Trust Guideline for the Management of Preterm Birth (26^{+0} to 36^{+6} Weeks)

Document Control:

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Version History:

Version	Date	Author	Reason/Change
9	10/04/2020	Mr Charles Bircher, Mr Richard Smith	Changed nifedipine protocol to match BNF and added a protocol if immediate release nifedipine not available
10	25/05/2020	Mr Charles Bircher, Mr Richard Smith	Brand of swab used to detect ruptured membranes has changed
11	12/11/2020	Mr Charles Bircher, Mr Richard Smith, Mrs Beth Gibson	Addition of QUIPP app calculation and recommendation towards consideration of second dose of steroids following clinical governance 18/09/2020
12	26/08/2022	Mr Charles Bircher	Updated – Antenatal corticosteroids to reduce neonatal morbidity and mortality, RCOG Green Top No. 74
13	18/09/2023	Dr Thomas Curtis,	Compliance with SBLv3 and

		Sherri Richardson	introduction of PeriPrem. Reformatting to new template.
14	August 2024	Charles Bircher	Addition of Actim Partus if Fetal Fibronectin unavailable

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
Preterm Labour: 24-36 weeks	September 2023

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The authors listed above drafted this guideline on behalf of maternity clinical guidelines committee who has agreed the final content. During its development it has been circulated for comment to members of the maternity guidelines committee.

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g., changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to Norfolk & Norwich University Hospitals NHS Foundation Trust; please refer to local Trust's procedural documents for further guidance, as noted in Section 4.

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1. Introduction

1.1. Rationale

Preterm labour is defined as onset (spontaneous) of labour before 37 completed weeks of gestation and preterm birth is defined as birth at less than 37^{+0} weeks of gestation.

Intact survival of babies born after 27 weeks exceeds 50% and nearly 100% survival is expected of babies born after 32 weeks of pregnancy.

This guideline outlines the management of Preterm Birth from 26^{+0} to 36^{+6} weeks gestation. The recommendations contained within the guideline align local practice with, and summarise, relevant national guidance from the National Institute of Health and Care Excellence (NICE), the Royal College of Obstetricians and Gynaecologists (RCOG) and Saving Babies' Lives Version Three.

1.2. Objective

The objective of the clinical guideline is to:

- Optimise the management of women with preterm labour.
- Optimise fetal survival through this management.

1.3. Scope

This guideline covers preterm labour and preterm birth on or after 26^{+0} weeks of gestation. For gestations less than this, management should be according to "Trust Guideline for the Management of Babies Born Extremely Preterm - Trust Doc ID: 7508".

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
BNF	British National Formulary
BPD	Bronchopulmonary dysplasia
CTG	Cardiotocography; a method of fetal monitoring
GTG	Green-top Guideline (RCOG guidance)
NICE	National Institute for Health and Care Excellence
NEC	Necrotising enterocolitis
NNUH	Norfolk and Norwich University Hospitals NHS Foundation Trust
PERIPrem	Perinatal excellence to reduce injury in premature birth
PPROM	Premature prelabour rupture of membranes
Preterm labour/birth	Labour or birth occurring prior to 36+6 weeks of gestational age
PVL	Periventricular leukomalacia
RCOG	Royal College of Obstetricians and Gynaecologists
ROP	Retinopathy of prematurity
SGA	Small-for-gestational-age
Tocolysis	Administration of medication to delay labour, usually to

	facilitate administration of steroids.

2. Responsibilities

All NNUH Maternity Obstetric and Midwifery staff are required to remain up to date with the guidance included in this document.

3. Processes to be followed

3.1. Initial assessment

Diagnosis of preterm labour can be difficult.

Clinical features useful in making an objective diagnosis include:

- History – regular painful contractions
- Abdominal examination – descent of the presenting part
- Transvaginal ultrasound measurement of cervical length is the preferred screening test in the assessment of preterm labour if the operator is competent to perform it. Women with cervical length <15mm should be managed as high risk for preterm birth.
    - Operator competence is defined as satisfactory "competent" completion of three workplace-based assessments in the RCOG training ePortfolio.
- Fetal Fibronectin (or if unavailable, Actim Partus) can be used as an alternative to cervical length screening when a competent ultrasound operator is unavailable
- AmniSure testing can be performed as indicated
    - See "Trust Guideline for the Use of Fetal Fibronectin and Amnisure - Trust Doc ID: 8893"
- Individualised risk scoring via the Quipp App.
    - https://quipp.org/symptomatic.html
- Vaginal examination for progressive cervical changes
- Avoid vaginal examination but perform a sterile speculum examination if preterm pre-labour rupture of membranes (PPROM)

Other assessments should include:

- Assessment of fetal wellbeing. This can be either by intermittent fetal heart auscultation or by cardiotocography (CTG).
- In-room ultrasound scan to confirm presentation
- Departmental ultrasound scan for fetal size and liquor volume if indicated
- Evaluating for clinical evidence of infection
    - Pyrexia, tachycardia, uterine tenderness, offensive vaginal discharge and fetal tachycardia

Any woman suspected to be in preterm labour should be assessed by a member of the medical staff and decision for commencement of tocolysis or in-utero transfer should be made in discussion with the senior registrar or consultant on-call.

These women should be offered the RCOG patient information sheet on premature labour (https://www.rcog.org.uk/globalassets/documents/patients/patient-information-leaflets/pregnancy/pi-premature-labour.pdf)

3.2. PERIPrem Passport

PERIPrem is a unique perinatal care bundle of 11 interventions that demonstrate a significant impact on brain injury and mortality rates amongst babies born prematurely. PERIPrem also forges new ways of working, where clinicians from obstetrics, midwifery and neonatal teams join together to drive forward and revolutionise care for preterm babies.

The PERIPrem and parent passports should be completed for all women presenting in threatened preterm labour.

Links to these can be found below:

- PERIPrem Perinatal Passport for births <34/40 weeks – Trust Doc ID: 22960
- PERIPrem Baby Passport – for patients to complete – Trust Doc ID: 22959

3.3. Involvement of neonatal services

Ensure the neonatal team are involved when a preterm birth is anticipated, so that there is time to meet as a perinatal team to discuss care options with parents prior to birth. This is especially important at earlier gestational ages.

Women identified to be potentially at increased risk of imminent preterm birth, where active survival-focused care is planned, should be made aware of optimisation interventions that may be offered. Families should also be offered information and support for families from charities such as Bliss.

3.4. Antenatal corticosteroids

Every effort should be made to initiate antenatal steroid therapy in all women between 26^{+0} and 34^{+6} weeks gestation who are at risk of preterm birth. These include women presenting with:

- Threatened preterm labour
- Antepartum haemorrhage
- Preterm rupture of the membranes
- Any condition requiring elective preterm delivery

3.4.1. Special circumstances

- Chorioamnionitis: A course of antenatal corticosteroids may be started but should not delay delivery if indicated by maternal or fetal condition. The potential beneficial effects of steroids for the baby should be balanced against

the risk of exacerbating the severity of systemic infection for both the woman and baby

- Diabetes: Antenatal steroids must be used with caution in diabetic patients – please refer to guideline "Trust Guideline for the Management of Diabetes from Pre-conception to the Postnatal Period"
- Growth restriction: There is little direct evidence of benefit of antenatal corticosteroids for small-for-gestational-age (SGA) or growth restricted babies, but the present recommendation from the RCOG (*GTGs 129 and 31*) is to consider a course of corticosteroids up to 35^{+6} weeks gestation.

3.4.2. Steroid regimes of choice

- Betamethasone or Dexamathasone Phosphate 12mg given IM in two doses 24 hours apart
- However, any regime with 24mg of either drug given in a 24–48-hour period is reasonable

3.4.3. Optimal treatment delivery interval and repeat courses

The optimal treatment-delivery interval for administration of antenatal corticosteroids is after 24 hours but less than seven days after the administration of the second dose.

However, there is a trend towards benefit in babies delivered before, and after, the optimal treatment interval has elapsed. Therefore, treatment should be given even if delivery is anticipated within 24 hours as benefits are still seen.

There is evidence that a repeat course of steroids, if given at least **seven days after** the initial course and prior to 34^{+6} weeks gestation is likely to reduce the need for respiratory support for the baby. Women should be informed that no reduction in serious morbidity or long-term benefits have been seen with repeated courses of corticosteroids, but that these babies may be smaller: effects include a reduction in fetal weight (mean difference 80g), head circumference, length and neonatal blood pressure.

Therefore, we recommend considering a second course of steroids if it is more than seven days since the original course and the woman is less than 34 weeks' gestation, with consultant involvement in the decision.

The maximum number of corticosteroid courses given in any one pregnancy should not exceed two.

3.5. Tocolysis

Though use of tocolytic drugs have been associated with a prolongation of pregnancy up to seven days, no significant effect has been shown in reducing perinatal or neonatal morbidity.

Tocolysis should be considered if the few days gained would be put to good use, such as completing a course of corticosteroids or in-utero transfer. If one of these conditions is met tocolysis should be offered between 26^{+0} and 33^{+6} weeks.

As no benefit has been proven, maintenance tocolytic therapy is not recommended beyond 48 hours.

Tocolytic drugs should not be used when there is a contraindication to prolongation of pregnancy, such as:

- Lethal congenital or chromosomal malformation
- Intrauterine infection
- Severe pre-eclampsia
- Placental abruption
- Advanced cervical dilatation (>4cm)
- Evidence of fetal compromise or placental insufficiency

Senior opinion should be sought in the presence of following relative contraindications:

- Mild haemorrhage due to placenta praevia
- Suspicious or pathological CTG
- Fetal growth restriction
- Multiple pregnancy

3.5.1. Tocolytic drugs and recommended dose regimes

Nifedipine is recommended as the first choice in tocolysis. It is not currently licenced for use as a tocolytic in the UK.

- Site an intravenous cannula prior to commencement of treatment
- The BP (blood pressure) should be checked prior to administration of each tablet and if the systolic BP <100 mmHg, the doctor should be contacted prior to drug administration
- The suggested regime of Nifedipine in the British National Formulary (BNF) is:
    - Immediate release, initially 20mg, followed by 10–20mg three to four times per day, adjusted according to uterine activity
- However, if immediate release Nifedipine is not available the following regime can be used:
    - Initial dose: Nifedipine modified release (m/r) 20mg
    - After an hour (if contractions persist), give Nifedipine m/r 10mg orally every six hours for 48 hours as indicated
    - Maximum dose is 60mg/day

Contraindications to Nifedipine:

- Cardiac conducting defects
- Hypotension
- Left ventricular failure
- Hepatic and renal failure are relative contraindications for Nifedipine
- Caution should be exercised in:
    - Women with diabetes or in multiple pregnancy owing to the risk of pulmonary oedema
    - Women who are taking medicines that may interact with nifedipine (see BNF Appendix 1: Interactions under Calcium-channel Blockers)

Pharmacy holds a small stock of Atosiban for patients who are unable to be given nifedipine. Please consult the BNF and product information if needed.

The woman should be advised on side effects of nifedipine which include:

- Hypotension (though in normotensive women the effect on BP seems to be small and seldom severe enough to withdraw treatment)
- Palpitation
- Peripheral oedema
- Headaches
- Facial flushing
- Less common effects include constipation, dizziness, nausea, bradycardia, fatigue, rash and abnormal liver function tests (though there are no long-term effects on the liver)

3.6. Magnesium sulphate for prevention of cerebral palsy

- MgSO4 has been shown to be neuroprotective against cerebral palsy and cystic periventricular leukomalacia (PVL).
- MgSO4 should be offered in women with imminent delivery $<30^{+0}$ weeks and considered between 30^{+0} and 33^{+6} weeks.
- This should be administered if the birth is expected within the next 4-24 hours and should be continued for 24 hours or delivery, whichever occurs first. This would be expected in a woman having regular uterine contractions with a cervical dilatation of 4 cm or more.
- Such treatment is recommended regardless of mode of delivery and corticosteroid administration.
- An intravenous loading dose of 4g over 20-30 minutes followed by a maintenance dose of 1g/hr should be given.
- Monitoring should include hourly maternal blood pressure, heart rate, respiratory rate and patellar reflexes.

- The urine output should be monitored with a strict input-output chart to ensure the output is more than 100mL per four hours. Consider use of an indwelling catheter to monitor output
- Discontinue the infusion and seek medical review if the respiratory rate <16/min, urine output <100mL per four hours or the patellar reflexes are absent.
- Antidote for suspected magnesium toxicity:
    - Calcium gluconate (1 gram (10 mL of 10% solution) slowly via intravenous route over 10 minutes) should be given if there is clinical concern over respiratory depression.

3.7. Use of antibiotics

Routine use of antibiotics in **threatened** preterm labour with intact membranes is not recommended.

However, all women in **established** preterm labour (regular uterine activity and ≥4cm dilated) should be offered antibiotics to cover Group B Streptococcus. See "NNUH/JPUH Joint Clinical Guideline for Group B Streptococcus in Pregnancy – Trust Doc ID: 845".

The use of antibiotics with PPROM should be according to the "Clinical Guideline for the Diagnosis and Management of Preterm Prelabour Rupture of Membranes (PPROM) – Trust Doc ID: 873".

3.8. Management of labour

There is no benefit shown of elective caesarean section compared to vaginal delivery in delivery of a small and preterm baby in cephalic presentation. However, caesarean section maybe associated with a higher incidence of morbidity in the women.

No robust data to guide the mode of delivery in breech presentation. An individualised plan should be made after discussion with the woman.

Once in established labour it may be appropriate to monitor the fetus via intermittent auscultation after discussion with the women about risk and benefits of CTG vs intermitted auscultation. If the woman chooses intermittent auscultation, this should be done using NICE guidelines on intermittent auscultation.

For the best outcome, the baby should be delivered gently. Elective forceps is no longer thought to be required, but an episiotomy should be considered.

If an assisted vaginal delivery is felt necessary it is best to avoid ventouse prior to 36 weeks gestation, to avoid damage to the fragile scalp.

An epidural anaesthetic is preferable to pethidine for pain relief.

Fetal blood sampling is generally felt to be contraindicated before 34 weeks gestation, but no evidence exists to support this and individual cases must be judged on their own merits.

Delayed cord clamping at or more than one minute after birth should be aimed for in all preterm births. If this is not possible, cord milking can be considered in babies above 28 weeks gestation. The use of LifeStart is recommended to facilitate neonatal resuscitation during ongoing delayed cord clamping in preterm birth.

3.9. Role of breastmilk

Mother's breastmilk is the optimal form of feeding for preterm infants. Specific health benefits for the preterm infant population include lower mortality rates, lower rates of sepsis and necrotising enterocolitis (NEC), improved neurodevelopmental outcomes, lower rates of bronchopulmonary dysplasia (BPD), retinopathy of prematurity (ROP) and fewer hospitalizations in the first year after discharge compared to formula feeding. All pre-term babies can receive colostrum; for those babies who are not able to tolerate enteral feeds, buccal colostrum for mouth care purposes is beneficial. The provision of early colostrum to a baby is dependent on getting expressed colostrum to the neonatal unit and administered to the baby. It is reliant on all staff understanding the importance and urgency of early colostrum. Obstetric teams should include a discussion about the benefits of early breast milk during antenatal counselling of women at risk of preterm birth and should consider recommending antenatal hand expressing if preterm birth is considered inevitable.

4. Related Documents

- NICE. Preterm labour and birth. NICE guideline [NG25]: 20 November 2015, last updated June 2022.
- Royal College of Obstetricians and Gynaecologists. Antenatal corticosteroids to reduce neonatal morbidity and mortality. Green-top guideline no 74. RCOG press 2022
- Royal College of Obstetricians and Gynaecologists. Tocolysis for women in preterm labour. Green-top guideline no 1b. RCOG press 2011
- NHS England. Saving babies' lives version three: a care bundle for reducing perinatal mortality. July 2023. https://www.england.nhs.uk/publication/saving-babies-lives-version-three/
- NNUH Trust Guideline for the Management of Babies Born Extremely Preterm -Trust Doc ID: 7508
- NNUH Trust Guideline for the Use of Fetal Fibronectin and Amnisure - Trust Doc ID: 8893
- PERIPrem Perinatal Passport for births <34/40 weeks – Trust Doc ID: 22960
- PERIPrem Baby Passport – for patients to complete – Trust Doc ID: 22959
- NNUH/JPUH Joint Clinical Guideline for Group B Streptococcus in Pregnancy – Trust Doc ID: 845.
- NNUH Clinical Guideline for the Diagnosis and Management of Preterm Prelabour Rupture of Membranes (PPROM) – Trust Doc ID: 873

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- ACOG Committee Opinion, Number 713, August 2017, Antenatal Corticosteriod Therapy for Fetal Maturation
- WHO recommendation on use of a single repeat course of antenatal corticosteroid. 17 November 2015
- The Cochrane Collaberation. Magnesium Sulfate for women at risk of preterm birth for neuroprotection of the fetus. The Cochrane Library 2010
- Chapter XV. ICD 10. World Health Organization 2010
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- Vohr BR, Poindexter BB, Dusick AM, et al. Persistent beneficial effects of breast milk ingested in the neonatal intensive care unit on outcomes of extremely low birth weight infants at 30 months of age. Paediatrics. 2007;120(4):e953-9. doi:10.1542/peds.2006-3227

6. Monitoring service to be delivered

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Steroid administration prior to delivery <30 weeks	Perinatal Optimisation Project	S Richardson/ R Smith	Maternity Clinical Governance	Monthly
Magnesium sulphate administration <30 weeks	Perinatal Optimisation Project	S Richardson/ R Smith	Maternity Clinical Governance	Monthly
Delayed cord clamping at delivery < 30 weeks	Perinatal Optimisation Project	S Richardson/ R Smith	Maternity Clinical Governance	Monthly

The audit results are to be discussed at Maternity Clinical Governance as part for the perinatal optimisation project on a monthly basis to review the results and recommendations for further action. Maternity Governance ensure that the actions and recommendations are suitable and sufficient.

7. Appendices

There are no appendices for this document.

8. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Woman's and Children's Division	**Department**	Maternity Services
Name of person completing form	Sherri Richardson	**Date**	22/09/2023

Equality Area	**Potential Negative Impact**	**Impact Positive Impact**	**Which groups are affected**	**Full Impact Assessment Required YES/NO**
Race	No	No	None	No
Pregnancy & Maternity	No	Yes	None	No
Disability	No	No	None	No
Religion and beliefs	No	No	None	No
Sex	No	No	None	No
Gender reassignment	No	No	None	No
Sexual Orientation	No	No	None	No
Age	No	No	None	No
Marriage & Civil Partnership	No	No	None	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?		No impact		

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.