particularly concerning in the lower gestational age groups where a high burden of infection is often reported and multiple blood culture samples per baby might be expected. The data entry on clinical signs also remains significantly incomplete, which is most obviously evidenced by the low proportion of infections overall described by our analysis as being caused by skin commensal organisms. Our results also indicate a lower overall burden of infection than has previously been reported, further reinforcing the concerns that the data are incomplete.

The concerns NNAP have about data completeness suggest that inter-unit comparisons should be made with extreme caution, and that temporal trends should be interpreted with similar caution.

Table 8.1

Completeness of available culture data by gestational age. Entered blood culture results include the confirmation of "no growth".

Gestational age group	Number of eligible babies	Blood cultures			CSF cultures	
		Number of blood cultures	Number of blood cultures with results entered (% of blood cultures)	Number of blood cultures with results and clinical signs entered* (% of blood cultures)	Number of CSF cultures	Number of CSF cultures with pathogens entered (% of CSF cultures)
Missing	19	4	4 (100%)	2 (50%)	1	1 (100%)
< = 27 weeks	2321	6457	5573 (86%)	3960 (61%)	569	535 (94%)
28-31 weeks	5233	7075	6097 (86%)	4443 (63%)	486	441 (91%)
32-36 weeks	26262	16100	13600 (84%)	9958 (62%)	803	701 (87%)
> = 37 weeks	52452	25752	21311 (83%)	15176 (59%)	4028	3421 (85%)
Total	86287	55388	46585 (84%)	33539 (61%)	5887	5099 (87%)

**Includes cultures that confirmed that "none" of the predefined clinical signs were present at the time the culture was taken.*

Table 8.2

Positive blood culture results by NNU level and gestational age.

NNU level	Number of eligible NNU	Gestational age group	Number of eligible babies	Number of admissions	Number of babies with a pure growth of a pathogen	Number of babies with a skin commensal and ≥ 3 clinical signs	Number of babies with a mixed growth and ≥ 3 clinical signs
SCU	42	Missing	5	5	0	0	0
		< = 27 weeks	272	363	3	0	0
		28-31 weeks	760	998	0	0	0
		32-36 weeks	4517	4875	7	0	0
		> = 37 weeks	8135	8510	4	0	0
LNU	83	Missing	8	8	0	0	0
		< = 27 weeks	1023	1551	36	5	0
		28-31 weeks	2750	3272	35	12	1
		32-36 weeks	12182	12776	12	3	0
		> = 37 weeks	22001	22941	20	0	0
NICU	49	Missing	7	7	0	0	0
		< = 27 weeks	2108	3156	189	57	4
		28-31 weeks	3081	3635	62	22	1
		32-36 weeks	11301	12027	29	3	0
		> = 37 weeks	23886	24716	15	7	1
Total	174	Missing	19	20	0	0	0
		< = 27 weeks	2321	5070	228	62	4
		28-31 weeks	5233	7905	97	34	2
		32-36 weeks	26262	29678	48	6	0
		> = 37 weeks	52452	56167	39	7	1

Table 8.3

Positive CSF culture results by NNU level and gestational age.

NNU level	Number of eligible NNU	Gestational age group	Number of eligible babies	Number of admissions	Number of babies with a pure growth of a pathogen
SCU	43	Missing	5	5	0
		< = 27 weeks	272	363	0
		28-31 weeks	760	998	1
		32-36 weeks	4517	4875	0
		> = 37 weeks	8135	8510	0
LNU	82	Missing	8	8	0
		< = 27 weeks	1023	1551	0
		28-31 weeks	2750	3272	0
		32-36 weeks	12182	12776	1
		> = 37 weeks	22001	22941	1
NICU	49	Missing	7	7	0
		< = 27 weeks	2108	3156	2
		28-31 weeks	3081	3635	1
		32-36 weeks	11301	12027	0
		> = 37 weeks	23886	24716	1
Total	174	Missing	19	20	0
		< = 27 weeks	2321	5070	2
		28-31 weeks	5233	7905	2
		32-36 weeks	26262	29678	1
		> = 37 weeks	52452	56167	2

Bloodstream and cerebrospinal fluid (CSF) infections

NNAP audit measure: How many bloodstream infections^a are there on a NNU per 1000 days of central line^b care?

a: the growth of a recognised pathogen in pure culture, or in the case of a mixed growth, or growth of skin commensal, the added requirement for 3 or more of 10 predefined clinical signs

b: central line = UAC, UVC, percutaneous long line or surgically inserted long line.

A central line is a catheter (tube) with its tip in a large vein, and is used to deliver vital nutrition and medication directly into a baby's blood. Infections are a risk in any hospitalisation but when babies have central venous catheters, they are at higher risk for serious infections, especially if bacteria get into the bloodstream.

Where bloodstream infections occur and a central line is in situ, this is termed "CLABSI". The risk of CLABSI can be reduced considerably through the use of proper insertion techniques and management of the central line.

Standard: No defined standard, audit measure is used for benchmarking

Source of Standard: NNAP Board

Results

86,287 babies in 174 NNU received 1,053,014 days of care. In total 13% of all care days included a central line and 317 bloodstream infections were reported for these central line days; 2.25 bloodstream infections per 1000 central line days. This result should be treated with significant caution given the potential for under reporting of blood stream and CSF infections described above.

Table 9.1

Occurrence of central line associated bloodstream infection in NNAP participating NNU; babies who died or were discharged during 2014.

NNU level	Number of eligible NNU	Gestational age group	Number of eligible babies	Number of line days	Number of central line associated bloodstream infections	CABSI per 1000
SCU	43	Missing	5	0	0	0
		< = 27 weeks	272	141	0	0
		28-31 weeks	760	550	0	0
		32-36 weeks	4517	701	1	1.4
		> = 37 weeks	8135	546	0	0
LNU	82	Missing	8	0	0	0
		< = 27 weeks	1023	4665	9	1.9
		28-31 weeks	2750	15340	25	1.6
		32-36 weeks	12182	7366	4	0.5
		> = 37 weeks	22001	3804	5	1.3
NICU	49	Missing	7	0	0	0
		< = 27 weeks	2108	45056	182	4.0
		28-31 weeks	3081	28003	58	2.0
		32-36 weeks	11301	17024	20	1.2
		> = 37 weeks	23886	17439	13	0.7
Total	174	Missing	19	0	0	0
		< = 27 weeks	2321	49862	191	3.8
		28-31 weeks	5233	43893	83	1.9
		32-36 weeks	26262	25091	25	1.0
		> = 37 weeks	52452	21789	18	0.8

Appendix A – Neonatal units that contributed 2014 data

Units represented in this report by less than 12 months of data are indicated by an asterisk (*).

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Alexandra Hospital	SCU	312	289
Bassetlaw District General Hospital	SCU	146	131
Bedford Hospital	SCU	369	322
Bronglais General Hospital	SCU	5	5
Conquest Hospital	SCU	416	370
County Hospital, Staffordshire	SCU	881	873
Cumberland Infirmary	SCU	200	184
Darent Valley Hospital	SCU	823	753
Darlington Memorial Hospital	SCU	536	500
Dewsbury & District Hospital	SCU	298	273
Ealing Hospital	SCU	262	241
Epsom General Hospital	SCU	179	162
Frimley Park Hospital	SCU	870	826
Furness General Hospital	SCU	110	91
George Eliot Hospital	SCU	251	228
Good Hope Hospital	SCU	584	552
Harrogate District Hospital	SCU	151	137
Hereford County Hospital	SCU	250	240
Hinchingbrooke Hospital	SCU	224	215
James Paget Hospital	SCU	336	317
King George Hospital*	SCU	199	194
North Devon District Hospital	SCU	194	184
Oxford University Hospitals, Horton Hospital	SCU	145	139
Pilgrim Hospital	SCU	334	316
Princess Royal Hospital	SCU	258	234
Princess Royal University Hospital	SCU	380	343
Queen Elizabeth Hospital, Gateshead	SCU	232	209
Queen Elizabeth The Queen Mother Hospital	SCU	402	373
Queen's Hospital, Burton-on-Trent	SCU	244	230
Royal Surrey County Hospital	SCU	680	633

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Scarborough General Hospital	SCU	244	228
South Tyneside District Hospital	SCU	81	80
The Royal Free Hospital	SCU	340	309
Torbay Hospital	SCU	335	319
University Hospital of North Durham	SCU	784	729
Wansbeck General Hospital	SCU	355	329
Warwick Hospital	SCU	361	324
West Cumberland Hospital	SCU	149	136
West Middlesex University Hospital	SCU	460	421
West Suffolk Hospital	SCU	353	340
Worthing Hospital	SCU	651	618
Yeovil District Hospital	SCU	202	193
Ysbyty Gwynedd	SCU	165	151
Airedale General Hospital	LNU	221	215
Barnet Hospital	LNU	1112	1082
Barnsley District General Hospital	LNU	316	296
Basildon Hospital	LNU	517	455
Basingstoke & North Hampshire Hospital	LNU	270	245
Broomfield Hospital	LNU	679	653
Calderdale Royal Hospital	LNU	489	470
Chesterfield & North Derbyshire Royal Hospital	LNU	262	251
City Hospital, Birmingham	LNU	1011	969
Colchester General Hospital	LNU	445	407
Countess of Chester Hospital	LNU	538	515
Croydon University Hospital	LNU	483	456
Diana Princess of Wales Hospital	LNU	751	721
Doncaster Royal Infirmary	LNU	356	326
Dorset County Hospital	LNU	258	236
East Surrey Hospital	LNU	447	422
Glangwili General Hospital	LNU	187	173
Gloucestershire Royal Hospital	LNU	532	499
Great Western Hospital	LNU	475	434
Hillingdon Hospital	LNU	397	371
Ipswich Hospital	LNU	673	644
Kettering General Hospital	LNU	310	286

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
King's Mill Hospital	LNU	289	254
Kingston Hospital	LNU	396	376
Leighton Hospital	LNU	391	356
Lincoln County Hospital	LNU	592	568
Lister Hospital	LNU	969	941
Macclesfield District General Hospital	LNU	132	118
Manor Hospital	LNU	668	648
Milton Keynes Foundation Trust Hospital	LNU	446	421
Nevill Hall Hospital	LNU	250	220
Newham General Hospital	LNU	568	530
North Manchester General Hospital	LNU	530	492
North Middlesex University Hospital	LNU	467	435
Northampton General Hospital	LNU	292	271
Northwick Park Hospital	LNU	528	491
Ormskirk District General Hospital	LNU	355	333
Peterborough City Hospital	LNU	1086	1056
Pinderfields General Hospital	LNU	354	326
Poole Hospital NHS Foundation Trust	LNU	399	379
Prince Charles Hospital	LNU	184	172
Princess Alexandra Hospital	LNU	473	448
Princess of Wales Hospital	LNU	276	252
Queen Elizabeth Hospital, King's Lynn	LNU	404	388
Queen Elizabeth Hospital, Woolwich	LNU	340	305
Queen's Hospital, Romford	LNU	1083	1016
Rotherham District General Hospital	LNU	232	214
Royal Albert Edward Infirmary	LNU	274	256
Royal Berkshire Hospital	LNU	530	483
Royal Cornwall Hospital	LNU	507	491
Royal Derby Hospital	LNU	425	387
Royal Devon & Exeter Hospital	LNU	587	559
Royal Glamorgan Hospital	LNU	267	245
Royal Hampshire County Hospital	LNU	344	313
Royal Lancaster Infirmary	LNU	204	190
Royal Shrewsbury Hospital	LNU	807	775
Royal United Hospital	LNU	702	677

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Russells Hall Hospital	LNU	571	544
Salisbury District Hospital	LNU	217	200
Scunthorpe General Hospital	LNU	682	639
Southend Hospital	LNU	449	409
St Helier Hospital	LNU	559	536
St Mary's Hospital, IOW	LNU	280	265
St Mary's Hospital, London	LNU	414	397
St Richard's Hospital	LNU	788	754
Stepping Hill Hospital	LNU	364	321
Stoke Mandeville Hospital	LNU	491	454
Tameside General Hospital	LNU	261	240
Taunton & Somerset Hospital	LNU	492	477
Tunbridge Wells Hospital	LNU	702	679
University Hospital Lewisham	LNU	406	391
University Hospital of South Manchester	LNU	420	382
Victoria Hospital, Blackpool	LNU	480	470
Warrington Hospital	LNU	413	389
Watford General Hospital	LNU	1242	1199
Wexham Park Hospital	LNU	482	454
Whipps Cross University Hospital	LNU	407	361
Whiston Hospital	LNU	323	299
Whittington Hospital	LNU	1820	1804
Withybush Hospital*	LNU	76	65
Worcestershire Royal Hospital	LNU	784	763
York District Hospital	LNU	345	327
Arrowe Park Hospital	NICU	355	344
Birmingham Heartlands Hospital	NICU	1281	1231
Birmingham Women's Hospital	NICU	1485	1395
Bradford Royal Infirmary	NICU	701	668
Chelsea & Westminster Hospital	NICU	622	605
Derriford Hospital	NICU	1209	1158
Glan Clwyd Hospital	NICU	278	268
Guy's & St Thomas' Hospital	NICU	926	891
Homerton Hospital	NICU	858	800
Hull Royal Infirmary	NICU	531	516

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
James Cook University Hospital ¹	NICU	511	433
King's College Hospital	NICU	607	590
Lancashire Women & Newborn Centre	NICU	603	572
Leeds Neonatal Service ²	NICU	1734	1669
Leicester Neonatal Service ³	NICU	1244	1163
Liverpool Women's Hospital	NICU	751	735
Luton & Dunstable Hospital	NICU	953	917
Medway Maritime Hospital	NICU	916	887
New Cross Hospital	NICU	969	938
Norfolk & Norwich University Hospital	NICU	1208	1181
North Bristol NHS Trust (Southmead)	NICU	2828	2764
Nottingham City Hospital	NICU	767	721
Nottingham University Hospital (QMC)	NICU	816	757
Oxford University Hospitals, John Radcliffe Hospital	NICU	920	873
Princess Anne Hospital	NICU	746	706
Queen Alexandra Hospital	NICU	554	524
Queen Charlotte's Hospital	NICU	527	506
Rosie Maternity Hospital, Addenbrookes	NICU	876	854
Royal Bolton Hospital	NICU	635	612
Royal Gwent Hospital	NICU	457	433
Royal Oldham Hospital	NICU	629	585
Royal Preston Hospital	NICU	529	498
Royal Sussex County Hospital	NICU	501	477
Royal Victoria Infirmary	NICU	757	710
Singleton Hospital	NICU	409	393
St George's Hospital	NICU	2276	2243
St Mary's Hospital, Manchester	NICU	1121	1077
St Michael's Hospital	NICU	2930	2831
St Peter's Hospital	NICU	769	749
Sunderland Royal Hospital	NICU	314	294
The Jessop Wing, Sheffield	NICU	1346	1305
The Royal London Hospital	NICU	692	642
University College Hospital	NICU	915	844
University Hospital Coventry	NICU	1025	962
University Hospital of North Staffordshire	NICU	774	762

NNU name	NNU level	Number of completed episodes of care included	Number of distinct babies included
University Hospital of North Tees	NICU	344	329
University Hospital of Wales	NICU	544	524
William Harvey Hospital	NICU	613	573
Wrexham Maelor Hospital	NICU	185	177

¹ Data from James Cook University Hospital includes that of Friarage Hospital. The NNU at the Friarage Hospital closed in October 2014.

² Data from Leeds Neonatal Service includes data from Leeds General Hospital and St Jame's Hospital.

³ Data from Leicester Neonatal Service includes data from Leicester Royal Infirmary and Leicester General Hospital.

Appendix B – Key recommendations by audience

The NNAP 2015 Annual Report on 2014 data makes a number of key recommendations of how to address the issues identified within the key findings and results of the audit.

The tables below indicate which of the key recommendations within the report are directed to each of the following audiences:

- Those people who commission neonatal services
- The NNAP neonatal unit clinical teams that provide direct neonatal care
- The Health Board/Trust senior management that supports neonatal services locally
- The regional neonatal Operational Delivery Networks (ODN) in England and Wales that provide advice on neonatal services to Health Boards, Trusts and Commissioners.

	For Commissioners of neonatal services
Antenatal Steroids	Commissioners should review antenatal steroid administration for their populations, and provide support for any units whose administration rates could be improved.
Neonatal Unit Transfer	Commissioners should act to minimise clinically unnecessary transfers and take transfers into account when reviewing neonatal unit cot capacity.
Clinical follow-up at 2 years of age	Specialist Commissioners and Health Boards should ensure that their contractual arrangements with NHS units include adequate incentives for neonatal follow up in line with current Neonatal Critical Care Service Specifications.
Data Management	Neonatal service commissioners should give incentives to high quality data management for national audit and benchmarking and support the provision of staff at a network and unit level with responsibilities for data capture and analysis.

	For neonatal unit clinical teams
Temperature on admission	Neonatal units should maintain a high level of vigilance in preventing admission hypothermia by adopting professionally accepted techniques such as the use of occlusive wraps, radiant warmers, hats and adjusting the temperature of delivery rooms to ensure that babies are warm on admission. Units experiencing problems with admission hypothermia should review their adherence to accepted care practices after each hypothermic admission.
Antenatal Steroids	Neonatal units with rates of antenatal steroid administration of less than 85% should urgently consider their clinical care pathways with their obstetric colleagues, and review the antenatal course of mothers not given steroids to see whether best practice was followed and if opportunities to do so were missed.
Retinopathy of Prematurity (ROP) Screening	Neonatal units should critically review their 2014 ROP results and identify whether failure to screen eligible babies at an appropriate time was the result of clinical circumstances, organisational failings or administrative errors. Units identified as “non participant” should carefully review their clinical and recording processes for ROP screening in babies less than 32 weeks gestation. All neonatal units should aim to achieve the standard of 100% “on time” screening of eligible babies and should review their clinical and organisational pathways in discussion with their ophthalmology colleagues.
Mother’s milk at discharge	Neonatal units with low rates of breastmilk feeding at discharge should review their practices, and conduct a quality improvement intervention involving clinical teams and parents to encourage higher rates.

Consultation with parents	Neonatal units with low rates of consultation with parents should critically review their processes of both communicating with parents and recording the details of communications. They should make contact with other units achieving better results in order to gain insight into effective practices that they might adopt. Units should make use of guidance on parent involvement in their baby's care which is readily available in the Bliss Baby Charter Standards.
Clinical follow-up at 2 years of age	Neonatal units should have facilities and personnel to conduct and record neonatal follow up at 2 years of age, for those babies born before 30 weeks gestation, in order to identify neurodevelopmental and other disability. Neonatal units should arrange appropriate follow up for babies discharged home, and make arrangements for data capture through (i) identification of eligible babies at discharge, (ii) a mechanism for tracking families through transfers for neonatal care or follow up and change of address and (iii) obtaining information for those who don't attend follow up.
Recording of bloodstream and cerebrospinal fluid (CSF) cultures	Neonatal units should develop robust systems to ensure comprehensive capture of data on blood and CSF cultures.

	For Health Board/Trust senior management
Temperature on admission	NHS Trusts and Health Boards should proactively address any low levels of adherence and encourage the sharing of best practice, facilitate quality improvement and closely monitor performance against this measure.
Recording of bloodstream and cerebrospinal fluid (CSF) cultures	NHS Trusts and Health Boards should provide regular blood culture listings from laboratory systems to their neonatal units to enable clinical teams to validate data entry.
Clinical follow-up at 2 years of age	Specialist Commissioners and Health Boards should ensure that their contractual arrangements with NHS units include adequate incentives for neonatal follow up in line with current Neonatal Critical Care Service Specifications.
Data Management	Regardless of their grade or job title, the individual(s) who are given the responsibility for managing NNAP data should be supported with training, agreed processes to follow and adequate time within their job plan to undertake and complete this work.

	For regional neonatal Operational Delivery Networks (ODN) in England and Wales
Temperature on admission	Neonatal Networks, Health Boards and Trusts should proactively address any low levels of adherence and encourage the sharing of best practice, facilitate quality improvement and closely monitor performance against this measure.
Antenatal Steroids	Neonatal Networks and commissioners should review antenatal steroid administration for their populations, and provide support for any units whose administration rates could be improved.
Retinopathy of Prematurity (ROP) Screening	Neonatal Networks should offer support and the sharing of best practice to any units with low ROP screening adherence rates.
Mother's milk at discharge	Neonatal Networks should review breastmilk administration rates within their units, and consider facilitating the sharing of good practice across their units.
Consultation with parents	Neonatal Networks should review the consultation rates of their units, and where these are low they should offer targeted support to facilitating and recording communication with parents.
Neonatal Unit Transfer	Neonatal Networks should review the rate of transfers of babies within their network on at least a quarterly basis to assess the reason for transfers and determine whether they result from insufficient clinical capacity. They should report these findings to relevant commissioning bodies.



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