Dr Catherine McParlin, Dr Alex Patience, Dr Louise Michie - Written evidence (PRT0049)

In 2021 the North East, North Cumbria (NENC) Local Maternity and Neonatal System (LMNS), in collaboration with the NENC Preterm Birth (PTB) Clinical Leadership Group, distributed £390K to maternity providers to implement a PTB clinic (with funded specialised consultant obstetric, midwifery and sonography support) and updated NENC regional guidelines for the prediction and prevention of PTB. This funding is recurrent. A total of 10 PTB clinics have been funded across the NENC region.

The aims of the collaboration were as follows:

1. Each unit across NENC to have a PTB prevention antenatal clinic where women at risk of PTB are stratified into intermediate and high risk pathways of care.
2. To provide consistent access to interventions to reduce the risk of PTB in women with a short cervical length (progesterone/vaginal cerclage).
3. To provide a regional service for transabdominal cerclage.
4. To provide a regional approach (guideline) to the management of threatened PTB and planned PTB.
5. To collect outcome data on PTB activity across NENC.
6. To create a PTB dashboard to evaluate outcomes relating to the new PTB prevention services and regional guideline.
7. To coordinate ultrasound scanning (USS) training in cervical length measurement.
8. To enable shared learning across NENC from clinical incidents involving PTB.

A summary of the first year evaluation report can be found appended to this document.

Variation in care and health inequalities

The implementation of existing NICE and NHS guidance on preterm birth.

The NICE preterm labour guideline (2015) recommends admitting all women who present with threatened preterm labour under 30 weeks gestation. This does not take into account advances in preterm birth prediction e.g. quantitative fibronectin, cervical length scanning and use of the QUiPP app. This is recommended in the British Association of Perinatal Medicine (BAPM) guidelines and Saving Babies Lives version 3 (SBLv3). It also forms part of the Maternity Incentive Scheme. In view of this, a NENC Preterm Birth guideline was developed and implemented in all maternity units across NENC in 2021.

There is conflicting advice between the Royal College of Obstetrics and Gynaecology (RCOG) Greentop Guideline on Cervical Cerclage and SBLv3 on who to offer history indicated cerclage to. In view of this, we will be performing our own focus group to standardise care provision regarding history indicated cerclage within NENC.

The ethnic and socioeconomic inequalities seen in relation to preterm birth and how these could be reduced.

PTB is compounded by the significant association between PTB and social inequalities. A recent systematic review identified possible mediators of PTB including maternal smoking, maternal mental health, maternal physical health, maternal lifestyle, healthcare and maternal working environment. These mediators only partly explain the substantial socioeconomic inequalities in PTB and further research and evaluation is needed to understand and address inequalities. As a Region the NENC has high areas of deprivation and wide geographic spread. Therefore establishment of the service across the NENC will hopefully reduce inconsistencies in care and help to reduce disparities between maternity units. The service promotes easier access to the same high quality, evidence based practice in all locations across the NENC region and promotes shared learning between healthcare professionals. As part of the evaluation of services we are collecting postcodes and ethnicities of

women who attend the high-risk clinic and also from women who deliver before 34 weeks gestation in the hope that we may be able to identify associations with outcomes.

As a Region, the NENC PTB group, in collaboration with service users, have produced accessible patient information leaflets about the signs and symptoms of preterm labour, , optimisation measures and care pathways, along with a preterm baby passport These resources have been translated into the 5 commonest languages spoken in our area.

Prevention

● The prediction of preterm birth, including through screening and the use of new technologies.

In line with NENC guidelines, all women deemed to be at intermediate or high-risk of PTB are reviewed in their booking hospital high risk clinic by the specialist midwife and/or the lead consultant obstetrician. All smokers are offered referral to smoking cessation services. Depending on risk status women are offered cervical length scans on an intermediate or high-risk pathway. We have standardised our intermediate and high-risk pathways so that women receive the same care, regardless of booking location within NENC. If the cervix is found to be less than 25 mm in length further monitoring and interventions to prevent PTB are discussed. Progesterone pessaries and/or cervical cerclage may be offered depending on individual cases. We are currently looking at the outcomes of all pregnancies offered an intervention, with a view to considering centralisation of surgical services to allow concentration of expertise and training in cervical cerclage. It has been agreed that 2 units within our area will provide transabdominal cervical cerclage and referral pathways have been set up so that all units can access these services. As a region, based on the MAVRIC study, we offer transabdominal cerclage rather than high vaginal cerclage (HVC - Shirodkar), as HVC was not shown to improve pregnancy outcomes when compared to low vaginal cerclage.

- Women in threatened PT labour are offered quantitative fetal fibronectin testing (FFN), (if available), and the risk of delivery within the next 7 days can be calculated via the QUIPP App. There is agreement within NENC to offer optimisation to all patients who have a risk of preterm delivery over or equal to 5% within the next week.
- There has been a NENC program of training in cervical length measurement to ensure that all units have this capability to perform these measurements in preterm birth clinics. This resource has also been useful given the national shortage of FFN, as cervical length alone can be used as an alternative to FFN when assessing women who present in threatened preterm labour using the QUiPP app.

We conducted two focus groups, looking at progesterone use and emergency/transabdominal cerclage. Following this, progesterone is now offered prophylactically from 16 weeks to all women with a previous preterm birth under 34 weeks. Due to the high-risk nature of emergency cerclage, it is now recommended that this is only performed in the largest three units. This is to ensure that only the most experienced surgeons are undertaking this procedure. This also allows for patient participation in research trials e.g. CStich2.

- **Primary prevention and treatment for preterm birth.**
  - Women who have a uterine abnormality or have a history of having a cervical suture are deemed high risk.
  - Women who have had a previous full dilatation C/S or cervical biopsy which was greater than 15mm in depth are deemed at intermediate risk, they are seen in clinic as above but have less intensive monitoring.

- **Secondary prevention and treatment for preterm birth.**

- Women with previous PTB before 34 weeks gestation, preterm premature rupture of membranes or previous mid-trimester loss are deemed as high risk and seen in clinic for more intensive monitoring.

Neonatal and longer-term care and support

● How neonatal care can improve outcomes for babies born preterm.

- Each unit across NENC now has a named neonatal consultant and neonatal nurse to lead on preterm birth optimisation. There is also a neonatal representation at the NENC preterm birth expert group.
- The NENC Region has 7 obstetric units with level 1 special care baby units and 3 obstetric units with level 3 neonatal intensive care units. Well established referral pathways are in place across the NENC between Units with the aim of optimising the most appropriate place of birth for a preterm baby. Women can be transferred whilst still pregnant if PTB is likely and / or the QUIPP risk is greater than 5%. Where transfer time exceeds one hour, there is a NENC policy to accept transfer at a lower QUiPP threshold of 1% for observation only.
- The NENC has a dedicated neonatal transfer pathway which is co-ordinated centrally (Northern Neonatal Transport Service). There is a policy of maternal auto-acceptance of in utero transfers where neonatal capacity exists.

● How postnatal care and psychological support for women who have given birth preterm and parents can improve outcomes.

- On site family accommodation is available (limited numbers) for people who live geographically distant to the level 3 neonatal units at Royal Victoria Infirmary (Newcastle upon Tyne) and James Cook

University Hospital (Middlesbrough). This reduces family separation whilst babies remain as inpatients.

- Some units have psychological support available through the neonatal unit in the form of counselling. Otherwise, this is provided by local charities e.g. Leo's Neonatal.
- In some units, specialist preterm midwives are able to continue to offer their expertise and support into the postnatal period. This does depend on their workload and funded hours.

The NENC preterm guideline recommends that all women who deliver less than 30 weeks gestation should be offered a postnatal debrief appointment. This should include risk reduction advice e.g interpregnancy interval, lifestyle advice and it also helps to identify women who may benefit from pre-pregnancy trans-abdominal cerclage.

● Integration between neonatal care for babies born preterm and postnatal care for women.

- The aim is to minimise separation of mother and newborn baby following delivery. For example, if a very preterm baby is born in a unit with a level 1 special care baby unit and needs to be transferred to a level 3 unit then if the mother is well enough she will also be transferred either with the baby or as soon as possible. The ideal scenario would be to transfer the mother whilst still pregnant.
- We aim to care for parents and babies together with transitional care, if this is safe to do so.
- We currently have a PTB experience of care evaluation underway across NENC.

● Longer-term impacts, care and support for preterm babies and their families.

As stated above, parents with babies who deliver before 30 weeks gestation are offered postnatal debrief sessions and if appropriate

counselling prior to the next pregnancy so that any potential impact on future reproductive health can be managed accordingly.

Other topics

- **Data collection and monitoring in relation to preterm birth, including variation in the recording of data.**
    - As part of the Regional PTB network in the NENC all units are collecting data in line with a co-designed dashboard. All units are collecting data on women:
    - 1. Attending the preterm birth prevention clinic
    - 2. Attending with threatened preterm labour
    - 3. Delivering < 34 weeks gestation

For all of these, the interventions and outcomes are collected and collated monthly.

Over the last 2 years, this data has been shared at the NENC preterm expert group at regular intervals. This allows for variation in practice to be identified in order to minimise this. It also reveals where practice needs to be improved so that quality improvement projects can be implemented where needed. The management of data on optimisation is supported by the Maternity and Neonatal Safety Improvement Programme.

An evaluation of the implementation of PTB service is currently underway funded jointly be the NENC LMNS and NIHR Applied Research Collaboration NENC which is being implemented by a post-doctoral research midwife (C.McParlin).

APPENDIX: Summary of NENC preterm birth first year report

Introduction

The Maternity Transformation Programme was established to implement the vision set out in Better Births (2016); a national ambition to halve the

rates of stillbirths, neonatal and maternal deaths and intrapartum brain injuries by 2030, with a 20% reduction by 2020. The second version of the Saving Babies' Lives Care Bundle (SBLCBv2), published in 2019, extended the 'Maternity Safety Ambition' to include reducing preterm birth (PTB) from 8% to 6% by 2025. SBLCBv2 focuses on three intervention areas to improve outcomes; prediction and prevention of PTB and better preparation when PTB is unavoidable. Part of element 5 of the SBLCBv2 emphasises the need to 'Optimise place of birth'. Extreme PTB in a tertiary unit setting can lead to improvements in survival and neurodevelopmental outcomes compared to birth at the same gestation in a level 1 unit. Therefore, women at imminent risk of PTB should be offered transfer to a unit with appropriate and available neonatal cot facilities when safe to do so, and as agreed by the relevant neonatal Operational Delivery Network (ODN).

This report comprises a summary of the first year of the evaluation of the PTB clinics and maternal and neonatal outcomes across the NENC Region.

Objectives of the evaluation:

- Record when lead consultant identified
- Record when specialist midwife in post
- Monitor capability and capacity for cervical scans
- Record when clinic up and running with PTB guidelines in place.
- Ensure standardised data collection toolkit in place
- Data being received from Units for each quarter and collate findings
- Carry out interviews with lead consultants to explore experiences of setting up the service.
- Carry out interviews with Specialist midwives to identify experiences of working in and supporting the service.

Methods

The clinic dashboard was designed by the PTB speciality group lead and deputy and ratified via LMNS PTB group in March 2022. Variables collected on an Excel spreadsheet that can be updated as women progress through their pregnancy were agreed. This was subsequently modified approximately three times as important variables were identified over the course of the first year. The final modification was made at the beginning of the second year, ie. If clinic attendees are found to have a short cervix, are commenced on progesterone or undergo cervical cerclage then the specialist midwife will record the gestation at which this occurs. When recording PTBs, the specialist midwife will also note whether the PTB was due to PT labour or iatrogenic reasons.

Results

Set up of PTB services:

Table 1 highlights when the PTB clinic commenced in each Unit and when the specialist PTB midwife started in post.

Table 1: Overview of the preterm clinics in the North East and North Cumbria

Unit	**Clinic started**	**Sp MW in post**
South Tyneside & Sunderland	April 2022	20/04/22
North Tees University Hospital	2021	April 2022
Queen Elizabeth Hospital Gateshead	2021	Oct 21
Royal Victoria Infirmary	2010	Aug 22

Newcastle		
James Cook University Hospital (South Tees)	2021	July 2022
Northumbria Health Care Trust	June 2020	June 2020
West Cumberland Hospital	Nov 2022	October 2022
Cumberland Infirmary	Dec 2022	Sept 2022
University Hospitals of North Durham	April 2022	May 2022, in post 10 months
Darlington Memorial Hospital	April 2022	June 2022, in post approx. 6 months

All Units had capability to carry out cervical length scanning prior to April 2022 to varying degrees. Training has been provided throughout the year and capacity has increased in all Units.

Baseline booking, delivery, birth and preterm birth rates across NENC

Figures 1&2 present data from the preceding three years (2019-22) and for 2022-23.

This data were derived from MSDS via the Performance Analysis Team at NHS England (North East and Yorkshire).

Fig. 1: numbers of bookings and deliveries in the NENC Region

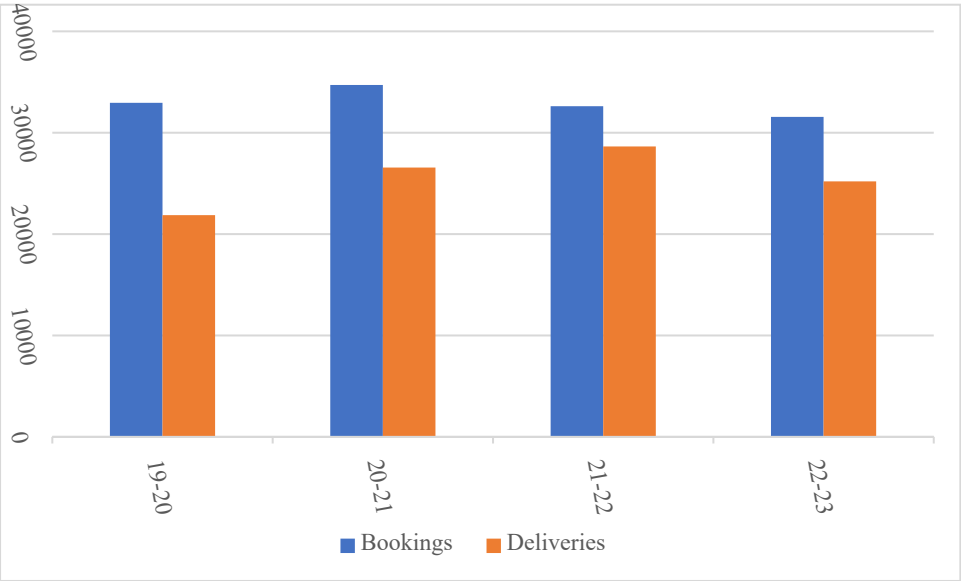
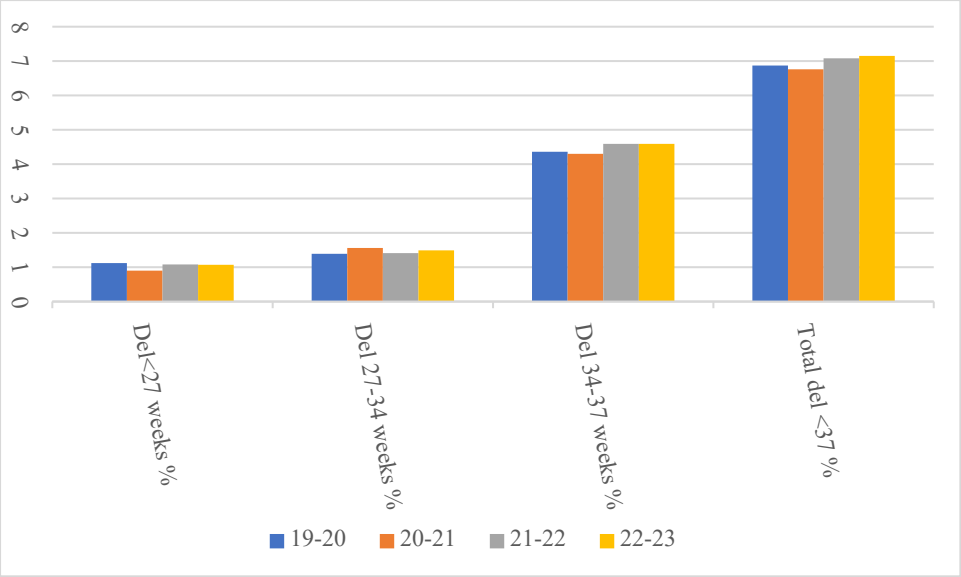


Fig 2: Proportion of total deliveries at different gestational cut offs for the last 4 years.



Clinic attendances for 2022/23

Table 4 presents data on the clinic attendance at each Unit in the Region with the corresponding variables.

Table 4a: Summarised data for the PTB clinics for all Units in the Region.

	Clinic attendance	Pathway started	Pathway started (%)	Bookings per year*	PTB pathway started /booking (%)	Number of attendees smoking at time of clinic attendance	% smokers/ pathway started	Ref smoking cessation**
Northumbria	261	251	96.2	4367	5.75%	29	11.6%	29
RVI	498	410	82.3	5630	7.28%	50	12.2%	28
QE	165	163	98.8	2525	6.46%	23	14.1%	21
ST.Sunderland	188	187	99.5	4660	4.01%	36	19.2%	36
Durham	120	98	81.7	4470	4.12%	21	21.4%	18
Darlington	94	86	91.5			23	26.7%	22
N.Tees	156	153	98.1	2925	5.23%	35	22.9%	21

S.Tees	243	224	92.2	4310	5.20%	45	20.1%	45
Cumberland Inf.* **	97	76	78.4	2675	4.11%	16	21.0%	16
West Cumberland	41	34	82.9			6	17.6%	6
Region Total	1863	1682	90.3	31562	5.33%	284	16.9%	242

*Number of bookings obtained from MSDS data, rounded up to nearest '5'. No separate figures available for UHND and Darlington, Cumberland Infirmary and West Cumberland.

**Number of referrals to smoking cessation not always recorded accurately for Q1 (hence it appears inadequate for the RVI and N.Tees)

***No PTB clinic data available for Cumberland Infirmary for Q2 or Q3

Fig 3: Illustration of key variables for PTB clinic attendances

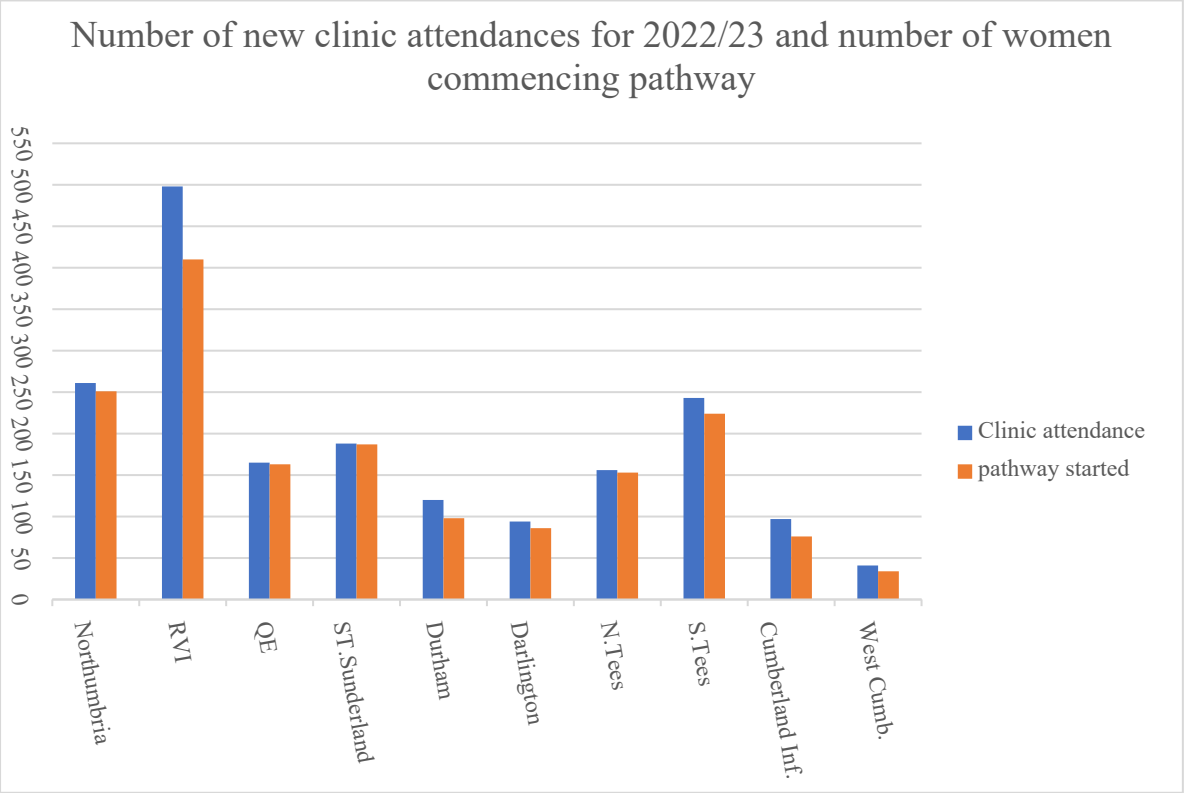


Fig 4: Number of high and intermediate risk women attending clinics for 2022/23

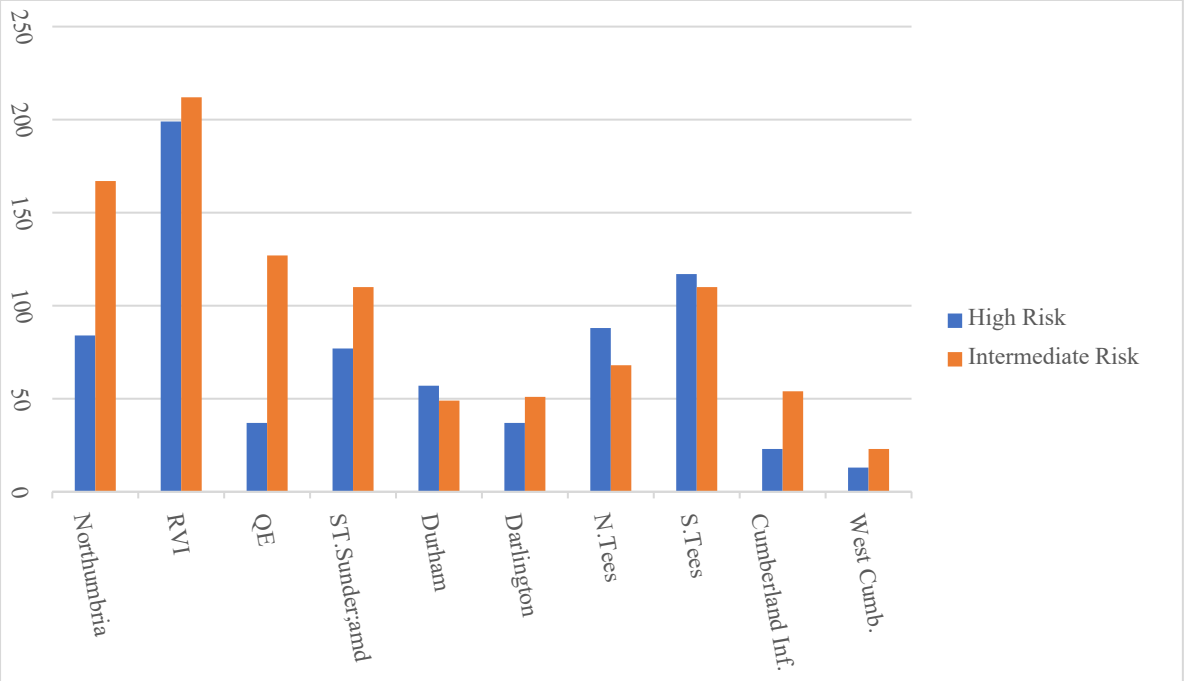


Fig 5: Proportion of women smoking who started pathway (%)

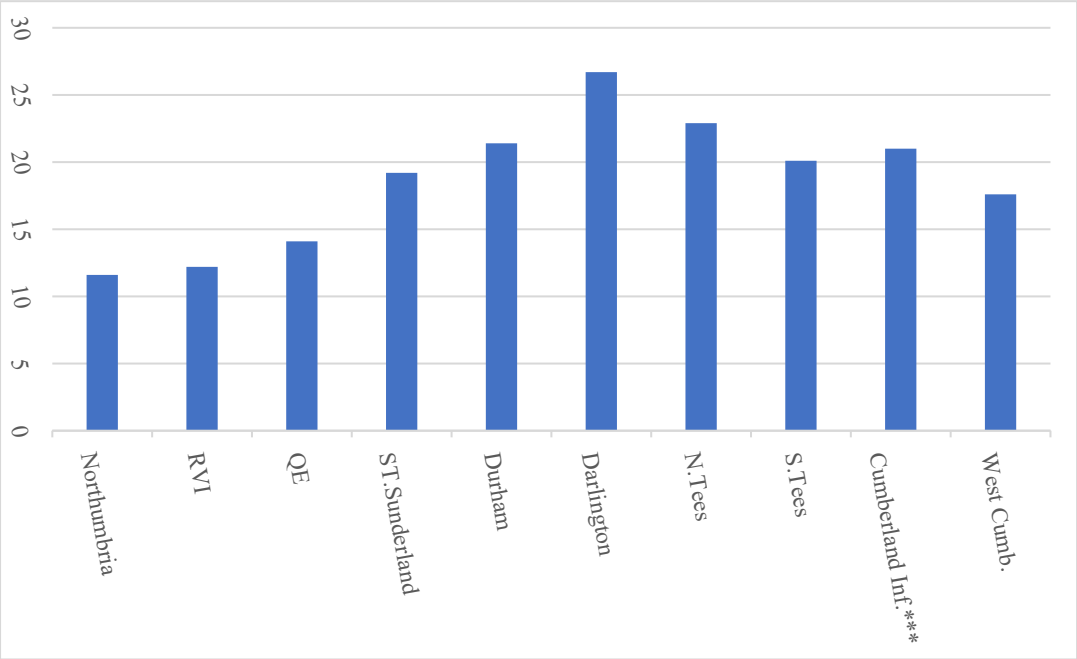


Figure 5 highlights the disparities across the Region in terms of smoking rates during pregnancy in this high risk population group. Most of the women who were smoking at the time of attending the PTB clinic were referred to smoking cessation. Whilst not recorded for the whole of last year the data collection spreadsheet has been amended to record the number of women smoking at the time of delivery which should give an indication of smoking cessation success rates.

Fig 6: Proportions (%) of women starting PTB pathway at each Unit who had a cervix less than 25mm, % women treated with progesterone, % women undergoing cervical cerclage, at any point during pregnancy

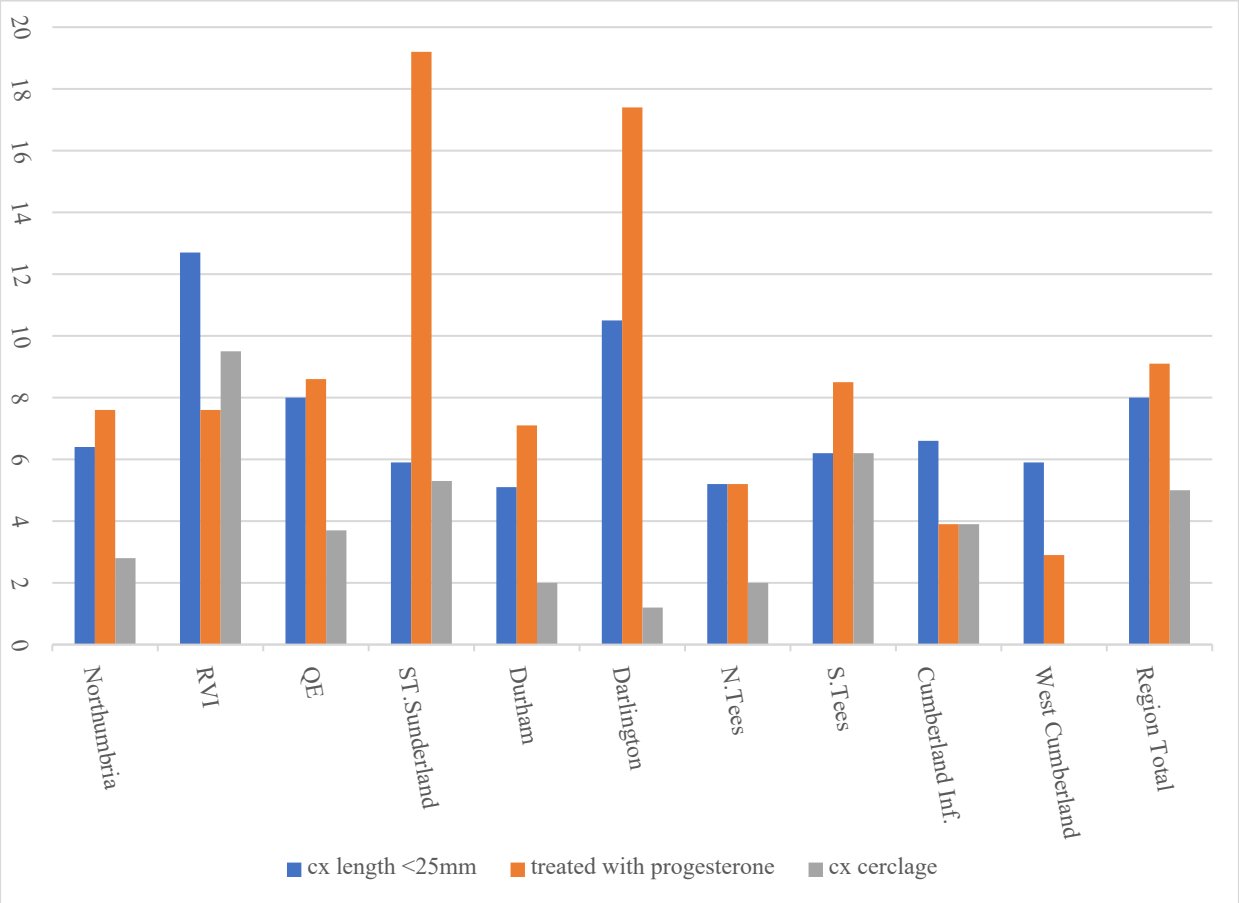


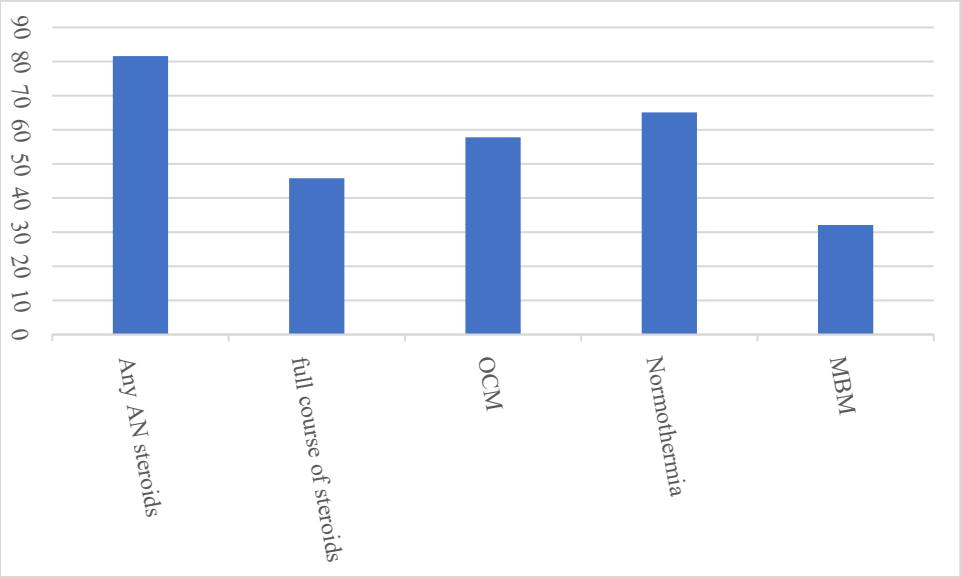
Figure 6 demonstrates that treatment with progesterone tends to reflect the number of short cervixes detected, although in some units the treatment with progesterone far exceeds reported short cervical lengths. Reported reasons for this were past obstetric history and maternal choice.

It is not possible to demonstrate at what gestation women had the shortened cervix or at what gestation treatment was given/commenced. The data collection spreadsheet has already been altered to enable this information to be collected for the year 2023/24.

PTB optimisation interventions

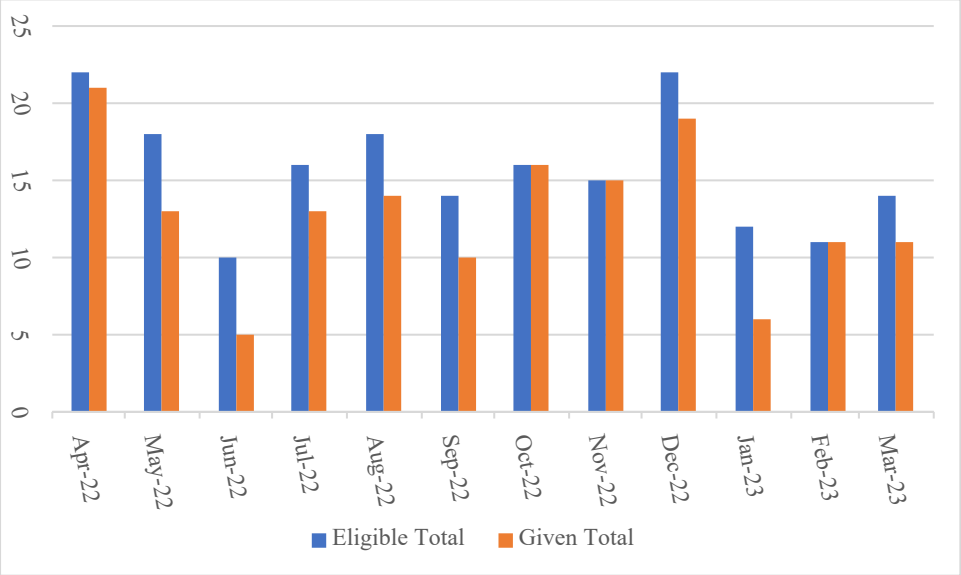
Figures 7-9 presents Regional data for 2022/23 including numbers of PTBs before 34 weeks gestation and achievement of optimisation interventions.

Fig 7: Proportion of women delivering across the Region receiving Optimisation interventions.



Only women delivering before 30 weeks gestation are eligible to receive magnesium sulphate, therefore the following bar chart presents number of women eligible and number of women actually receiving magnesium sulphate.

Fig 8:Number of women eligible for magnesium sulphate and actually given magnesium sulphate



Similarly, only women who experience preterm labour are eligible for intrapartum antibiotics. Therefore, the following figure presents numbers of women eligible and numbers receiving IV antibiotics.

Fig 9: Number of eligible women and number of women receiving at least 1 dose of antibiotics.

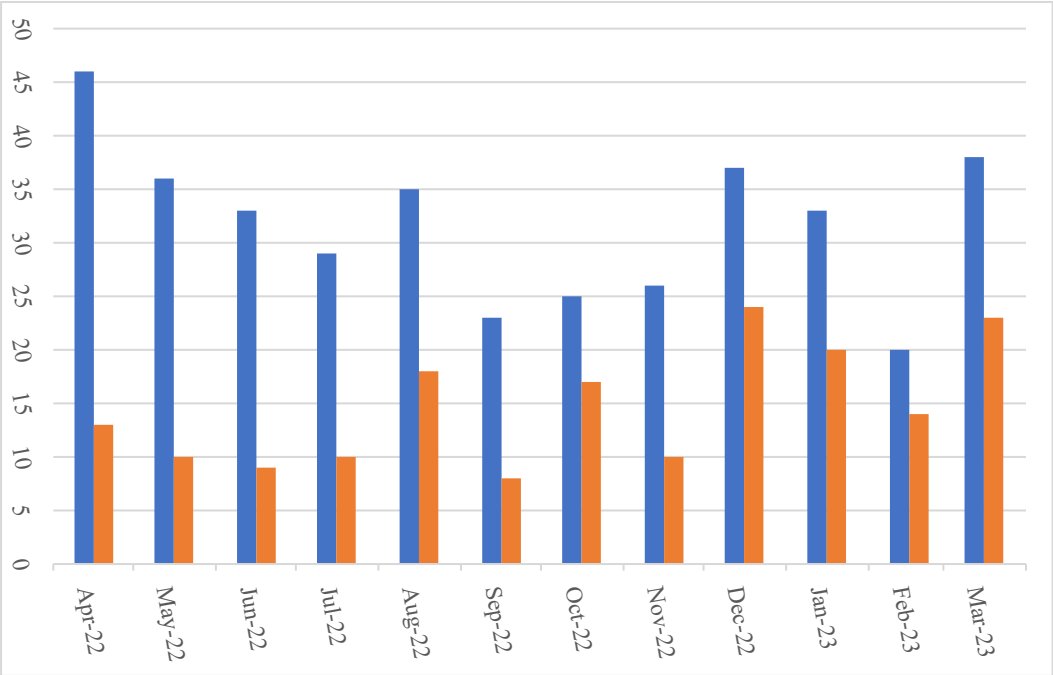


Table 6: Comparison of data for whole Region for 2021/22 and 2022/23:

Optimisation measure	**2021/22**	**2022/23**
Place of birth (<27 weeks or <800g or multiples <28 weeks) [level 3 NICU]	80%	92%
Place of birth (<30 weeks or <1250g) [Level 3 NICU]	81%	82%

Magnesium sulphate given to eligible women <30 weeks gestation	81%	82%
Optimal Cord Management	45%	58%
Normothermia recorded with 1 hour of birth	69%	73%

- Refers to women <34 weeks gestation unless otherwise stated.

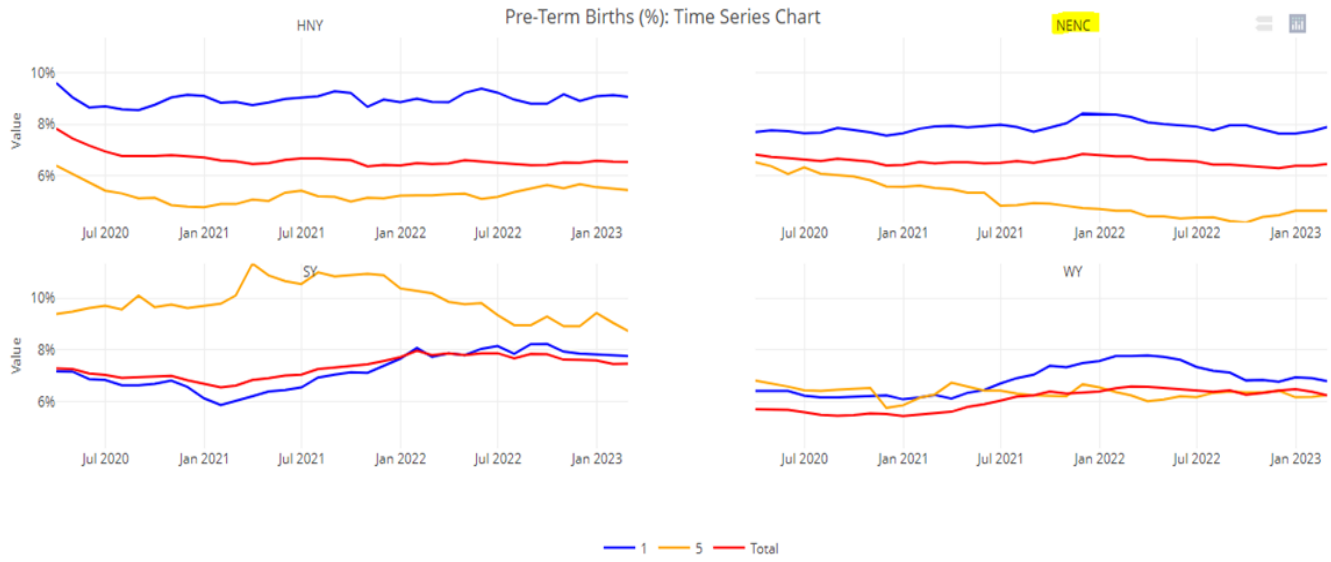
Table 7: Comparison of Q4 data (January/February/March) as whole year of data not available for 2021/22

Optimisation measure	**2021/22 Q4**	**2022/23 Q4**
Intrapartum Antibiotics at least one dose	49%	63%
Intrapartum Antibiotics > 4 hours prior to delivery	5%	16%
Antenatal corticosteroids any dose	49%	56%
Antenatal corticosteroids full course within 1 week of delivery	33%	37%
Maternal Breast Milk in the first 24 hours	13%	30%

Data obtained from MatNeo SIP

Data refers to women <34 weeks gestation unless otherwise stated.

Fig 12: Impact of deprivation on preterm birth rates for Humber & North Yorkshire, NENC, South Yorkshire and West Yorkshire (prepared by the Senior Analytical Manager from the NHS Performance Analysis Team, North East and Yorkshire)



Summary: on the charts the red line represents the overall value for each geography, the blue line the value for patients in the most deprived national quintile and the orange line the value for patients in the least deprived national quintile. There has been a noticeable drop-off in the pre-term birth figures for the least deprived quintile for NENC, but the most deprived has stayed around the same level.

As part of the evaluation, no indices of deprivation were collected. However, the data collection spreadsheets have now been altered so that postcode data is collected for women who attend the PTB clinics or deliver a preterm baby before 34 weeks. This will be analysed at the end of 2023/24 to look for any trends or common themes.

Conclusions from interview with lead consultants in each Unit prior to April 2022:

- Different challenges, each Unit unique, different starting point/experiences, skill mix.
- Wide variety of previous PTB care pathway. Some clinics already up and running, other Units see high risk PTB women in general high risk clinic. Variety of guidelines, between consultants and between Units.
- Equipment and staffing variable.
- Increased workload, referrals, appointments and scans Routine Cervical scans put extra pressure and work on US departments. Also, LLETZ and full dilation CS have increased workload.
- Agreed benefits for pregnant women and babies, even if no change in outcome metrics, Reassurance for parents.
- Consistent management within and between Units
- Support across the Region Consultants and Units supporting each other with advice on management of patients and setting up clinics

Conclusions from Specialist midwives' interviews conducted once midwives had been in post for at least 6 months

- All specialist midwives stated they were really enjoying the role and were getting a lot of job satisfaction from it.
- Most said there was more data collection and admin than they had expected, otherwise the role was much as they'd expected if not better.

- Most midwives stated they were developing professionally, learning and gaining experience, they felt involved and part of a bigger team.
- Teamwork within Units (mainly lead consultants) and across the Region was very good- both in terms of the PTB specialist groups, other Units and specialist midwives.
- Support from midwifery management was mixed, some negative, some positive experiences.
- Most of the midwives struggled to fit all task into the given time, some stated they completed data collection whilst doing their other midwifery roles, others attended meetings and completed admin tasks in their own time.
- Generally, midwives felt the service was making a difference emotionally and psychologically for women and families, providing support, reassurance and continuity.
- All midwives were keen to develop their role further and identified ways of doing this.

First year report conclusions

- All 10 Units have a PTB clinic set up and running across the Region, all have a lead consultant, specialist midwife and capacity to carry out cervical length scans.
- Many Units had their own teething problems when setting up the clinic. Ranging from staffing shortages, delays in getting specialist midwives into post and capacity to do cervical length scans.

  NB Cumbria, Durham and Darlington

- All Units have Regional Guidelines in place and are collecting specified and agreed evaluation data. All Units are required to present their data quarterly at the Regional PTB Speciality Group.
- Data collection quite onerous initially but midwives now feel more confident with this. (although most Units are struggling to collect data on patients who attend in threatened preterm labour due to issues with the way admissions are recorded at different Antenatal Assessment Units)
- Some descriptive stats appear worse than they are because of issues with record keeping/data extraction/data reporting at a local level.
- Issues extracting/checking/cross referencing data from Neonatal Badgernet, all specialist midwives now have access or support within their Unit for this.
- Data collection proforma has evolved throughout the year as the PTB group have identified important variables that should be collected. Eg. Gestation when short cervix identified, gestation when progesterone commenced, cervical cerclage performed. Recording if PTB due to labour or iatrogenic reasons.
- Extra variables added at the beginning of 2023/24 therefore next year's report should provide more detailed information.
- Increased awareness within each Unit, referral systems have developed and improved over the year.
- Capacity within Units to carry out cervical length scans has increased, mainly due to training offered Regionally.

Recommendations for year 2

- Ensure Specialist Midwife is supported and trained when she starts at Durham and Darlington Trust.

- Need to tighten up all data collection, ensuring all variables recorded accurately, including extra variables that have been added.
- Ensure reason for PTB recorded, i.e. spontaneous labour or iatrogenic reasons
- Consider how to monitor and tackle disparities and inequalities within Units and across the Region. Record postcodes, data on ethnicity and smoking at delivery.
- Devise methods to collect data on threatened preterm labour attendances, investigate whether a TPTL page could be added to Maternity Badgernet so the data can be easily accessed.
- Improve information for parents, create/design patient information leaflets. The Northern Neonatal Network has already created a leaflet explaining 'Why babies may need to move around the Region', formatting is currently being ratified.
- Standardise a 'Baby Passport' that can be used across the Region. This will be held by parents and contain details regarding any optimisation measures that have been implemented. The Team in South Tyneside & Sunderland have already designed one and they will share with the Group.
- The Regional PTB Group is planning a focus group to explore standardisation of care and reduction of discrepancies in relation to prevention of PTB, (treatment with progesterone and the cervical cerclage services).

27 March 2024