



Royal College of
**Paediatrics and
Child Health**

National Neonatal Audit Programme 2016 Annual Report on 2015 data



Photo courtesy of BLISS

National Neonatal Audit Programme 2016 Annual Report on 2015 data

Published September 2016

Commissioned by the Healthcare Quality Improvement Partnership

Royal College of Paediatrics and Child Health
5-11 Theobalds Road, London, WC1X 8SH

The Royal College of Paediatrics and Child Health (RCPCH) is a registered charity in England and Wales (1057744) and in Scotland (SC038299).

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

Neonatal Data Analysis Unit (NDAU),
Imperial College, London

RCPCH

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

National Neonatal Audit Programme 2016 Annual Report on 2015 data

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

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

The programme is funded by
NHS England, the Scottish Government and the Welsh Government



NNAP Project Board members

Professor Anne Greenough, Professor of Neonatology and Clinical Respiratory Physiology & Vice-President (Science and Research), RCPCH – Chair of the NNAP Project Board

Dr Roshan Adappa, Consultant Neonatologist, NNAP Representative for Wales

Dr Lisa Barker, Trainee Representative

Zoe Chivers, Head of Services, Bliss

Lindsey Cracknell, Parent Representative

Daniel Gray, NNAP Data Analyst, NDAU

Ellen Hallsworth, Parent Representative

Wendy Hodgson, Neonatal Nurse Representative

Dr Chris Kissack, Consultant Neonatologist, NNAP Representative for Scotland

Nicholas Longford, NNAP Statistician, NDAU

Dr Gopi Menon, Consultant Neonatologist, British Association of Perinatal Medicine

David McKinlay, Project Manager, HQIP

Professor Neena Modi, Professor of Neonatal Medicine, Neonatal Data Analysis Unit (NDAU) & President, RCPCH

Jenny Mooney, Director of Operations, HQIP (to 21/03/16)

Dr Sam Oddie, Consultant Neonatologist, NNAP Clinical Lead

Gina Outram, Neonatal Nurse Representative

Dr Colin Peters, Consultant Neonatologist, NNAP Representative for Scotland

Sarah Rattigan, Director, East of England Neonatal Operational Delivery Network

Patrick Tully, Parent Representative

Professor Andrew Wilkinson, Professor of Perinatal Medicine, The Neonatal Society

Calvin Down, Project Manager, RCPCH

Melanie David-Feveck, Project Administrator RCPCH

Tyler Moorehead, Clinical Standards Programme Manager, RCPCH (to 26/04/16)

Mark Hannigan, Clinical Standards Programme Manager, RCPCH (from 27/04/16)

Alison Firth, Clinical Standards Editor, RCPCH

Acknowledgements

The NNAP Project Board would like to thank the many doctors, nurses, administrators and others who have contributed their time and effort to collect information and review its accuracy; particular thanks are due to the NNAP clinical leads in each unit.

Thanks also to the team at Clevermed Ltd for their ongoing support for NNAP data entry and data checking on the Badger system.

We also acknowledge the contribution made towards the development of this report by the members of the NNAP Clinical Reference Advisory Group (CRAG) and colleagues within the clinical standards, invited review, policy and workforce teams at the RCPCH

Contents

Forewords.....	Page 5
Executive Summary.....	Page 7
The NNAP within the current context of neonatal care.....	Page 7
Summary of key findings and recommendations	Page 8
Impact and engagement	Page 9
Future development and improvement	Page 10
1. Introduction.....	Page 11
1.1 Aims of the NNAP.....	Page 11
1.2 Case ascertainment	Page 11
2. Key Findings and Recommendations	Page 12
2.1 Temperature on admission	Page 13
2.2 Antenatal steroids.....	Page 15
2.3 Retinopathy of Prematurity (ROP) screening.....	Page 16
2.4 Mother's milk at discharge.....	Page 18
2.5 Consultation with parents.....	Page 19
2.6 Neonatal unit transfers	Page 21
2.7 Clinical follow-up at 2 years of age	Page 22
2.8 Bronchopulmonary Dysplasia (BPD)	Page 24
2.9 Recording of bloodstream and cerebrospinal fluid (CSF) cultures.....	Page 26
2.10 Prevalence of Central Line-associated Bloodstream Infections (CLABSI).....	Page 26
3. Case Studies.....	Page 27
4. Full 2015 National, Network and Year on Year Results	Page 36
4.1 NNAP audit measures	Page 36
4.2 Data completeness	Page 37
4.3 Data analysis	Page 37
4.4 Neonatal unit designations.....	Page 37
4.5 Note on Scotland Network data presented in this report.....	Page 38
4.6 Outlier analysis.....	Page 38
4.7 Full 2015 Results	Page 39
Appendix A: Neonatal units that contributed 2015 data	Page 80
Appendix B: RCPCH resources and publications	Page 85

Forewords

Professor Anne Greenough, Vice President (Science and Research) Royal College of Paediatrics and Child Health & Chair of the NNAP Project Board

As chair of the National Neonatal Audit Programme (NNAP) Project Board I am delighted that the NNAP has continued to evolve and that it now encompasses an even wider neonatal community with Scottish units having contributed data for the first time in 2015.

In addition, this year an updated version of the NNAP publication, "Your Baby's Care" which presents the results in a parent friendly format, is being launched with this full annual report. I would like to give thanks to our three parent representatives on the Project Board who led on the development of the booklet. Ellen, Lindsay and Patrick have been an excellent addition to the Board particularly focusing our attention on what is important to parents. We continue to be grateful for the input of colleagues from the Neonatal Data Analysis Unit (NDAU) who provide the data analysis and statistical support for the audit.

As neonatologists, we 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 nine years ago to provide such data. Over that period, there have been increases in the recording of data and improvements in key outcomes. Neonatal practitioners should be congratulated on their input into the NNAP, often providing these data with no additional resource. I am grateful to the NNAP project team for producing this comprehensive report.

Ellen Hallsworth and Patrick Tully, Parent Representatives NNAP Project Board

All parents whose babies are admitted to neonatal care are united by the desire for them to get better.

As the parents of identical twins born prematurely at 31 weeks (Patrick), and a daughter born at 28 weeks (Ellen), we joined the NNAP project board because we believe that babies stand the best chance of getting better when parents are able to work in partnership with the doctors, nurses and other professionals who care for them on neonatal units.

On the project board, we try to bring parents' perspectives to bear on the current audit measures, and to contribute to the audit as it develops and plays a role in driving improvement. We hope that the 2015 annual report, and the parent-focused "Your Baby's Care" leaflet which accompanies it, will help parents and clinicians to work together to achieve the best outcomes for babies.

A mixed picture emerges from the 2015 data. Though there is limited improvement across the majority of measures, from a parent's point of view the high levels of variation between units are worrying. We would like "Your Baby's Care" to act as a starting point for making things better. We hope it will be a

tool for talking about support for breastfeeding and why it matters; and that it will continue to support rising rates of follow up at 2 years of age, since gathering longitudinal data enables us to understand the long-term outcomes of neonatal care, something which matters so much to parents. The NNAP's new online reporting tool is also a vital resource for parents who want to find out more about what their unit does well, what could be improved, and what to expect if their baby is transferred between units.

It is widely acknowledged that family-centred care leads to better outcomes, so it's disappointing that consultation between parents and senior members of staff seems to have shown little improvement since 2012. Though the first 24 hours of a neonatal stay are crucial, we also want to find new ways to measure how parents can work in partnership with the teams caring for their babies over the course of a longer stay.

If, as a parent, carer or family member of a baby admitted to neonatal care, you have suggestions for how the NNAP can better reflect your experiences and concerns, please let us know by contacting the NNAP project team at: nnap@rcpch.ac.uk. By working with clinicians to improve care we, as parents, can help to improve things not just for our own babies, but for those babies who will require neonatal care in the future.

Dr Alan Fenton, President British Association of Perinatal Medicine

The presentation of outcome measures by Neonatal Networks is a vital element of the NNAP annual report. A key step in trying to improve neonatal care is the sharing of best practice, and local network peer support may be an appropriate starting point to facilitate the process.

This year's report highlights on-going wide variation in some of the audit measures. It is incumbent on professionals in individual organisations with less than optimal outcomes (be they networks or individual neonatal units) to identify the factors that influence their performance and, where possible, to institute steps to begin the process of improvement. It is crucial that this process also includes those responsible for commissioning neonatal services. This is particularly important in light of the findings of recent Bliss reports which have highlighted staffing shortages as a critical issue in the delivery of neonatal care: over-stretched services will find it considerably more challenging to improve care overall and there is increasing evidence demonstrating that understaffing is linked to increased mortality.

The continuing challenge for the NNAP Project Board will be to ensure and maintain widespread clinician 'buy in' to the Programme and that the items audited are both robust and truly measure quality in neonatal care. Clearly, static data items such as admission temperature are easily monitored. Facilitating parental involvement in their baby's care is a dynamic process that continues to develop during a family's journey through the neonatal unit and is considerably more difficult to assess meaningfully at a single point in time. On-going engagement and consultation with families will help the development and refining of these measures.

Without doubt however the proposals to include items from 2017 aimed at minimising mother-baby separation are timely and relevant. The next challenge will be ensuring and auditing safe delivery of care to infants receiving enhanced care outwith neonatal units.

Executive Summary

Welcome to this 9th annual report of the National Neonatal Audit Programme (NNAP), produced by the Royal College of Paediatrics and Child Health (RCPCH)

The NNAP within the current context of neonatal care

Approximately 750,000 babies are born each year in England, Scotland and Wales and of these nearly 1 in 8, or around 95,000, 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. The aim of the NNAP is to improve the standard of care that is provided to these babies by neonatal services.

Bliss, the UK charity working to provide the best possible care and support for all premature and sick babies and their families published reports in 2015 and 2016 showing that services for premature and sick babies in both England and Wales are under severe pressure, facing a critical shortage of nurses, doctors and the full range of professionals needed to deliver safe care of the quality that these vulnerable babies need and deserve.

Bliss also highlighted the fact that these staffing shortages have resulted in a large number of transfers of babies taking place due to a lack of staffed cots rather than medical need, putting babies at unnecessary risk and adding to their families' stress and worry.

The NNAP awaits with interest the key findings and recommendations from the publication of the Review of Maternal and Neonatal Services in Scotland.

Monitoring the standard of care provided by specialist neonatal units is essential to inform efforts to give all babies the best possible chance of surviving and reaching their full potential. The monitoring is achieved through the NNAP, which encourages individual neonatal units and regional networks to deliver the very highest levels of care to babies and families by reporting their outcomes against standards described by professional organisations.

The NNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP), funded by NHS England, the Scottish Government and the Welsh Government, and is delivered by the RCPCH.

Through its annual comparison of the results from all levels of neonatal units in England, Scotland and Wales against professionally agreed standards (detailed in full in Section 4 of this report), 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. It is hoped that neonatal units, networks and commissioners will use this report to create change and lead quality improvement, based on their results.

The NNAP is particularly pleased that neonatal units in Scotland have now joined the audit, as this helps to provide a more comprehensive picture of neonatal care across the UK and further opportunities for units to share best practice and learn from each other.

Alongside this year's annual report the NNAP has produced an online reporting tool, which will, for the first time, allow people to view the results of the NNAP analysis in an interactive manner. The tool can be accessed from the NNAP web pages at www.rcpch.ac.uk/nnap and provides options to view and compare results for chosen units and networks for the NNAP audit measures and across audit years. The NNAP project board hopes that this tool will further enhance the ability of the audit to encourage the sharing of best practice and to stimulate quality improvement activities for the benefit of babies and their parents.

Summary of key findings and recommendations

This audit report of 2015 NNAP data covers ten key areas of neonatal care. Of the key findings, three demand particular attention:

- Two-year follow up – there has been an improvement in the rate of follow up of very pre-term babies (54% in 2014, 60% in 2015). There is, however, considerable variation between networks, with the best performing network achieving recorded follow up on almost three times the number of babies than the lowest performing.
- Temperature on admission – more than one in four babies who had their temperature recorded within an hour after birth were too cold, a major concern given the recognised association between hypothermia and increased mortality and morbidity.
- Recorded consultation with parents – there has been little or no overall progress since 2012 with this basic, but essential, standard of parental partnership in care. This is very disappointing, meaning that one in ten parents still did not have a recorded consultation with a senior member of the neonatal team within 24 hours of their baby's admission to the unit.

Overall, this report notes that whilst there are continued levels of variation between units and networks many have been able to achieve a high quality of care for their babies offering encouragement to other units and networks to do the same.

The NNAP strongly recommends the sharing of best practice between units and networks and hopes that the introduction of interactive unit and network level caterpillar plots within the NNAP online reporting tool will facilitate more meaningful comparisons of results and opportunities for units and networks to collaborate and learn from each other. The online reporting tool, and an extended version of this report containing tables of full unit level results, can be found on the NNAP web pages at: www.rcpch.ac.uk/nnap.

Impact and engagement

The NNAP has progressed over the years from an audit focusing only on neonatal units in England to the inclusion of units in Wales in 2012 and, Scottish neonatal units in 2015.

Data completeness for the majority of the NNAP audit measures is now at an extremely high level which means that the report outputs produced by the audit are able to provide a trusted source of information upon which to identify quality improvement opportunities.

At a project board level the experience of the parents of babies admitted to neonatal care has, since September 2015, been reflected by three parent representatives who play a key role in challenging the clinical members of the board to ensure that the work of the audit remains focused on babies and their families.

The production of the *"Your Baby's Care"* information booklet in 2015, and this year's updated version, is a testament to the positive influence on the audit of the parent representatives who will play an ever increasing role in raising the profile of the importance of the audit and ensuring that it is relevant to the needs of babies and families. In addition, their presence on the project board provides advice and guidance for improved communication between neonatal unit staff and parents and helps to stimulate closer involvement in the care of babies on the unit by their own parents in collaboration with staff.

Two neonatal nurses joined the project board in September 2015 bringing a wealth of experience from the position of those who interact most closely with babies and parents on a daily basis.

The involvement of the NNAP Clinical Reference Advisory Group (CRAG) has, since its establishment in late 2014, continued to provide valuable input and guidance from clinicians who represent a broad range of unit levels and geographical representation.

The NNAP is committed to close consultation and engagement with its key stakeholders so that it continues to be both clinically relevant and responsive to the needs of the whole neonatal community. The audit engages with its varied audiences by undertaking activities such as online surveys, attending neonatal network data analyst and managers meetings and running an annual NNAP/NDAU collaborators' meeting, the latest of which was held in April 2016 and brought together over 120 attendees including commissioners, parents and a range of multidisciplinary neonatal and network staff.

The NNAP has directly responded to feedback from stakeholders by implementing changes such as the inclusion of comparative data alongside data completeness in the quarterly reports that it provides to neonatal units. The introduction in January 2016 of new audit measures on the provision of antenatal magnesium and an additional measure of Central Line-associated Bloodstream Infections (CLABSI) was influenced by the engagement activities detailed above.

The introduction of the NNAP online reporting tool this year is also a direct result of the call from stakeholders to have a better means of viewing and comparing NNAP results. The case studies included in this report highlight how some neonatal units have responded to the review of their own NNAP results by implementing effective quality improvement activities.

Future development and improvement

Following further consultation with stakeholders in 2016 a number of new audit measures will be introduced in time for data entry in 2017. These new measures will address:

- Late and Moderate Preterm Birth – Avoiding inappropriate separation of mother and baby
- Preterm infants delivered at <27 weeks gestation – delivery in appropriately designated unit
- Necrotising Enterocolitis (NEC) – Using a surveillance definition to facilitate NEC focussed quality improvement activity in NNU
- Reducing term neonatal admissions – minimising unnecessary mother and baby separation
- The NNAP will also start to collect data in January 2017 on mortality to discharge for babies admitted to neonatal care using a methodology that has been developed so that it compliments existing projects that report on neonatal mortality.

More work will be undertaken in future to engage with parents in particular via social media and through collaboration with Bliss. The NNAP project board parent representatives will help to direct engagement activities and forge stronger links with other parent representatives in neonatal units and networks to ensure that a consistent message is delivered as part of a coordinated communication plan.

RCPCH Support and Quality Improvement Services

At a wider level the RCPCH provides a range of support services and quality improvement tools. These can be viewed at the end of this report in Appendix B.

1. 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 and Scottish units joining in 2015. Participation in the NNAP has grown significantly since then, with 179 neonatal units across England, Scotland and Wales having contributed data to this 2016 report on 2015 data. A full list of the NNUs which provided 2015 data can be viewed in Appendix A.

The NNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP), funded by NHS England, the Scottish Government and the Welsh Government and delivered by the Royal College of Paediatrics and Child Health (RCPCH).

1.1 Aims of the NNAP

The key aims of the audit are:

- To assess whether babies admitted to NNUs in England, Scotland and Wales receive consistent high quality care in relation to the NNAP audit measures that are aligned to a set of professionally agreed guidelines and standards.
- To identify areas for quality improvement in NNUs in relation to the delivery and outcomes of care.

1.2 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 Health Board and 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 2015.

2. Key Findings and Recommendations

The following key findings and recommendations are based on the analysis of the data provided by 179 neonatal units on the care provided to 95,325 babies admitted to eligible neonatal units and discharged from neonatal care in England, Scotland and Wales during the calendar year of 1 January to 31 December 2015.

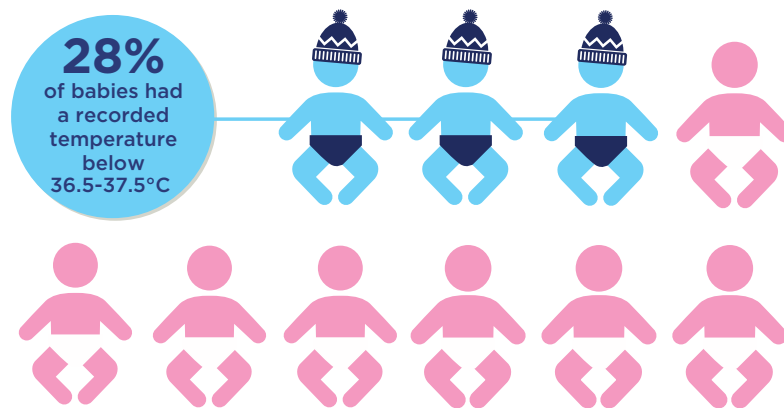
The NNAP focused on the following areas of neonatal care in 2015:

- 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
- Bronchopulmonary Dysplasia (BPD)
- Recording of blood stream and cerebrospinal fluid cultures
- Prevalence of Central Line-associated Bloodstream Infections (CLABSI)

Full details of the NNAP 2015 audit measures are available on page 36 of this report.

2.1 Temperature on admission

It is important to take a baby's temperature on admission to the neonatal unit as low admission temperature has been associated with an increased risk of illness and death in pre-term infants. Hypothermia is an easily preventable condition, even in vulnerable newborns, so if a baby is too cold, neonatal unit staff need to know so that they can take action to get the temperature back to normal.



Key Findings

- Hypothermia remains a common problem in UK neonatal care. 28% of babies born in 2015 at less than 32 weeks gestation who had their temperature recorded within an hour of birth had a temperature below the recommended range of 36.5°C to 37.5°C. (Table 1.3, page 42).
- Marked hypothermia remains common for almost one in ten babies, with 9% of babies born at less than 32 weeks gestation having a temperature below 36.5°C within an hour of birth (Table 1.3, page 42).
- Five-and-a-half percent (5.5%) of babies born at less than 32 weeks gestation did not have their temperature recorded within an hour after birth (Table 1.1, page 40).
- There is a wide variation (from 24% to 88%) in the performance ability of neonatal units in admitting babies within the recommended temperature range of 36.5°C to 37.5°C (Figure 1, page 44).
- Neonatal networks varied in the proportion of babies admitted within the recommended temperature range. At one network (Thames Valley – Wessex), 74% of babies born at <32 weeks were admitted with a temperature within the recommended range, while at seven other networks the proportion of babies admitted with a temperature within the recommended range was lower than the national average of 62% (Table 1.4, page 43).

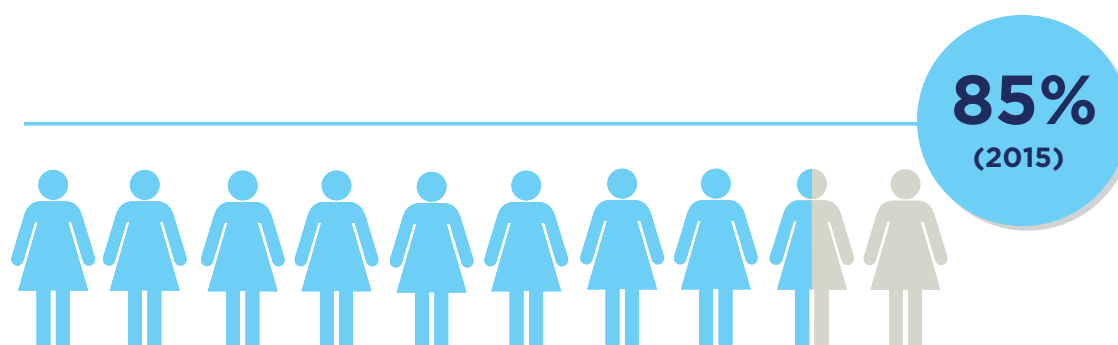
Key Recommendations

- Neonatal units recording any admission temperatures more than an hour after birth should review the effectiveness of their mechanisms for measuring and recording admission temperature.
- Neonatal units should ensure that they have a care bundle in place, developed with multidisciplinary input, which mandates the use of evidence-based strategies to minimise admission hypothermia of very preterm infants.
- Neonatal units that have above average rates of admission hypothermia recorded for their babies should firstly consider whether they have such an evidence-based care bundle and, if they do, should audit whether they are applying it effectively, and seek local quality improvement and sharing/learning opportunities by comparing their practices to units with better performance using the NNAP online reporting tool.
- Neonatal units should report all infants admitted with marked hypothermia (admission temperature $<36.0^{\circ}\text{C}$) through local governance structures to identify opportunities to improve practices.
- Neonatal networks should regularly review the occurrence of hypothermia in their units and, based on this review, facilitate the sharing of best practice to help and support their units in achieving continuous improvements in standards.
- Commissioners should encourage local quality improvement through reporting hypothermia to regional dashboards using definitions consistent with those used in the NNAP, given the evidence of harm associated with admission temperatures of less than 36.5°C .

Full 2015 results and tables for Temperature on admission are found on pages 40 to 45.

2.2 Antenatal steroids

Antenatal steroids are the most powerful health promotion tool in neonatal care. They are given to mothers by obstetricians prior to pre-term birth in order to reduce the chance that their baby is affected by breathing difficulties (respiratory distress syndrome), as well reduce the risk of several other serious complications of prematurity.



Key Findings

- Eighty-five percent of mothers of babies born between 24 and 34 weeks of gestation were recorded as receiving antenatal steroids, a figure which was unchanged from 2014 (Table 2.1, page 46).
- Neonatal unit performance varies considerably, with rates of antenatal steroid administration ranging from 41% to 97%. Some units admit a substantially lower proportion of babies exposed to antenatal steroids than the average for units. (Figure 3, page 48)
- Neonatal network variation is clear: out of sixteen networks, two admitted more than 90% of eligible babies who were exposed to antenatal steroids, whereas a further two have aggregate rates below the 2015 network average (Figure 4, page 48.)

Key Recommendations

- Neonatal units, together with the lead obstetrician responsible for the implementation of the NICE guidance on preterm labour, should formally review records of babies born at <35 weeks admitted for neonatal care where antenatal steroids had not been given to the mother, in order to identify potential missed opportunities and themes as to why these were not given.
- Neonatal networks should keep administration rates of antenatal steroids in their units under regular review, identify any quality improvement opportunities and support units to achieve the best possible neonatal outcomes.
- The NNAP and the National Maternity and Perinatal Audit should collaborate to report antenatal steroid administration rates as part of the national Maternity Dashboard.
- The NNAP should, together with relevant stakeholders, review whether the current NNAP standard for this audit measure is optimal, or if units and networks should be audited against a different or additional standard.

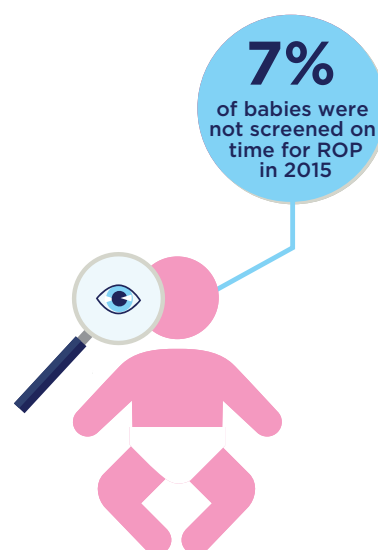
Full 2015 results and tables for Antenatal steroids are found on pages 46 to 48.

2.3 Retinopathy of Prematurity (ROP) screening

Retinopathy, a condition that affects the blood vessels in the back of the eyes, is a complication of prematurity with the potential to result in visual loss or blindness. It has no signs or symptoms, but is largely preventable if babies are screened and treated on time in line with national guidelines.

Key Findings

- More than one in 20 babies (7%) did not receive ROP screening within the recommended time - a figure unchanged from 2014 (Table 3.1, page 50).
- The gestational age group most commonly not screened on time was those born at ≥ 32 weeks gestation, where only 85% were screened on time (Table 3.4, page 52).
- Performance of on time screening varies by network. No network achieved 100% on time screening of eligible infants for ROP. Seven networks show on-time screening rates of $\geq 95\%$ (East of England, North West, Peninsula and Western, South East Coast, South London, Thames Valley - Wessex and Yorkshire & Humber) and are above the average of 93% for all networks (Table 3.2, page 51).
- A further five networks had on-time screening rates of $<90\%$ (Northern, Scotland, Staffordshire, Shropshire and Black Country, Trent Perinatal and Central Newborn and Wales) (Table 3.2, page 51) and are clearly below the network average (Figure 6, page 53). For three of these five networks (Northern, Trent Perinatal and Central Newborn and Staffordshire, Shropshire and Black Country) the proportion of their babies screened on time was lower than their results for 2014, which is a cause for serious concern. These results show that major quality improvement and sharing / learning opportunities exist for ROP screening in some networks.
- At a unit level, 38 out of 156 units screened 100% of their babies on time; in contrast, some units are falling far from this standard (Figure 5, page 53).
- Fifteen units screened 10% or more babies late, representing 106 out of the total 324 babies not screened on time, which demonstrates a considerable quality improvement opportunity (Table 3.1, page 50).
- Neonatal units with data completeness $<90\%$ missed data on a significant number of babies, who were mostly of gestations and birthweights close to the threshold for screening. However a significant number of babies who were screened outside the appropriate time window were of very low gestations - i.e. babies who had quite a high priority risk of needing treatment for ROP (Table 3.4, page 52).
- Neonatal units who had entered data for $<90\%$ of eligible babies were also less adherent to the standard for ROP screening than units with better data completeness for the data they did submit (84% vs 96%), suggesting a link between unreliable clinical processes and poor data recording.



Key Recommendations

- Neonatal units should strive to achieve the standard of 100% “on time” screening for ROP for all eligible babies. Where this does not occur due to late or absent screening, units should, as part of a formal local risk incident investigation, formally review their clinical, organisational and administrative pathways in discussion with their ophthalmology colleagues.
- Units identified as outliers, and those units identified as non-participant in the outlier analysis, should review their clinical, organisational and administrative pathways with the aim of documenting comprehensive ROP screening in collaboration with their ophthalmology colleagues.
- Units with multiple missed ROP screening cases should consider using the NNAP online data reporting tool to find units with which to compare themselves in order to identify quality improvement opportunities.
- Units should clearly describe to parents, prior to the opening of the screening window, but after the first week of life, the need for ROP screening using an individualised written resource which sets out for the parents the anticipated date of first screening for their baby.
- Neonatal networks should regularly review their units’ adherence to ROP screening guidance, and consider supporting units in conducting quality improvement and education activities, especially where poor performance is repeated.
- Commissioners and neonatal networks should work together to ensure that sufficient trained personnel are available to perform ROP screening in neonatal units.
- Commissioners should consider using contractual mechanisms such as the Commissioning for Quality and Innovation (CQUINs) payments framework and Key Performance Indicators (KPIs) to encourage trusts to ensure comprehensive screening for ROP is conducted and sustained.
- The NNAP should discuss with Clevermed Ltd how the Badger neonatal software could be adapted so that both the date of first screening, and any subsequently arranged screens, are easily discernible from a baby’s own electronic record, and from a central report.

Full 2015 results and tables for ROP screening are found on pages 49 to 53.

2.4 Mother's milk at discharge

Premature babies are especially vulnerable to infection, and mother's milk provides an important line of defence through the protective antibodies that it provides. These significant health benefits include a reduction in infection and gut pathologies, as well as improved longer-term health and neurodevelopmental outcomes.

Key Findings

- Fifty-eight percent of eligible babies delivered at <33 weeks were receiving their mother's milk at the time of their discharge from neonatal care; this figure has remained stable since 2012 (Table 4.1, page 55).
- Breastmilk feeding rates vary considerably by network, ranging from 43% to 85% (Figure 8, page 57). This geographical variation may be partly explained by underlying population factors in background rates of breast feeding; however the measure of mother's milk administration at discharge remains highly relevant in supporting unit-based quality improvement activities which address practices and culture.



Key Recommendations

- Neonatal units should be able to demonstrate active multidisciplinary use of a local policy to support the establishment and ongoing support for breastmilk feeding of preterm babies.
- Networks and units should use the NNAP online data reporting tool to compare their performance and its trajectory over time to that of suitable comparable networks. Units should use this data, alongside available data concerning breastfeeding practices in full-term babies in their local area, to inform local quality improvement activity.
- The NNAP should consider including transferred babies in this measure in future audits.

Full 2015 results and tables for Mother's milk at discharge are found on pages 54 to 57.

2.5 Consultation with parents

The parents of babies admitted for care in neonatal units find themselves in a difficult and stressful situation. Involving parents in their baby's care is crucial for achieving the best long-term outcomes; engaging them in the first 24 hours is an essential part of doing this. It is therefore vital 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

- Eighty-eight percent of parents had a documented consultation with a senior member of the neonatal team within 24 hours of their baby's admission to the unit which means that more than 1 in 10 parents still did not. There has been no improvement since 2014, which is disappointing after 9 years of audit (Table 5.1, page 58).
- Four percent of parents had no consultation at all, showing little change from 2013 and 2014 (Table 5.1, page 58).
- At a unit level, adherence to the standard varies widely ranging from 54-100%. (Figure 9, page 60).
- Neonatal networks vary considerably in their adherence to this standard (ranging from 70-100%), and overall adherence is much better in LNUs than in NICUs or SCBUs (Table 5.2, page 59). Two networks delivered the standard in almost 100% of babies, but seven networks fell below the average of 88% for all networks (Table 5.2, page 59 and Figure 10, page 61).



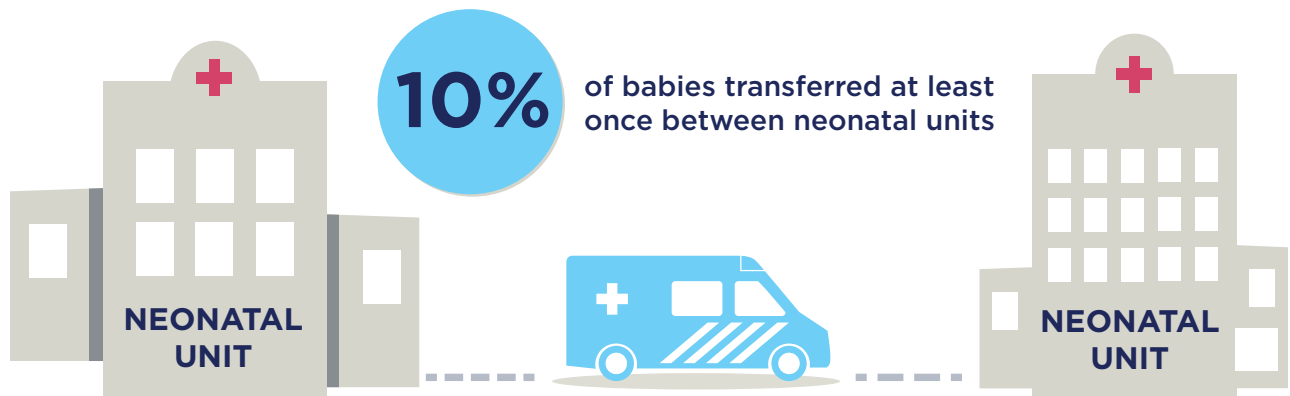
Key Recommendations

- Neonatal units should review the reasons why timely parental consultations did not occur in their units, asking whether documentation and recording processes describe, on a daily basis, whether or not parents have seen a senior doctor. They should seek to identify themes among the underlying reasons and put processes in place in order to strengthen their support of parental partnership in care.
- Neonatal 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 units should refer to the NNAP online reporting tool in order to identify suitable units for comparison to inform local quality improvement for this audit measure.
- Neonatal units should promote the aims and importance of the NNAP with parents by discussing the NNAP booklet "Your Baby's Care" with them and by openly displaying their latest NNAP results for parents in the unit.
- Neonatal networks should review the parental consultation rates of units within their network, and offer encouragement and support to lower performing units to enhance parental partnership in care. Networks should encourage units to identify suitable comparator units with better performance using the NNAP online reporting tool in order to identify quality improvement opportunities.
- Clevermed should support data entry by designing the software such that users are only able to record the lack of a parental consultation once the first 24 hours following admission have elapsed.
- The NNAP should continue to work with parent representatives on the NNAP project board to identify improved audit measures of parental communication and partnership in care, and should communicate the details of new measures in time for data entry in 2017.

Full 2015 results and tables for Consultation with parents are found on pages 58 to 61.

2.6 Neonatal unit transfers

In England, Scotland and Wales neonatal care is provided by three different levels of unit. There are times when 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 clinically feasible.



Key Findings

- Transfers of babies between neonatal units are common, with one in ten babies experiencing at least one transfer in 2015 (Table 6.1, page 63)
- The current audit measure does not allow the NNAP to present data which adequately describes any variation in the rates of transfer of babies across network boundaries, and therefore any apparent differences should be interpreted with great caution.

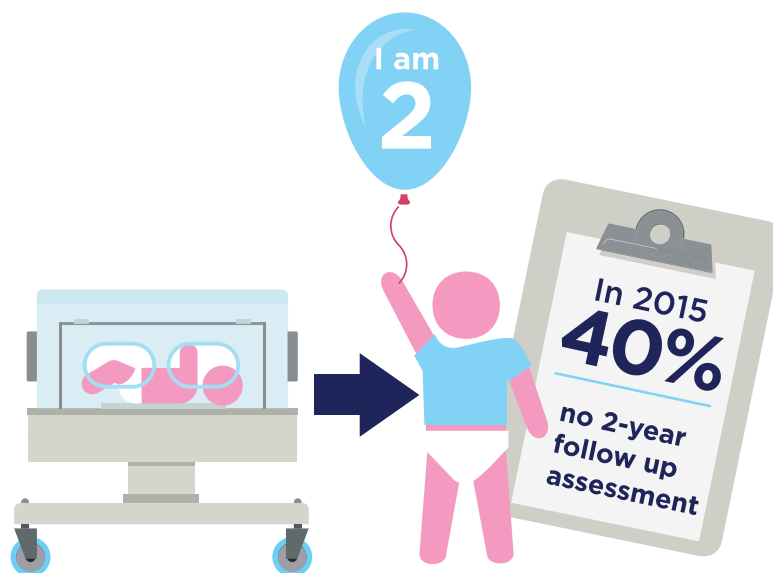
Key Recommendations

- Neonatal networks should regularly monitor their transfer rates and aim to minimise transfers, particularly those to units which will require parents to travel long distances and, due to this travel burden, cause undue separation of baby and parents.
- Commissioners should ensure that there is adequate staffing in their units in line with professional agreed service standards in order to minimise unnecessary transfers.
- The NNAP should consider developing an alternative measure that describes transfers in terms of their impact on parental travel time.

Full 2015 results and tables for Neonatal unit transfers are found on pages 62 to 64.

2.7 Clinical follow up at 2 years of age

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. Babies born prematurely do not always reach key developmental milestones so these checks at age two provide a valuable opportunity to identify any potential issues at an early stage.



Key Findings

- Sixty percent of babies born at <30 weeks gestation have had a recorded follow up consultation (Table 7.1, page 66), a considerable improvement from the 54% recorded in 2014.
- At network level, the best performing network recorded follow up data for almost three times the number of babies than the lowest performing (Table 7.2, page 66 and Figure 12, page 71).
- Performance of standardised assessments varied significantly; 60% of babies for whom follow up information was available had their developmental outcome categorised using data from a standardised assessment (Table 7.5, page 70). Bayley assessments were performed most commonly but a wide range of alternative assessments, including Griffiths and Schedule of Growing Skills, were also used. This reflects the lack of clear recommendations, which is to be addressed by the forthcoming NICE preterm infants guideline, due to be published in 2017.

Key Recommendations

- Neonatal units with incomplete data capture should develop specific plans to improve documented follow up of babies born at <30 weeks to two years corrected age.
- Neonatal medical staff should discuss the indications and arrangements for two year follow up with families in the period leading up to the discharge home of their baby, and support this communication with written information which details the expected timeframe for the two year follow up consultation.
- Parents should ensure that they support the follow up of their preterm infants by attending appointments or engaging in alternative arrangements in the event that follow up becomes impractical, for example in situations where families move house at some distance from the discharging unit.
- Neonatal networks should use the NNAP online reporting tool to identify networks or units that have, as suggested by their higher results, better procedures or practices and support their units to deliver and record follow up with higher levels of completeness.
- NHS England commissioners, and their equivalents in Scotland and Wales, should use contractual means such as as the Commissioning for Quality and Innovation (CQUINs) payments framework and Key Performance Indicators (KPIs) to encourage networks and units to deliver this key aspect of follow up care more effectively.
- The NNAP should reconsider the criteria for this audit measure once NICE has published its guidance on the follow up of preterm infants in 2017.

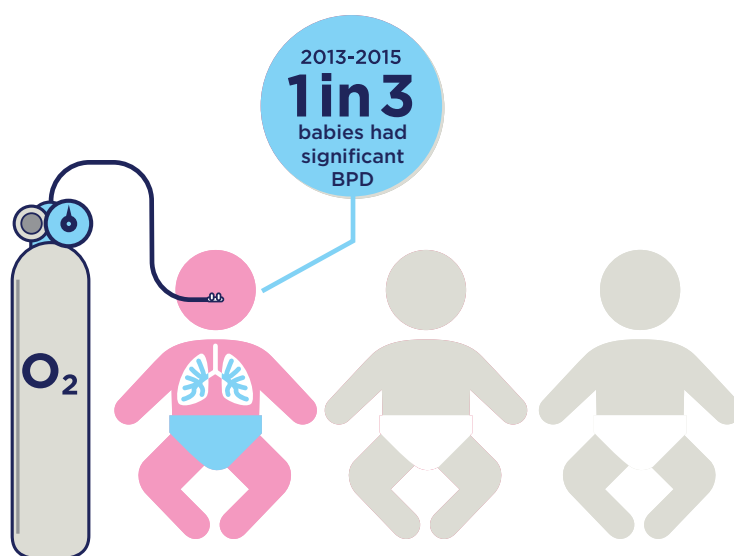
Full 2015 results and tables for Clinical follow up at 2 years of age are found on pages 65 to 71.

2.8 Bronchopulmonary Dysplasia (BPD)

Bronchopulmonary dysplasia (BPD) is an important complication of preterm birth. First described in 1967, this disease now occurs in babies who survive thanks to modern intensive care. BPD typically results in longer hospital stays, sometimes results in infants needing home oxygen, and may even cause longer term problems with development. While some babies are born with risk factors for developing the disease – such as very low gestation – it is likely that care practices also influence the risk of babies developing BPD. BPD is often studied using operational definitions based on the levels of support clinicians provide to infants at particular ages.

Several such “surveillance definitions” exist for BPD. The NNAP has chosen to report two levels of a well-recognised surveillance definition. Currently collected data do not allow the NNAP to distinguish between “moderate BPD” and “severe BPD” as described by the National Institute for Child Health and Human Development (NICHD), and for this reason, we report “significant BPD”, which we define as the occurrence of either of these disease severities.

The introduction of this measure means that for the first time the NNAP is able to provide data describing the rates of significant BPD for mainland UK babies based upon 3 years’ worth of data.



Key Findings

- Just under one in three babies born at <32 weeks gestation were affected by significant BPD between 2013 and 2015 (Table 8.1, page 72).
- Neonatal unit rates vary considerably. 17 out of 54 NICUs had rates of significant BPD of >40%, while a further 11 of the 54 NICUs had rates of significant BPD of <30%. (Figure 13, page 74).
- At a network level, rates of significant BPD range between 24% and 39%. (Figure 14, page 74)
- These benchmark results should be viewed with caution, as more work is needed to understand the potential confounding effects on variation of survival, case mix, thresholds for oxygen administration (SpO₂ targeting), population factors and treatment choices

Key Recommendations

- Neonatal units should consider reviewing their reported rates of significant BPD and using the NNAP online data reporting tool to identify similar units with which to compare themselves with in order to identify quality improvement opportunities.
- When reporting this measure of BPD in future, the NNAP should consider adjusting for potential confounding variables such as mortality, in addition to reporting unadjusted rates.

Full 2015 results and tables for BPD are found on pages 72 to 74.

2.9 & 2.10 Recording of bloodstream and cerebrospinal fluid (CSF) cultures & Prevalence of Central Line-associated Bloodstream Infections (CLABSI)

Bloodstream infections lead to mortality and preterm babies who have infections are more likely to develop neurodevelopmental disability. Measuring blood stream infection in the 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.

Key Findings

- No important increase in the number of blood cultures recorded compared to 2014 (64,798 from 95,325 babies in 2015 and 55,388 from 86,287 babies in 2014) (Table 9.1, page 76).
- Sixteen percent of blood cultures that were taken do not have a result recorded; therefore data pertaining to blood and CSF infection appears very likely to be significantly incomplete (Table 9.1, page 76).
- Utility of the data for identifying infection rates is limited, as the NNAP is unaware of which units can confidently state that all positive blood cultures are entered into the Badger system.

Key Recommendations

- Neonatal units should develop improved methods to enter data pertaining to positive blood and CSF cultures, and the symptoms associated with them.
- NHS Trusts and Health Boards should ensure that neonatal unit clinical staff are provided with regular reports about positive samples to support data verification.
- The NNAP should plan a staged approach to improving infection measures within the audit in view of the low data completeness. Such an approach should sequentially aim to:
 - facilitate comparisons between units with known complete data entry for all positive blood cultures;
 - increase the number of units with complete data entry;
 - support development of linkage between routine data sources and the audit dataset; and
 - improve data completeness for contemporaneous symptom data capture.
- The NNAP encourages NHS England and the Healthcare Quality Improvement Partnership to convene a meeting including Public Health England (and their equivalents in Scotland and Wales) to discuss data linkage between their respective routine data sources and the National Neonatal Research Database (NNRD) to avoid duplicate data entry (and the hazards associated with this).

Full 2015 results and tables for Recording of bloodstream and cerebrospinal fluid (CSF) cultures are found on pages 75 to 77.

Full 2015 results and tables for Prevalence of Central Line-Associated Bloodstream Infections (CLABSI) are found on pages 78 to 79.

3. Case Studies

The following three case studies are included in this report to highlight how some neonatal networks and units have used NNAP results as a basis for identifying, and undertaking, local quality improvement activities.

3.1 Case Study One

Using results from the National Neonatal Audit Programme (NNAP) Annual Report to drive improvements in the rates of breast feeding at discharge from neonatal care

Presented by: Dr P Sashikumar, Consultant Neonatologist, K. Vandertak, Nurse Educator, Neonatal Infant Feeding Team, L.Proffitt, Neonatal Matron, S Jones, Advanced Neonatal Nurse Practitioner.

Background:

The Oliver Fisher Neonatal Intensive Care Unit (NICU) is located within the Medway Maritime Hospital in Kent. Each year, around 1,000 babies spend some time being looked after in the unit as they need intensive, high dependency, transitional or special care.

The unit is located within the wider South East Coast Neonatal Operational Delivery Network (ODN).

The Oliver Fisher NICU has participated in the NNAP since 2007 with audit results for the unit consistently confirming high standards of care.

The 2015 report on 2014 data however showed a drop in our rates of breast milk feeding at discharge. Furthermore, and for the first time ever, we were identified as a low outlier for this NNAP audit measure with breast feeding rates at discharge of 34% compared to the national average of 60% in babies born at less than 33 weeks gestation.

In this case study we highlight that with a quality improvement approach, and simple but focused interventions, we have been able to achieve a significant improvement in breast milk feeding rates over a relatively short period of time.



Feeding with mother's milk

The following table shows the 2014 results for the Oliver Fisher NICU for the NNAP audit measure which asked: *“What proportion of babies born at less than 33 weeks gestation were receiving any of their own mother’s milk at discharge to home from the neonatal unit?”*. Results for the unit are shown against those for both the National and South East Coast Neonatal Network averages for the same year:

NNAP Standard	National Average	South East Coast Neonatal Network Average	Oliver Fisher NICU	Further Comments
Benchmarking	60% (3,570/5,942)	63% (273/432)	34% (21/62)	Oliver Fisher NICU confirmed as a Low Outlier for 2014 NNAP data

We were notified about our provisional low outlier status for this audit measure by the NNAP clinical lead in May 2015 and we received formal confirmation of the low outlier status in October 2015 prior to the launch of the annual report in November 2015.

What we did in response to our low outlier status

We developed a quality improvement action plan which included the revamping of the Infant Feeding Team and a comprehensive review our existing breast feeding practice. The team implemented the elements of the agreed action plan and made small and steady progress to improve the awareness among the staff of how to provide effective support for breast feeding. The team worked very closely with the midwifery team in the hospital and in the community to provide coordinated support for families.



Oliver Fisher NICU Infant Feeding Team

The team worked towards getting more equipment and ran training days to support both medical and nursing staff. The main components of the action plan were as follows and we have shared a copy of the full action plan with the NNAP project team which is available to view on the NNAP website at: www.rcpch.ac.uk/nnap

Situation before action plan intervention	Action plan interventions undertaken
Prior to August 2015 there was not a team with direct responsibility for coordinating infant feeding. A lack of a dedicated team for coordinating breastfeeding made it very difficult to ensure that the large number of nurses working either directly in/or supporting the neonatal unit had consistent training for supporting parents with breastfeeding	Revamp of the Infant Feeding Team in August 2015 so that it comprised: ✓ A lead consultant (P Sashikumar) ✓ Nurse educator (K Vandertak) who would support and educate other nurses and have a presence on the unit promoting breast feeding ✓ Established links to the infant feeding coordinator (J Maynard) on the maternity side ✓ 10 dedicated nurses who support parents ✓ Infant Feeding Team meetings every 6 weeks to discuss progress and make improvements
There was a general gap in training for doctors with a lack of understanding and awareness amongst medical staff of the information and techniques for supporting mothers with breastfeeding  	✓ Between December 2015 and May 2016, 27 out of the 29 doctors working on the neonatal unit completed the Unicef E-module for paediatricians. This training is now part of the induction program for all new doctors ✓ 81 nurses in total work in support of the neonatal unit. By December 2015: • 10 nurses had attended the Unicef 2 day Breast feeding awareness course • 58 nurses had completed training in Expressing and Breast Pump competencies ✓ A stage 2 assessment report of the maternity team, delivered to the Trust in June 2016 following a Unicef UK BFI visit, highlighted the positive attitude in the maternity service and acknowledged the steps that had been taken to promote breast feeding. The report identified the key training needs of the neonatal staff and we are in the process of implementing the training in a timely fashion.

• In 2014 there was no formal Feeding Policy for the promotion of breastfeeding for unit staff to follow	✓ A new Infant Feeding Policy was introduced in January 2016 and is available on the Trust intranet as part of the Oliver Fisher NICU Neonatal Guidelines
• In terms of parental support, there was not a sufficient number of breast feeding pumps in 2014, and those that were available could only be accessed in the breast feeding room meaning that mothers could not express by the cot side. • Furthermore, the breast feeding room was not particularly comfortable for parents.	✓ We purchased six additional breast pumps which could be brought to the cot side. ✓ 12 new recliner chairs, purchased through support from the Oliver Fisher Charity, have provided additional comfort for mothers, helping to promote Kangaroo care. ✓ We are exploring the idea of allowing parents to stay during ward rounds so that breast feeding is not interrupted. ✓ The unit is considering introducing enhanced audio-visual aids for parents to promote breastfeeding alongside staff support, such as information that can be viewed on tablets or other hand-held devices.



Parents using a new recliner chair within the baby breastfeeding room

What we have achieved:

By undertaking quality improvement activities we believe that we have made significant improvements in our breast feeding support for families and in our adherence to the NNAP standard for this aspect of neonatal care. The NNAP provides all units that participate in the audit with quarterly reports which show unit performance against the NNAP audit measures. The latest report, which covered the period 1 January to 30 June 2016, validated these improvements by showing breast feeding rates for our unit of 69%, a vast improvement on the situation in 2014 as detailed below.

Key: Figures highlighted in red are below the NNAP national average and those in green are above the national average:

	NNAP Jan-Dec 2014	NNAP Jan-June 2015	NNAP July-Dec 2015	NNAP Jan-March 2016
Oliver Fisher NICU rates of breast feeding at discharge from neonatal care	34%	39%	40%	69%
NNAP National average	60%	59%	58%	59%

*Please note that this figure is subject to change as it reflects interim analysis provided by the NNAP to units. The confirmed 2016 results will be provided in the NNAP 2017 Annual Report on 2016 data which will be published in autumn 2017.

When thinking about safety, clinical effectiveness, efficiency and/or responsiveness, we believe that by following a defined quality improvement plan we have improved patient care and experience in the following areas:

- Increased breast milk feeding rates for high risk Preterm Infants.
- Improved NNAP performance from low outlier status in 2014 to above the national average by mid-2016.
- Provided levels of care and support which should improve patient outcomes.
- Working towards achieving UNICEF UK Baby Friendly Accreditation.

Acknowledgements:

1. Infant feeding team, Oliver Fisher Neonatal Unit
2. Dylan Webb Butler and family for allowing us to use their photographs
3. Oliver Fisher Neonatal Unit Staff

3.2 Case Study Two

Increasing data completeness for 2 Year Follow-up data

Presented by: Dr Kate Palmer, Consultant Neonatologist, Royal Stoke University Hospital Neonatal Intensive Care Unit

Background: Prior to 2014, at our unit we only completed outcome forms in BadgerNet for babies for whom Bayley III 2 year assessments were performed. The NNAP 2014 Annual Report on 2013 data showed that we had only 5 babies for whom we had sufficient data for their level of impairment to be determined

Processes that were in place before 2014

1. Offered all children born at <32 weeks or with a birth weight <1250g (local network criteria) a Bayley Scales III developmental assessment in a fixed regular slot separate to the regular neonatal follow up clinic
2. Only completed outcome forms in Badger for babies for whom Bayley Scales III 2 year assessments were performed
3. Did not always complete all data fields in the BadgerNet 2 year follow up form resulting in fewer babies than anticipated being eligible for determination of their level of impairment
4. No attempt made to seek information on children who did not attend the Bayley Scales III assessment
5. No attempt to complete BadgerNet 2 year follow up form after attendance at neonatal follow up clinic aged 2 years



Credit: shutterstock

What we did:

- ✓ Increased flexibility in the timing of appointments including offering morning or afternoon options
- ✓ Reviewed all 2 year follow up forms in BadgerNet, including those for children who did not attend for Bayley Scales III assessment
- ✓ Assessors encouraged to complete all fields when entering data
- ✓ Used the electronic patient record to review the neonatal follow up clinic letters of children who did not receive a Bayley scales III assessment and used this to add information to the BadgerNet 2 year follow up form
- ✓ Asked colleagues seeing eligible babies in the neonatal follow up clinic to enter 2 year follow up data on the BadgerNet form even if they were expecting the child to attend for a Bayley assessment.

Screenshot of the 2-year follow up form on BagerNet.

Credit: Clevermed Ltd

What we have achieved:

The results of the quality improvement activities undertaken are shown below:

Year	Number of eligible babies	Number of babies with no 2 year health data entered at all	Number of babies indicated as not having had a 2 year follow up consultation (for whatever reason)	Number of babies with details of health data entered from a 2 year follow up consultation
2013	24	2	17	5 (21%)
2014	42	0	6	36 (86%)
2015	46	2	9	35 (76%)

In addition, for babies born between 1 July 2013 and 30 June 2014, whose 2 year follow up data will appear in the NNAP 2017 Annual Report on 2016 data, we have written to the health visitors of children who either failed to respond to the invitation to attend for a Bayley assessment or failed to attend the appointment for information on the developmental outcomes of these children.

3.3 Case Study Three

Yorkshire and Humber Neonatal Operational Delivery Network (ODN)

Using NNAP data in peer review visits

Presented by: Dr Chris Day, Consultant Neonatologist and Clinical Network Lead for the Yorkshire and Humber Neonatal ODN

Background: Our network has a significant history of network facilitated, data based, and unit delivered quality improvement activities. These include facilitating changes in practices related to hypothermia which have resulted in important improvements in admission temperatures.

What we have done:

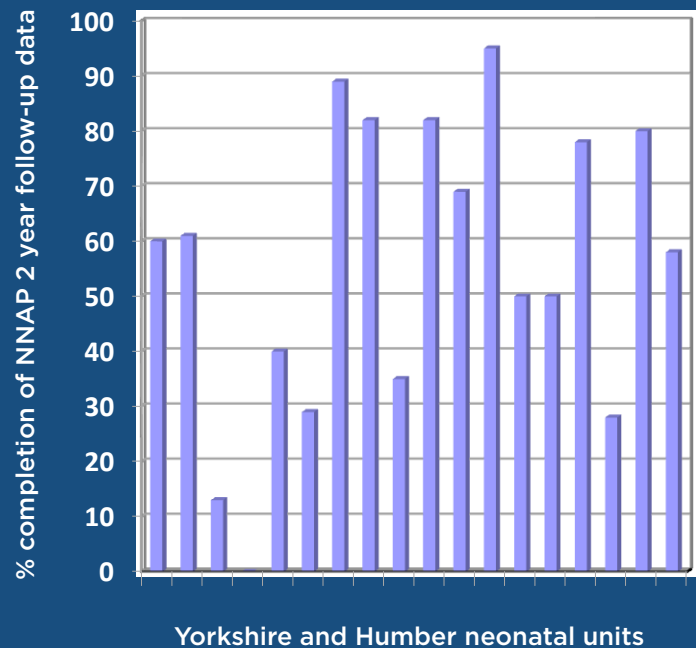
- ✓ So far in 2016 the network team has been visiting all of the units in the Yorkshire and Humber Neonatal ODN to carry out a multi-professional peer review programme.
- ✓ During preparation for the visits the network pulls together a wide range of available data from external sources such as the NNAP together with our own regional data.
- ✓ The units complete the pre-visit metric with locally held data (e.g. on staffing levels). (e.g. on staffing levels).
- ✓ The network then visits with a multidisciplinary team that includes our data analyst, manager, lead clinician and lead nurse together with our regional BLISS worker representing parents.



Image: Site visit at The Jessop Wing, Sheffield Hospital (NICU). The picture includes from left to right, Dr Chris Day, Consultant Neonatologist and network clinical lead, the Sheffield neonatal unit lead clinician and senior nurses, the Yorkshire & Humber network lead nurse, the Yorkshire & Humber network manager and a BLISS parent representative.

- ✓ We were aware from the NNAP data that our network as a whole had higher than average rates of two-year follow-up reported by NNAP in 2015. Despite that we had very variable levels of completion of 2 year follow up across our units and we used this as one the key metrics for our peer review visits. The data has been very helpful to individual units in reflecting on what has gone well in their follow up plans and in discussing what needs to be done to be 'even better'.

Yorkshire and Humber ODN. % of eligible babies with 2 year follow - up data - 2014 data



What we have achieved:

The peer review visits cover a wide range of issues using all the key areas of the NHS England Neonatal Critical Care Service Specification as the framework for assessment. It has been invaluable to have some good data from the NNAP on how other units perform to use as a benchmark. We have previously used the same data source to address other specific issues (e.g. temperature on admission) with significant improvements seen although more remains to be done.

We, and the network units that we work with, will be looking closely at all of the audit measure results in future NNAP reports, much as we regularly review other aspects of service delivery, and we hope that a spirit of healthy competition will see Yorkshire and Humber units moving up to being among the best performers.

4. Full 2015 Unit, Network, National and Year on Year Results

4.1 NNAP audit measures

The 2015 NNAP Audit Measures were:

- Do all babies of less than or equal to 31⁺⁶ 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?
- What is the proportion of babies born <32 weeks who develop Bronchopulmonary Dysplasia?
 - A:** Mild: respiratory support (Ventilation ,CPAP, BiPAP, HHFNC and or any oxygen) on day 28 + air at 36 weeks corrected gestation or from the time of discharge if discharged earlier
 - B:** Significant: respiratory support on day 28 + respiratory support at 36 weeks corrected gestation or from the time of discharge if discharged earlier
- 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
- How many blood stream infections are there on a NNU per 1000 days of central line care?

4.2 Data completeness

For the 2015 data, quarterly reports were produced by the NNAP project team and disseminated to all neonatal unit NNAP clinical leads in order to provide regular updates on their data completeness and adherence to the NNAP standards. All NNU were provided with a summary report of their 2015 data in mid-February 2016 after which they were given a final six week window of opportunity to review and amend their 2015 data on the Badger system. The final 2015 data download for this report was extracted from Badger after the reviewing process had closed at the end of March 2016.

4.3 Data analysis

The 2015 download included data on care provided for 95,325 babies discharged in 2015. 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 2015 may not appear in the analysis because the baby had a subsequent episode which continued into 2016. By the same reasoning, there are some episodes which finished during 2014 that were used for the 2015 data analysis. The 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.

4.4 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.”

4.5 Note on Scotland Network data presented in this report

The NNAP project board welcomes the fact that Scottish neonatal units have submitted data to the audit for the first time this year with eight units having contributed 2015 data. Four further Scottish units are now entering 2016 data and it is hoped that all units in Scotland will be submitting data to the NNAP by 2017.

Neonatology in Scotland is managed strategically by three Neonatal Managed Clinical Networks (MCNs), namely the North of Scotland, South East and Tayside and the West of Scotland. In future years the NNAP might report separately for each of the three MCNs but due to the absence of some units in 2015, and the lower number of babies that this absence provides, the results for Scotland are, for 2015, presented as a single Scotland-wide network.

4.6 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.

The three NNAP audit measures for which outlier analysis on 2015 NNAP data were undertaken are:

- The percentage of babies born at less than 32 weeks with a temperature between 36.5° – 37.5°C recorded within an hour of birth
- The percentage of babies born at <1501g or a gestational age of < 32 weeks at birth who underwent the first Retinopathy of Prematurity (ROP) screening in accordance with the current guideline recommendations

- The percentage of babies for whom there was a documented consultation with parents by a senior member of the neonatal team within 24 hours of admission.

To be eligible for inclusion in the 2015 data outlier analysis for the above three audit measures a unit had to have entered data for at least 90% of eligible babies. The full methodology and results for the 2015 data outlier analysis are available online via the NNAP website: www.rcpch.ac.uk/nnap

4.7 Full 2015 Results

The following section provides results of the full analysis of 2015 NNAP data, covering unit level, network level and national level results as well as results across audit years.

"NNAP Online" is a new reporting tool for the audit which is available via the NNAP web pages at: www.rcpch.ac.uk/nnap

It provides an opportunity to view and compare the NNAP results at a unit, network and national level in a more interactive manner. This includes the ability to identify and compare specific unit and network performance on the caterpillar and outlier funnel plots for different NNAP audit measures.

Please note that the number of units referred to in the figures showing caterpillar plots of unit level results for NNAP audit measures may be lower than the number of units described in the tables that precede them. That is due to the fact that in order to be included in the analysis for the production of the caterpillar and outlier funnel plots units had to meet the criteria of having:

- Data entered for at least 90% of eligible cases
- Entered data across the full calendar year of 1 January to 31 December 2015
- At least 10 cases entered

Temperature on admission

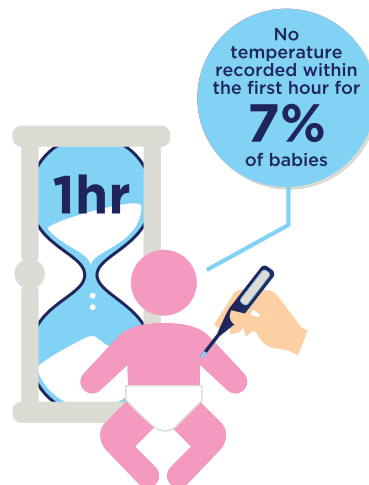
Full key findings and recommendations for this audit measure can be found on pages 13 to 14.

NNAP audit measure: Do all babies < 32 weeks gestation have their temperature taken within an hour after birth?

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

For temperatures taken within an hour of birth:
90% at 36.5°C to 37.5°C

Note: In 2014, the NNAP project board agreed to change the criteria for this audit measure to include the admissions of all babies born at <32 weeks. The intention was to widen the gestation range over which units might identify quality improvement opportunities. Babies born at less than 32 weeks gestation are normally admitted to a neonatal unit directly after birth, similarly to those born at less than 29 weeks gestation.



Results:

The analysis of 2015 data for this measure is based on an extremely high rate of data completeness of 99.3%

There were **7864** babies born at a gestational age of <32 weeks reported by **177** NNU. Of these babies, **93%** had their temperature measured within the first hour of birth (Table 1.1). This compares closely with 2014, when 94% of babies born at less than 29 weeks gestation had their temperature taken within an hour of birth.

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. The first temperature measurement was between 36.5°C and 37.5°C for **62%** of babies who had their temperature measured within an hour of birth (Table 1.3).

For babies born at <29 weeks gestation who had their temperature recorded within an hour of birth, the proportion with a temperature within the recommended range of 36.5°C to 37.5°C in 2015 (**52%**) differed little from that in 2014 (**51%**) (Table 1.5).

For the following tables responses are assigned "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, Scotland and Wales at a gestational age <32 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	-	81	65 (80%)	15	0	1
SCU	38	413	384 (93%)	24	1	4
LNU	85	2813	2631 (94%)	155	4	23
NICU	54	4557	4271 (94%)	238	19	29
Total	177	7864	7351 (93%)	432	24	57

Table 1.2

Babies born in England, Scotland and Wales at a gestational age <32 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	81	65 (80%)	15	0	1
East of England Neonatal ODN	558	533 (96%)	19	0	6
Midlands South West Newborn Neonatal ODN	337	295 (88%)	31	1	10
North Central & North East London Neonatal ODN	668	599 (90%)	57	5	7
North West London Neonatal ODN	329	299 (91%)	30	0	0
North West Neonatal ODN	1084	1031 (95%)	49	1	3
Northern Neonatal ODN	348	334 (96%)	10	2	2
Peninsula & Western Neonatal ODN	495	449 (91%)	39	4	3
Scotland	316	278 (88%)	29	4	5
South East Coast Neonatal ODN	566	536 (95%)	24	1	5
South London Neonatal ODN	504	474 (94%)	29	0	1
Staffordshire, Shropshire and Black Country Neonatal ODN	314	290 (92%)	20	1	3
Thames Valley & Wessex ODN (Thames Valley)	299	297 (99%)	2	0	0
Thames Valley & Wessex ODN (Wessex)	331	328 (99%)	2	1	0
Trent Perinatal & Central Newborn Neonatal ODN	601	557 (93%)	33	3	8
Wales	294	268 (91%)	23	0	3
Yorkshire & Humber Neonatal ODN	739	718 (97%)	20	1	0
Total	7864	7351 (93%)	432	24	57

Table 1.3

Temperature values for babies born in England, Scotland and Wales at a gestational age of <32 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)	36.0-36.4 (as % of eligible babies)	36.5-37.5 (as % of eligible babies)	> 37.5 (as % of eligible babies)
Other	-	65	0	43 (66%)	7 (11%)	15 (23%)	0 (0%)
SCU	38	384	0	31 (8%)	80 (21%)	232 (60%)	41 (11%)
LNU	85	2631	0	210 (8%)	498 (19%)	1641 (62%)	282 (11%)
NICU	54	4271	3	364 (9%)	818 (19%)	2649 (62%)	437 (10%)
Total	177	7351	3	648 (9%)	1403 (19%)	4537 (62%)	760 (10%)

Table 1.4

Temperature values for babies born in England, Scotland and Wales at a gestational age <32 weeks who had their temperature taken within an hour of birth, by neonatal ODN of birth

Neonatal ODN of Birth	Number of eligible babies	Temperature values (°C)				
		< 32.0	32.0-35.9	36.0-36.4 (as % of eligible babies)	36.5-37.5 (as % of eligible babies)	> 37.5
Other*	65	0	43 (66%)	7 (11%)	15 (23%)	0
East of England Neonatal ODN	533	0	38	89 (17%)	347 (65%)	59
Midlands South West Newborn Neonatal ODN	295	0	39	75 (25%)	142 (48%)	39
North Central & North East London Neonatal ODN	599	0	59	133 (22%)	357 (60%)	50
North West London Neonatal ODN	299	0	37	74 (25%)	176 (59%)	12
North West Neonatal ODN	1031	1	95	191 (19%)	650 (63%)	94
Northern Neonatal ODN	334	0	36	72 (22%)	178 (53%)	48
Peninsula & Western Neonatal ODN	449	0	37	92 (20%)	269 (60%)	51
Scotland	278	0	18	41 (15%)	192 (69%)	27
South East Coast Neonatal ODN	536	1	36	93 (17%)	345 (64%)	61
South London Neonatal ODN	474	0	47	103 (22%)	290 (61%)	34
Staffordshire, Shropshire and Black Country Neonatal ODN	290	0	32	77 (27%)	158 (54%)	23
Thames Valley & Wessex ODN (Thames Valley)	297	0	18	62 (21%)	187 (63%)	30
Thames Valley & Wessex ODN (Wessex)	328	0	3	40 (12%)	244 (74%)	41
Trent Perinatal & Central Newborn Neonatal ODN	557	0	42	109 (20%)	345 (62%)	61
Wales	268	1	28	51 (19%)	166 (62%)	22
Yorkshire & Humber Neonatal ODN	718	0	40	94 (13%)	476 (66%)	108
Total	7351	3	648 (9%)	1403 (19%)	4537 (62%)	760

Table 1.5 Comparison to temperature audit results in previous NNAP reports.

NNAP data year	Number of eligible NNU	Number of Eligible babies	Number of babies with a temperature measurement within an hour (as % of eligible babies)	Number of babies with a temperature between 36.5°C and 37.5°C within an hour of birth (as % of eligible babies)
2013 (Babies less than 29 weeks)	170	2908	2699 (93%)	1485 (51%)
2014 (Babies <29 weeks)	167	3109	2934 (94%)	1578 (51%)
2015 (Babies less than 29 weeks)	177	3325	3125 (94%)	1735 (52%)
2015 (Babies less than 32 weeks gestation)	177	7864	7351 (93%)	4537 (58%)

NB Gestation criteria for inclusion in NNAP changed for 2015 data – data for 2015 are shown for both old and new gestational age range.

Figure 1: Proportion of babies with a gestation at birth <32 weeks, admitted with a temperature of 36.5 – 37.5 C measured within an hour of birth, to neonatal units in England, Scotland and Wales 2015. Values (circles) for participating units within England, Scotland and Wales and 95% confidence intervals (bars) are shown in ascending order.

--- the NNAP standard

... the national rate of admission normothermia

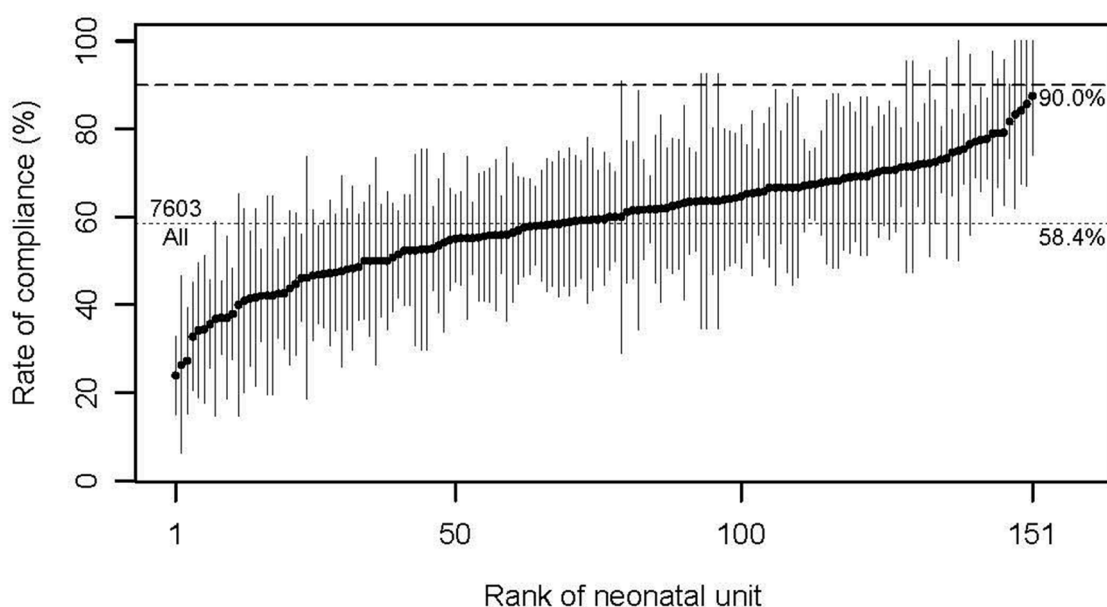
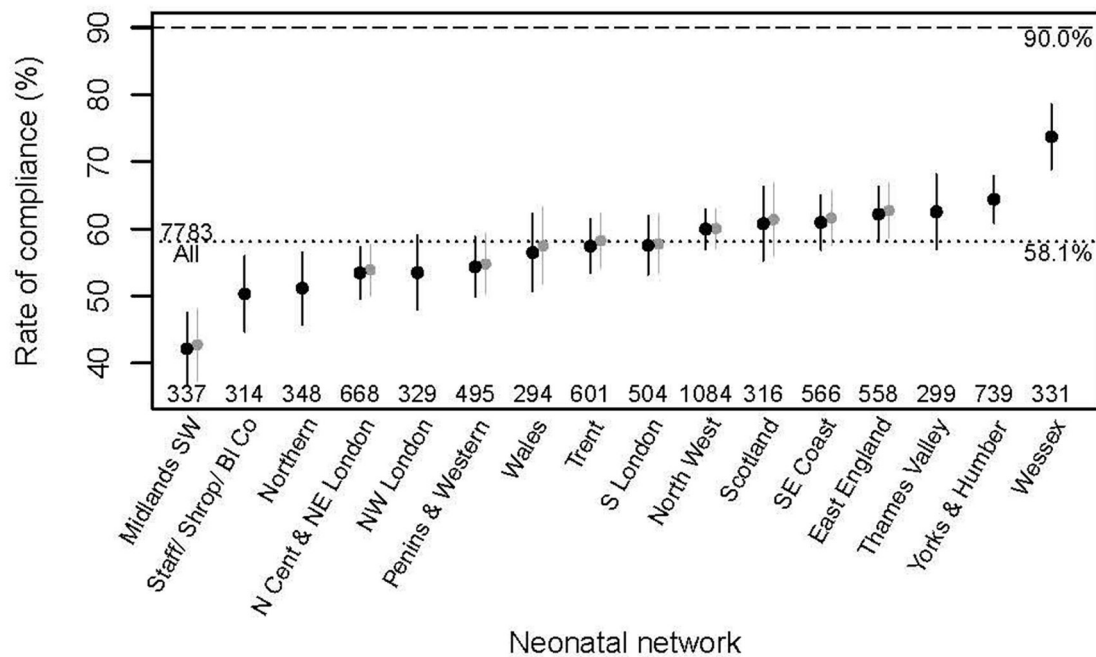


Figure 2: Proportion of babies with a gestation at birth <32 weeks, admitted with a temperature of 36.5 – 37.5 C measured within an hour of birth, to neonatal networks in England, Scotland and Wales 2015. Values (circles) and 95% confidence intervals (bars) are shown in ascending value order. The adjacent grey segments are based on treating any missing values as indicative that the recorded temperatures were within the recommended range.

- - - - the NNAP standard

.... the national rate of compliance



2015 Outlier analysis

Two units were identified as low performing outliers for 2015 data via the outlier identification process. Full methodology and results of outlier analysis are available from the NNAP web pages at www.rcpch.ac.uk/nnap

Antenatal Steroids

Full key findings and recommendations for this audit measure can be found on page 15.

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

Standard: 85% of mothers should receive any dose of antenatal steroids.

Source of Standard: NNAP Board

Results:

The analysis of 2015 data for this measure is based on an extremely high rate of data completeness of 99.3%

There were **18,687** eligible mothers identified from data submitted for **21,427** babies by **179** neonatal units. Records for **68** 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. Antenatal steroids were not administered in **14%** of cases and steroid data were missing or unknown for **1%** of babies.

For the following tables responses are assigned “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 2.1

Mothers in England, Scotland 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	-	327	136 (42%)	180 (55%)	11
SCU	39	1721	1383 (80%)	315 (18%)	23
LNU	86	7756	6734 (87%)	978 (13%)	44
NICU	54	8883	7657 (86%)	1167 (13%)	59
Total	179	18687	15910 (85%)	2640 (14%)	137

Table 2.2

Mothers in England, Scotland 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 (as % of eligible of mothers)	Missing/ Unknown data
Other	329	137 (42%)	180 (55%)	11
East of England Neonatal ODN	1431	1233 (86%)	196 (14%)	2
Midlands South West Newborn Neonatal ODN	851	686 (81%)	135 (16%)	30
North Central & North East London Neonatal ODN	1508	1313 (87%)	176 (12%)	19
North West London Neonatal ODN	721	654 (91%)	63 (9%)	4
North West Neonatal ODN	2437	2098 (86%)	330 (14%)	9
Northern Neonatal ODN	799	676 (85%)	120 (15%)	3
Peninsula & Western Neonatal ODN	1246	1069 (86%)	171 (14%)	6
Scotland	856	753 (88%)	89 (10%)	14
South East Coast Neonatal ODN	1253	1076 (86%)	176 (14%)	1
South London Neonatal ODN	1098	939 (86%)	156 (14%)	3
Staffordshire, Shropshire and Black Country Neonatal ODN	716	604 (84%)	103 (14%)	9
Thames Valley & Wessex ODN (Thames Valley)	698	631 (90%)	67 (10%)	0
Thames Valley & Wessex ODN (Wessex)	726	641 (88%)	82 (11%)	3
Trent Perinatal & Central Newborn Neonatal ODN	1446	1223 (85%)	206 (14%)	17
Wales	728	638 (88%)	88 (12%)	2
Yorkshire & Humber Neonatal ODN	1844	1539 (83%)	302 (16%)	3
Total	18687	15910 (85%)	2640 (14%)	137

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%
2015	179	18687	85%	1%

Figure 3 Antenatal steroid administration to babies of 24-34 weeks inclusive gestation at birth, England, Scotland and Wales 2015. Values (circles) for participating units and 95% confidence intervals (bars) are shown in ascending value order.

- - - - the NNAP standard

. . . . the national rate of compliance

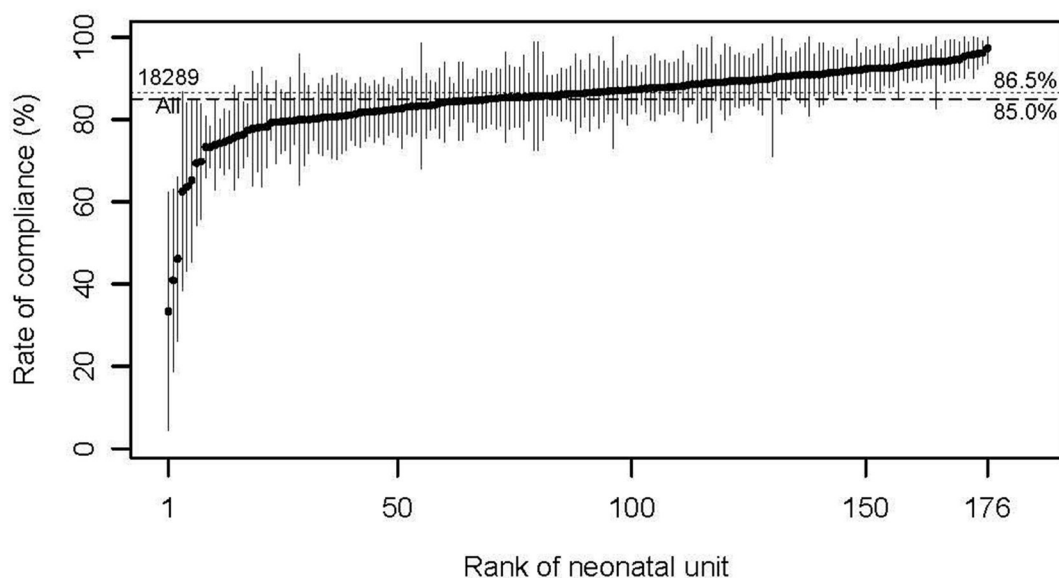
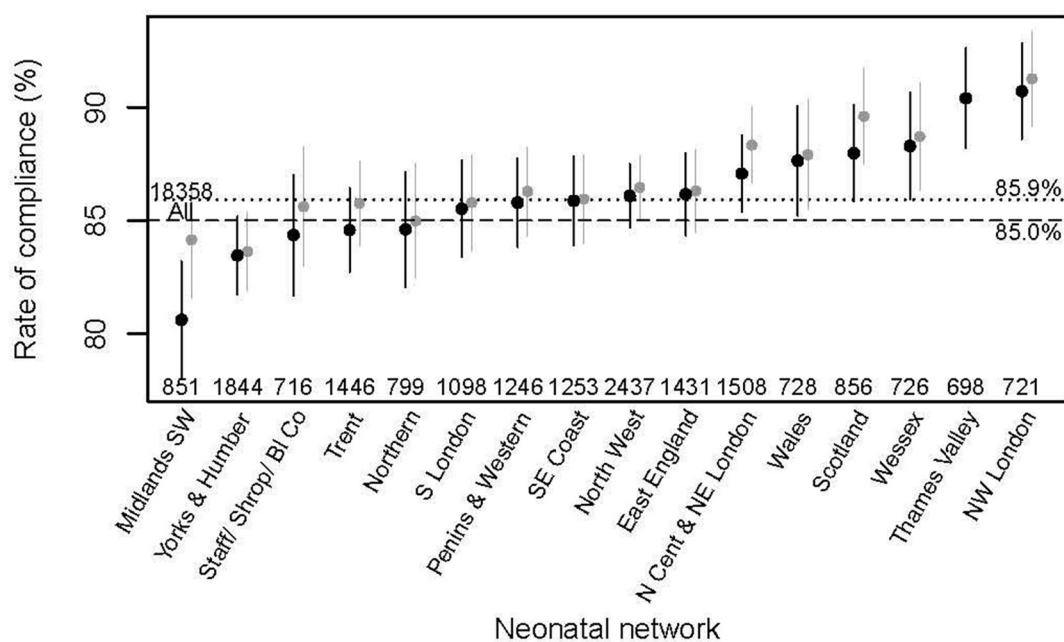


Figure 4: Antenatal steroid administration to babies of 24-34 weeks gestation inclusive, England, Scotland and Wales 2015. Values (circles) for neonatal network units and 95% confidence intervals (bars) are shown in ascending value order. The adjacent grey segments are based on treating any missing values as indicative that antenatal steroids were given.

- - - - the NNAP standard

. . . . the national rate of antenatal steroid administration



Retinopathy of Prematurity (ROP) Screening

Full key findings and recommendations for this audit measure can be found on page 17.

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?

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 < 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 ≥ 27 weeks, 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 follows:

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 **9492** babies born with a birth weight <1501g or with a gestational age at birth <32 weeks in a NNAP contributing NNU. Of these babies, **34** 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 **33** babies were excluded because they were transferred to non-neonatal units before, or during, the ROP screening window. Finally, **604** babies were excluded because they died before the closure of the screening window and had not been screened. This left **8821** babies eligible for ROP screening from **179** NNU.

Including post-discharge screenings, **98%** 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 **13%** 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 **2%** of eligible babies. A small number of units are responsible for a large proportion of the missing data. 13 out of 179 hospitals had 10% or more babies with no data recorded for ROP screening (this equates to 107 of the total of 217 babies for whom ROP data was missing).

Table 3.1

ROP screening for babies born <1501g or gestation at birth <32 weeks by NNU level in England, Scotland 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	39	751	727 (97%)	587	112	699 (93%)	10 (1%)	18 (2%)	24 (3%)
LNU	86	3639	3533 (97%)	2886	524	3410 (94%)	16 (0%)	107 (3%)	106 (3%)
NICU	54	4431	4344 (98%)	3665	452	4117 (93%)	28 (1%)	199 (4%)	87 (2%)
Total	179	8821	8604 (98%)	7138	1088	8226 (93%)	54 (1%)	324 (4%)	217 (2%)

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	661	654 (99%)	538	107	645 (98%)	7 (1%)
Midlands South West Newborn Neonatal ODN	409	400 (98%)	337	47	384 (94%)	9 (2%)
North Central & North East London Neonatal ODN	758	729 (96%)	583	115	698 (92%)	29 (4%)
North West London Neonatal ODN	399	396 (99%)	303	74	377 (94%)	3 (1%)
North West Neonatal ODN	1158	1156 (99%)	973	140	1113 (96%)	2 (0%)
Northern Neonatal ODN	382	370 (97%)	263	61	324 (85%)	12 (3%)
Peninsula & Western	556	551 (99%)	479	55	534 (96%)	5 (1%)
Scotland	355	339 (95%)	265	49	314 (87%)	16 (5%)
South East Coast Neonatal ODN	617	604 (98%)	523	61	584 (95%)	13 (2%)
South London Neonatal ODN	619	613 (99%)	496	89	585 (95%)	6 (1%)
Staffordshire, Shropshire and Black Country Neonatal ODN	319	295 (92%)	264	15	279 (87%)	24 (8%)
Thames Valley & Wessex ODN (Thames Valley)	322	318 (99%)	273	31	304 (94%)	4 (1%)
Thames Valley & Wessex ODN (Wessex)	354	350 (99%)	291	47	338 (95%)	4 (1%)
Trent Perinatal & Central Newborn Neonatal ODN	712	662 (93%)	557	75	632 (89%)	50 (7%)
Wales	361	333 (92%)	285	25	310 (86%)	28 (8%)
Yorkshire & Humber Neonatal ODN	839	834 (99%)	715	97	812 (97%)	5 (1%)
Total	8821	8604 (98%)	7138	1088	8226 (93%)	217 (2%)

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		
				On time (as % of eligible babies)	Early (as % of eligible babies)	Late* (as % of eligible babies)
2008	148	3414	1936 (57%)			
2009	167	7913	5336 (67%)	2098 (27%)	1859 (23%)	1379 (17%)
2010	171	8235	5853 (71%)	4777 (58%)	308 (4%)	768 (9%)
2011	164	7887	6460 (82%)	5310 (67%)	233 (3%)	917 (13%)
2012	173	7996	6312 (79%)	5319 (67%)	122 (2%)	871 (11%)
2013	175	8000	7497 (94%)	6995 (87%)	70 (1%)	432 (5%)
2014	173	8224	7997 (97%)	7653 (93%)	61 (1%)	283 (3%)
2015	179	8821	8604 (98%)	8226 (93%)	54 (1%)	324 (4%)

*For data from 2008-2011 inclusive all screenings that occurred after the time of final neonatal discharge were considered as 'late'.

Table 3.4

ROP screening for babies born <1501g or gestation at birth <32 weeks by NNU level in England, Scotland and Wales. Adherence to standard by indication for screening, and whether transfer had occurred before the end of the screening window

Group	Number of eligible babies	Babies with any screening data (%)	On time (%)	Late	Early
< 27 weeks	1335	1330 (99%)	1230 (92%)	99	1
27-28 weeks	1611	1611 (100%)	1543 (96%)	66	2
29-31 weeks	4601	4507 (98%)	4372 (95%)	116	19
≥ 32 weeks	1274	1156 (90%)	1081 (85%)	43	32
> 1500 g	1941	1872 (96%)	1808 (93%)	54	10
Not Transferred before ROP window closed	5905	5736 (97%)	5492 (93%)	203	41
Transferred before ROP window closed	2916	2868 (98%)	2734 (94%)	121	13

Figure 5: On time screening for ROP (first screen only) for units in England, Scotland and Wales in 2015 for babies with a birthweight of less than 1,501g or a gestation at birth of less than 32 weeks. Values (circles) for units and 95% confidence intervals (bars) are shown in ascending value order.

- - - - indicates the NNAP standard & indicates the national rate of compliance

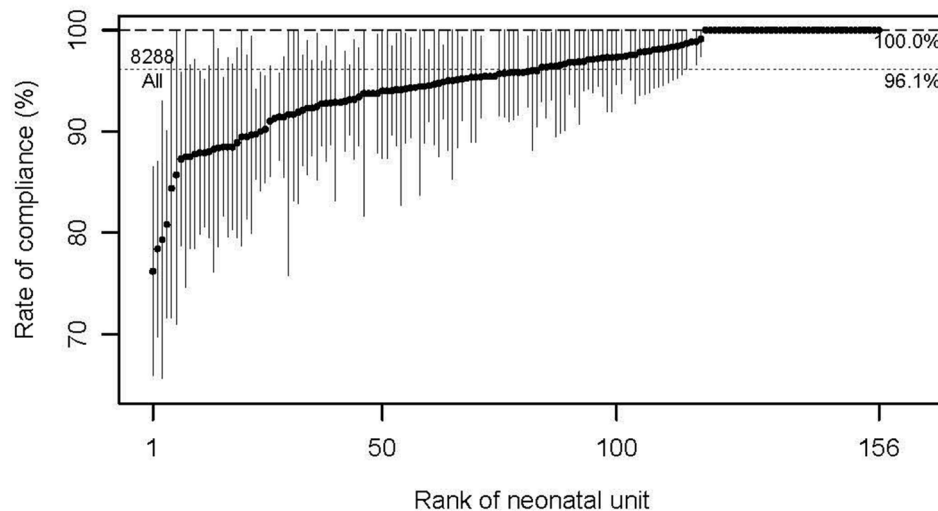
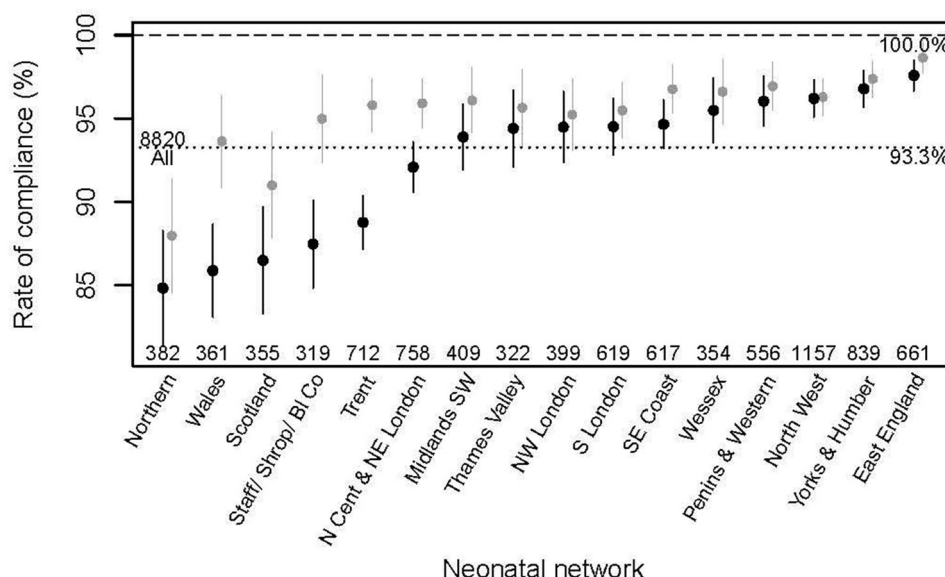


Figure 6: On time screening for ROP (first screen only) for neonatal networks in England, Scotland and Wales in 2015 for babies with a birthweight of less than 1,501g or a gestation at birth of less than 32 weeks. Networks' values (dots) and associated 95% confidence intervals (vertical bars) are displayed in ascending value order. The adjacent grey segments are based on treating any missing values as indicative that a ROP screening did take place.

- - - - indicates the NNAP standard & indicates the national rate of compliance



2015 Outlier analysis

No units were identified as low performing outliers for 2015 data via the outlier identification process. Full methodology and results of outlier analysis are available from the NNAP web pages at www.rcpch.ac.uk/nnap

Mother's milk at discharge

Full key findings and recommendations for this audit measure can be found on page 18.

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?

Standard: 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 **11,279** babies born in NNAP NNU at less than 33 weeks there were **6,323** 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 **58%** 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, **41%** 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 **44%** of otherwise eligible babies are excluded from analysis, which remains a limitation with the quality of this 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	35	324	211 (65%)	113 (35%)	0 (0%)
LNU	86	2818	1732 (61%)	1079 (38%)	7 (0%)
NICU	54	3181	1750 (55%)	1383 (43%)	48 (2%)
Total	175	6323	3693 (58%)	2575 (41%)	55 (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 milks (as % of eligible babies)	Feeding without Mother's milk (as % of eligible babies)	Missing Data (as % of eligible babies)
East of England Neonatal ODN	468	314 (67%)	154 (33%)	0 (0%)
Midlands South West Newborn Neonatal ODN	287	164 (57%)	121 (42%)	2 (1%)
North Central & North East London Neonatal ODN	480	354 (74%)	124 (26%)	2 (0%)
North West London Neonatal ODN	238	202 (85%)	34 (14%)	2 (1%)
North West Neonatal ODN	843	358 (43%)	447 (53%)	38 (5%)
Northern Neonatal ODN	251	115 (46%)	136 (54%)	0 (0%)
Peninsula & Western Neonatal ODN	444	291 (66%)	151 (34%)	2 (0%)
Scotland	330	179 (54%)	150 (45%)	1 (0%)
South East Coast Neonatal ODN	419	260 (62%)	159 (38%)	0 (0%)
South London Neonatal ODN	435	346 (80%)	84 (19%)	5 (1%)
Staffordshire, Shropshire and Black Country Neonatal ODN	248	121 (49%)	127 (51%)	0 (0%)
Thames Valley & Wessex ODN (Thames Valley)	231	144 (62%)	87 (38%)	0 (0%)
Thames Valley & Wessex ODN (Wessex)	286	183 (64%)	102 (36%)	1 (0%)
Trent Perinatal & Central Newborn Neonatal ODN	493	270 (55%)	222 (45%)	1 (0%)
Wales	218	93 (43%)	124 (57%)	1 (0%)
Yorkshire & Humber Neonatal ODN	652	299 (46%)	353 (54%)	0 (0%)
Total	6323	3693 (58%)	2575 (41%)	55 (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%)
2015	175	6323	3693 (58%)	2575 (41%)	55 (1%)

Figure 7: Proportion of babies with gestation at birth <33 weeks, who were discharged home on some of their mothers own milk, England, Scotland and Wales 2015. Values (circles) for participating units and 95% confidence intervals (bars) are shown in ascending value order.

... the national rate of compliance

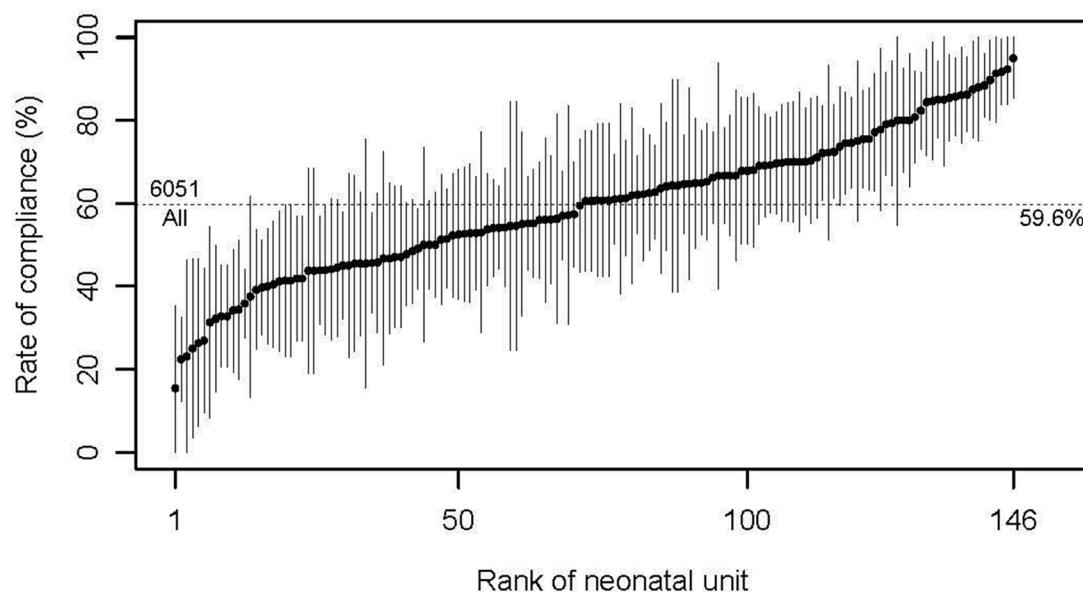
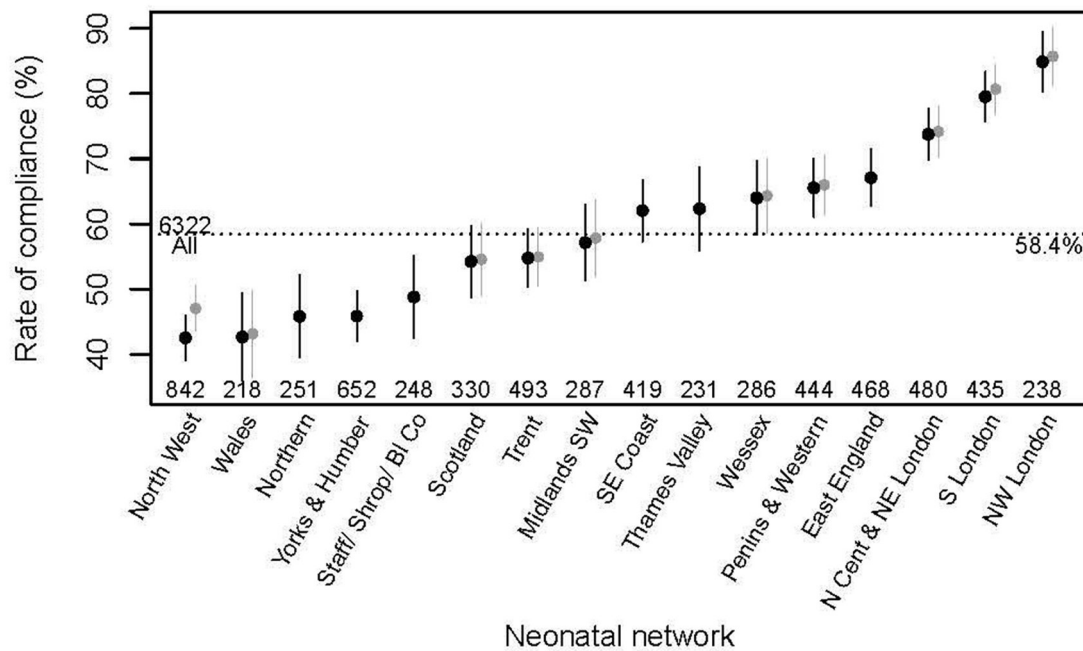


Figure 8: Proportion of babies with gestation at birth <33 weeks, cared for in neonatal networks within England, Scotland and Wales 2015, who were discharged home on any of their own mothers milk at discharge. Networks' values (circles) and 95% confidence intervals (bars) are displayed in ascending value order. The adjacent grey segments are based on treating any missing values as indicative that a baby was fed mothers milk at the time of discharge.

... the national rate of compliance



Consultation with parents

Full key findings and recommendations for this audit measure can be found on pages 19 to 20.

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

* The NNAP clarified in 2015 that they regard a senior member of the neonatal team as being a consultant or second tier medical trainee, or a nurse practitioner operating in such a role

Standard: 100%

Source of Standard: NNAP Board

Results

There were **95,325** first episodes of care reported by **179** 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 **58,077** episodes eligible for the audit measure.

A senior member of the neonatal team consulted parents or carers within 24 hours of admission for **88%** of eligible episodes. Consultations that occurred before admission, or more than 24 hours after admission, were recorded in **4%** of eligible episodes.

No consultation occurred for **4%** of eligible episodes and data on consultations was either missing or 'unknown' for **4%** 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 episodes	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	39	6402	5352 (84%)	161 (3%)	241 (4%)	212 (3%)	436 (7%)
LNU	86	25825	23567 (91%)	454 (2%)	522 (2%)	587 (2%)	695 (3%)
NICU	54	25850	22381 (87%)	646 (2%)	441 (2%)	1276 (5%)	1106 (4%)
Total	179	58077	51300 (88%)	1261 (2%)	1204 (2%)	2075 (4%)	2237 (4%)

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 episodes	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
East of England Neonatal ODN	5929	5557 (94%)	76	129	73	94
Midlands South West Newborn Neonatal ODN	2938	2070 (70%)	107	102	224	435
North Central & North East London Neonatal ODN	5068	4365 (86%)	122	141	128	312
North West London Neonatal ODN	2289	1984 (87%)	37	84	62	122
North West Neonatal ODN	7144	6132 (86%)	302	36	559	115
Northern Neonatal ODN	2109	1965 (93%)	23	51	32	38
Peninsula & Western Neonatal ODN	4229	3574 (85%)	156	157	207	135
Scotland	3087	2405 (78%)	49	128	231	274
South East Coast Neonatal ODN	3865	3563 (92%)	56	68	78	100
South London Neonatal ODN	3802	3523 (93%)	61	48	48	122
Staffordshire, Shropshire and Black Country Neonatal ODN	2052	1782 (87%)	55	71	94	50
Thames Valley & Wessex ODN (Thames Valley)	2402	2397 (100%)	2	0	1	2
Thames Valley & Wessex ODN (Wessex)	2390	2371 (99%)	6	3	7	3
Trent Perinatal & Central Newborn Neonatal ODN	3655	3259 (89%)	97	48	124	127
Wales	2365	1902 (80%)	42	92	82	247
Yorkshire & Humber Neonatal ODN	4753	4451 (94%)	70	46	125	61
Total	58077	51300 (88%)	1261	1204	2075	2237

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)	No Consultation (% of eligible episodes)	Missing/Unknown data (% of eligible episodes)
2012*	174	54409	42792 (79%)	1754 (3%)	4165 (8%)	2146 (4%)	3552 (7%)
2013	176	50757	42807 (84%)	1386 (3%)	2273 (4%)	1555 (3%)	2736 (5%)
2014	174	52372	46485 (89%)	1451 (3%)	1134 (2%)	1598 (3%)	1704 (3%)
2015	179	58077	51300 (88%)	1261 (2%)	1204 (2%)	2075 (4%)	2237 (4%)

*For the purpose of comparison with previous years, neonatal admissions that lasted for less than 12 hours were included in the 2012 analysis, but were excluded from subsequent years.

Figure 9: Documented consultation with parents, by a senior member of the neonatal team, within 24 hours of admission. Values (circles) for participating units within England, Scotland and Wales and 95% confidence intervals (bars) are shown in ascending order

--- the NNAP standard

.... the national rate of compliance

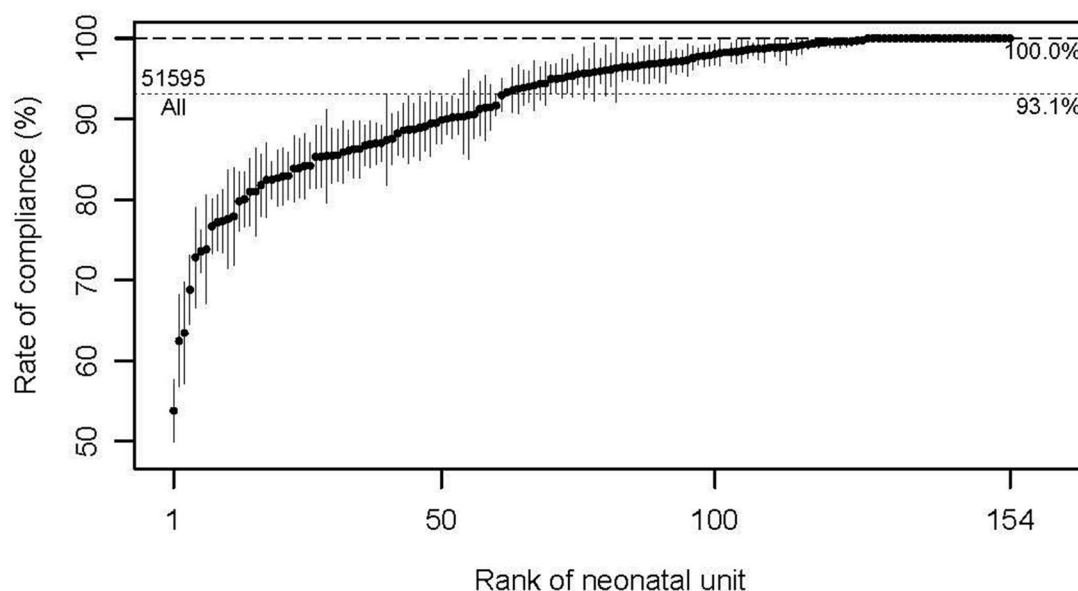
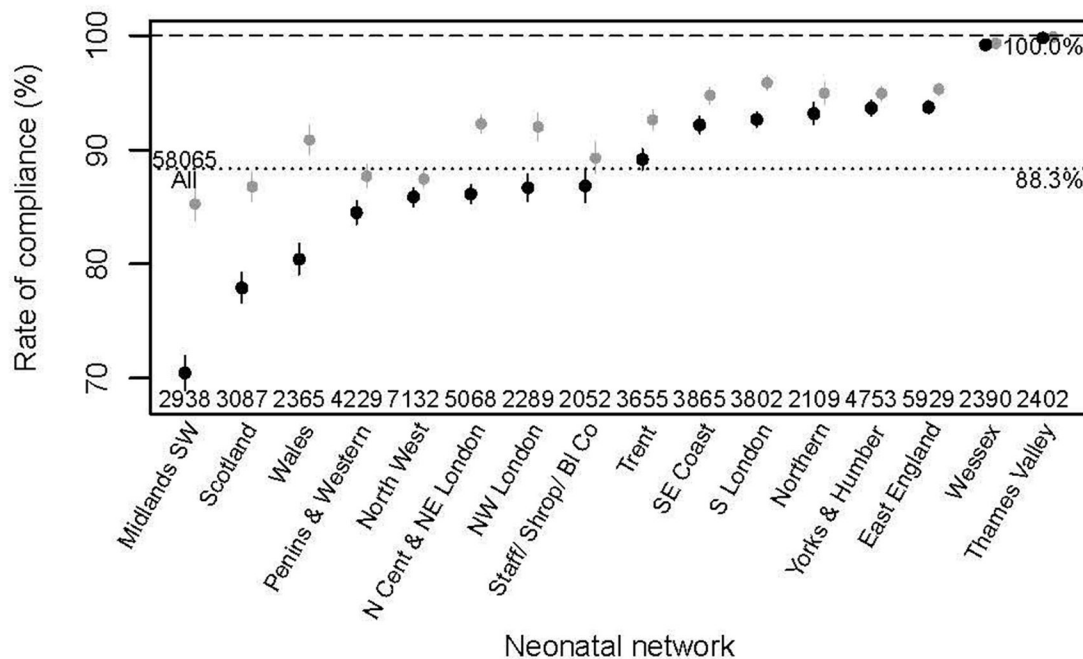


Figure 10: Documented consultation with parents, by a senior member of the neonatal team, within 24 hours of admission 2015. Values (circles) for neonatal networks units within England, Scotland and Wales and 95% confidence intervals (bars) are shown in ascending order. The adjacent grey segments are based on treating any missing values as indicative that a consultation did take place.

- - - - the NNAP standard

. . . . the national rate of compliance



2015 Outlier analysis

Fourteen units were identified as low performing outliers for 2015 data via the outlier identification process. Full details of the outlier analysis methodology and results are available via the NNAP web pages; www.rcpch.ac.uk/nnap

Neonatal Unit Transfers

Full key findings and recommendations for this audit measure can be found on page 21.

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 the neonatal services their baby needs as close to home as possible.

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

Source of Standard: NNAP Board

Results:

There were a total of **95,325** babies eligible for inclusion in the NNAP 2015 audit. Of these babies, **103** 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 **95,222** babies who had complete episodic data.

From these **95,222** babies, there were a total of **14,308** transfers involving **9,523** babies. This means that **10%** of babies experienced at least one transfer during their time in neonatal care. Of these transfers **82%** were within the first known network of care and **18%** 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

*Please note that, for the reasons as acknowledged on page 43 of this report, results for 2015 data are expressed for a single Scotland-wide network in this report whereas neonatology in Scotland is managed strategically by three separate Neonatal Managed Clinical Networks (MCNS). The results for Scotland that are indicated in table 6.1 should, therefore, be viewed with caution as they do not account for any transfers of babies from one unit to another that occurred across the three Scottish MCN boundaries.

	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	Unknown
Neonatal Network									
Bedfordshire and Hertfordshire	3403	214 (6%)	345	241 (70%)	104 (30%)	1	37	66	0
Cheshire and Merseyside	3106	279 (9%)	387	301 (78%)	86 (22%)	0	3	83	0
Eastern	6461	489 (8%)	709	620 (87%)	89 (13%)	2	7	80	0
Greater Manchester	3784	604 (16%)	844	724 (86%)	120 (14%)	0	2	118	0
Kent	3120	281 (9%)	473	334 (71%)	139 (29%)	6	61	72	0
Lancashire and South Cumbria	1699	163 (10%)	276	187 (68%)	89 (32%)	0	33	56	0
London - North Central	4399	455 (10%)	592	381 (64%)	211 (36%)	4	22	185	0
London - North East	4424	571 (13%)	891	743 (83%)	148 (17%)	8	19	121	0
London - North West	2868	471 (16%)	656	544 (83%)	112 (17%)	0	13	98	1
London - South East	2480	357 (14%)	537	415 (77%)	122 (23%)	1	5	116	0
London - South West	3781	233 (6%)	335	245 (73%)	90 (27%)	4	5	81	0
Midlands - Central	3738	498 (13%)	742	576 (78%)	166 (22%)	1	16	149	0
Midlands - South West	5571	433 (8%)	591	489 (83%)	102 (17%)	0	3	99	0
Midlands North Staffordshire, Shropshire and Black Country Newborn Network	4260	265 (6%)	392	283 (72%)	109 (28%)	0	19	90	0

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	Unknown
North Trent	4087	325 (8%)	484	385 (80%)	99 (20%)	13	12	74	0
Northern	3245	415 (13%)	633	620 (98%)	13 (2%)	0	2	11	0
Peninsula - South West	2810	208 (7%)	319	235 (74%)	84 (26%)	5	43	36	0
Scotland	3620	348 (10%)	491						
South Central (North)	2695	383 (14%)	548	478 (87%)	70 (13%)	4	2	64	0
South Central (South)	3252	387 (12%)	561	506 (90%)	55 (10%)	0	7	48	0
Surrey and Sussex	4121	476 (12%)	727	541 (74%)	186 (26%)	19	57	110	0
Trent	2868	337 (12%)	568	414 (73%)	154 (27%)	2	8	143	1
Wales	2703	397 (15%)	566	517 (91%)	49 (9%)	1	13	35	0
Western	8509	519 (6%)	742	647 (87%)	95 (13%)	0	11	84	0
Yorkshire	4218	414 (10%)	628	535 (85%)	93 (15%)	0	5	88	0
Total	95222	9523 (10%)	14038	11450 (82%)	2588 (18%)	71	405	2110	2

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

Clinical Follow-up at 2 years of age

Full key findings and recommendations for this audit measure can be found on pages 22 to 23.

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

*Please note that 2 year follow up results for Scotland are not indicated in this section as 2015 is the first year in which Scottish units have participated in the audit.

Preterm infants are at high risk of neonatal mortality and adverse developmental outcomes. It is important that the development of very preterm 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 preterm 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 at 2 years of age should take, but at present the *NHS England Neonatal Critical Care Service Specification*, *Neonatal Care in Scotland: A Quality Framework* and the *BAPM Standards for Hospitals Providing Neonatal Intensive and High Dependency Care* all indicate that follow up should be undertaken at 2 years corrected age.

Standard:	100% of babies with data entered
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 2016, and babies born during the 12 month period of July 2012 to June 2013 were selected, as these babies could have been expected to have had a follow up appointment by the end of 2015.

Results:

There were **3,744** babies <30 weeks gestation born between July 2012 and June 2013 who survived and were discharged from a NNU to home, to a ward or to foster care, of these babies:

- a) **60%** of babies had some/all health data entered
- b) **13%** were lost to follow up or were not assessed for other reasons.
- c) **13** babies were reported to have died after discharge
- d) **40%** had no follow up data entered at all
- e) Of the **2,252** babies with health data entered, **43%** had no neurodevelopmental impairment, **22%** had mild/moderate impairment, **17%** had severe impairment and **18%** had insufficient data to determine the impairment category.

Table 7.1

Clinical follow up data recorded at 2 years of age for **3,744** babies <30 weeks gestation born between July 2012 and June 2013 who survived and were discharged from a NNU to home, to a ward or to foster care.

Year	Eligible babies	Some health data entered = 60%				No health data entered = 40%			
		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
2015	3,744	411 (11%)	963 (26%)	506 (14%)	372 (10%)	58 (2%)	399 (11%)	13 (0%)	1022 (27%)
Total	3,744	2252/3744 (60%)				1492/3744 (40%)			

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 2012 and June 2013 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	290	56 (19%)	150 (52%)	62 (21%)	46 (16%)	42 (14%)	3 (1%)	33 (11%)	0 (0%)	48 (17%)
Midlands South West Newborn Neonatal ODN	191	16 (8%)	115 (60%)	59 (31%)	35 (18%)	21 (11%)	0 (0%)	18 (9%)	1 (1%)	41 (21%)
North Central & North East London Neonatal ODN	398	48 (12%)	146 (37%)	66 (17%)	51 (13%)	29 (7%)	9 (2%)	32 (8%)	1 (0%)	162 (41%)
North West London Neonatal ODN	179	12 (7%)	68 (38%)	37 (21%)	22 (12%)	9 (5%)	4 (2%)	10 (6%)	0 (0%)	85 (47%)
North West Neonatal ODN	454	30 (7%)	204 (45%)	125 (28%)	44 (10%)	35 (8%)	19 (4%)	52 (11%)	2 (0%)	147 (32%)

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
Northern Neonatal ODN	178	34 (19%)	81 (46%)	43 (24%)	16 (9%)	22 (12%)	0 (0%)	10 (6%)	0 (0%)	53 (30%)
Peninsula & Western Neonatal ODN	243	25 (10%)	149 (61%)	74 (30%)	39 (16%)	36 (15%)	0 (0%)	37 (15%)	0 (0%)	32 (13%)
South East Coast Neonatal ODN	264	25 (9%)	121 (46%)	65 (25%)	28 (11%)	28 (11%)	3 (1%)	38 (14%)	1 (0%)	76 (29%)
South London Neonatal ODN	283	23 (8%)	105 (37%)	36 (13%)	40 (14%)	29 (10%)	3 (1%)	20 (7%)	2 (1%)	130 (46%)
Staffordshire, Shropshire and Black Country Neonatal ODN	145	15 (10%)	90 (62%)	47 (32%)	26 (18%)	17 (12%)	4 (3%)	10 (7%)	0 (0%)	26 (18%)
Thames Valley & Wessex ODN (Thames Valley)	147	12 (8%)	115 (78%)	69 (47%)	23 (16%)	23 (16%)	2 (1%)	17 (12%)	0 (0%)	1 (1%)
Thames Valley & Wessex ODN (Wessex)	168	6 (4%)	137 (82%)	78 (46%)	46 (27%)	13 (8%)	1 (1%)	24 (14%)	0 (0%)	0 (0%)
Trent Perinatal & Central Newborn Neonatal ODN	306	36 (12%)	140 (46%)	64 (21%)	47 (15%)	29 (9%)	4 (1%)	58 (19%)	5 (2%)	63 (21%)
Wales	147	4 (3%)	42 (29%)	20 (14%)	14 (10%)	8 (5%)	0 (0%)	3 (2%)	0 (0%)	98 (67%)
Yorkshire & Humber Neonatal ODN	351	69 (20%)	178 (51%)	118 (34%)	29 (8%)	31 (9%)	6 (2%)	37 (11%)	1 (0%)	60 (17%)
Total	3744	411 (11%)	1841 (49%)	963 (26%)	506 (14%)	372 (10%)	58 (2%)	399 (11%)	13 (0%)	1022 (27%)

*Please note that 2 year follow up results for Scotland are not indicated in this table as 2015 is the first year in which Scottish units have participated in the audit.

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 2012 and June 2013 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	206	29	173	1	3	30	169	3	4
Midlands South West Newborn Neonatal ODN	131	6	122	2	1	5	121	3	2
North Central & North East London Neonatal ODN	194	21	167	2	4	21	165	5	3
North West London Neonatal ODN	80	1	78	1	0	3	74	2	1
North West Neonatal ODN	234	14	208	5	7	6	213	10	5
Northern Neonatal ODN	115	21	91	2	1	19	91	1	4
Peninsula & Western Neonatal ODN	174	13	160	0	1	12	157	3	2
South East Coast Neonatal ODN	146	8	134	3	1	7	138	0	1
South London Neonatal ODN	128	14	110	2	2	12	110	6	0
Staffordshire, Shropshire and Black Country Neonatal ODN	105	0	101	2	2	2	101	1	1
Thames Valley & Wessex ODN (Thames Valley)	127	2	121	1	3	4	115	4	4

Table 7.5

Recorded provision of standardised assessments to babies < 30 weeks born between July 2012 and June 2013 who had health data available

	Eligible babies	Eligible babies with health data entered	No Data on a standardised assessment	Standardised assessment (as % of babies with health data entered)	Standardised assessment used			
					Bayley-III	Griffiths	Schedule of growing	Other
Neonatal ODN of Final Discharge								
East of England Neonatal ODN	290	206	30	178 (86%)	153	1	8	13
Midlands South West Newborn Neonatal ODN	191	131	44	87 (66%)	27	2	52	4
North Central & North East London Neonatal ODN	398	194	69	126 (65%)	106	15	0	5
North West London Neonatal ODN	179	80	42	39 (49%)	30	0	0	5
North West Neonatal ODN	454	234	173	61 (26%)	23	1	9	14
Northern Neonatal ODN	178	115	20	97 (84%)	90	0	2	4
Peninsula & Western Neonatal ODN	243	174	18	156 (90%)	122	23	11	0
South East Coast Neonatal ODN	264	146	40	106 (73%)	74	0	28	1
South London Neonatal ODN	283	128	35	95 (74%)	50	25	13	2
Staffordshire, Shropshire and Black Country Neonatal ODN	145	105	36	69 (66%)	68	1	0	0
Thames Valley & Wessex ODN (Thames Valley)	147	127	67	60 (47%)	46	0	7	4
Thames Valley & Wessex ODN (Wessex)	168	143	76	69 (48%)	31	2	12	23
Trent Perinatal & Central Newborn Neonatal ODN	306	176	83	94 (53%)	19	2	64	3
Wales	147	46	1	45 (98%)	38	3	2	2
Yorkshire & Humber Neonatal ODN	351	247	168	79 (32%)	4	0	61	5
Total	3744	2252	902	1361 (60%)	881	75	269	85
								51

Figure 11: Clinical follow up at 2 years of age, in babies born at <30 weeks gestation, England and Wales. Values (circles) for participating units within England and Wales and 95% confidence intervals (bars) are shown in ascending value order.

--- the NNAP standard

.... the national rate of compliance

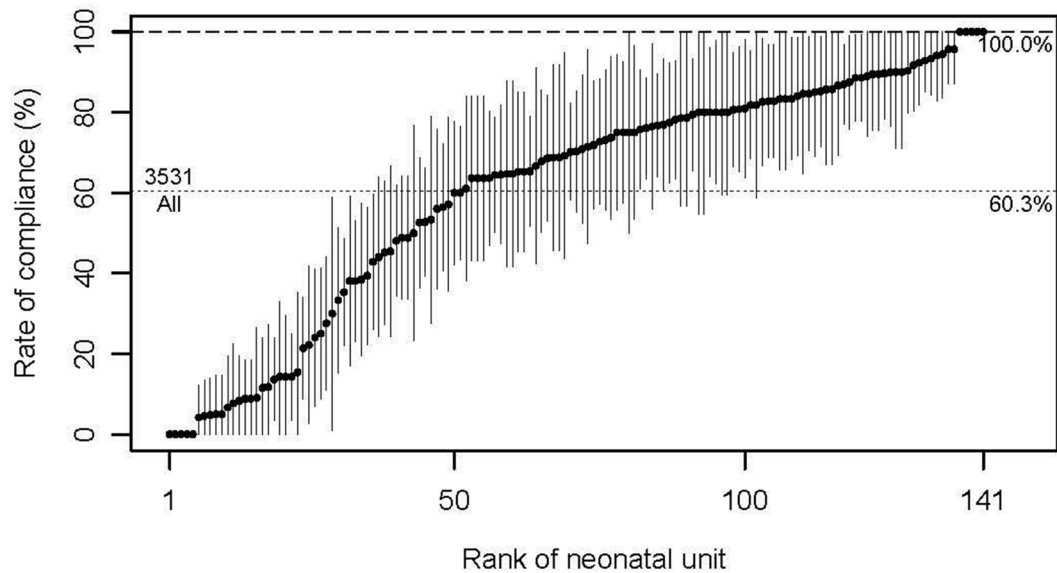
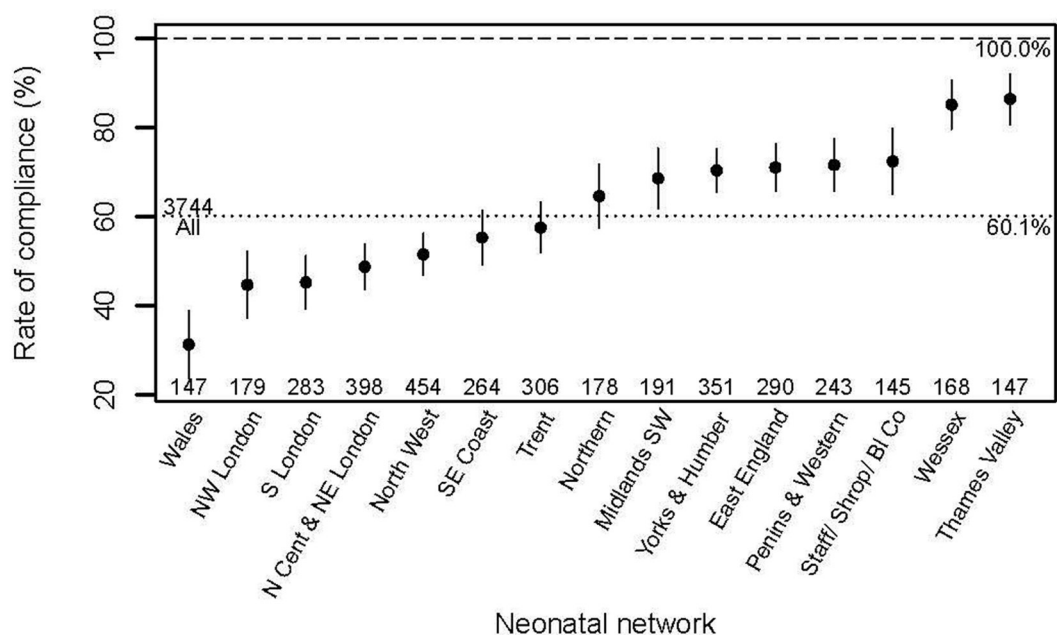


Figure 12: Clinical follow up at 2 years of age, in babies born at <30 weeks gestation, England and Wales. Values (circles) for participating units within England and Wales and 95% confidence intervals (bars) are shown in ascending value order.

--- the NNAP standard

.... the national rate of compliance



Bronchopulmonary Dysplasia

Full key findings and recommendations for this audit measure can be found on pages 24 to 25.

NNAP audit measure: What is the proportion of babies born <32 weeks who develop Bronchopulmonary Dysplasia?

Definition of Bronchopulmonary Dysplasia:

A: Mild: respiratory support (Ventilation, CPAP, BiPAP, HHFNC and or any oxygen) on day 28 + air at 36 weeks corrected gestation or from the time of discharge if discharged earlier

B: Significant: respiratory support on day 28 + respiratory support at 36 weeks corrected gestation or from the time of discharge if discharged earlier

Results

There were **25,009** babies born <32 weeks and discharged between January 1st 2013 and December 31st 2015, as reported by **182** NNU who were considered for this audit measure. Of these babies, **1993** were excluded from analysis for BPD because they died before reaching 36 weeks corrected gestation. A further **639 (3%)** babies were removed as the complete respiratory data required for analysis of BPD was not available from NNAP-participant units. In total **22,377** babies were eligible for inclusion in the analysis.

Over 3 years, there was no indication of BPD for **53%** of babies, whilst **16%** of babies were defined as having Mild BPD and **30%** were categorised as having significant BPD. BPD could not be determined for **1%** of babies.

All babies were assigned to their recorded place of birth for this analysis. For the following tables responses are assigned "Other" if the mother was recorded as delivering at home, in transit, in an unknown location or in a non NNAP unit in the first NNU admission.

Table 8.1

Bronchopulmonary Dysplasia for babies born <32 weeks gestation and discharged between January 1st 2013 and December 31st 2015 in England, Scotland and Wales

Unit level	Number of eligible NNU	Number of eligible babies	BPD Status			
			No BPD	Mild BPD	Significant BPD (as % of eligible babies)	BPD not determinable
Other	-	572	169	60	120 (21%)	223
SCU	42	1261	824	183	244 (19%)	10
LNU	86	8254	5102	1325	1776 (21%)	51
NICU	54	12290	5696	2035	4488 (37%)	71
Total	182	22377	11791	3603	6628 (30%)	355

Table 8.2

Bronchopulmonary Dysplasia for babies born <32 weeks gestation and discharged between January 1st 2013 and December 31st 2015 in England, Scotland and Wales

Neonatal ODN of birth	Number of eligible babies	BPD Status			
		No BPD	Mild BPD	Significant BPD (as % of eligible babies)	BPD not determinable
Other	572	169	60	120 (21%)	223
East of England Neonatal ODN	1626	916	289	420 (26%)	1
Midlands South West Newborn Neonatal ODN	1017	621	139	243 (24%)	14
North Central & North East London Neonatal ODN	1974	1012	345	596 (30%)	21
North West London Neonatal ODN	1031	549	170	292 (28%)	20
North West Neonatal ODN	2860	1402	451	996 (35%)	11
Northern Neonatal ODN	1008	462	135	394 (39%)	17
Peninsula & Western Neonatal ODN	1409	742	247	410 (29%)	10
Scotland	758	395	154	209 (28%)	0
South East Coast Neonatal ODN	1527	893	225	408 (27%)	1
South London Neonatal ODN	1449	801	202	440 (30%)	6
Staffordshire, Shropshire and Black Country Neonatal ODN	791	412	130	246 (31%)	3
Thames Valley & Wessex ODN (Thames Valley)	777	447	132	195 (25%)	3
Thames Valley & Wessex ODN (Wessex)	934	479	141	314 (34%)	0
Trent Perinatal & Central Newborn Neonatal ODN	1669	892	262	504 (30%)	11
Wales	886	449	173	259 (29%)	5
Yorkshire & Humber Neonatal ODN	2089	1150	348	582 (28%)	9
Total	22377	11791	3603	6628 (30%)	355

Figure 13: Rates of significant bronchopulmonary dysplasia, in babies born at <32 weeks gestation, England, Scotland and Wales 2015. Values (circles) for participating units within England, Scotland and Wales and 95% confidence intervals (bars) are shown in ascending value order.

... the national rate of Significant BPD

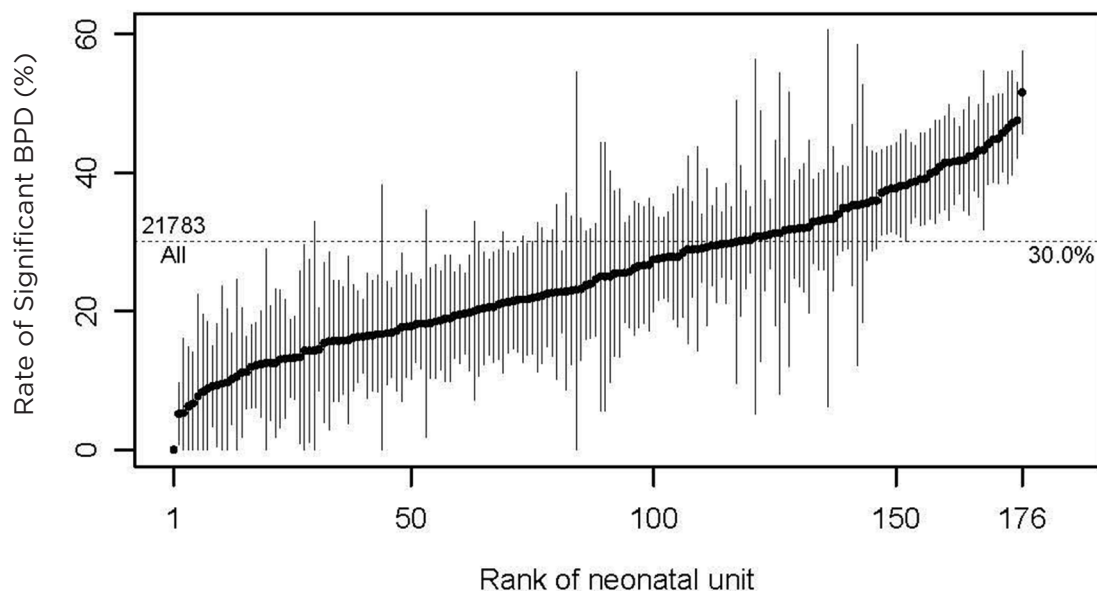
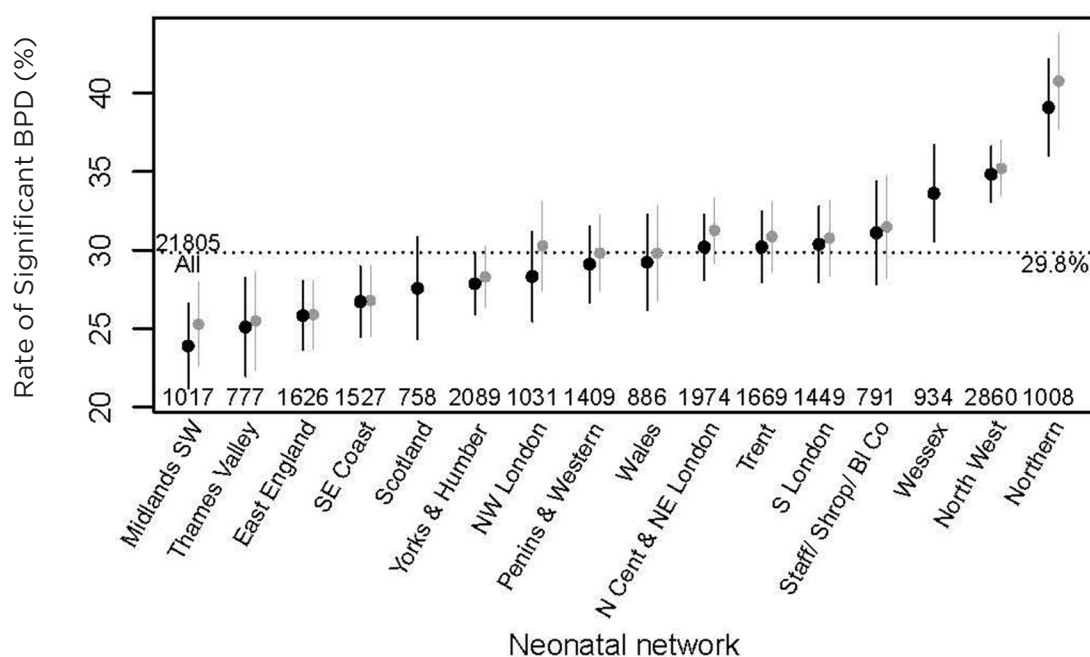


Figure 14: Rates of significant bronchopulmonary dysplasia, in babies born at <32 weeks gestation, England, Scotland and Wales 2015. Values (circles) for neonatal network units within England, Scotland and Wales and 95% confidence intervals (bars) are shown in ascending value order. The adjacent grey segments are based on treating any missing values as indicative that significant bronchopulmonary dysplasia did occur.

... the national rate of Significant BPD



Recording of Blood stream and cerebrospinal fluid (CSF) cultures

Full key findings and recommendations for this audit measure can be found on page 26.

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 episode 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?

Standard: Benchmarking

Source of Standard: NNAP Board

Results

There were **109,376** admissions and **95,325** babies reported from **179** NNU who were included in this question. A total of **71,181** blood and CSF cultures were recorded for these babies; pathogens results, including 'no growth' were entered for **85%** 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 predefined clinical signs, and **0.01%** a mixed growth with three or more predefined clinical signs.

As described in the key findings and recommendations section, significant concerns persist relating to the completeness and quality of the data for this audit question.

Table 9.1 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	134	5	4 (80%)	2 (40%)	0	-
<= 27 weeks	2521	7267	6254 (86%)	4066 (56%)	687	635
28-31 weeks	5685	7944	6794 (86%)	4551 (57%)	496	449
32-36 weeks	28705	18405	15606 (85%)	10912 (59%)	805	702
>= 37 weeks	58280	31177	26059 (84%)	17932 (58%)	4395	3783
Total	95325	64798	54717 (84%)	37463 (58%)	6383	5569 (87%)

* includes cultures that confirmed that “none” of the predefined clinical signs were present at the time the culture was taken.

Table 9.2 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	39	Missing	4	4	0	0	0
		<= 27 weeks	242	352	0	2	0
		28-31 weeks	688	904	3	0	0
		32-36 weeks	4006	4365	7	0	0
		>= 37 weeks	6815	7173	7	0	0
LNU	86	Missing	130	131	0	0	0
		<= 27 weeks	1079	1640	34	3	0
		28-31 weeks	3023	3639	46	8	0
		32-36 weeks	13512	14295	13	3	1
		>= 37 weeks	25553	26601	11	2	0
NICU	54	Missing	5	6	0	0	0
		<= 27 weeks	2349	3463	191	75	2
		28-31 weeks	3574	4172	85	24	0
		32-36 weeks	13113	13917	37	6	0
		>= 37 weeks	27663	28714	33	4	0
Total	179	Missing	134	141	0	0	0
		<= 27 weeks	2521	5455	225	80	2
		28-31 weeks	5685	8715	134	32	0
		32-36 weeks	28705	32577	57	9	1
		>= 37 weeks	58280	62488	51	6	0

Table 9.3

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	39	Missing	4	4	0
		<= 27 weeks	242	352	0
		28-31 weeks	688	904	0
		32-36 weeks	4006	4365	0
		>= 37 weeks	6815	7173	2
LNU	86	Missing	130	131	0
		<= 27 weeks	1079	1640	0
		28-31 weeks	3023	3639	1
		32-36 weeks	13512	14295	0
		>= 37 weeks	25553	26601	1
NICU	54	Missing	5	6	0
		<= 27 weeks	2349	3463	1
		28-31 weeks	3574	4172	1
		32-36 weeks	13113	13917	1
		>= 37 weeks	27663	28714	2
Total	179	Missing	134	141	0
		<= 27 weeks	2521	5455	1
		28-31 weeks	5685	8715	2
		32-36 weeks	28705	32577	1
		>= 37 weeks	58280	62488	5

Prevalence of Central Line-associated Bloodstream Infections (CLABSI)

Full key findings and recommendations for this audit measure can be found on page 26.

NNAP audit measure: How many blood stream 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.

Standard: Standard not set, benchmarking

Source of Standard: NNAP Board

Results

95,325 babies in **179 NNU** received **1,137,398** days of care. In total **14%** of all care days included a central line and **348** bloodstream infections were reported for these central line days; **2.21** 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 10.1

Occurrence of central line associated bloodstream infection in NNAP participating NNU; babies who died or were discharged during 2015

NNU Level	Number of eligible NNU	Gestational age group	Number of eligible babies	Number of line days	Number of Central line associated blood stream infections	CLABSI per 1000
SCU	39	Missing	4	0	0	0
		<= 27 weeks	242	100	0	0
		28-31 weeks	688	372	0	0
		32-36 weeks	4006	501	0	0
		>= 37 weeks	6815	506	0	0
LNU	86	Missing	130	0	0	0
		<= 27 weeks	1079	4217	9	2.1
		28-31 weeks	3023	15912	19	1.2
		32-36 weeks	13512	7916	4	0.5
		>= 37 weeks	25553	4122	1	0.2
NICU	54	Missing	5	0	0	0
		<= 27 weeks	2349	52098	200	3.8
		28-31 weeks	3574	33786	76	2.2
		32-36 weeks	13113	19106	22	1.2
		>= 37 weeks	27663	19140	17	0.9
Total	179	Missing	134	0	0	0
		<= 27 weeks	2521	56415	209	3.7
		28-31 weeks	5685	50070	95	1.9
		32-36 weeks	28705	27523	26	0.9
		>= 37 weeks	58280	23768	18	0.8

Appendix A – Neonatal units that contributed 2015 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	296	270
Bassetlaw District General Hospital	SCU	151	132
Bedford Hospital	SCU	434	387
Borders General, Melrose	SCU	104	93
Conquest Hospital	SCU	496	457
Cumberland Infirmary	SCU	232	210
Darent Valley Hospital	SCU	862	791
Darlington Memorial Hospital	SCU	398	364
Dewsbury & District Hospital	SCU	279	253
Ealing Hospital *	SCU	138	129
Epsom General Hospital	SCU	217	202
Furness General Hospital	SCU	111	97
George Eliot Hospital	SCU	290	250
Good Hope Hospital	SCU	590	566
Harrogate District Hospital	SCU	146	135
Hereford County Hospital	SCU	227	214
Hinchingbrooke Hospital	SCU	214	200
James Paget Hospital	SCU	343	325
North Devon District Hospital	SCU	199	176
Oxford University Hospitals, Horton Hospital	SCU	166	146
Pilgrim Hospital	SCU	466	431
Princess Royal Hospital	SCU	292	266
Princess Royal University Hospital	SCU	439	386
Queen Elizabeth Hospital, Gateshead	SCU	246	231
Queen Elizabeth The Queen Mother Hospital	SCU	384	360
Royal Surrey County Hospital	SCU	677	633
Scarborough General Hospital	SCU	216	194
South Tyneside District Hospital	SCU	120	113
The Royal Free Hospital	SCU	400	368
Torbay Hospital	SCU	344	322
University Hospital Of North Durham	SCU	542	511
Wansbeck General Hospital	SCU	359	330
Warwick Hospital	SCU	296	264
West Cumberland Hospital	SCU	175	152
West Middlesex University Hospital	SCU	539	490
West Suffolk Hospital	SCU	388	371

NNU Name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Worthing Hospital	SCU	620	586
Yeovil District Hospital	SCU	212	205
Ysbyty Gwynedd	SCU	190	175
Airedale General Hospital	LNU	200	192
Barnet Hospital	LNU	1302	1255
Barnsley District General Hospital	LNU	370	335
Basildon Hospital	LNU	502	447
Basingstoke & North Hampshire Hospital	LNU	283	258
Broomfield Hospital	LNU	713	679
Calderdale Royal Hospital	LNU	444	420
Chesterfield & North Derbyshire Royal Hospital	LNU	271	250
City Hospital, Birmingham	LNU	1190	1155
Colchester General Hospital	LNU	434	407
Countess Of Chester Hospital	LNU	464	444
Croydon University Hospital	LNU	503	469
Diana Princess Of Wales Hospital	LNU	812	775
Doncaster Royal Infirmary	LNU	341	321
Dorset County Hospital	LNU	256	242
Dumfries & Galloway Royal Infirmary	LNU	181	161
East Surrey Hospital	LNU	595	555
Frimley Park Hospital	LNU	867	827
Glangwili General Hospital	LNU	279	260
Gloucestershire Royal Hospital	LNU	674	629
Great Western Hospital	LNU	904	870
Hillingdon Hospital	LNU	542	512
Ipswich Hospital	LNU	700	668
Kettering General Hospital	LNU	329	304
King's Mill Hospital	LNU	272	248
Kingston Hospital	LNU	490	466
Leighton Hospital	LNU	386	353
Lincoln County Hospital	LNU	664	627
Lister Hospital	LNU	1108	1073
Macclesfield District General Hospital	LNU	120	114
Manor Hospital	LNU	863	831
Milton Keynes Foundation Trust Hospital	LNU	405	378
Nevill Hall Hospital	LNU	259	241
Newham General Hospital	LNU	635	586
Nobles Hospital	LNU	13	12
North Manchester General Hospital	LNU	578	548
North Middlesex University Hospital	LNU	539	483
Northampton General Hospital	LNU	307	285
Northwick Park Hospital	LNU	678	639

NNU Name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Ormskirk District General Hospital	LNU	371	352
Peterborough City Hospital	LNU	1190	1150
Pinderfields General Hospital	LNU	359	336
Poole Hospital NHS Foundation Trust	LNU	471	440
Prince Charles Hospital	LNU	206	193
Princess Alexandra Hospital	LNU	514	486
Princess Of Wales Hospital	LNU	287	269
Queen Elizabeth Hospital, King's Lynn	LNU	554	529
Queen Elizabeth Hospital, Woolwich	LNU	424	386
Queen's Hospital, Burton On Trent	LNU	413	400
Queen's Hospital, Romford	LNU	1171	1116
Rotherham District General Hospital	LNU	253	229
Royal Albert Edward Infirmary	LNU	323	308
Royal Alexandra, Paisley	LNU	459	428
Royal Berkshire Hospital	LNU	625	576
Royal Cornwall Hospital	LNU	511	490
Royal Derby Hospital	LNU	419	370
Royal Devon & Exeter Hospital	LNU	711	685
Royal Glamorgan Hospital	LNU	247	221
Royal Hampshire County Hospital	LNU	322	293
Royal Lancaster Infirmary	LNU	224	209
Royal Shrewsbury Hospital	LNU	1008	956
Royal United Hospital	LNU	797	766
Russells Hall Hospital	LNU	565	534
Salisbury District Hospital	LNU	237	218
Scunthorpe General Hospital	LNU	799	741
Southend Hospital	LNU	411	376
St Helier Hospital	LNU	581	557
St Mary's Hospital, IOW	LNU	231	215
St Mary's Hospital, London	LNU	413	398
St Richard's Hospital	LNU	690	658
Stepping Hill Hospital	LNU	417	376
Stoke Mandeville Hospital	LNU	549	492
Tameside General Hospital	LNU	311	279
Taunton & Somerset Hospital	LNU	559	540
Tunbridge Wells Hospital	LNU	700	669
University Hospital Lewisham	LNU	514	490
University Hospital Of South Manchester	LNU	421	400
Victoria Hospital, Blackpool	LNU	433	416
Warrington Hospital	LNU	414	395
Watford General Hospital	LNU	1232	1176
Wexham Park Hospital	LNU	523	500

NNU Name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Whipps Cross University Hospital	LNU	406	363
Whiston Hospital	LNU	312	292
Whittington Hospital	LNU	2151	2110
Worcestershire Royal Hospital	LNU	782	763
York District Hospital	LNU	323	312
Aberdeen Maternity Hospital	NICU	942	926
Arrowe Park Hospital	NICU	404	389
Birmingham Heartlands Hospital	NICU	1404	1368
Birmingham Women's Hospital	NICU	1758	1682
Bradford Royal Infirmary	NICU	750	711
Chelsea & Westminster Hospital	NICU	727	704
Derriford Hospital	NICU	1313	1257
Glan Clwyd Hospital	NICU	222	215
Guy's & St Thomas' Hospital	NICU	966	921
Homerton Hospital	NICU	904	848
Hull Royal Infirmary	NICU	563	549
James Cook University Hospital	NICU	409	400
King's College Hospital	NICU	813	778
Lancashire Women & Newborn Centre	NICU	664	646
Leeds Neonatal Service ¹	NICU	1611	1550
Leicester Neonatal Service ²	NICU	1438	1316
Liverpool Women's Hospital	NICU	994	974
Luton & Dunstable Hospital	NICU	978	939
Medway Maritime Hospital	NICU	1049	1013
New Cross Hospital	NICU	1066	1012
Ninewells, Dundee	NICU	542	510
Norfolk & Norwich University Hospital	NICU	1234	1199
North Bristol NHS Trust (Southmead)	NICU	3134	3080
Nottingham City Hospital	NICU	778	726
Nottingham University Hospital (QMC)	NICU	756	705
Oxford University Hospitals, John Radcliffe Hospital	NICU	992	955
Princess Anne Hospital	NICU	737	708
Princess Royal Maternity, Glasgow	NICU	585	543
Queen Alexandra Hospital	NICU	597	555
Queen Charlotte's Hospital	NICU	484	461
Rosie Maternity Hospital, Addenbrookes	NICU	971	947
Royal Bolton Hospital	NICU	684	660
Royal Gwent Hospital	NICU	501	485
Royal Hospital For Children, Glasgow	NICU	889	838
Royal Oldham Hospital	NICU	646	610
Royal Preston Hospital	NICU	497	470

NNU Name	NNU level	Number of completed episodes of care included	Number of distinct babies included
Royal Stoke University Hospital	NICU	1133	1099
Royal Sussex County Hospital	NICU	525	492
Royal Victoria Infirmary	NICU	709	655
Singleton Hospital	NICU	435	425
St George's Hospital	NICU	2374	2345
St Mary's Hospital, Manchester	NICU	1219	1188
St Michael's Hospital	NICU	3007	2870
St Peter's Hospital	NICU	713	687
Sunderland Royal Hospital	NICU	343	326
The Jessop Wing, Sheffield	NICU	1681	1653
The Royal London Hospital	NICU	774	740
University College Hospital	NICU	984	909
University Hospital Coventry	NICU	1411	1277
University Hospital Of North Tees	NICU	341	322
University Hospital Of Wales	NICU	463	446
Victoria Hospital, Fife	NICU	426	400
William Harvey Hospital	NICU	530	499
Wrexham Maelor Hospital	NICU	202	185

¹ Data from Leeds Neonatal Service includes data from Leeds General Hospital and St James's Hospital.

² Data from Leicester Neonatal Service includes data from Leicester Royal Infirmary and Leicester General Hospital.

Appendix B: RCPCH resources and publications

Invited Reviews

Our invited reviews service aims to support healthcare organisations and clinical teams to resolve service, practice or individual concerns or 'benchmark' their paediatric and/or neonatal service provision. This can include issues around safety, training, compliance with standards, and proposals for reconfiguration, expansion or service design.



This confidential, established and influential service offers independent external peer opinion backed by a respected professional body. We have worked with over 60 organisations, and their teams, in the four years since the service was established, including individual neonatal units and networks in Wales, Scotland and all parts of England.

Seeking assistance?

More details about the review service can be found on our website www.rcpch.ac.uk/invitedreviews

We welcome enquiries from healthcare organisations or commissioners and would be happy to discuss in confidence, without obligation, how the service may be able to help. Please contact the team on invited.reviews@rcpch.ac.uk or call Sue Eardley on 020 7092 6091

Meds IQ

Meds IQ is an online library of QI resources in improving paediatric medication safety. The resources vary in scope and level of quality assurance – from small, Trust approved practice improvement projects to nationally accredited, innovative tools.



An example of a resource on Meds IQ is NeoMate – a smartphone app that aims to improve outcomes for newborn babies who require intensive care following birth. Recognising that sick babies are often born unexpectedly in smaller hospitals without a tertiary neonatal intensive care service, the app aims to bridge the gap between regional centres and local peripheral hospitals by giving all staff the information they need to make decisions safely, for free. The app is endorsed by the London Neonatal Transfer Service, and drug calculations have been quality checked by the Trust neonatal pharmacy team. Checklists were created by a consortium of neonatal consultants, registrars and nurses. The app won an NHS Innovation Challenge Award in 2015. It is also MHRA certified.

Neomate and other useful tools, projects and e-learning can be found on www.medsiq.org

Paediatric workforce data

The College collects data regarding the paediatric workforce, child health services provision and issues facing the service and workforce through its biennial Paediatric Workforce Census and other data collection activities. The Census tells us where neonatal services are located, at what level, and how they are staffed. It also tells us how many paediatricians specialise in, or have a special interest in, neonatology, and where they are employed.

These data can be used to identify pressure areas, and to inform workforce planning and national policy development. The College supports members to use these data to inform service development in their local area.

Look out for the findings of the 2015 Paediatric Workforce Census, which will be published in December this year.

For more information, please visit www.rcpch.ac.uk/workforce or contact workforce@rcpch.ac.uk.

Research &US: Infants', Children's and Young People's Child Health Research Charter



Working with children, young people, parents, carers and healthcare professionals, the RCPCH developed the Infants', Children's and Young People's Child Health Research Charter (Charter) to provide guiding principles for anyone; whether that be a child, young person, parent, doctor, nurse, allied healthcare professional, researcher or anyone working with and involving children and young people in research.

The Charter is one of the commitments the RCPCH made in the Turning the Tide report and builds on the work of the Nuffield Council on Bioethics, Generation R, National Institute of Health Research, the National Children's Bureau, UNICEF and more.

Child Health Research is important and the RCPCH supports the need for clinicians to involve children and young people in research and discussions surrounding this. It is important to remember that children are different from adults and their bodies' responds differently to treatments, they have different opinions and what matters to them may be different to what matters to the adults around them. The Charter highlights the need to appropriately involve children and young people in all stages of research, from the development and design to dissemination of results.

For more information or advice about research please contact the RCPCH Research and Evaluation Team at research@rcpch.ac.uk, or to find out more about involving children and young people contact and_us@rcpch.ac.uk.

Paediatric Care Online (PCO UK)

PCO UK is a new online decision support system designed for healthcare professionals who see children at the point of presentation, providing immediate access to clinically assured information to inform decisions at point of care. PCO UK includes Key Practice Points; from abdominal distension to wheezing



they offer clinically assured advice on 'red flag' signs and symptoms and referral pathways, incorporating national clinical guidance where available.

PCO UK is developed by a partnership group, hosted by the RCPCH and funded by the Department of Health. Partners include the Royal College of General Practitioners, the Royal Pharmaceutical Society, the Royal College of Nursing, the Institute of Health Visiting and the American Academy of Pediatrics.

All RCPCH members have access to PCO UK included in their membership, and can email membership@rcpch.org.uk with any queries. For other subscription options, including individual and institutional licences, please contact the team at pco@rcpch.ac.uk to discuss. For general enquiries, please contact the PCO UK Team on pco@rcpch.ac.uk

