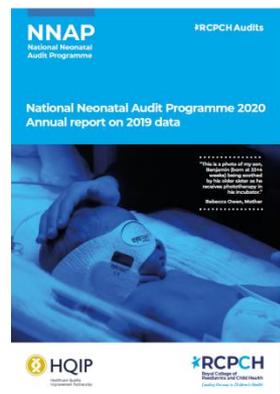


National Neonatal Audit Programme 2020 report on 2019 data

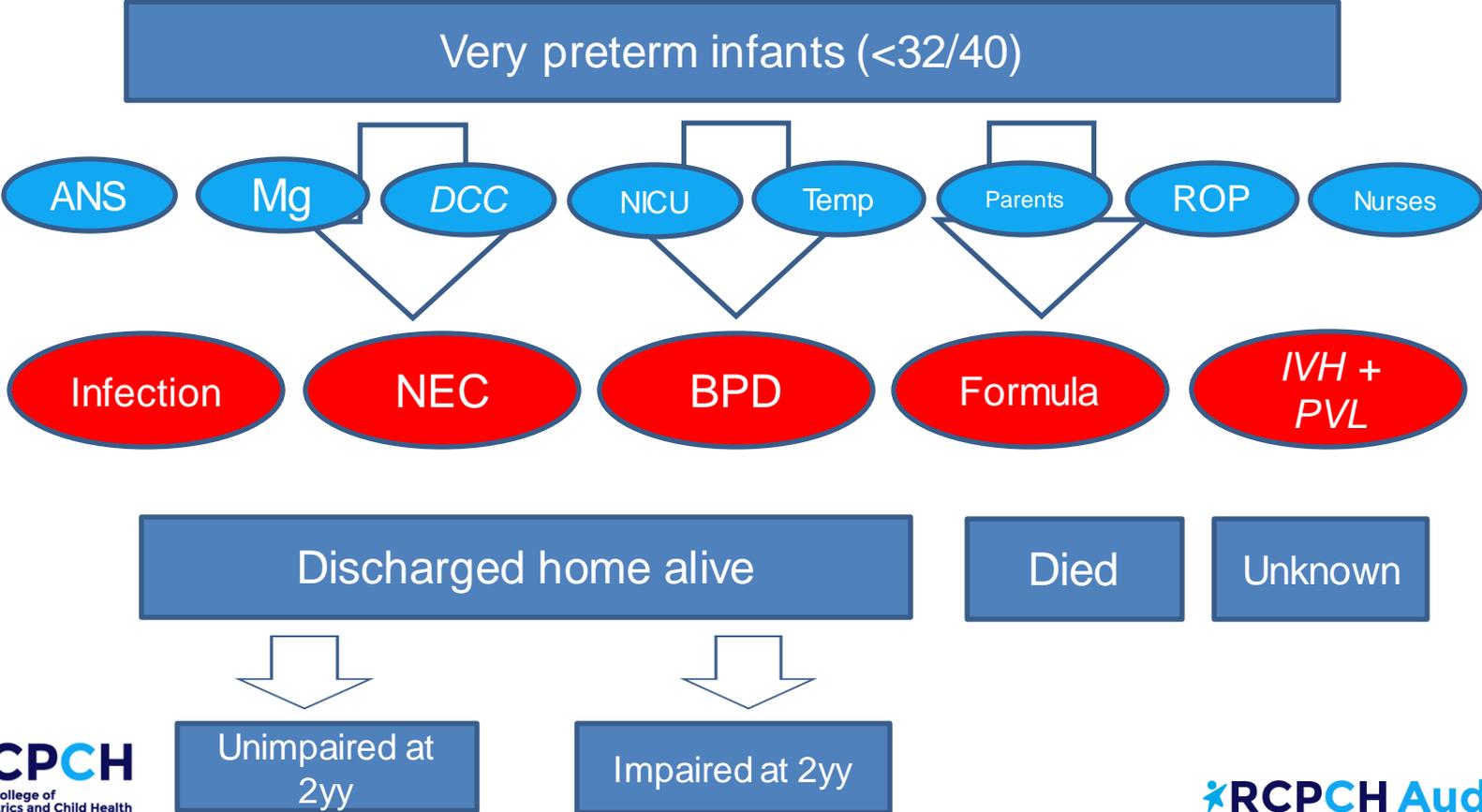
**Sam Oddie, NNAP Clinical Lead
Report Launch 12th November 2020**



Agenda

- Summarise results
- Signpost to NNAP Online
- Point to *Key Findings*
- Deliver *Recommendations* to target groups
- Some measures in second presentation
 - Mortality
 - Nurse staffing
 - Breastmilk feeding

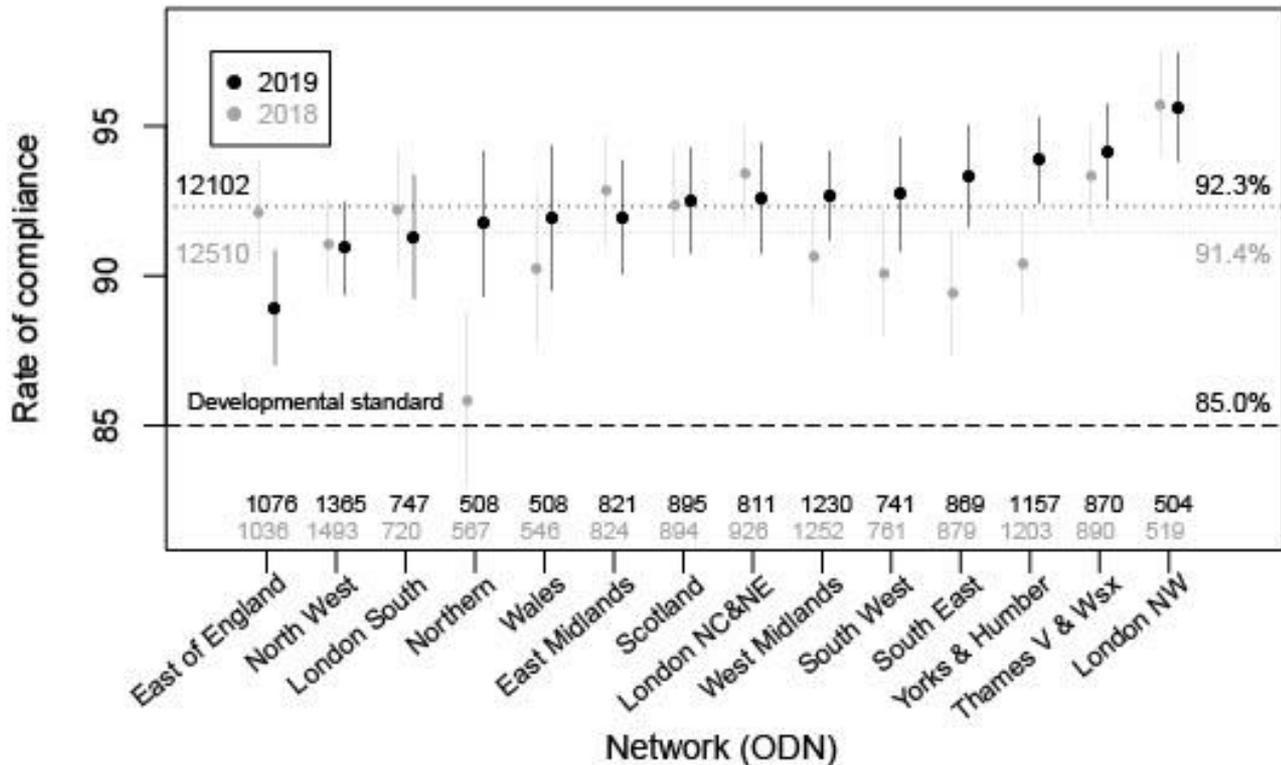
Improving preterm outcomes



Antenatal steroids

- Is a mother who delivers a baby between 23 and 33 weeks gestational age inclusive given at least one dose of antenatal steroids?

Antenatal steroids ODN plot



Antenatal steroids recommendation

Neonatal units and obstetric services should work as a perinatal team to:

- Optimise the timing and dosing
- Avoid the inappropriate use of multiple courses
- Adopt evidence-based practices to predict preterm birth
 - BAPM Perinatal Optimisation Care Pathway Toolkit
 - Scottish Patient Safety Programme

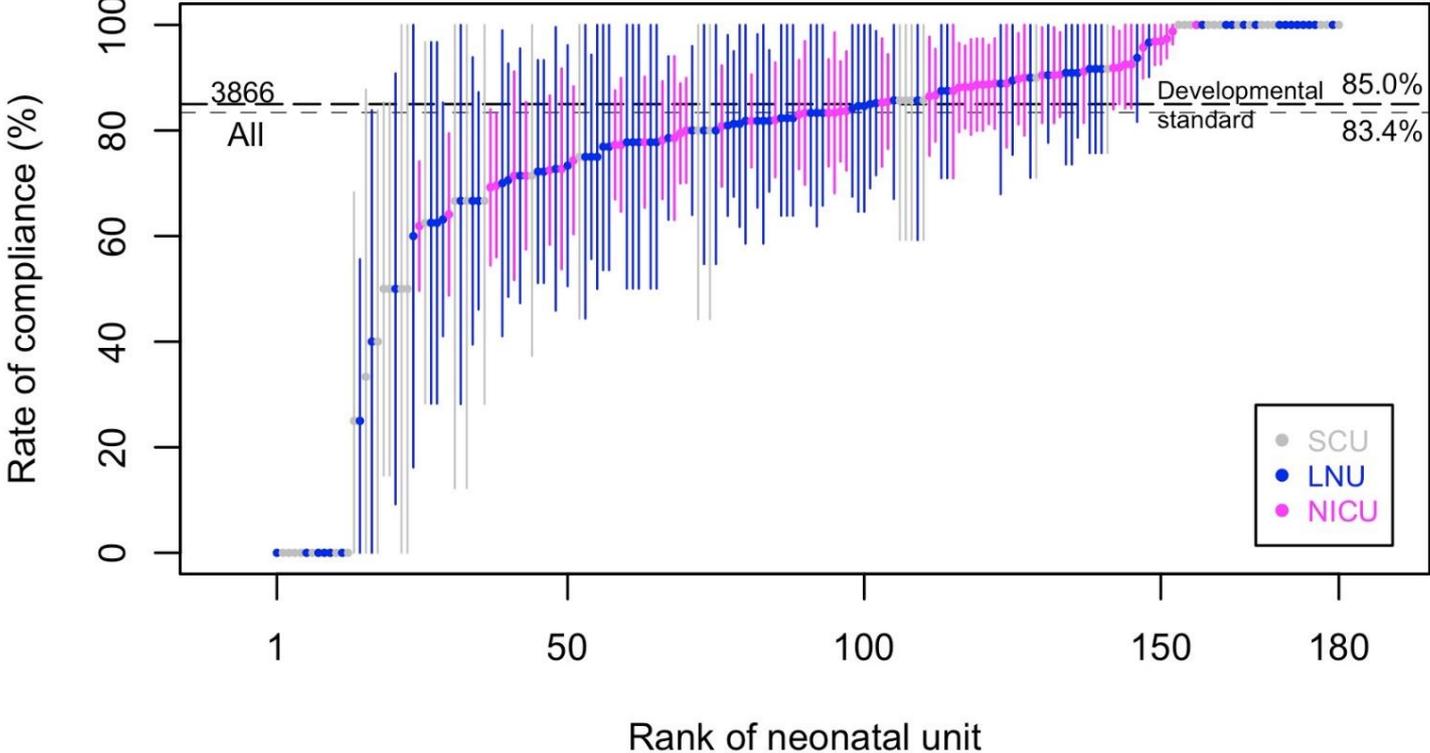
The National Maternity and Perinatal Audit (NMPA) should:

Consider developing reporting of antenatal steroid use in order to encourage timely exposure of eligible infants to it.

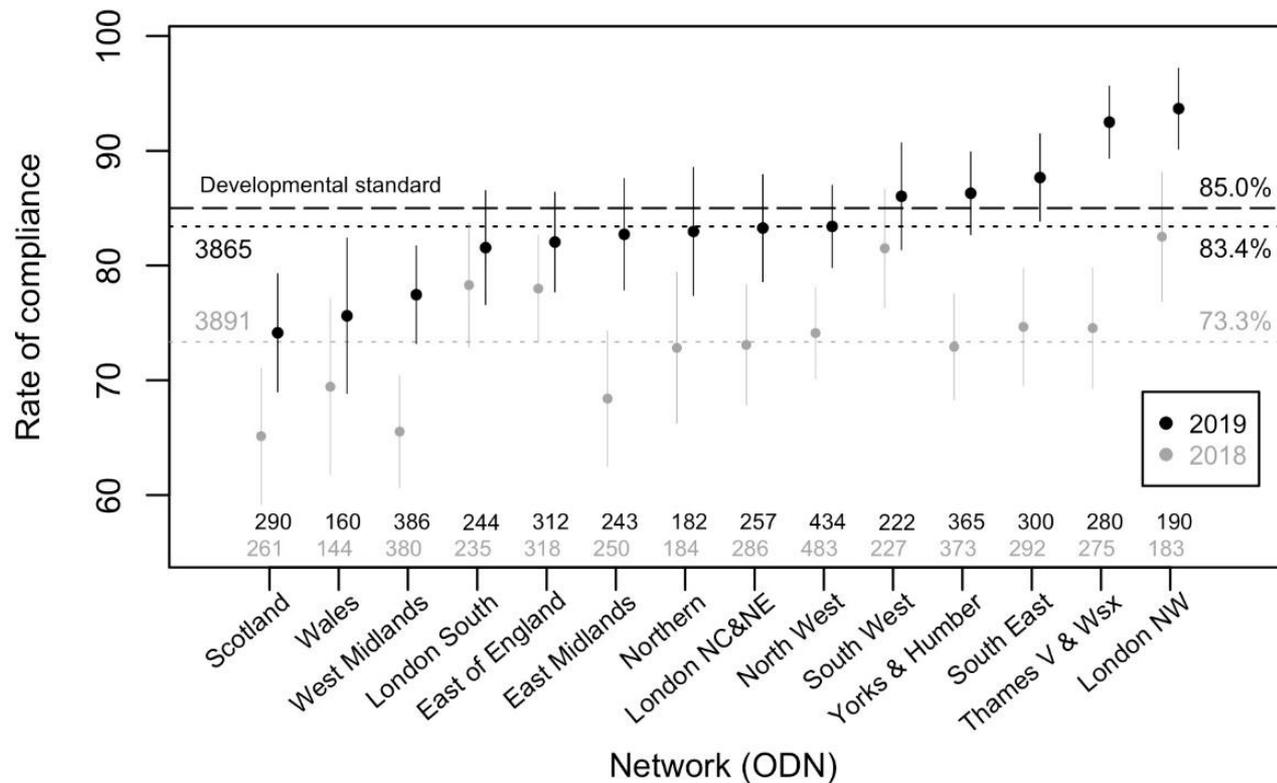
Antenatal magnesium sulphate

Is a mother who delivers a baby below 30 weeks gestational age given magnesium sulphate in the 24 hours prior to delivery?

Magnesium sulphate unit plot



Magnesium sulphate ODN plot



Magnesium sulphate key findings

- The lower rates of magnesium sulphate administration in the Wales and Scotland neonatal networks in 2019 may be indicative of the effectiveness of the PReCePT quality improvement programme, which is centrally funded and regionally delivered in England.

Magnesium sulphate recommendations

Neonatal networks, units and obstetric services should work as a perinatal team to:

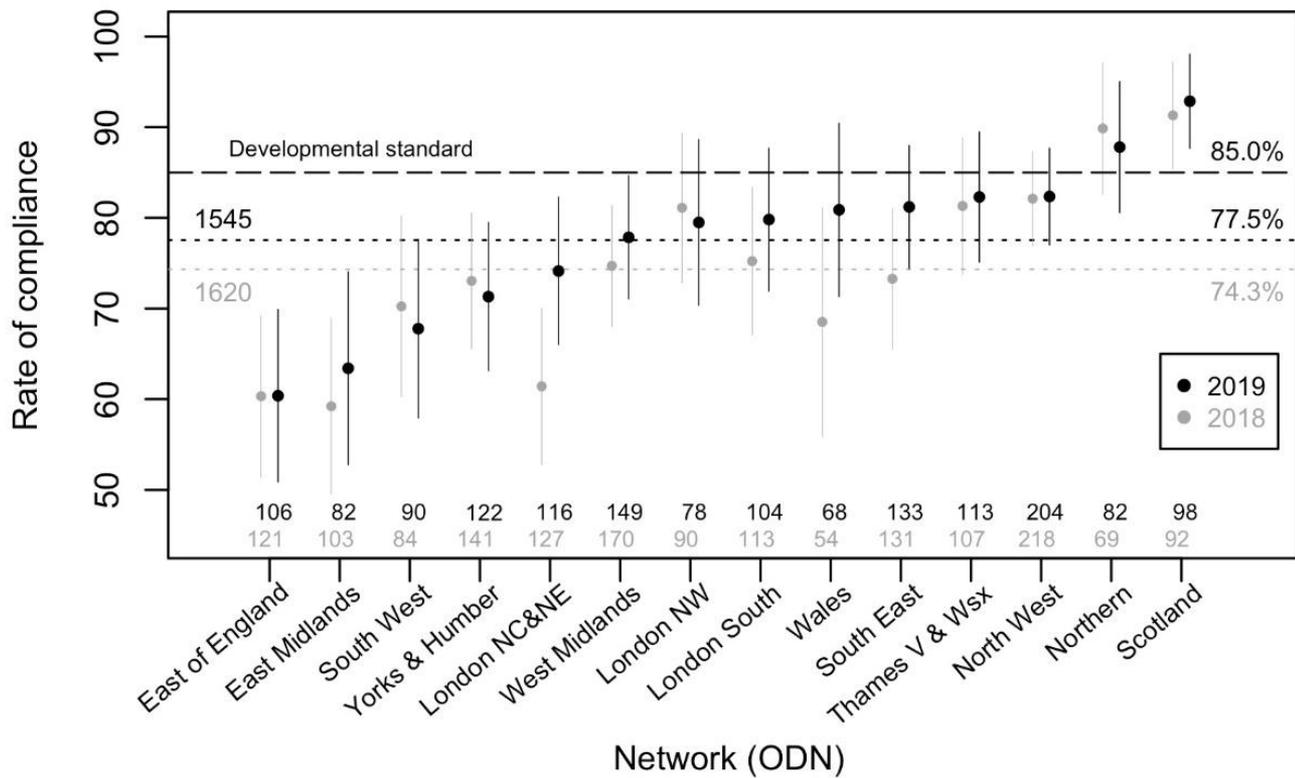
- Ensure women..... are offered magnesium sulphate where possible
- Adopt and implement the following guidance and methodologies to guide improvement:
 - BAPM Perinatal Optimisation Care Pathway Toolkit
 - PReCePT quality improvement programme tools
 - Scottish Patient Safety Programme

To help reduce the risk of babies who are born prematurely developing cerebral palsy.

Birth in a centre with a NICU

Is an admitted baby born at less than 27 weeks gestational age delivered in a maternity service on the same site as a designated NICU?

Birth in a centre with a NICU: ODN



Birth in a centre with a NICU recommendations

Departments of Health ... and Neonatal Networks should:

Prioritise structural changes and operational management to ensure that babies who require intensive care are cared for in the units best equipped to deliver it.

Local Maternity Systems (LMS) and equivalent bodies should:

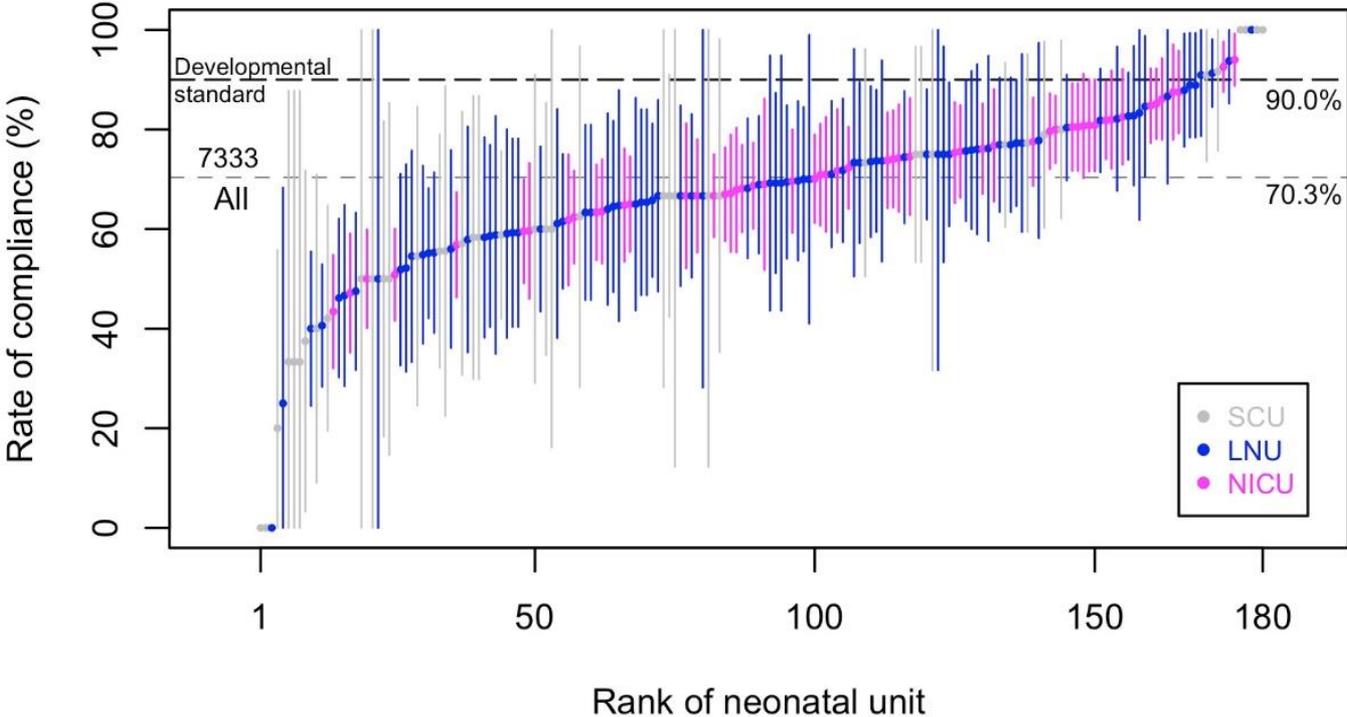
Ensure that appropriate clinical pathways exist

To enable delivery of intensive care to all infants where this is required, with a minimum of postnatal transfers.

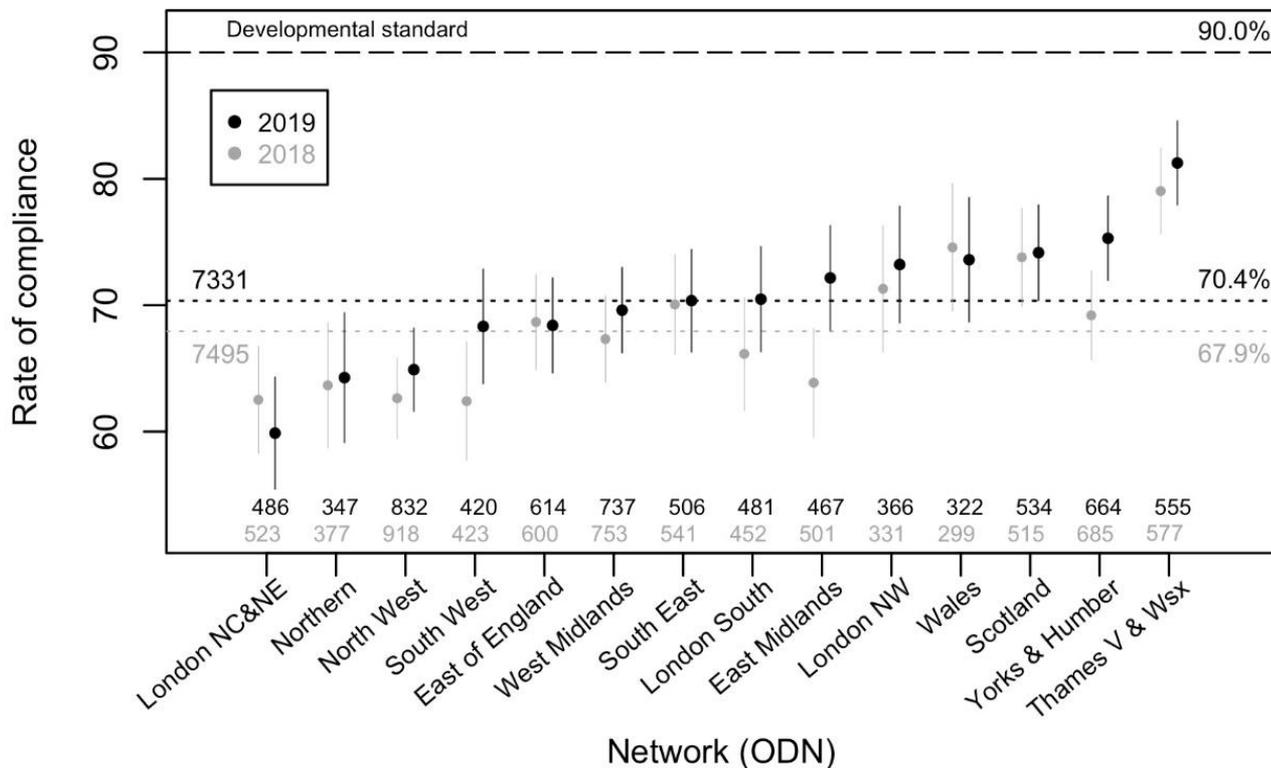
Normal temperature on admission

Does an admitted baby born at less than 32 weeks gestational age have a first temperature on admission which is both between 36.5–37.5°C and measured within one hour of birth?

Normal temperature on admission

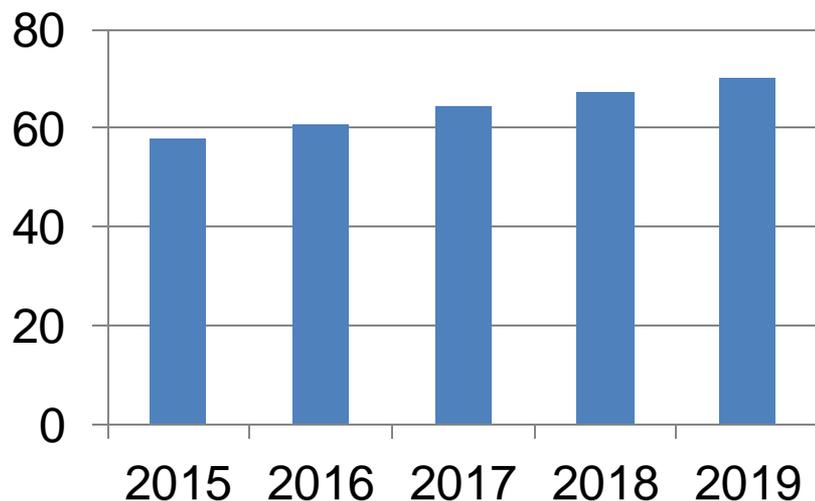


Normal temperature on admission

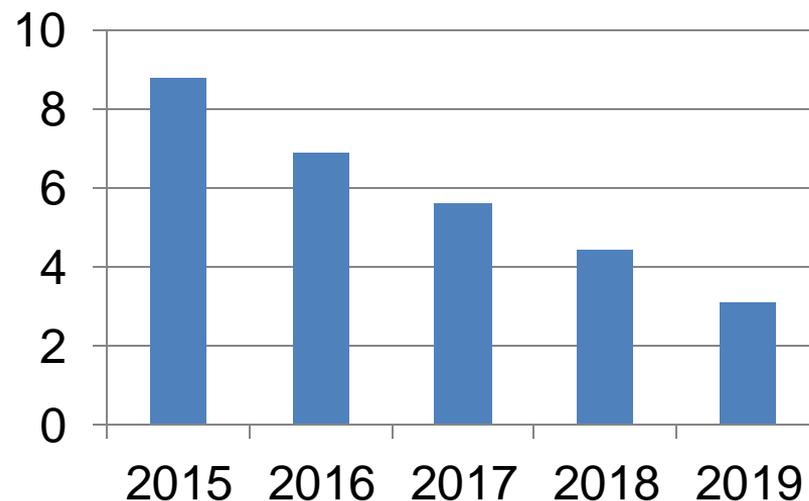


Temperature performance over time. UK, <math><32/40</math>

T 36.5 – 37.5°C



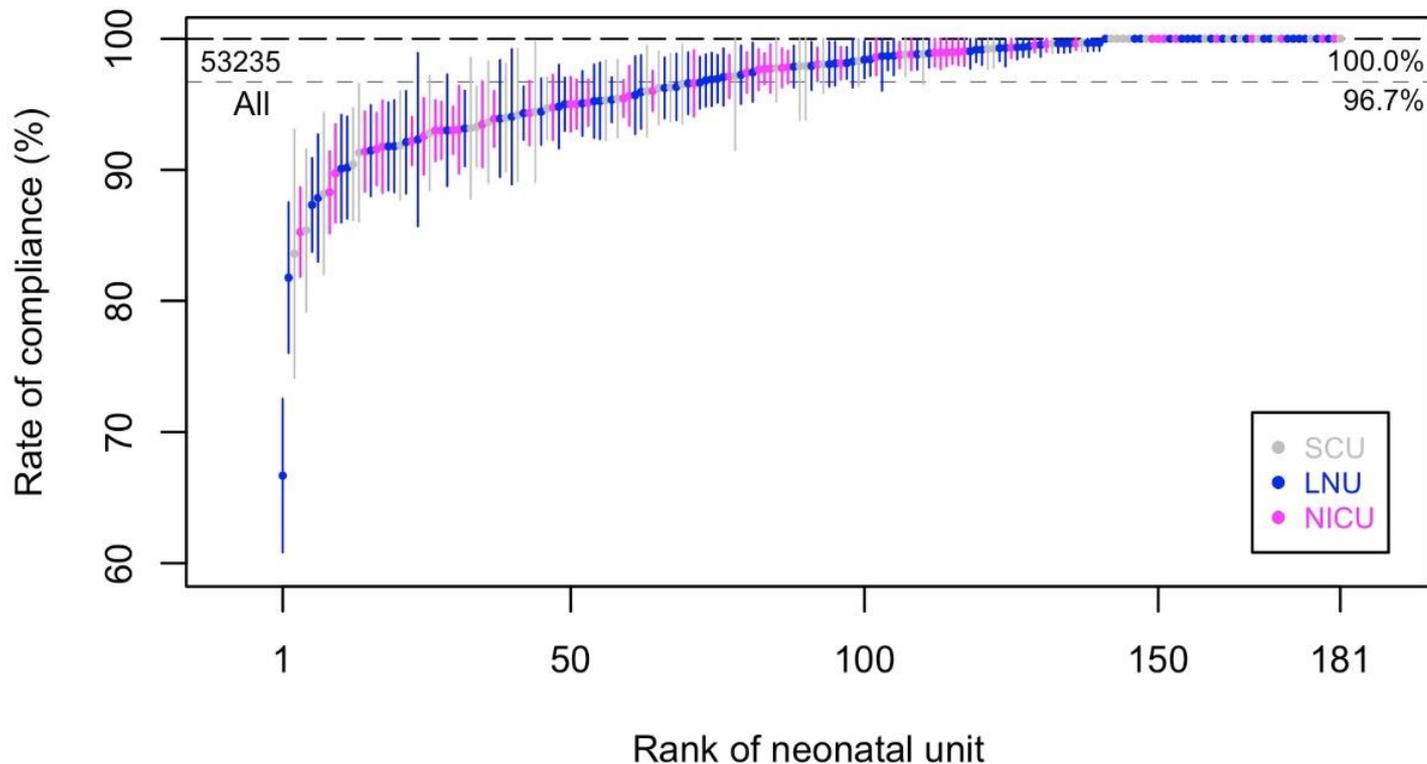
T <math><36^{\circ}\text{C}</math>



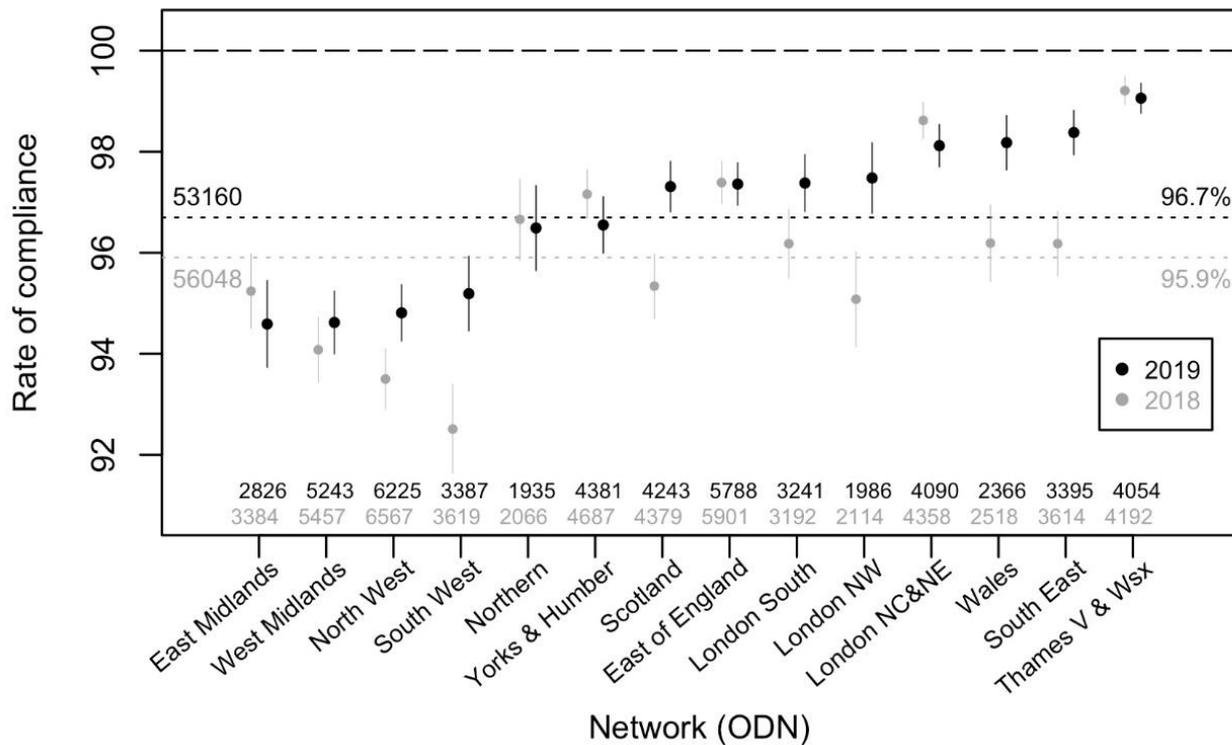
Parental consultation in 24 hours

Is there a documented consultation with parents by a senior member of the neonatal team within 24 hours of a baby's first admission?

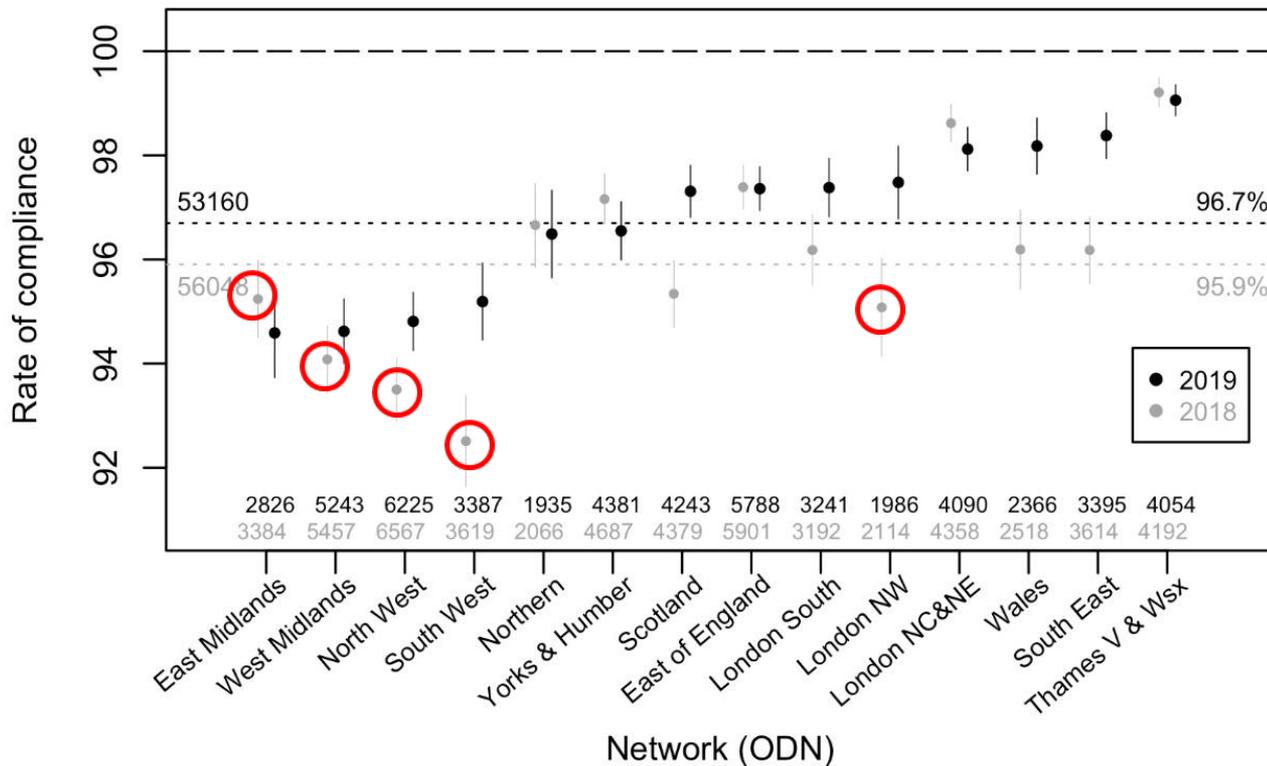
Parental consultation in 24 hours



Parental consultation in 24 hours



Parental consultation in 24 hours



Parental consultation in 24 hours recommendation

Neonatal units with lower rates of parental consultation, and particularly those with low outlying performance, should:

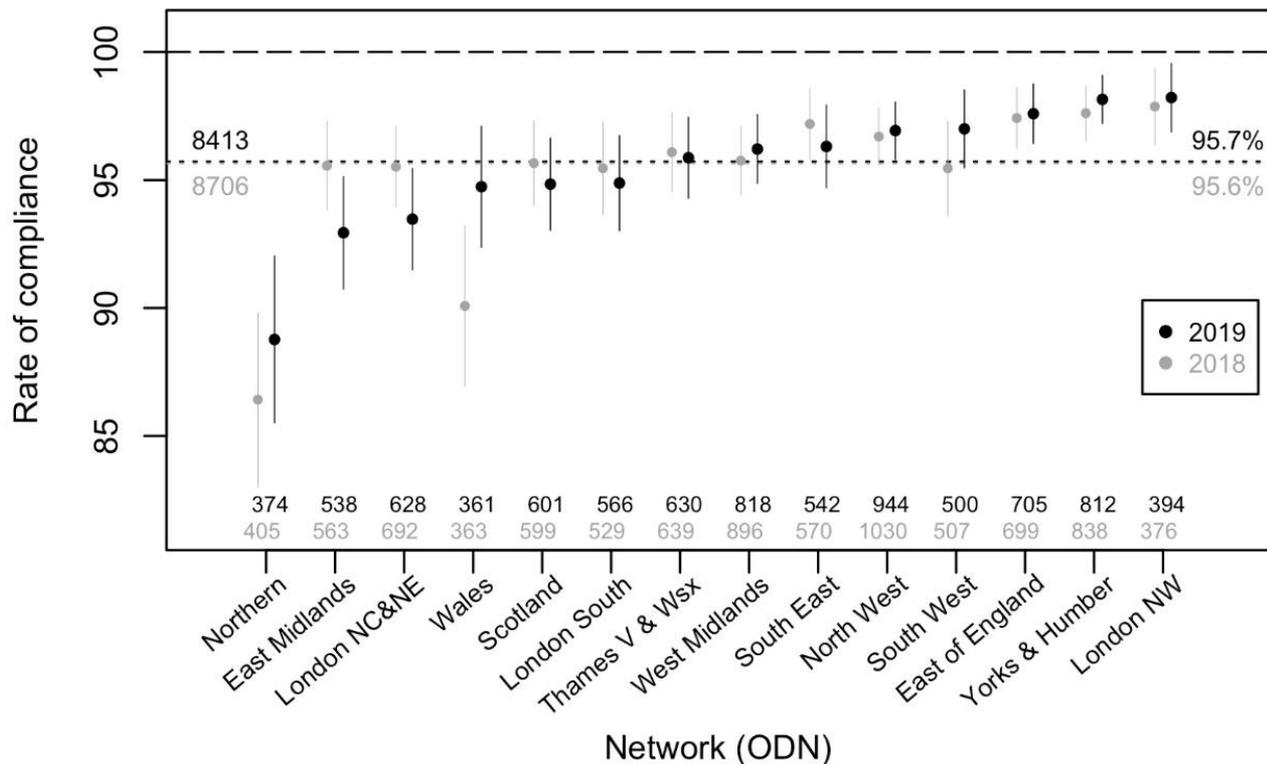
- Reflect on their rates of parental consultation
- Use a QI approach and consider using means such as video calls, where parents are unable to enter the neonatal unit

In order to improve parental partnership in care.

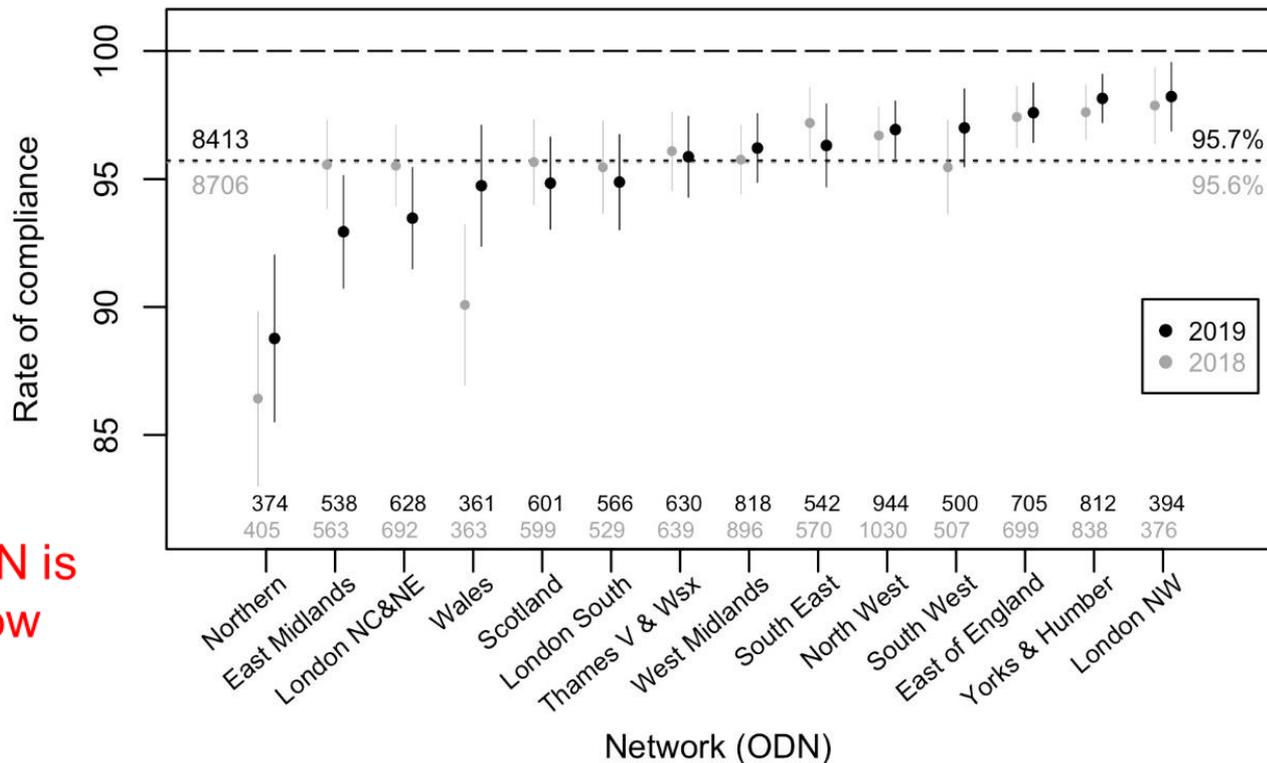
On-time screening for ROP

Does an admitted baby born weighing less than 1501 g, or at gestational age of less than 32 weeks, undergo the first retinopathy of prematurity (ROP) screening in accordance with the NNAP interpretation of the current guideline recommendations?

On-time screening for ROP

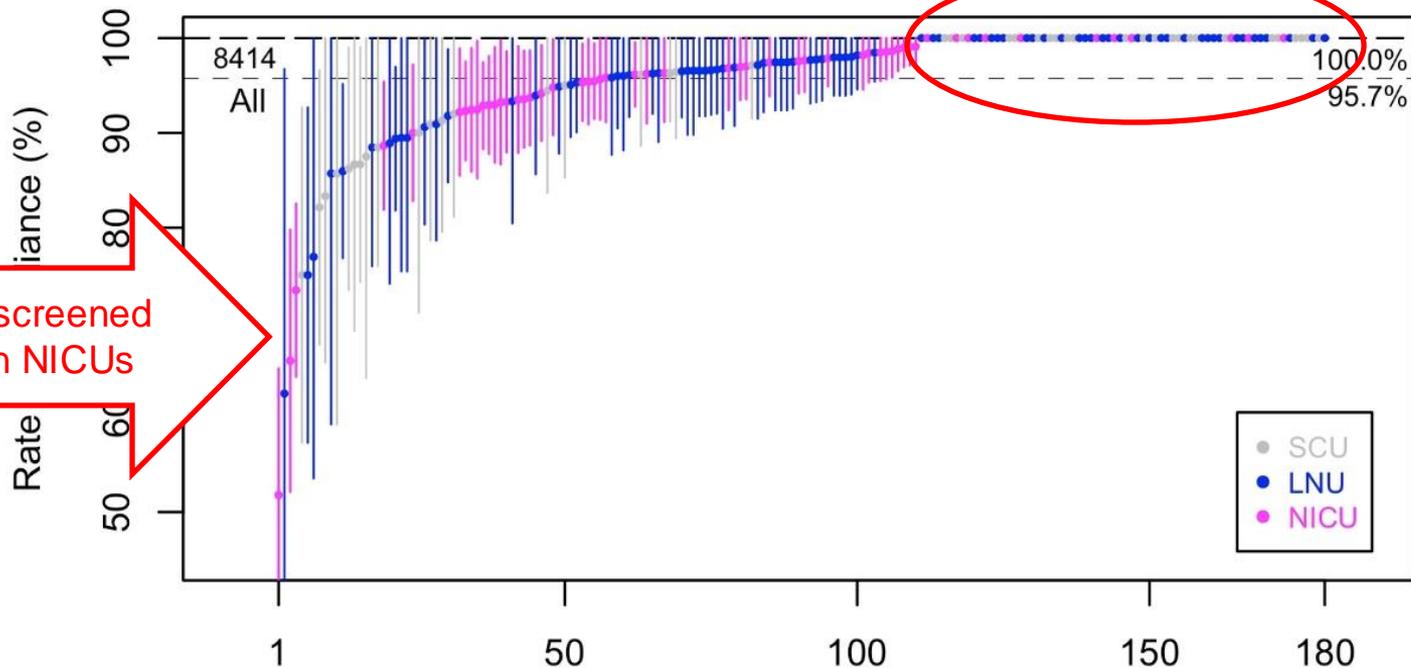


On-time screening for ROP



One ODN is repeat low outlier

On-time screening for ROP



Most unscreened babies in NICUs

1% of babies never screened, 10 were <30/40

On-time screening for ROP recommendations

Neonatal Intensive Care Units (NICUs) with persistently low levels of ROP screening should ensure that:

- Babies requiring ROP screening are accurately identified
- Safety systems for appropriate ROP screening are in place

So that babies who are at the highest risk of loss of vision, can be screened and receive timely treatment if required.

Neonatal Networks with low rates of ROP screening should:

- Implement a mechanism for real time measurement of their unit's adherence to ROP screening guidelines

So that they can identify where related QI activities need to be undertaken.

Late onset bloodstream infection and CLABSI

- Does an admitted baby have one or more episodes of bloodstream infection, characterised by one or more positive blood cultures taken, after 72 hours of age?
- How many babies have a positive blood culture (any species) with a central line present, after the first 72 hours of life, per 1000 central line days?

Late onset bloodstream infection key findings

- Methodology changes.
 - (denominators; improved and clarified the list of “clearly pathogenic organisms”).
- 113 out of 181 (63%) units confirmed all +ve blood cultures were submitted
 - 2018 (66%) (COVID-19 pandemic + data validation window)
- Among NICUs with complete data entry:
 - 0 – 12.8% very preterm infants experienced ≥ 1 positive blood cultures
 - Very unlikely to be explained by case mix.

CLABSI key findings

- The rate of CLABSI for babies born at less than 32 weeks' gestation in the 39 of 54 NICUs which have submitted all their positive blood cultures to the unit is 8.06. This is higher than the comparable rate for all NICUs of 5.40, reflecting complete reporting.

Bloodstream infection and CLABSI recommendations

Neonatal units with higher reported rates of infection should:

- Compare practices with units with lower rates of infection, identified via NNAP Online and consider whether their rates of infection could be decreased
- Ensure that their use of evidence-based infection reduction strategies is optimised

Neonatal networks and units with both low and high rates of infection should:

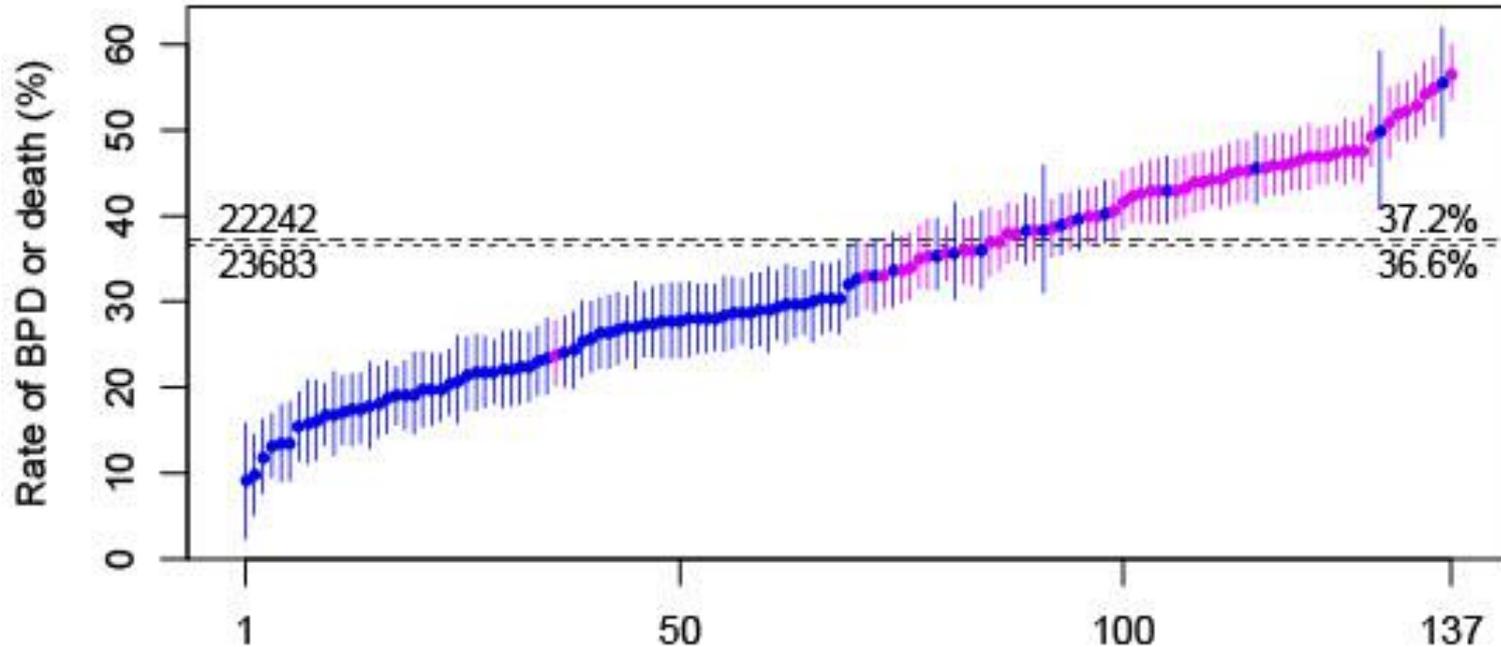
- Facilitate invitations for units with higher rates of infection to visit units with lower rates in order to jointly agree whether potentially better practices could be used and consider requiring units to participate in such quality improvement activity
- Ensure that the proposed visits should be multidisciplinary and focussed on identification and implementation of potentially better practices including “infection prevention bundles”

Bronchopulmonary Dysplasia (BPD)

Does an admitted baby born at less than 32 weeks develop bronchopulmonary dysplasia (BPD)?

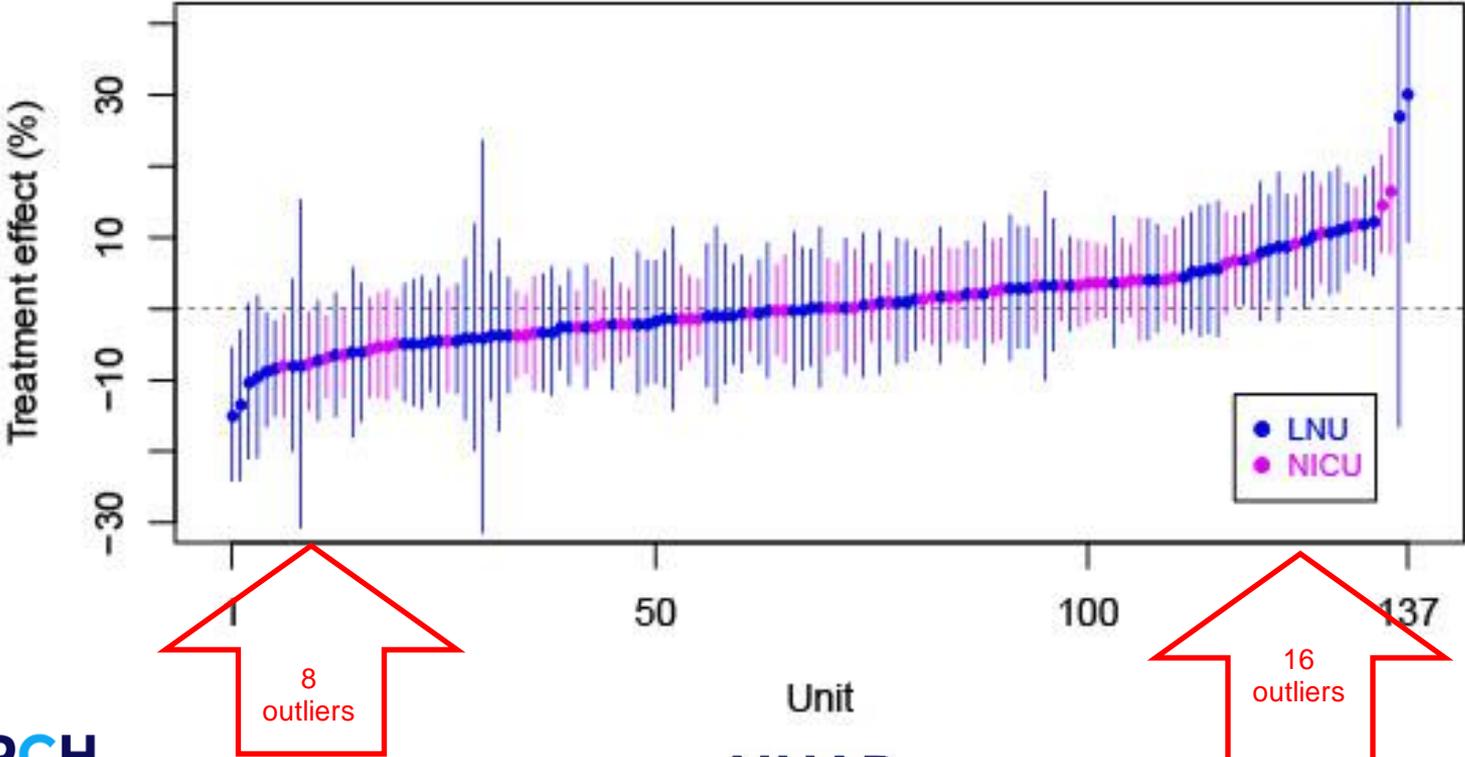
Bronchopulmonary dysplasia

Rates of BPD or death (2017–2019)



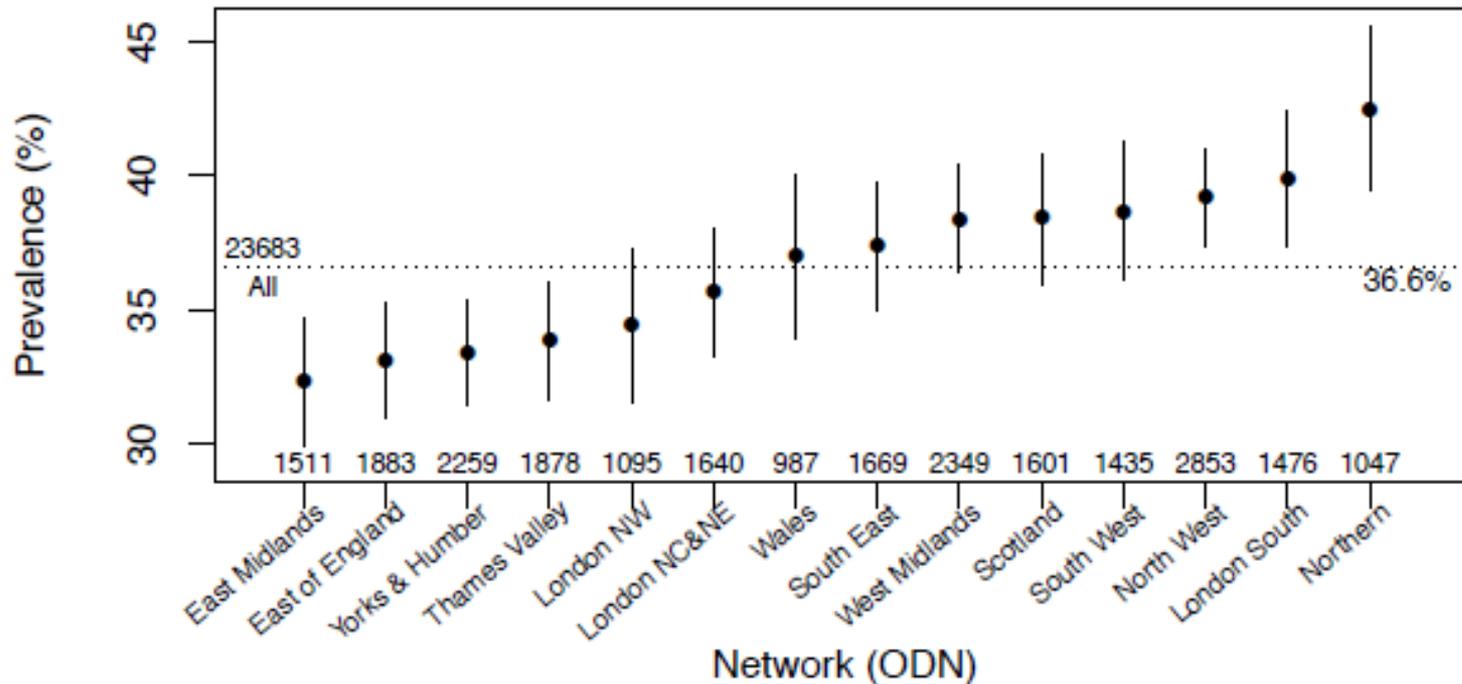
BPD (with treatment effect)

Treatment effects (2017-2019)



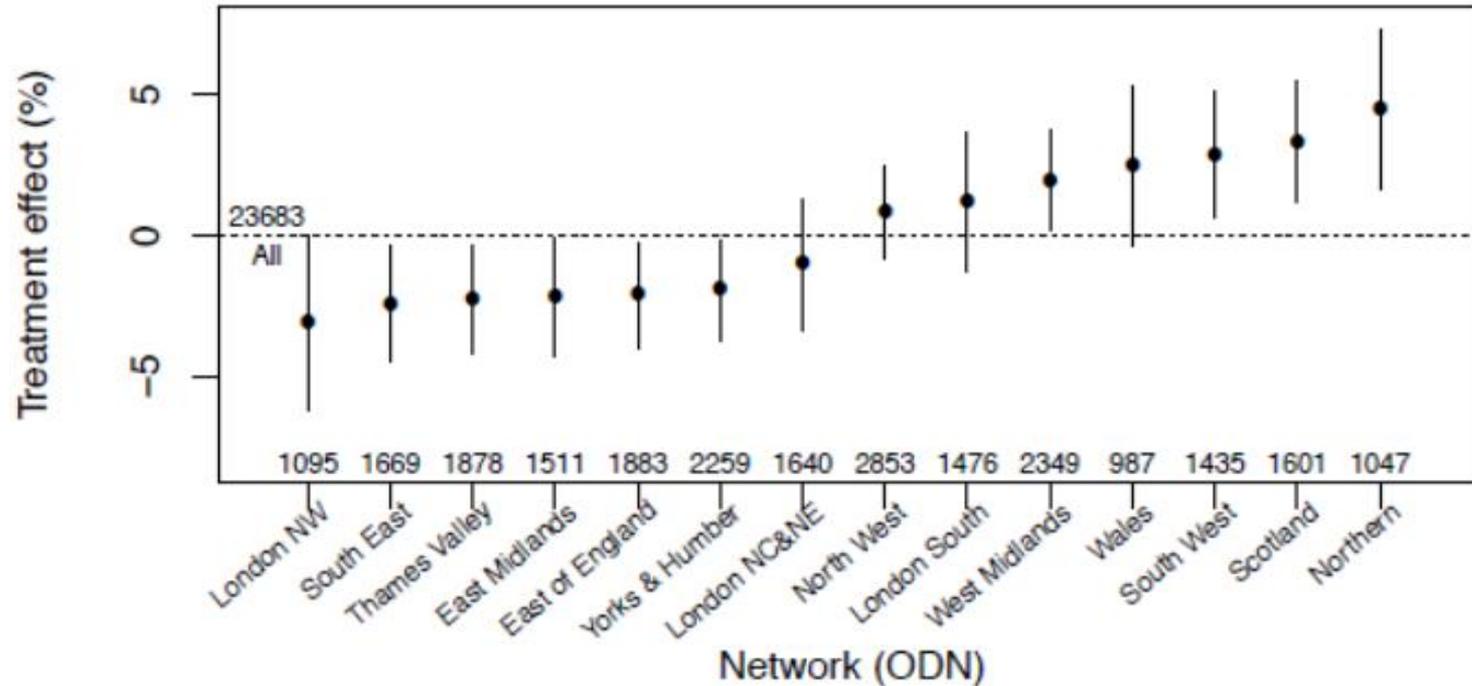
Bronchopulmonary dysplasia

BPD or death – Network-level rates



BPD (with treatment effect)

Network-level treatment effects



BPD recommendations

Neonatal units with high treatment effect should:

- Seek to identify potentially better practices from neonatal units with lower treatment effect

Neonatal units and networks should:

- Seek to understand the extent to which care practices explain the differences in rates of BPD
- Implement potentially better care practices, including any identified from NICE guidance about specialist respiratory care

The British Association of Perinatal Medicine (BAPM) should:

- Consider developing a care pathway identifying potentially better practices and the optimal means for their implementation

In order to reduce the proportion of babies affected by bronchopulmonary dysplasia.

Necrotising Enterocolitis (NEC)

Does an admitted baby born at less than 32 weeks gestational age meet the NNAP surveillance definition for necrotising enterocolitis (NEC) on one or more occasion?

NEC key findings

- 5.5% of very preterm infants were diagnosed with NEC in 2019.
- Rates of NEC appear to vary more than two-fold between neonatal networks
 - Missing data, as much as ~13% in one ODN
 - Differences unlikely explained by case mix
 - Consider alongside mortality figures for the networks
 - NEC appears to be lower where mortality is higher.
- 117 out of 181 (64%) NNAP units confirmed NEC data were validated.
 - 2018 - 71%
- 38/54 NICUs validated their NEC data (5056 of 7692 eligible babies)
- Missing data 2019 - 2.3% in 2019 (2018 – 5.4%).

NEC recommendations

Units with validated NEC data should:

- Compare their rates of NEC to those of other comparable units with validated data, and if their rates of NEC are relatively high, seek to identify and implement potentially better practices

All neonatal units should:

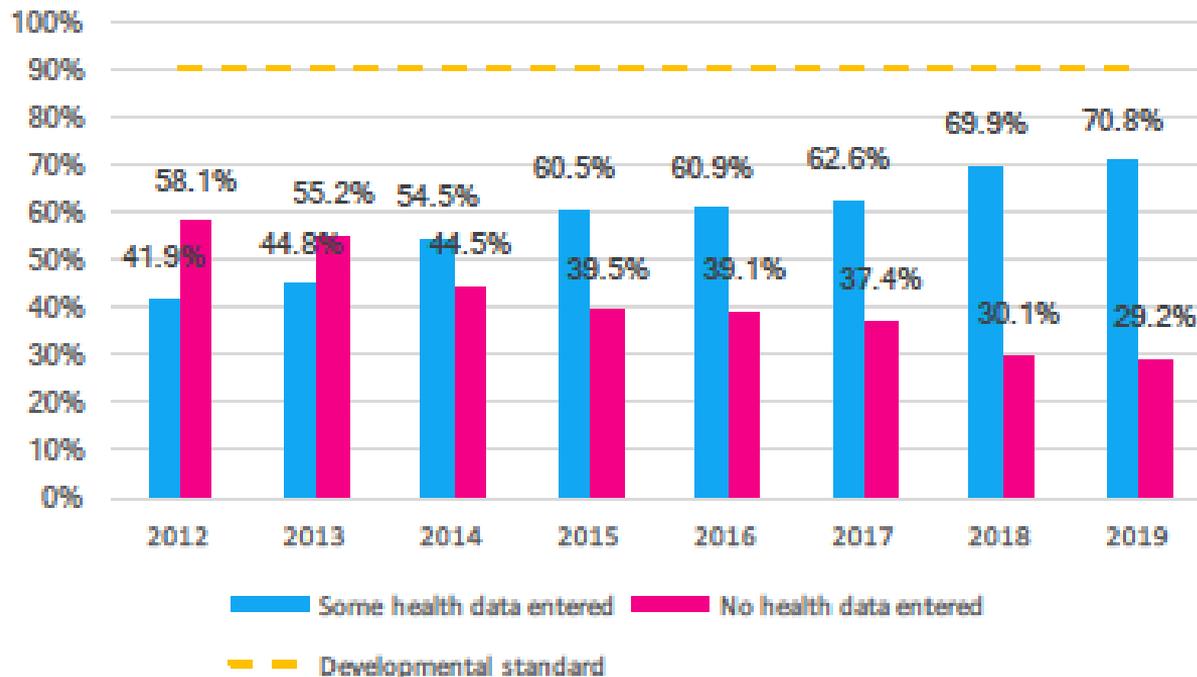
- Ensure the accurate recording of NEC diagnoses

In order to facilitate valid comparisons of the rates of NEC, and the development of preventative measures based on variations in rates of NEC.

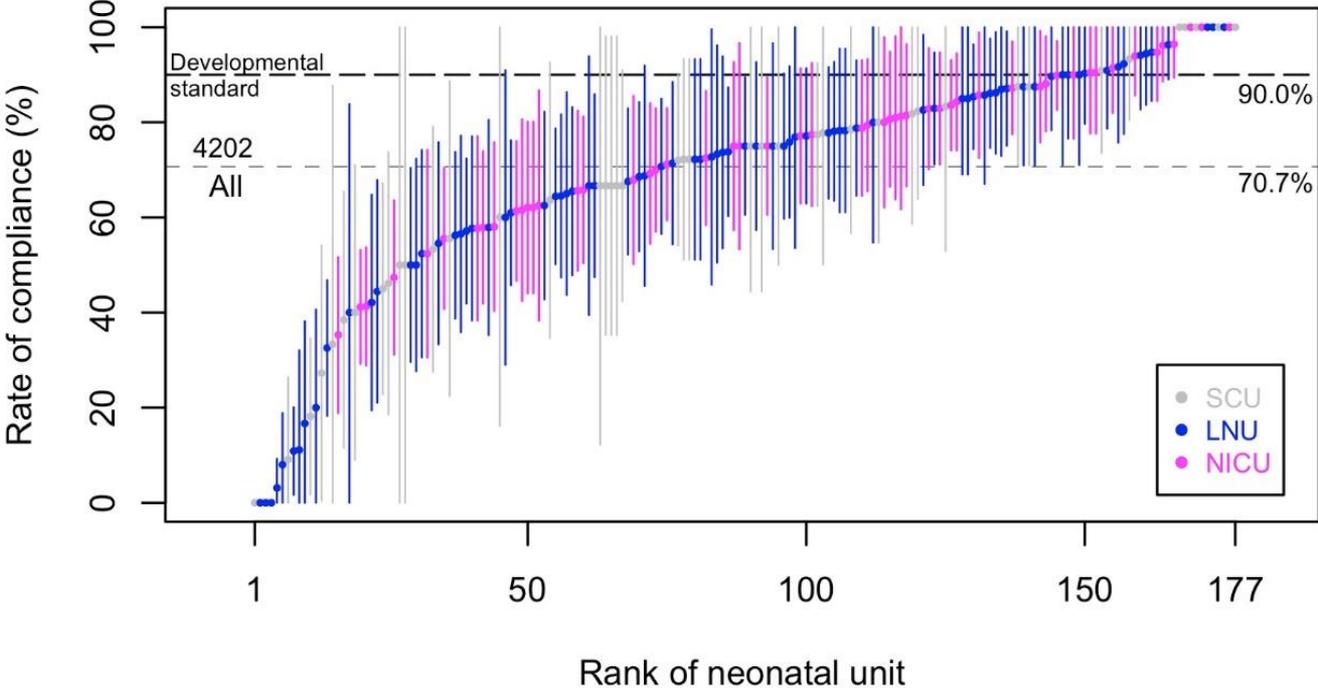
Follow-up at two years of age

Does a baby born at less than 30 weeks gestational age receive medical follow-up at two years gestationally corrected age (18-30 gestationally corrected age range of acceptable ages)?

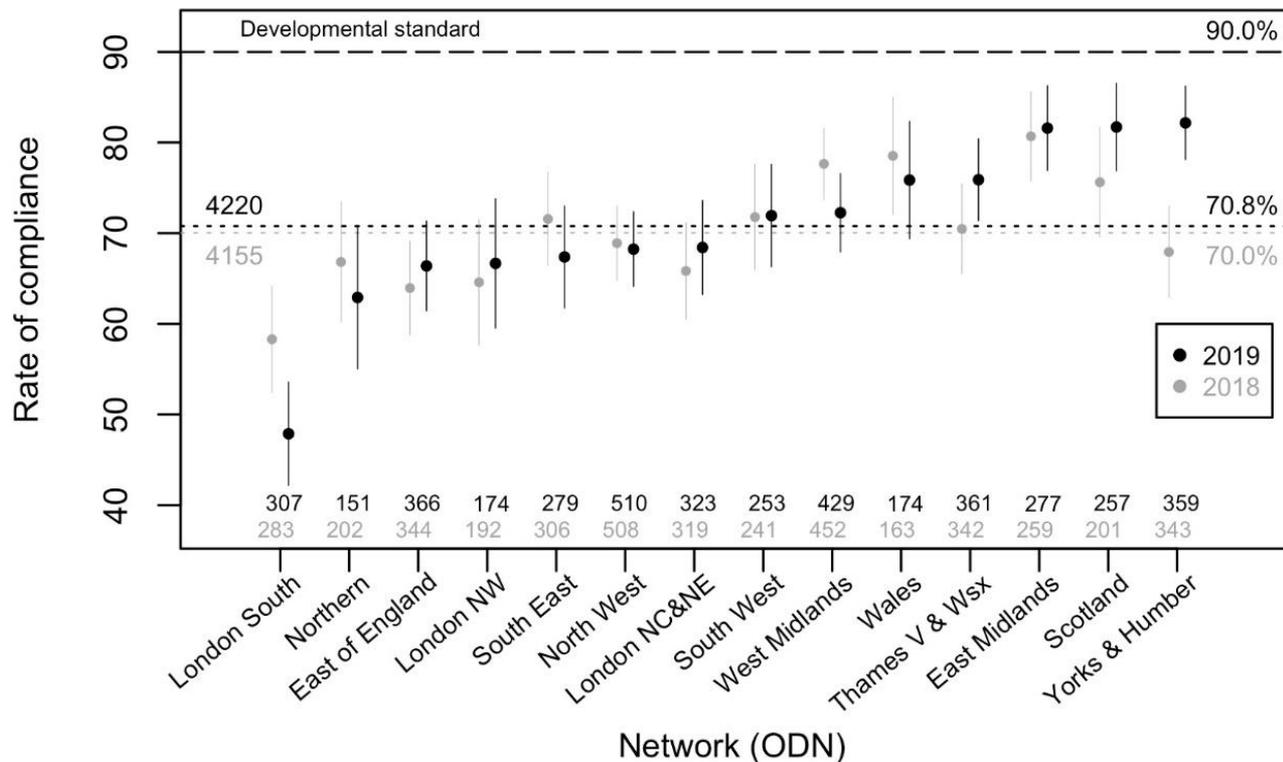
Follow-up at two years of age, by year



Follow-up at two years of age



Follow-up at two years of age



Follow-up at two years of age recommendations

Neonatal units should:

Produce detailed plans to provide or organise follow up of care for preterm babies in accordance with NICE guidance and consider arrangements for:

- Communicating with families about follow up at discharge
- Families who live far from the hospital of care
- Families who do not attend appointments
- Families who move to different areas
- Completing and documenting assessments made

The British Association for Neonatal Neurodevelopmental Follow Up (BANNFU) should:

- describe and promote best practice and successful models of delivery of high rates of follow up using appropriate instruments

NNAP report launch – presentation 1

- Look at unit level results on NNAP Online
 - Use results in your unit QI plan
 - Use KFs and Recommendations
 - Share
-
- More results later

Antenatal steroids key findings

- At least one dose of antenatal steroids was administered to 91.3% (11,277 of 12,397) of women whose baby was born at 23-33 weeks' gestation and was admitted for neonatal care. This national level coverage was higher than in 2018 (90.5%). Some rapid improvements since 2018 can be seen in many networks, but low outliers can also be detected at both unit and network levels.

Birth in a centre with a NICU key findings

- The proportion of babies born at less than 27 weeks' gestation in a hospital with an on-site NICU has improved only marginally from 2018 to 2019 (from 74.3% to 77.5%). This is a major concern because of the evidence that outcomes are improved when the least mature babies are cared for in a NICU. Most networks have improved only marginally since 2018, although the London North Central and East, and Wales networks have achieved improvements of more than 12% in a single year.

Normal temperature on admission key findings

- 70.3% (5,186 of 7,382) of very preterm babies had a normal first temperature within an hour of admission. This is a further improvement on previous years (2015 – 58.1%; 2016 – 60.8%; 2017 – 64.4%; 2018 – 67.4%) and was achieved without any increase in hyperthermia. All networks except for one, have improved. Two networks have made striking improvements in thermoregulatory management (East Midlands and Yorkshire and the Humber).
- There has been a further reduction in marked hypothermia (temperature less than 36.0°C), which has strongest relationship with adverse outcome (2015 – 8.8%; 2016 – 6.9%; 2017 – 5.6%; 2018 – 4.4%; 2019 – 3.1%)
- Networks vary importantly, with three high outlying performers, and three low outlying networks. At unit level, success in keeping babies warm varies strikingly by unit (60-80%). The same unit was identified as a high performing outlier as in the 2018 data. Two low performing outlier units are identified.

Parental consultation in 24 hours key finding

- Only 3.3% of babies have no record of a consultation between parents and medical staff within 24 hours of admission to the neonatal unit. This is an improvement on 2018 (4.1%). Of the five lowest performing networks in 2018, four have made substantial improvements in 2019, making an important contribution to the overall improvement across all networks.
- Performance overall at unit level was generally good, but there was a wide variation in how successful units were at meeting this standard (range 82 – 100%, with one exception of 67%). Units of all levels have good and bad performance, and 33 are identified as having unusually low (outlying) performance.

On-time screening for ROP key findings (1)

- After more than 10 years of measurement in the NNAP, 1.3% of babies still have no record of screening at any time, and a further 2.6% (220 of 8,414) of babies were screened after the NNAP interpretation of national screening guidance. Limited availability of ophthalmology screening in SCUs might explain some missed or delayed screening, but the majority (146/220) of late or missed screens were for babies in NICUs.
- Networks also vary significantly in their delivery of on-time screening. Three networks can be identified as low outliers, including one identified also in 2018 and 2017. Three NICUs in these networks can be identified as low outliers in 2019, with on-time screening rates of 52%, 66% and 73%, suggesting a role for leading units in driving regional quality improvement.

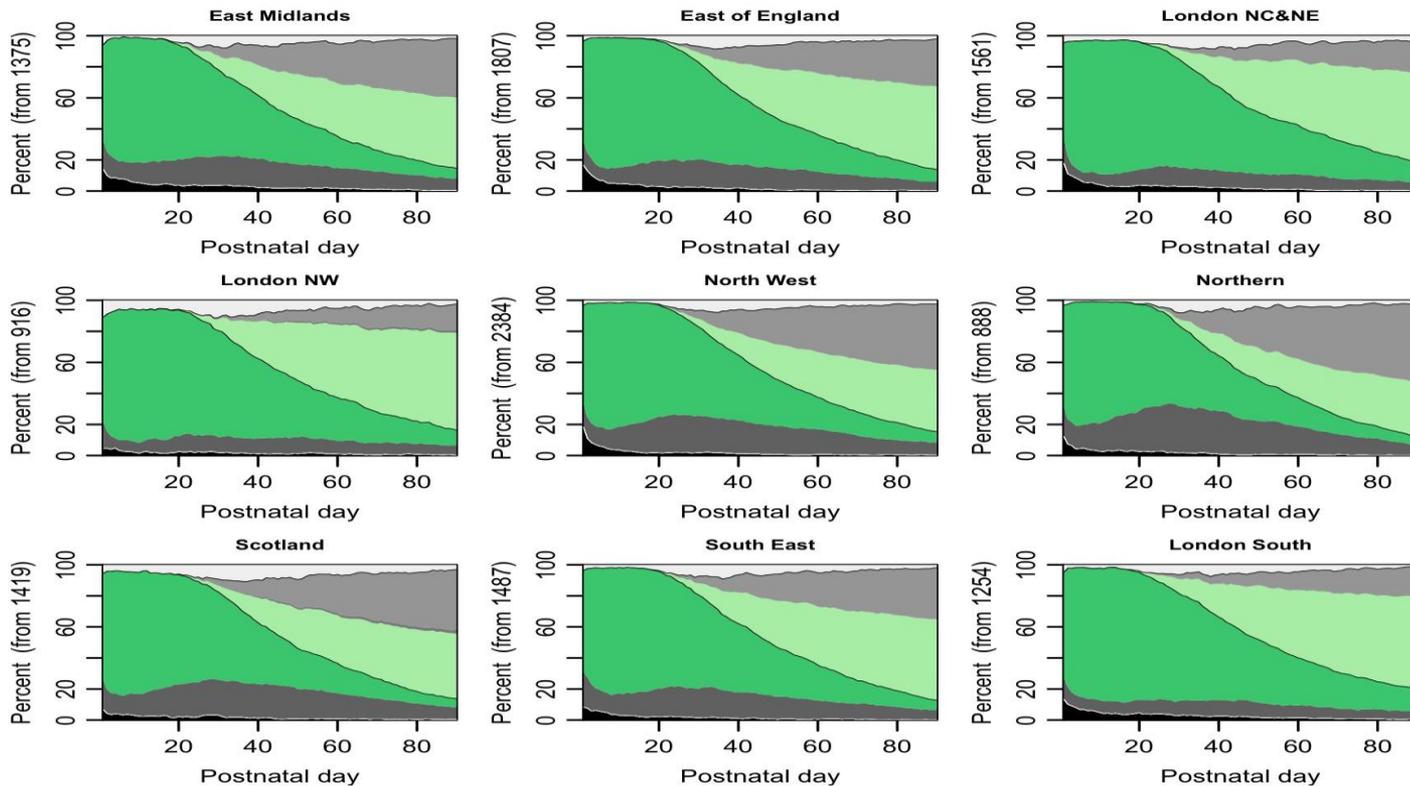
On-time screening for ROP key findings (2)

- Ten un-screened babies were less than 30 weeks' gestation and below 1,000g in birthweight, and thus at a high risk of life-changing disease. For 49 babies we were unable to ascertain if screening had happened at all, usually because of transfer to non-NNAP units.
- 70 out of 181 units (38.6%) screened all their babies on time, which is an improvement on 2018 data (33.9%).

BPD Key findings

- Overall, about one third of surviving very preterm infants develop BPD. There is huge variation in the rate of BPD or death between units (range 9.1 - 57%) and between networks (32-42%). This variation occurs across both LNU and NICU and cannot be accounted for by case mix (range of treatment effect attributable to neonatal network negative 3.1% to positive 4.5%).
-
- Sixteen units are identified as having outlying high treatment effect, meaning that babies born in these units are more likely than expected to be diagnosed with BPD, or die, than comparable babies cared for in all units. Eight units have outlying low treatment effect, suggesting that treatment in these units leads to lower rates of BPD or death.

Early breastmilk feeding by ODN (1)



Minimising separation of mother and baby

For a baby born at greater than or equal to 37 weeks gestational age, who did not have any surgery or a transfer during any admission, how many special care or normal care days were provided when oxygen was not administered?

For a baby born at 34-36 weeks gestational age, who did not have any surgery or a transfer during any admission, how many special care or normal care days were provided when oxygen was not administered?

Minimising separation key findings

- Term babies
 - Wide range of mean separation days by unit (1-5 days)
 - No change in mean duration
- Late and moderate preterm babies
 - NICU stay shorter than LNU/ SCU (NICU 5.8 days, LNU and SCU 7 days)
 - Wide range in separation days by unit
 - (NICUs 1.5-10.4; LNUs 2.6 - 12; SCUs 2.6 – 10.4).

Minimising separation recommendations

Neonatal networks should:

- Review the admission durations of their units, alongside admission rates, as part of planning maximally effective use of neonatal bed days

Neonatal and maternity teams should:

- Ensure discharge practices minimise inappropriate separation of mother and baby
- Consider introducing measures to facilitate timely discharge such as criterion-based discharge
- Consider delivering some care as transitional care

So that babies born at term and late preterm admitted to neonatal units are not separated from their mothers for longer than is necessary.

Follow-up at two years of age key findings

- There is marked variation between neonatal networks in rates of follow up (range 48 – 82%). No network is close to recording at least some clinical follow up data for all its babies. One network has recorded a marked decline in follow-up rates since 2018.
- Neonatal units record a wide range of follow up achievement from 0 – 100%. All unit types show some exceptional, and low rates of follow up.