

NNAP

National Neonatal
Audit Programme

✧RCPCH Audits

National Neonatal Audit Programme (NNAP) Summary report on 2021 data



Photo of Olivia-Grace
Courtesy of Danielle Benedict

Summary report on 2021 data

The National Neonatal Audit Programme is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP).

HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the NCAPOP, comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies www.hqip.org.uk/national-programmes

NNAP Governance

Details of the NNAP governance structure and membership of the NNAP Project Team, Project Board and Methodology and Dataset Group are available at:

www.rcpch.ac.uk/work-we-do/quality-improvement-patient-safety/national-neonatal-audit-programme/governance-delivery



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Introduction

Established in 2006, the National Neonatal Audit Programme (NNAP) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and delivered by the Royal College of Paediatrics and Child Health (RCPCH).

It assesses whether babies admitted to neonatal units receive consistent high-quality care in relation to the NNAP audit measures that are aligned to a set of professionally agreed guidelines and standards. The NNAP also identifies variation in the provision of neonatal care at local unit, regional network and national levels and supports stakeholders to use audit data to stimulate improvement in care delivery and outcomes.

The audit reports key outcomes of neonatal care (mortality, bronchopulmonary dysplasia, late onset bloodstream infection, necrotising enterocolitis and preterm brain injury), measures of optimal perinatal care (birth in the right place, antenatal steroids, antenatal magnesium sulphate, deferred cord clamping and normal temperature on

admission), maternal breastmilk feeding (during admission and at discharge), parental partnership, neonatal nurse staffing levels, and other important care processes (screening for retinopathy of prematurity and follow-up at two years of age).

This report summarises the key messages and national recommendations developed by consensus by the NNAP Project Board and Methodology and Dataset Group, based on NNAP data relating to babies discharged from neonatal care in England and Wales between January and December 2021, unless otherwise stated. Scottish data is not included in this report, however Scottish neonatal services will re-join the audit from the 2022 data year.



Further information:

Further information about the background, aims, and scope of the NNAP is available at: www.rcpch.ac.uk/about-nnap

Full results:

Full results at unit and network level, interactive reporting tools and unit posters are available on NNAP Online at:

nnap.rcpch.ac.uk

The NNAP 2021 data line of sight table describes the evidence base for the recommendations made in this report, and is available at:

www.rcpch.ac.uk/nnap-report-2021-data

Appendix A: Results, NNAP annual report on 2021 data

Appendix A provides results by NNAP measure by unit type (Special Care Unit, Local Neonatal Unit, Neonatal Intensive Care Unit), by neonatal network, and for England and Wales combined, with a summary of findings for each audit measure, recommended next steps for services seeking to make improvements and links to further resources and case studies. It is available at:

www.rcpch.ac.uk/nnap-report-2021-data

Results at a glance

The National Neonatal Audit Programme (NNAP) assesses whether babies admitted to neonatal units receive consistent high-quality care and identifies areas for improvement.

This poster summarises the results based on NNAP data relating to babies discharged from neonatal care between January and December 2021, unless otherwise stated.

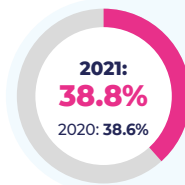
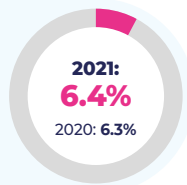
1. Outcomes of neonatal care



Mortality

6.4% of very preterm babies* died before discharge home, ranging from 4% to 8% between networks (observed proportion).

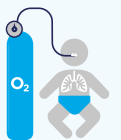
*born July 2018 to July 2021



Bronchopulmonary dysplasia

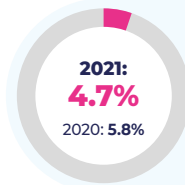
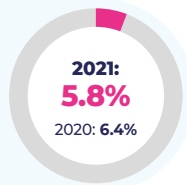
38.8% of very preterm babies* developed BPD or died, ranging from 33.5% to 46% between networks (observed proportion).

*discharged January 2019 to December 2021



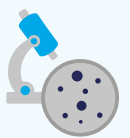
Necrotising enterocolitis

5.8% of very preterm babies developed necrotising enterocolitis, ranging from 3.1% to 8.9% between networks (observed proportion).



Bloodstream infection

4.7% of very preterm babies had growth of a clearly pathogenic organism, ranging from 2.5% to 7.6% between neonatal networks.

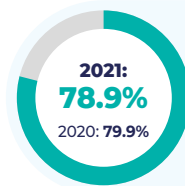


2. Optimal perinatal care



Antenatal steroids

92.1% of mothers of babies born at less than 34 weeks' were given antenatal steroids, ranging from 89.2% to 95.8% between networks.



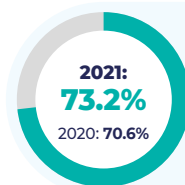
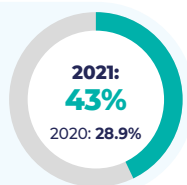
Born in a centre with a NICU

78.9% of babies born at less than 27 weeks' gestation were born in a centre with a NICU on site, ranging from 67.6% to 86.3% between networks.



Deferred cord clamping

43% of very preterm babies had their cord clamped at or after one minute, ranging from 13.9% to 68.1% between networks.



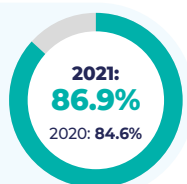
Temperature on admission

73.2% of very preterm babies were admitted with a temperature within the recommended range of 36.5-37.5°C, ranging from 63.8% to 82.9% between networks.



Antenatal magnesium sulphate

86.9% of eligible mothers were given antenatal magnesium sulphate, ranging from 83.6% to 91.7% between networks.



3. Parental partnership in care

WITHIN
14
DAYS



Breastmilk feeding at 14 days

80.5% of very preterm babies received their mother's milk at 14 days of life, ranging from 75.9% to 86.3% between neonatal networks.

2021:
80.5%
2020: 82.2%



AT
DISCHARGE



Breastmilk feeding at discharge

60.6% of very preterm babies received their mother's milk at discharge home, ranging from 52% to 75.6% between neonatal networks.

2021:
60.6%
2020: 60.1%



Parental consultation within 24 hours of admission

96.3% of parents had a documented consultation with a senior member of the neonatal team within 24 hours of their baby's admission.

2021:
96.3%
2020: 95.5%



Parental presence at consultant ward rounds

A parent was present on the consultant ward round at least once during the admission for 85.8% of admissions. The proportion of ward rounds with at least one parent present was 44.1%.

2021:
85.8%
2020: 84.2%



4. Care processes



On time screening of retinopathy of prematurity (ROP)

95.4% of eligible babies were screened on time for ROP, ranging from 81.4% to 98.1% between networks.

2021:
95.4%
2020: 95.1%



I am
2



Medical follow up at two years

72.6% of eligible babies had a documented medical follow up at the right time, ranging from 52.8% to 85.1% between networks.

2021:
72.6%
2020: 68.4%



5. Neonatal nurse staffing



Neonatal nurse staffing

73.9% of nursing shifts were staffed according to recommended levels, ranging from 61.2% to 89.2% between networks.

2021:
73.9%
2020: 78.6%



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Further information & resources

Neonatal services and trusts/health boards

Local quality improvement recommendations

A summary of all recommendations, including additional local quality improvement recommendations made to neonatal services, is available at:

www.rcpch.ac.uk/nnap-report-2021-data

Next steps and resources for improvement

Neonatal services and Trusts/Health Boards can access their full results at unit and network level, interactive reporting tools and unit posters on **NNAP Online** at www.nnap.rcpch.ac.uk

The **Appendix A: NNAP 2021 data – results** provides in-depth results and a summary of findings by audit measure, along with next steps and resources.

Download it here:

www.rcpch.ac.uk/nnap-report-2021-data

Parents and families

Your Baby's Care Guide 2021

Parents and families can find more information about the NNAP and 2021 results in **Your Baby's Care**, while **NNAP Online** provides more in-depth results for each neonatal unit and network in England and Wales.

Your Baby's Care: www.rcpch.ac.uk/your-babys-care
NNAP Online: www.nnap.rcpch.ac.uk

How we use information



To find out more about how we use information about babies experiencing neonatal care and their mothers, please visit www.rcpch.ac.uk/your-babys-information or scan the QR code with your phone to read our leaflet **Your Baby's Information**.

Key messages & recommendations

1 Outcomes of neonatal care

- The variation in rates of key outcomes of neonatal care, including mortality, bronchopulmonary dysplasia (BPD), necrotising enterocolitis (NEC) and late onset bloodstream infection in babies born at less than 32 weeks gestational age, remains wide and concerning both across neonatal networks and between neonatal units of similar types. Across neonatal networks, the following variation is seen:
 - Observed **mortality** varies two-fold, from 4% to 8%. Among babies born between 24 and 27 weeks gestational age, this ranges from 7.8% to 19.3%.
 - Observed rates of **BPD** or death range from 33.5% to 46%.
 - Observed rates of **necrotising enterocolitis** range from 3.1% to 8.9%.
 - Observed rates of late onset **bloodstream infection** range from 2.5% to 7.6%.
- This indicates a need and opportunity to deliver significantly improved outcomes for babies if the poorest performing networks across each measure improved to the performance of the best performing.
- Rates of **preterm brain injury** (intraventricular haemorrhage (IVH) grades 3 and 4 and cystic periventricular leukomalacia) are reported for the first time this year.
- The proportion of units able to provide **assurance that their 2021 outcome data are complete** has fallen in the past year (necrotising enterocolitis – 79%, reduced from 87% in 2020; late onset bloodstream infection – 74%, reduced from 84% in 2020; preterm brain injury (first year of reporting) only 66% of neonatal units could assure complete data. High and variable rates of missing data (for example ranging from 2.6% to 55.5% across neonatal networks for IVH 3 or 4), make it difficult to interpret the results with confidence.



The NNAP recommends that:

1. All neonatal networks and their constituent neonatal units should, following a review of local mortality results, and relevant national and regional reviews (such as the [Getting It Right First Time \(GIRFT\)](#) neonatal report, the [Neonatal Critical Care Review action plan in England](#), and [Independent Maternity Oversight Panel reviews in Wales](#)) take action to:
 - **Consider a quality improvement approach to the delivery of evidence-based strategies** in the following areas to reduce mortality: timely antenatal steroids, deferred cord clamping, avoidance of hypothermia and management of respiratory disease. Such quality improvement activity should pay due regard to relevant guidance and resources, such as the [NICE guidance for specialist respiratory care](#) and the [BAPM and NNAP quality improvement toolkits](#).
 - **Ensure that shared learning from locally delivered, externally supported, multidisciplinary reviews of deaths** (including data from the local use of the [Perinatal Mortality Review Tool](#)) informs network governance and unit level clinical practice.

Key messages & recommendations

2

Optimal perinatal care

- In 2021, **21.1%** of babies of less than 27 weeks' gestational age were **not born in a maternity unit with a neonatal intensive care unit (NICU)** on site (78.9% were delivered in the most appropriate location). Overall, 1% fewer babies were delivered in the most appropriate maternity unit compared to 2020, following a year-on-year improvement since the introduction of the measure in 2017. Evidence shows that birth in the right place reduces mortality and rates of preterm brain injury.
- In 2021, **86.9%** of mothers who delivered a baby at less than 30 weeks gestational age **received antenatal magnesium sulphate**. While the pace of improvement is slowing, modest further improvement with associated reduction in cerebral palsy is likely to be possible.
- In 2021, **43%** of babies born at less than 32 weeks' gestation had **deferred cord clamping**, while evidence shows that waiting at least 60 seconds before clamping the umbilical cord reduces mortality by 32%.¹ Data from trials¹ suggests that 60 fewer deaths may have occurred during this audit year if cord clamping had been deferred as it was in the trials. There is wide variation at both unit and network level. The increase in the rate of delivery of deferred cord clamping is slower than expected.
- In 2021, **73.2%** of babies had a **temperature measured on time and within the normal range**. Between 2015 and 2021 there has been significant improvement in this measure, with a 50% reduction (26% in 2015 and 11.8% in 2021) in the number of babies who had their temperature measured on time (within one hour of birth) and who had a low temperature (hypothermic). There was no associated increase in the number of babies whose temperature was high (hyperthermic).



The NNAP recommends that:

2. All neonatal and perinatal networks (including Local Maternity Systems (LMS) and Local Maternity and Neonatal Systems (LMNS) in England) **should undertake exception reporting** for all cases where a baby of less than 27 weeks' gestation (less than 28 weeks' for multiple births) is **not born at a maternity service on the same site as a NICU**, and should adopt evidence-based practices, using the following guidance and methodologies to support improvement:
 - [Maternity and Neonatal Safety Improvement Programme](#)
 - [BAPM and NNAP Antenatal Optimisation Toolkit](#)
 - Healthcare Improvement Scotland, Maternity and Children Quality Improvement Collaborative (MCQIC) [Preterm Perinatal Wellbeing Package](#)
 - BAPM Building Successful Perinatal Teams Resource (publication due late 2022).

1. Fogarty et. Al. Delayed vs early umbilical cord clamping for preterm infants: a systematic review and meta-analysis. AJOG, VOLUME 218, ISSUE 1, P1-18, JANUARY 01, 2018.

Key messages & recommendations

3

Parental partnership in care

- Rates of **breastmilk feeding at discharge** from neonatal care remain static (60.6% in 2021; 60.1% in 2020). Breastmilk feeding rates are higher at 14 days of age (**80.5%** in 2021) than at discharge, but there has been a 1.7 percentage point reduction compared to the first year of reporting in 2020. This decline may be related to COVID-19 related impacts on unrestricted parental access to neonatal units.
- There is wide variation in both **breastmilk feeding rates at 14 days of age** and at discharge. At network level, variation in breastmilk feeding at discharge is widest, ranging **from 52% to 75.6%**. Rates at 14 days of age range **from 75.9% to 86.3%**. Admission to a neonatal unit may mean that parents are unable to achieve the type of feeding they had intended. Neonatal services may also be limited in their ability to affect long-term feeding intentions, which may be influenced by socio-demographic factors.
- For the first year, the NNAP reports the **proportion of consultant ward rounds with at least one parent present**, in addition to the proportion of admissions where a parent attended at least one consultant ward round during their baby's stay on the neonatal unit. Data on whether parents were present were missing for 220,913 out of 808,697 (**27.3%**) days of admission, but where data was provided, at least one parent was present for **44.1%** of consultant ward rounds.



The NNAP recommends that:

3. NHS England and the Welsh Government should require neonatal networks to work with their constituent neonatal units to ensure they:
 - **Identify an infant feeding lead to train and support staff**, with protected time within their job plan for this role.
 - **Use the following tools and resources to support their maternal breastmilk focussed quality improvement initiatives:**
 - [BAPM and NNAP Maternal Breast Milk Toolkits](#)
 - [UNICEF Neonatal Baby Friendly Initiative](#)
 - Bliss resources, including [information for families](#), support services and the [Bliss Baby Charter](#)
 - [PERIPrem bundle](#): Maternal Early Breast Milk
 - Neonatal Network Care Coordinators (England).
 - Ensure **unrestricted access for parents to the neonatal unit and their baby**, and as full as possible for the wider family, including a return to pre-Covid visiting policies if not yet achieved.
 - Ensure that **parent presence on the consultant ward round is recorded daily**.
 - Seek to **learn from neonatal units that are achieving high rates of parent involvement**, making use of available resources including those provided by Bliss.
 - **Ask parents for their views and suggestions** for how to improve parental partnership in care, including how to increase parent involvement in consultant ward rounds and how to best ensure that parents meet a senior member of the neonatal team within 24 hours of admission.

Key messages & recommendations

4

Neonatal nurse staffing

- Neonatal **nurse staffing levels** have deteriorated with 26.1% of nursing shifts not meeting recommended levels in 2021 (**73.9%** of shifts met recommended levels), compared to 21.4% in 2020. In NICUs, 42.3% of shifts did not meet recommended staffing. Wide unit and network level variation exists in the achievement of recommended nurse staffing levels.



The NNAP recommends that:

4. Commissioners of nursing training in England and Wales should **ensure that the number of neonatal nurses is increased**. This will require training by higher education institutions of greater numbers of specialist nurses, and continued support by the Neonatal Nurses Association and neonatal networks to promote neonatal nursing as a positive career choice.
5. All Health Boards and Trusts providing neonatal services should work with neonatal networks to:
 - **Develop action plans and workforce strategies**, alongside measures to improve recruitment and retention, for the use of Neonatal Critical Care Review funding for nurse staffing (England only).
 - **Invest in staff wellbeing, career progression and training opportunities** for nursing associate roles and apprenticeship roles, following the guidance in the [GIRFT neonatology supplementary workforce report](#) on nurse career frameworks.

Care processes

5

- In 2021, **95.4%** of eligible babies received **on time screening for retinopathy of prematurity (ROP)** according to the NNAP definition of the screening window. This has remained between 95.1% and 95.7% over the last four years. Babies nursed in Special Care Units were less likely to be screened on time (88.6%), possibly reflecting challenges with providing in-reach ROP screening to smaller neonatal services. The NNAP 2023 report on 2022 data will report adherence to the new UK screening of retinopathy of prematurity guideline, published in March 2022.²
- The proportion of babies born at less than 30 weeks' gestation receiving two-year follow up within the appropriate time window is **72.6%** (2,628 of 3,622). This is an increase since 2020, when 68.4% received a two year follow up, and the highest proportion reported by the NNAP since the introduction of this measure in 2012. However, improvement has been slow and there is still wide variation in achievement of two-year follow up across neonatal units and networks.



The NNAP recommends that:

6. All neonatal units and networks should:
 - Ensure that they have **safe screening processes** that adhere to the updated UK screening of retinopathy of prematurity guideline.
 - Work with their **local ophthalmology team** to ensure processes are in place to cover staff sickness or absence to ensure that screening can be undertaken 52 weeks per year.

2. Royal College of Paediatrics and Child Health. UK Screening of Retinopathy of Prematurity Guideline, March 2022. Available at: <https://www.rcpch.ac.uk/resources/screening-retinopathy-prematurity-rop-clinical-guideline>

Summary results by network

The spine plots below give an overview of overall neonatal network performance across all measures and support the management of quality improvement priorities.

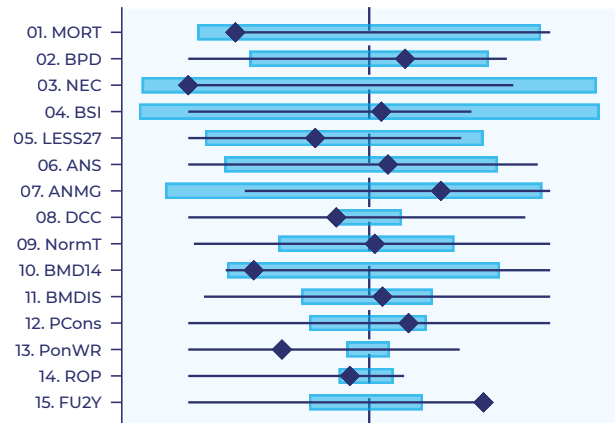
Performance on each measure is shown with a black diamond positioned on a horizontal line for each measure. The horizontal line extends left to right from the lowest to the highest value for that measure among all networks.

The rates are scaled so the national rates are aligned to a single vertical line for all measures and orientated so that better performance is to the right-hand side. A grey bar describes the expected range - two standard deviations either side of the national rate. The measures of NEC, BSI, BPD or death and mortality are represented by treatment effect (see **Appendix A** for a description of treatment effect for the relevant measures).

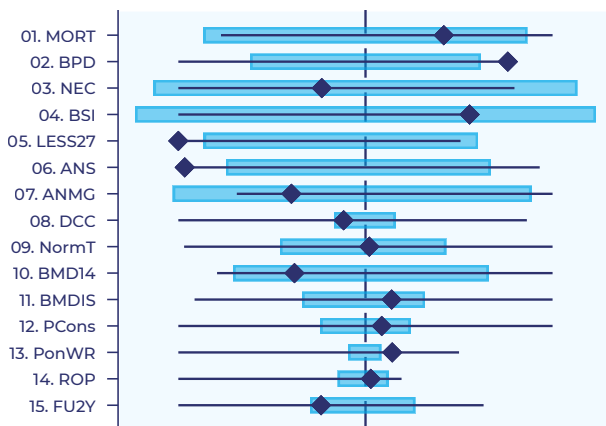
Plot key:

- MORT:** Mortality
- BPD:** Bronchopulmonary dysplasia
- NEC:** Necrotising enterocolitis
- BSI:** Bloodstream infection
- LESS27:** Birth in a centre with an NICU
- ANS:** Antenatal Steroids
- ANMG:** Antenatal magnesium sulphate
- DCC:** Deferred cord clamping
- NormT:** Normal temperature
- BMD14:** Breastmilk day 14
- BMDIS:** Breastmilk at discharge
- PCons:** Parental consultation in 24h
- PonWR:** Parental involvement on ward round
- ROP:** Retinopathy of prematurity
- FU2Y:** Two year follow up

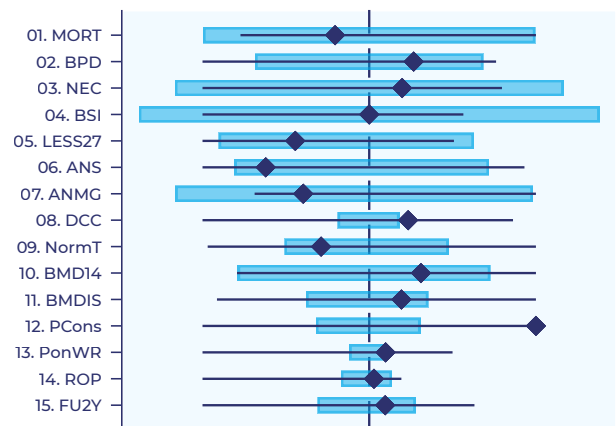
East Midlands ODN



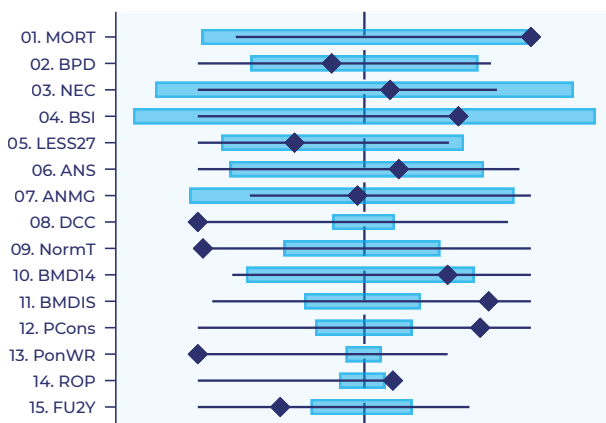
East of England Perinatal ODN



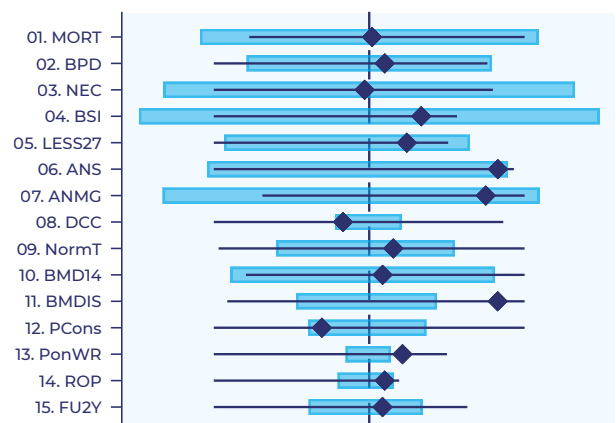
Kent, Surrey, Sussex ODN



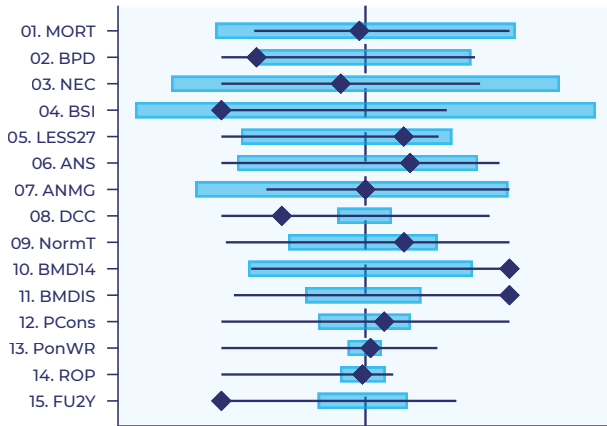
London ODN - North Central & East



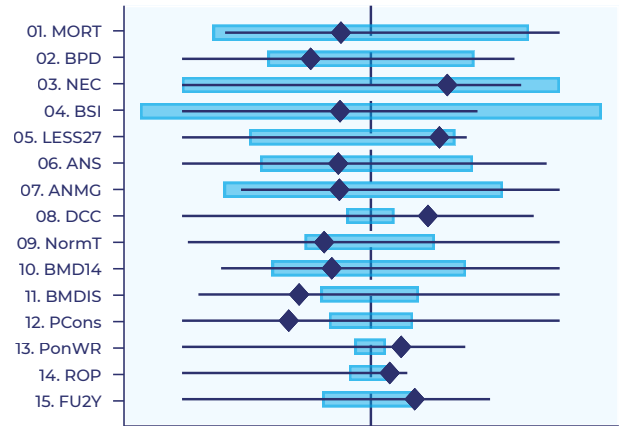
London ODN - North West



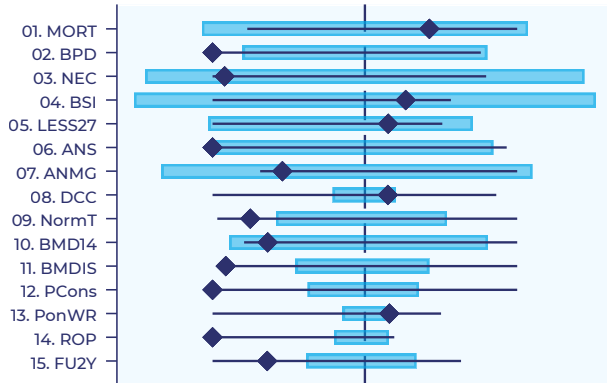
London ODN - South



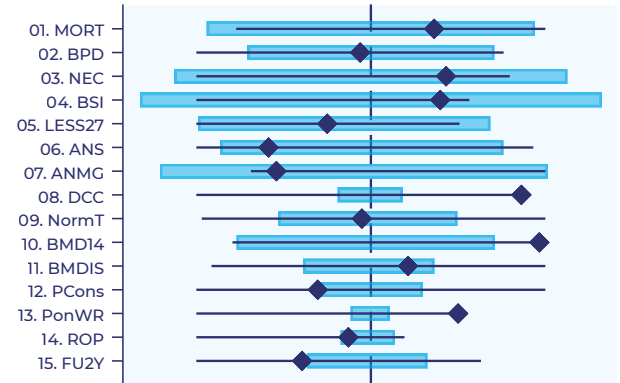
North West ODN



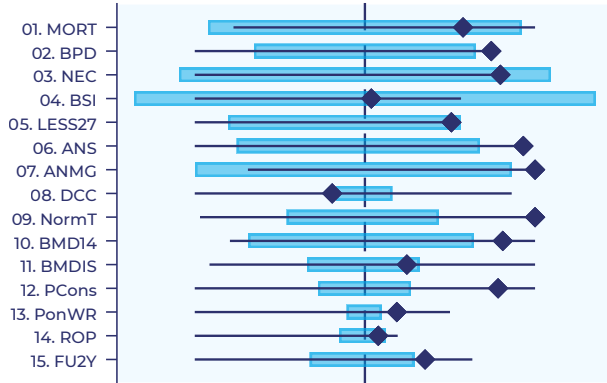
Northern ODN



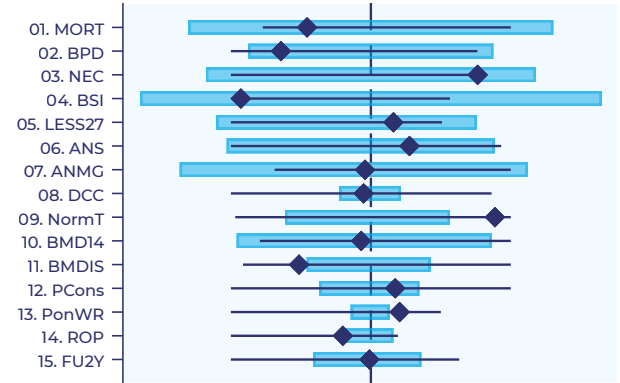
South West ODN



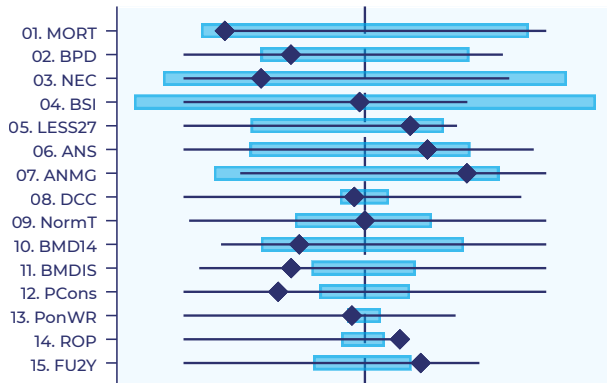
Thames Valley & Wessex ODN



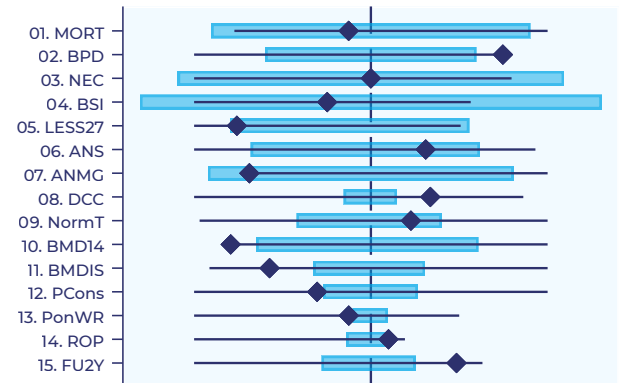
Wales



West Midlands ODN



Yorkshire & Humber ODN



A guide to the
**National Neonatal
Audit Programme**
Summary report
on 2021 data



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Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales.

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