Preterm Birth:
Prevention, Preterm Labour and Preterm Prelabour Rupture of Membranes

Author:	Dr Louise-Emma Shaw
Approval Body:	Antenatal and Labour Ward Forum
Approval Date:	Clinical Guideline Group 23/09/2024
Review Date:	October 2027

This guideline is based on the All Wales Preterm Birth Guidelines June 2023, and adapted for local variation in available resources.

Contents

1. Introduction

8% of all births will occur before 37 completed weeks of gestation. 70% of these are spontaneous following onset of spontaneous contractions or preterm prelabour rupture of membranes (PPROM). Preterm birth is the biggest cause of neonatal morbidity and mortality in the UK.

Most women who present with threatened preterm labour will go on to deliver at term, even in the absence of intervention. It is essential to recognise those women who are at the highest risk in to target interventions to those who will benefit the most, minimising unnecessary treatment.

Preterm prelabour rupture of membranes (PPROM) (<37/40 gestation) complicates up to 3% of pregnancies and is associated with 30–40% of preterm births. PPROM can result in significant neonatal morbidity and mortality, primarily from prematurity, sepsis, cord prolapse and pulmonary hypoplasia. In addition, there are risks associated with chorioamnionitis and placental abruption. The median latency after PPROM is 7 days and tends to shorten as the gestational age at PPROM advances.

2. Definitions and abbreviations

	Gestation
Term	37+0 onwards
Late pre-term	32+0 to 36+6
Early pre-term	28+0 to 31+6
Extreme prematurity	22+0 to 27+6
Pre-viable	upto and including 21+6
PTL	Preterm Labour
PPROM	Preterm Prelabour Rupture of Membranes
LLETZ	Large Loop Excision of the Transformation Zone
GA	General Anaesthetic
ANC	Antenatal Clinic
CTG	CardiTocoGraph
IV	Intravenous
SGA	Small for Gestational Age
GBS	Group B Streptococcus

3. Prevention of Preterm Birth

Smoking doubles the risk of PTL, and cessation support should be offered accordingly.

Infection with Chlamydia or gonorrhoea increases risk of PTL and women at risk should be offered screening.

Women at risk of preterm birth should be identified at booking, and referred to the preterm birth prevention clinic. Women should be seen in the pre-term birth clinic by 16 weeks gestation where a plan of care will be discussed and developed together with the woman and consultant obstetrician. In this clinic serial transvaginal ultrasound scans will be offered until 24 weeks of pregnancy. Once the women have

been discharged from the pre-term birth clinic they will attend their nominated Obstetric clinic or community midwife, and will not stay under the preterm birth clinic. Referrals should be done on the referral form (appendix 1). Where women have had a term birth after the risk factor event the risk of preterm birth is low and there is no need for referral.

Women at high risk of preterm birth

- Previous spontaneous preterm birth or spontaneous mid-trimester loss (16 to 34 weeks gestation)
- Previous preterm prelabour rupture of membranes <34 weeks gestation
- Previous use of cervical cerclage or use of progesterone to prevent preterm birth
- Known uterine variant (i.e. unicornuate / bicornuate uterus, uterine septum, intrauterine adhesions)
- History of trachelectomy (for cervical cancer)

These women will be offered scans every 2-4 weeks from after 14 weeks to 24 weeks gestation.

Women at Intermediate risk

- Previous birth by caesarean section at full dilatation
- History of significant cervical excisional event (LLETZ where >15mm depth removed, or >1 LLETZ procedure, or Cone biopsy)

These women will be offered a minimum of 1 scan between 18 and 22 weeks gestation.

A cervical length of 25mm or more is reassuring. A length less than 25mm is significantly short and consideration should be given to further management. Options include

1) Progesterone vaginal or rectal pessaries 200-400mg once daily until 34 weeks. This is an off-label use of progesterone.
2) Cervical cerclage (not recommended if a co-incidental finding of a short cervix with no risk factors for PTL). The technique for insertion of cervical cerclage is operator dependent, but should be placed as high as possible on the cervix. Cerclage reduces birth by an average of 34 days, but there is limited data on neonatal mortality or morbidity.

4. Acute presentation of Suspected Preterm Labour

Women who present with symptoms suggestive of PTL should have a detailed history including any gastro-intestinal symptoms (nausea, vomiting, diarrhoea), urinary frequency, abdominal or pelvic pressure and backache. The length, strength and frequency of contractions should be recorded. Any vaginal loss should be noted.

Clinical assessment should include

- maternal observations (pulse, blood pressure and temperature)

- urinalysis
- abdominal palpation for presentation and uterine contractility.
- If of appropriate gestation a CTG should be performed, otherwise auscultation of the fetal heart for at least 1 minute.
- A speculum examination of the cervix should be performed. Lubricating gel should be avoided (water can be used to aid insertion of the speculum). In the absence of a cervix obviously dilated (>3cm), ruptured membranes or frank blood loss, an actin partus should be performed. This should only be performed by appropriately trained staff. It should only be performed between 24+0 and 34+6 weeks gestation.
- Consider a microbiology high vaginal swab.

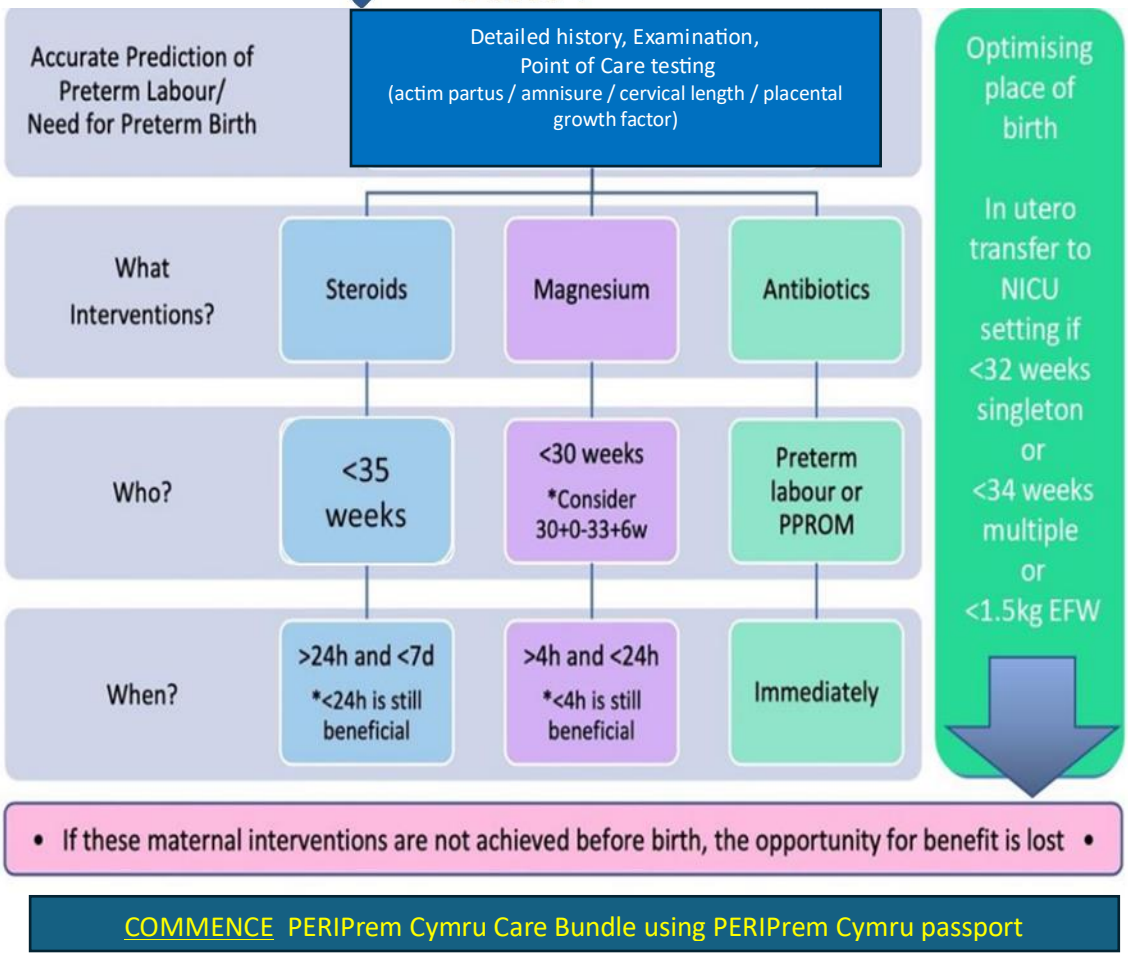
NEGATIVE PARTUS TEST: Reassure the chance of PTL is very low, and allow home with appropriate advice.

5. Acute presentation of suspected Preterm Prelabour Rupture of membranes

The 'gold standard' for diagnosing PPROM is to take a detailed history and perform a sterile speculum examination. A pool of liquor in the vagina is diagnostic and no further testing is needed. However clinical assessment alone may be equivocal in 10-20% of cases. If pooling of liquor is NOT seen or if examination findings are equivocal, and the clinical history is suggestive of SROM, then a point of care test (Amnisure) should be used. Where the history is suggestive and Amnisure test is negative it is very unlikely that the membranes have ruptured. Women should be advised to report any further symptoms or ongoing PV fluid leakage. Ultrasound should NOT be used to make the diagnosis. See flow Chart 1.

6. Management

Complete the PERIPrem Bundle. PERIPrem Cymru is a bundle of interventions to optimise the condition of preterm births. The Antenatal elements include admission to a unit with appropriate Neonatal facilities, steroids, IV antibiotics and magnesium.



- Admission to a unit with appropriate Neonatal facilities for the gestation

- Administration of steroids (between 24 and 35/40 gestation, or under 37/40 with SGA. Under 24/40 steroids should only be offered after counselling by a consultant obstetrician): Betamethasone 12mg IM 24 hours apart (or Dexamethasone 6mg 4 doses 12 hours apart). Even in established labour there is still some benefit to the baby. Do not give steroids if they have already been administered within the last 7 days or if 2 courses have already been administered during this pregnancy. In the presence of maternal or fetal compromise delivery should not be delayed to administer steroids.

- Consider Tocolysis. This is ONLY required to allow administration of steroids and/or to facilitate in utero transfer, where cervical dilatation is 4cm or less. Outside of these situations there is no evidence of improved outcomes with the use of tocolysis. First line tocolysis is nifedipine 20mg for four doses 20 minutes apart. As this can be associated with maternal hypotension IV access should be secured and 500mls Normal Saline administered alongside the first dose. Continuous CTG (if of appropriate gestation) is advised during this time. Following this Nifedipine MR (Modified release) 20mg 8 hourly until 24 hours post completion of steroids. In the presence of severe maternal cardiopulmonary compromise Nifedipine is contraindicated, and in this situation atosiban can be used (Initial bolus of 6.75mg given IV over 1 minute, followed by

an infusion at 18mg/hour for 3 hours then 6mg/hour until 24 hours post completion of steroids).

- Magnesium sulphate: For women at high risk of birth in the next 24 hours (ie those in established labour, or planned preterm birth) under 30 +0 gestation administration of IV magnesium sulphate is recommended to help reduce the risk of cerebral palsy. It can also be considered for women upto 33+6 weeks gestation. Administration is by 4g over 20 minutes, followed by infusion of 1g/hour for upto 24 hours. It can be discontinued immediately following birth, or if the situation changes and birth is unlikely. Repeated and/or prolonged use is not recommended. In the presence of maternal or fetal compromise birth should not be delayed to administer magnesium sulphate. Magnesium should not be administered during in utero transfer. During Magnesium sulphate infusion Respiratory rate and oxygen saturations should be recorded every 30 minutes, and blood pressure, urine output and the presence of patellar reflexes documented every 4 hours. If Urine output is reduced (<30mls/hour), patellar reflexes are lost, or respiratory rate falls below 12/minute then the infusion should be stopped due to the possibility of magnesium toxicity and immediate medical review requested. The antidote to Magnesium sulphate is Calcium Gluconate 1g IV.

- IV Antibiotics if birth in the next 24 hours is likely. These should cover GBS, and as such first line therapy would be with Benzylpenicillin 3g IV for a single dose followed by 1.2g IV every 4 hours until birth occurs. In the presence of Penicillin allergy IV cefuroxime (1.5g IV followed by 750mg IV every 8 hours) or Vancomycin (1g every 12 hours administered over 2 hours IV) can be used.

- In addition, women with PPROM should be counselled about the risk of infection, the symptoms to be observant for (feeling generally unwell, pyrexia, offensive liquor, abdominal pain different to contractions, altered fetal movements). Women should be advised to avoid situations that increase the risk of infection including baths/swimming, sexual intercourse including foreplay, and tampon use. In extremely premature PROM consideration should be given to not continuing the pregnancy because of the risk of chorioamnionitis and its complications including on future reproductive health. Where chorioamnionitis is identified birth should be expedited as soon as possible.

- Women with PPROM Oral antibiotics should be recommended for 10 days. The antibiotic of choice is erythromycin 250mg qds. If this is contraindicated consider an oral penicillin (not co-amoxiclav). If labour establishes following PPROM before 37/40 then IV antibiotics should be given to cover GBS (Group B Strep). First line choice would be Benzylpenicillin 3g loading dose then 1.2g every 4 hours. See Management of Women with Group B Streptococcus during pregnancy guideline for further information if allergic to penicillin. Where women have been identified as having GBS in the current pregnancy, consideration

should be given to augmenting the labour from 34/40 gestation, where the risk of infection is higher than benefits of delaying birth.

- Women with PPROM should be assessed for the need for an ultrasound scan. This is not to confirm the diagnosis of PPROM, but to aid management. Women with oligohydramnios are more likely to labour within 7 days. At extreme prematurity an estimated fetal weight may impact on the viability of the infant should labour occur. Presentation of the baby will impact of mode of birth should labour occur. Where a growth scan has been undertaken in the 2 weeks prior to PPROM then a bedside scan will be sufficient to assess presentation and liquor volume.

All parents should be issued a PERIPrem Cymru baby passport and given the opportunity to ask any questions regarding the care bundle. The importance of early breast milk and resources to lessen parental anxiety (Tommy's web site) should be discussed with all parents at an appropriate time. PERIPrem Cymru strongly supports and encourages antenatal and immediate postnatal expressing. Parents should be provided with the PERIPrem Cymru Early Maternal Breast Milk leaflet. For women at risk of extreme preterm birth discussions should be guided by the Extreme Preterm Pathway All Wales Standards.

Women with clinically diagnosed PPROM who have reduced amniotic fluid volumes on ultrasound are more likely to give birth within 7 days from membrane rupture. These factors, along with fetal presentation and the woman's individual history and social circumstances, should guide an individualised approach to the duration of in-patient surveillance. A retrospective cohort study of women with PPROM who had planned home care, found that membrane rupture occurring before 26+0 weeks, non-cephalic presentation and oligohydramnios were associated with an increased risk of 'complication' (defined as fetal death, placental abruption, umbilical cord prolapse, delivery outside of hospital and neonatal death). Inpatient care should be recommended to women who have all three of these features.

When cared for as an inpatient, women with PPROM should have a full set of maternal observations every 4 hours as a minimum, and be plotted on the MEWS chart. A CTG should be performed twice a day (if of appropriate gestation). Blood tests (FBC, CRP) should be performed on admission and then weekly (The white cell count will rise 24 hours following steroids and should return to baseline 3 days following administration).

Appropriate counselling around recommended vaccinations in pregnancy should take place. If PPROM ≤ 28 weeks gestation and where a consultant obstetrician or similar specialist considers, that there is a compelling clinical reason for early immunisation the RSV vaccine could be prescribed off-label and the rationale documented. See; The Green Book Chapter 27a Respiratory S Syncytial Virus RSV vaccination of pregnant women for infant protection: information for healthcare practitioners - GOV.UK (www.gov.uk)

7. Mode of Birth:

Discuss the general benefits and risks of caesarean section and vaginal birth with women in suspected, diagnosed or established preterm labour. Explain to women in suspected, diagnosed or established preterm labour the benefits and risks of caesarean section that are specific to gestational age. Highlight the difficulties associated with performing a caesarean section for a preterm birth, especially the increased likelihood of a vertical uterine incision and the implications of this for future pregnancies. Explain to women in suspected, diagnosed or established preterm labour that there are no known benefits or harms for the baby from caesarean section, but the evidence is very limited.

Consider caesarean section for women presenting in suspected, diagnosed or established preterm labour between 26+0 and 36+6 weeks of pregnancy with breech presentation.

8. Outpatient management of PPROM

When opting for outpatient surveillance women should be reminded of the symptoms of infection to report to the antenatal assessment unit. Women should not delay reporting any concerns because of a planned appointment.

Women should be seen weekly in the Antenatal Day Assessment unit. At these visits a full set of maternal observations should be recorded, and a CTG performed (if of suitable gestation) even when attending for an ultrasound scan. FBC and CRP should be performed weekly.

Ultrasound scans should be undertaken every 2 weeks unless the deepest vertical pool (DVP) is <2, when scans should then be weekly (see oligohydramnios guideline).

Women under midwifery led care should be transferred to obstetric led care and an antenatal clinic appointment should be made for 34 weeks to discuss plans for birth. Women already under obstetric led care but who do not have any further clinic appointments planned should also have an appointment made for 34/40.

Where blood test / observations fall outside of normal parameters referral should be made for a senior obstetric review and ongoing plan of management.

Women whose pregnancy is complicated by PPROM after 24+0 weeks gestation and who have no contraindications to continuing the pregnancy should be offered expectant management until 37+0 weeks; timing of birth should be discussed with each woman on an individual basis with careful consideration of patient preference and ongoing clinical assessment.

For those with evidence of GBS colonisation in the current pregnancy or in previous pregnancies, the perinatal risks associated with preterm delivery at less than 34 +0 weeks of gestation are likely to outweigh the risk of perinatal infection. For those at

more than 34 +0 weeks of gestation it may be beneficial to expedite delivery if a woman is a known GBS carrier.

Mode of birth should be as was planned and guided by other obstetric indications such as presentation. Where induction of labour is planned this should be booked with labour ward. To minimise the number of vaginal examinations (and thus the risk of infection) induction should be with a single prostaglandin and then with oxytocin infusion. Vaginal examinations should be undertaken by competent staff to reduce repetitive examinations.

9. PPROM < 24 weeks

Where women present with PPROM/PTL under 24 weeks a consultant obstetrician and senior Neonatologist should be involved in the management discussions with the parents. This should include any plans for perinatal optimisation, mode of birth and monitoring of the heart rate during labour (including impact of classical caesarean section on future pregnancies), and resuscitation. This will be influenced by factors such as estimated fetal weight. The discussions and agreed management plan should be clearly documented in the notes. The plan should be reviewed regularly to allow changes in the situation.

For women with PPROM <24+0 a referral to the fetal medicine ANC should be made.

10. References

Robb, A., Roberts, R. All Wales Preterm Birth Guidance. Wales Maternity and Neonatal network. April 2023. Available on Wisdom.

Thomson, AJ. Care of women presenting with suspected preterm prelabour rupture of membranes from 24+0 weeks of gestation. RCOG Green top guideline number 73. June 2019.

Knight, M., et al on behalf of MBRRACE-UK. Saving Lives, Improving Mothers Care Core Report -Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2019-21. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2023.

Cervical Cerclage. Shennan, A., Story, L. RCOG Green-Top Guideline 75. Feb 2022.

Extreme Preterm Pathway (All Wales Standards). Jones, R. Wales Maternity and Neonatal Network. Oct 2020.

Extreme Preterm Pathway: Perinatal management and parental discussion proforma. Barnard, I. Wales Maternity and Neonatal Network. Oct 2020

Extreme Preterm Pathway: Parent Information Leaflet. Course, C., Kandhari, A. Wales Maternity and Neonatal Network. July 2020.

SOP for Antenatal Pre-Term Birth Prevention Clinic

This Document should be read in conjunction with the **All-Wales Pre-Term Birth Guideline 2023.**

Introduction and Aim

8% of all births will occur before 37 completed weeks of gestation. 70% of these are spontaneous following onset of spontaneous contractions or preterm pre-labour rupture of membranes (PPROM). Preterm birth is the biggest cause of neonatal morbidity and mortality in the UK. Most women who present with threatened preterm labour will go on to deliver at term, even in the absence of intervention. It is essential to recognise those women who are at the highest risk to target interventions to those who will benefit the most, minimising unnecessary treatment. (1)

Objectives

- To identify women/birthing people who are at risk of Pre-Term Birth
- To refer to the Pre-Term birth prevention clinic for assessment and plan of care.
- To counsel women/Birthing People regarding the risks and implications that have been identified of Pre term birth
- To provide evidence-based care to women/birthing people in line with the All-Wales Pre-Term Pre- Birth Guideline

Scope

This SOP applies to Obstetricians, Midwives, Midwife Sonographers and Sonographers involved in the care of women who are identified as being at risk of pre-term birth (PTB)

The Pre-Term Birth Prevention Clinic will be overseen by Obstetricians Madhuchanda Dey and Najiya Ali in conjunction with the Midwife Sonographers.

The clinic will be scheduled on alternate Wednesday mornings in the midwife sonographer's room (5) There will also be one emergency appointment every Wednesday morning at 08:30am

- Women/Birthing people should be identified at Booking or when attending the antenatal clinic following their dating scan. The woman/Birthing person should be informed that due to their medical/obstetric history that they are being referred to and will be seen in the PTB clinic.
- An Appointment to be seen in the PTB clinic should be made by 14 weeks gestation.
- Women who are identified at risk of PTB will be placed in one of the two categories' below (see appendix 1)

High Risk
Previous **spontaneous** preterm birth or spontaneous mid-trimester loss (16 to 34 weeks gestation).
Previous preterm prelabour rupture of membranes <34/40
Previous use of cervical cerclage or use of progesterone to prevent PTB.
Known uterine variant i.e. (unicornuate/bicornuate uterus/ uterine septum
Intrauterine Adhesions (Aschermann's Syndrome)
History of trachelectomy (for cervical cancer)
Intermediate risk
Previous birth by caesarean section at full dilatation
History of significant cervical excisional event i.e., LLETZ where >15mm depth removed, or >1 LLETZ procedure carried out or cone biopsy (knife or laser, typically carried out under general anaesthetic)

Women should be referred and seen in the pre-term birth clinic by 14 weeks' gestation

A Plan of care will be discussed and developed together with the woman and the consultant obstetrician

Serial transvaginal scans will be offered every 2-4 weeks for women in the high-risk category from **after** 14 weeks until 24 weeks of pregnancy

NB If women/birthing people have had a TERM DELIVERY after the risk factor event, the risk of preterm birth is LOW and there is no need for cervical length screening.

Women who are in the intermediate risk category will be offered a minimum of 1 TVS between 18-22 weeks gestation and further risk assessed.

Once the women/birthing person have been discharged from the PTB clinic they will attend their nominated Consultant Obstetrician clinic/ Community midwife and will NOT stay under the lead obstetricians for the PTB clinic.

N.B – women who birthed before 34 weeks because of PET/PIH, Fetal risk factors, abruption, maternal medical risk factors does not require referral to Preterm Birth Prevention Clinic

References

1: All Wales Pre-term Birth Guideline; All Wales Maternity and Neonatal Guideline 2023

Appendix 2: Referral Form for preterm birth Clinic

Name: Hospital Number Date of Birth Address

Estimated Date of delivery:

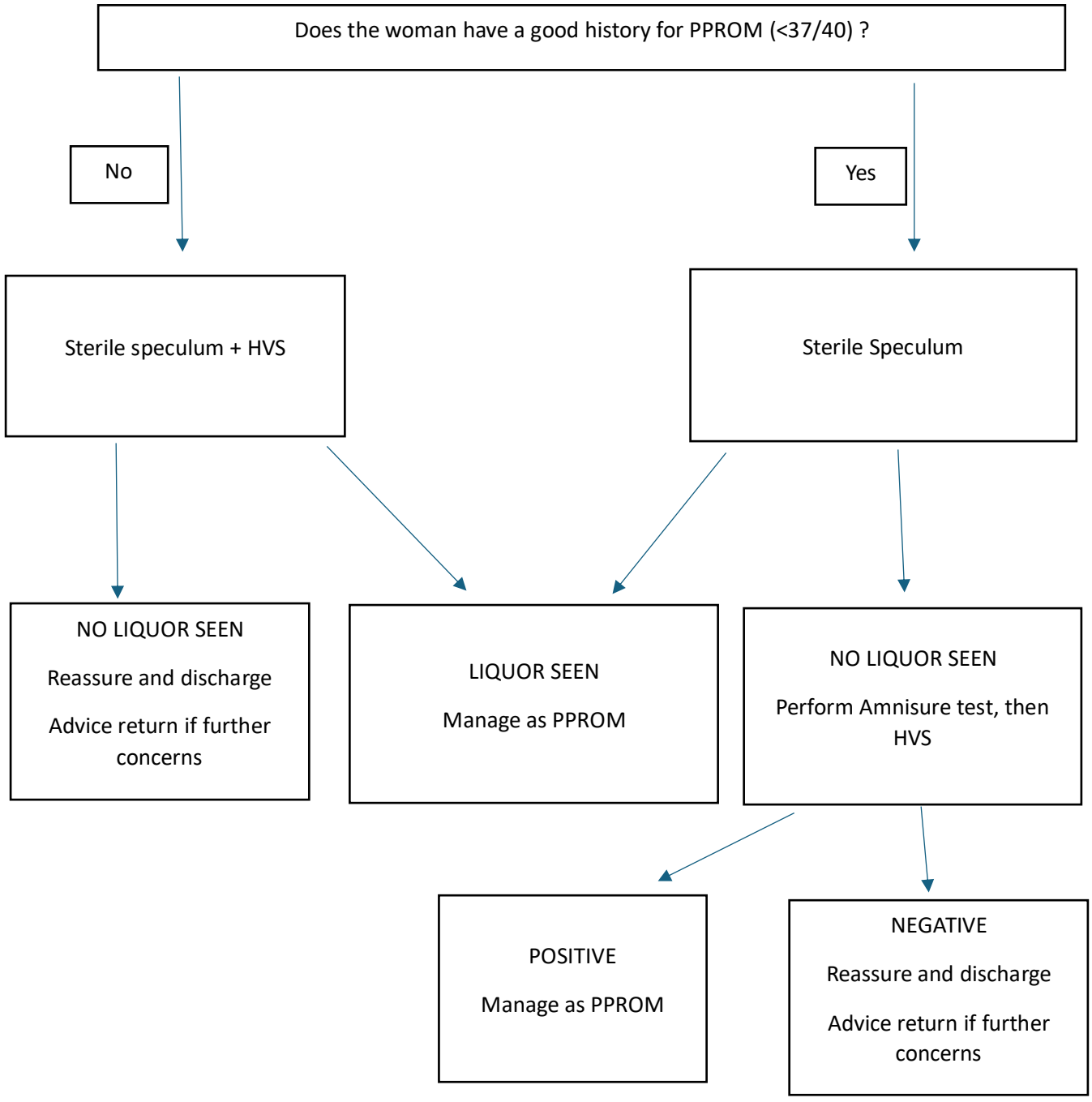
Current gestation:

High Risk	Tick
Previous **spontaneous** preterm birth or spontaneous mid-trimester loss (16 to 34 weeks' gestation).	
Previous preterm prelabour rupture of membranes <34/40	
Previous use of cervical cerclage or use of progesterone to prevent PTB.	
Known uterine variant i.e. (unicornuate/bicornuate uterus/ uterine septum	
Intrauterine Adhesions (Ashermann's Syndrome)	
History of trachelectomy (for cervical cancer)	

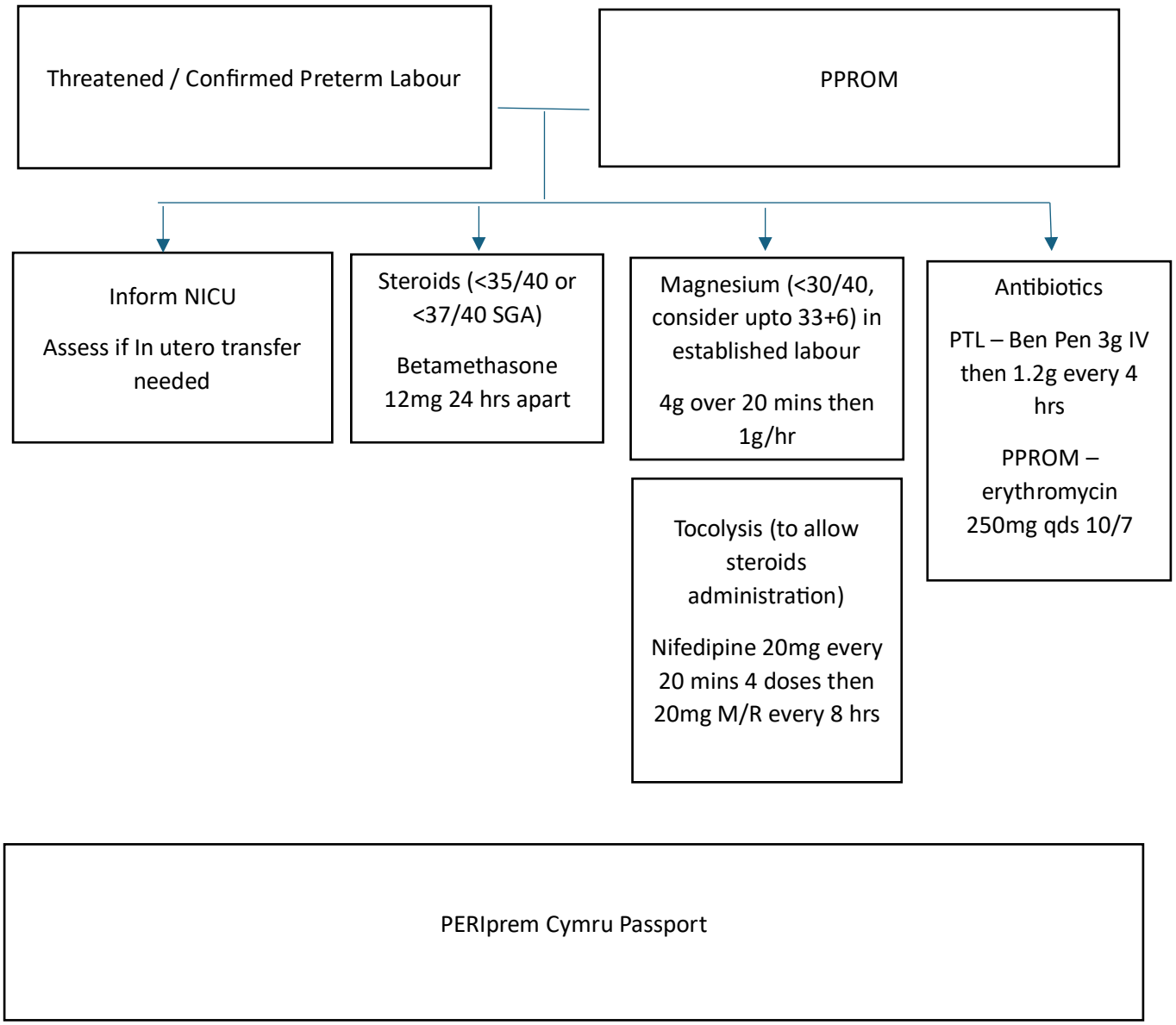
Intermediate risk	Tick
Previous birth by caesarean section at full dilatation	
History of significant cervical excisional event i.e., LLETZ where >15mm depth removed, or >1 LLETZ procedure carried out or cone biopsy (knife or laser, typically carried out under general anaesthetic)	

Referrer's signature: Date:

Appendix 3 Flow chart 1: Assessment for PPROM



Appendix 4 Flow chart 2 Summary of Management



Checklist for Clinical Guidelines being submitted for Approval

Title of Guideline:	Preterm Birth: Prevention, Preterm Labour and Preterm Prelabour Rupture of Membranes
Name(s) of Author:	Louise-Emma Shaw
Chair of Group or Committee approving submission:	Antenatal Forum
Brief outline giving reasons for document being submitted for ratification	Update of current guidance
Details of persons included in consultation process:	Louise-Emma Shaw
Name of Pharmacist (mandatory if drugs involved):	
Issue / Version No:	4
Please list any policies/guidelines this document will supercede:	Management of pre-term labour 2018
Date approved by Group:	October 2024
Next Review / Guideline Expiry:	October 2027
Please indicate key words you wish to be linked to document	Preterm, actim, partus
File Name: Used to locate where file is stores on hard drive	Z:\Maternity\Policies and Guidelines\Obs\2020 onwards\Pre-term birth\Preterm birth v1.3 03.10.24 MD comments.docx