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The National Neonatal Audit Programme: improving standards of care and driving quality improvement

Since 2006, the National Neonatal Audit Programme (NNAP)¹ has assessed whether neonatal unit babies receive consistent, high-quality treatment. The NNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and delivered by the Royal College of Paediatrics and Child Health (RCPCH).

The summary report on 2022 data was published in October 2023 (FIGURE 1).² The 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 broadly to babies discharged from neonatal care in England and Wales between January and December 2022, and Scotland between 1 April 2022 and 31 December 2022.

Outcomes of neonatal care

Variation persists in rates of key outcomes of neonatal care, ie mortality, bronchopulmonary dysplasia (BPD), necrotising enterocolitis (NEC) and bloodstream infection. This variation is not new but is a matter of concern. This variation is seen between units and between networks and is seen even when measured background characteristics are accounted for. For example, rates of mortality in very preterm infants range from 4.8-8% between neonatal networks. Furthermore, the overall rate of BPD or death is rising in very preterm infants (2015-2017=36.3%; 2020-2022=39.7%, $p < 0.001$), rather than the desired decrease over time. There is a need and an opportunity to deliver significantly improved outcomes for babies if the poorest performing networks across each measure improved to the level of the best performing networks.

The NNAP measurement of preterm brain injury is confounded by high rates of missing data. For example, the overall figure for missing data for intraventricular haemorrhage is 13.9%, but this varies by operational delivery network from 1.9% to 57.4%. There has been some improvement in the proportion of NNAP neonatal unit clinical leads who were able to assure their NNAP data on preterm brain injury (2022=71.8%; 2021=66.3%). Describing this critical outcome of neonatal care must be a

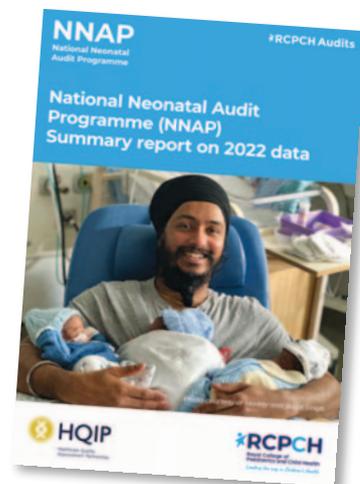


FIGURE 1 The NNAP summary report on 2022 data, published in October 2023.

priority for neonatal units and networks to facilitate quality improvement (QI) and assurance and also to allow measurement against the national ambition to reduce rates of brain injury during, or soon after, birth.

Optimal perinatal care

Deferred cord clamping (DCC) rates continue to rise. Considering only very preterm infants, 55.4% had DCC in 2022 compared to 43% in 2021. The neonatal community should be proud of its practice change in this regard. Neonatal network managers should support those units where further improvement in DCC is required. On average, significantly higher rates of DCC are achievable, without needing to try the as yet unproven technique of 'cord intact stabilisation'.

Adherence to timely administration of a full course of antenatal steroids is highly variable, ranging from 45.9% to 58.5% across neonatal networks. Overall, 52% of mothers who delivered a baby between 23 and 33 weeks gestational age received a full course of antenatal steroids within one week prior to delivery. This reflects the challenge of delivering antenatal steroids in a timely fashion to maximise clinical benefit. It is also possible that use of a 12-hour interval between doses of betamethasone, even though this has not been found to be beneficial, might confound some of this measurement. The NNAP team is concerned about the lack of concurrent description through maternity data of the number of women treated with antenatal steroids, some of whom will not deliver preterm.

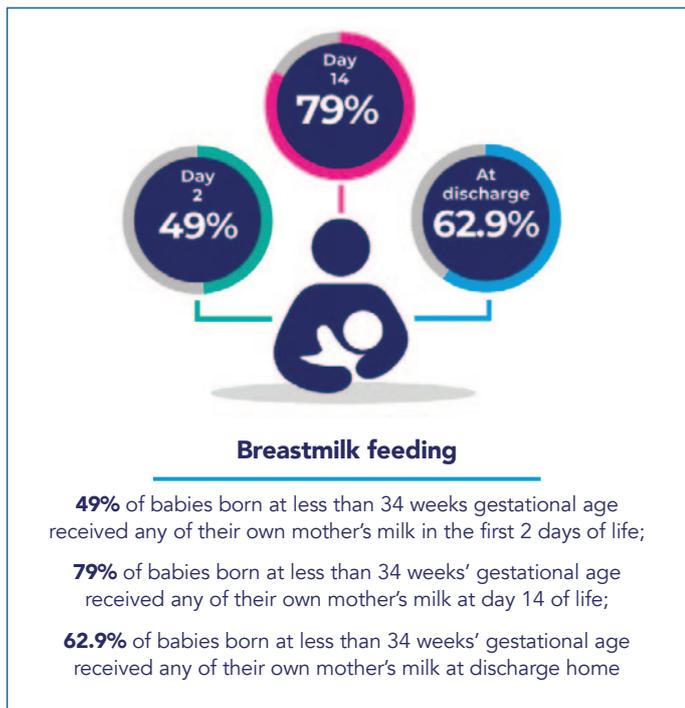


FIGURE 2 Breast milk feeding rates.

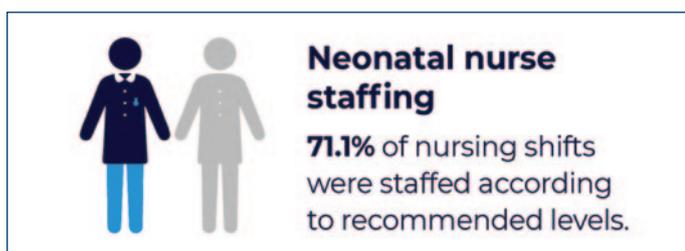


FIGURE 3 The proportion of neonatal nurse shifts staffed according to recommended levels.

In 2022, 76.3% of babies had a temperature within the normal range that was measured on time. There has been a sustained year-on-year improvement in the proportion of babies admitted with a normal temperature, from 58.1% in 2015. There has been no associated significant increase in the proportion of babies admitted with hyperthermia.

Parental partnership in care

Breast milk feeding of preterm babies at discharge is not improving in the UK. In 2022, the proportion of babies receiving breast milk feeding at discharge home ranged from 48.6% to 79.3% between neonatal networks. For the first time in 2022, the NNAP also reports the proportion of babies receiving breast milk within the first two days of life; this ranges from 34% to 76.7% between neonatal networks. Improving rates of initiation of breast milk feeding may maximise the early benefits of breast milk and increase the chances of establishing longer term breast milk feeding. FIGURE 2 indicates the rates of breast milk feeding at two and 14 days of life and at discharge home.

There is wide variation between neonatal units and between networks in the proportion of consultant ward rounds with parental involvement. Parents were included in ward rounds on 47.2% of care days, ranging from 36.8% to 60.3% between neonatal networks. A ward round is recorded as not taking place on 10% of baby care days, and data were missing for 23.2% of baby care days.

Recommendation	Actions
Networks should know their outcomes	Neonatal networks should review their rates of adverse outcomes (mortality, BPD, NEC, bloodstream infection and preterm brain injury) and develop locally prioritised action plans to respond to these results with their constituent neonatal units
Maternity data flow should describe preterm optimisation measures	NHS England, Scottish and Welsh Governments should ensure that maternity data flow describes the administration of antenatal steroids and other perinatal optimisation interventions, and that maternity and perinatal data are linked nationally
Multidisciplinary teams for preterm birth	NHS England, Scottish and Welsh Governments should ensure that preterm birth is optimally managed and monitored by a multidisciplinary team
Early breast milk feeding education	All Royal Colleges associated with preterm perinatal care (Royal College of Paediatrics and Child Health, Royal College of Obstetricians and Gynaecologists, Royal College of Nursing and the Royal College of Midwives) should include a focus on the importance of early breast milk feeding
Neonatal nurse numbers	The UK Government, Welsh Government and Scottish Government should consider ways to ensure that the implementation of medium- to long-term NHS-wide workforce plans (such as the NHS Long Term Workforce Plan in England ⁴ deliver the recruitment, training, development and retention of neonatal nurses

TABLE 1 A summary of the main report recommendations.

The proportion of neonatal admissions where a consultation with parents took place within 24 hours of admission has remained static over the past five years, with parents having a consultation with a senior member of the team for 95.9% of admissions in 2022.

Nurse staffing levels

The proportion of neonatal nurse shifts staffed according to recommended levels in 2022 across England, Wales and Scotland is 71.1% (FIGURE 3), having fallen for a second year in a row (2021=73.9%; 2020=78.6%, England and Wales only). The continuing decline in neonatal nurse staffing levels is a matter of serious concern to those providing and commissioning neonatal services, given its association with increased mortality.

Care processes

The NNAP introduced a new measure for 2022 in order to identify any variation in the exclusive use of non-invasive breathing support, which is recommended by the National Institute for Health and Care Excellence (NICE) for support of the least mature infants. The proportion of babies in neonatal

Resource	Description
NNAP summary report on 2022 data: www.rcpch.ac.uk/nnap-report-2022-data	Includes the summary report, results at a glance infographic, extended analysis report, recommendations and line of sight tables
NNAP data dashboard: www.rcpch.ac.uk/resources/nnap-data-dashboard	This interactive tool presents results for each of the 10 NNAP performance metrics as rolling averages and is updated quarterly Results can be displayed for neonatal units, Integrated Care Systems and Health Boards (Wales and Scotland), and by neonatal network
NNAP Online: https://nnap.rcpch.ac.uk	Provides a wealth of audit data at unit and network level in a range of formats
QI Central: https://qicentral.rcpch.ac.uk/resources/spotlight-projects/#page-section-4	This dedicated quality improvement site features a range of case studies focusing on audit measures Six new case studies were published at the same time as the recent report
Unit posters: https://nnap.rcpch.ac.uk/postergenerator.aspx	Poster 1 shows progress against 12 of the audit measures. Poster 2 should be adapted to indicate a unit's response to the results in poster 1
Your Baby's Care: www.rcpch.ac.uk/your-babys-care	The parent and carer guide to the audit
NNAP postcard: www.rcpch.ac.uk/sites/default/files/2023-12/nnap_postcard_2023_download.pdf	An introduction to the audit. Includes a QR code for the NNAP animation
NNAP animation: www.rcpch.ac.uk/resources/NNAP-animation	A short video that aims to explain the audit to parents and families and signposts to further information and sources of support

TABLE 2 NNAP resources.

intensive care units receiving only non-invasive breathing support in the first seven days varies from 16.5% to 71.4%; analysis shows this variation is unexplained by gestational age mix.

For the first time, the NNAP reports adherence to the updated UK screening for retinopathy of prematurity (ROP) guideline,³ published in March 2022. Overall, 69% of eligible babies were screened appropriately according to the new guideline. This proportion should not be compared to previous results that reported against the previous ROP guideline and so do not offer a fair comparison. The variation between neonatal networks in on-time screening is wide (49.8% to 77.3%) and concerning, as it was under the previous guideline.

NNAP national recommendations

TABLE 1 gives a summary of the main report recommendations. Full national recommendations and actions for local QI can be found in the summary report.² The report webpage includes a range of other resources such as the extended analysis and recommendations table.

NNAP resources

The NNAP produces a wide range of resources to enable you to review your local results alongside the recommended actions for local QI to help you formulate priorities and action plans. Details of these resources can be found in **TABLE 2**.

Unit posters, Your Baby's Care and the NNAP postcard were sent out to all clinical leads at participating units towards the end of last year. We encourage neonatal teams to consider the best ways to share these resources with parents and families using their service, to make sure they are aware of the NNAP, why it is important and how their baby's information is used.

What next for the NNAP?

Reviewing and validating your data

Early in 2024 we will be issuing final data quality and

completeness reports to units and networks giving them the opportunity to conduct a final review of their 2023 data. We will also be writing to clinical leads to ask for assurance that all their bloodstream infection, NEC and preterm brain injury data are complete and accurate. To support this process the NNAP held a webinar on data completeness on 10 January 2024. To access the recording please follow the link from the NNAP homepage.¹

Frequent reporting of NNAP results

The NNAP launched its new data dashboard in summer 2023.⁵ The dashboard presents results for each of the 10 NNAP performance metrics as annual rolling averages and will be updated quarterly. Results can be displayed for neonatal units, Integrated Care Systems and Health Boards (Wales and Scotland), and by neonatal network. A restricted access section of the dashboard will be available early in 2024 where authorised users will be able to review unit level data.

Supporting services to reduce health inequalities

Throughout 2023, we asked services to improve completeness of their postcode and ethnicity data to support reporting of NNAP metrics by ethnicity and deprivation indices. In 2024, we intend to produce supplementary national level reporting for the first time, which will enable exploration of health inequalities in the delivery of neonatal care.

References

1. **NNAP**. About the National Neonatal Audit Programme. Online at: www.rcpch.ac.uk/about-nnap
2. **NNAP**. National Neonatal Audit Programme Summary Report on 2022 Data: www.rcpch.ac.uk/nnap-report-2022-data
3. **Royal College of Paediatrics and Child Health**. UK Screening of Retinopathy of Prematurity Guideline. 2022 online at: www.rcpch.ac.uk/resources/screening-retinopathy-prematurity-rop-clinical-guideline
4. **NHS England**. NHS Long Term Workforce Plan. 2023 online at: www.england.nhs.uk/publication/nhs-long-term-workforce-plan
5. **NNAP**. Data dashboard. Online at: www.rcpch.ac.uk/resources/nnap-data-dashboard