Management of Pre Labour Rupture of Membranes below 37 weeks of gestation (PPROM) Guideline

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Target Audience:

People who need to know about this document in detail	All medical and midwifery staff that work within maternity services
People who need to have a broad understanding of this document	As above
People who need to know that this document exists	As above

Integrated Impact Assessment:

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1. Introduction

Prolonged premature rupture of membranes (PPROM) is defined as spontaneous rupture of the membranes before the onset of labour prior to 37 weeks gestation (24+0 to 36+6 weeks). It complicates up to 3% of all singleton pregnancies and is associated with over 30-40% of preterm births.

Risk factors for PPROM include intra-amniotic infection, placental abruption and invasive uterine procedures (e.g. amniocentesis, cordocentesis, chorionic villus sampling, cervical cerclage).

Women with PPROM have a 50% chance of going into labour within 24 to 48 hours and 70 to 90% chance within 7 days. The median latency to delivery with PPROM is 7 days but tends to shorten when diagnosis is made at a later gestational age. Between 24 and 28 weeks gestation the median latency period before birth is 8-10 days, decreasing to 5 days after 31 weeks.

PPROM is associated with an increase in perinatal mortality and an increase in neonatal morbidity. Perinatal complications include the following but depend on gestational age at diagnosis:

- Sepsis and infection
- Intraventricular haemorrhage
- Pulmonary hypoplasia and respiratory distress syndrome
- Skeletal deformities
- Cord prolapse
- Malpresentation

2. Initial Assessment and Diagnosis

Diagnosis of PPROM is made on the basis of maternal history followed by sterile speculum examination demonstrating liquor (discussed in detail below).

Observations
Prior to obstetric review, the patient should have baseline observations performed for temperature, pulse, blood pressure (BP), respirations and O2 saturation. These should be recorded on the Modified Obstetric Early Warning Score (MOEWS chart). Urinalysis should also be performed on a midstream sample.
Fetal heart rate should be recorded and cardiotocograph (CTG) performed if >26+0 weeks gestation.

History
On admission, document the following on the admission assessment proforma;

- Time of suspected rupture of membranes
- Type, colour and amount of vaginal fluid loss
- Signs of chorioamnionitis including 'offensive smelling' or abnormal vaginal discharge, lower abdominal pain or uterine tenderness, maternal fever or malaise, reduced fetal movements and fetal tachycardia.
- Presence of known group B streptococcus (GBS) infection

Consider the following differential diagnoses:

- Leakage of urine (incontinence)
- Physiological vaginal discharge
- Bacterial infection e.g. bacterial vaginosis
- Cervical mucous (show) which may be a sign of impending labour

Abdominal Palpation
Carry out abdominal palpation as a routine. Depending on the gestation it may be appropriate to measure symphysis fundal height (SFH) and check presentation. Note any abdominal tenderness, which may indicate infection.

The woman should be reviewed firstly by a gynae midwifery practitioner (GMP) or senior house officer (SHO), who should consider / perform the tests as outlined below. Review and plan of care should then be carried out by a senior obstetrician.

Vaginal Examination (Speculum)
Perform a sterile speculum examination. Observe for a pooling of amniotic fluid in the posterior vaginal fornix or clear fluid passing through the cervical canal. Obtain a high vaginal swab (HVS) for culture and sensitivity. If no liquor is seen a PAMG-1 test (AmniSure®) can be considered. This has 99% sensitivity and 98% specificity for ruptured membranes, and is not affected by urine, semen, vaginal infections or trace amounts of blood. It should not be used if there is active antepartum haemorrhage.

wisdom.nhs.wales/health-board-guidelines/cwm-taf-maternity-file/amnisure-standard-operating-procedure-for-the-use-of-ctm-guideline-2021-pdf/

Digital examination should not be performed.

NB. Actim Partus testing cannot be performed in the presence of ruptured membranes therefore is not appropriate if liquor is seen.

Additional investigations

- Full blood count (FBC) with attention to white blood cell count
- C-reactive protein (CRP)
- High vaginal swab (HVS)
- Midstream Urine sample (MSU)

An ultrasound scan may demonstrate oligohydramnios however whilst this may support a diagnosis of PPROM, ultrasound should not be used in isolation for diagnosis.

3. Management of Confirmed PPROM

Management usually comprises of an inpatient hospital stay for 24-48h followed by a clinical review to guide further management either as an inpatient or outpatient. These decisions are informed by gestational age, presence of infection, signs of impending labour and evidence of fetal compromise.

Tocolysis is not recommended as it increases the risk of chorioamnionitis and is associated with poorer perinatal outcomes. A **combination** of clinical assessment, maternal blood tests and fetal heart rate should be used to diagnose chorioamnionitis. These parameters should not be used in isolation.

Women should be made aware of possible features of infection and advised to seek medical attention urgently if they develop any of the following: lower abdominal pain, abnormal vaginal discharge, fever, generally unwell, altered fetal movements.

Antibiotic Administration

Erythromycin 250mg QDS should be given orally for 10 days following diagnosis of PPROM, or until the woman is in established labour, whichever is sooner. Microbiology advice should be sought for any patient with a macrolide allergy.

Amoxicillin and Co-amoxiclav (Augmentin) should be avoided due to the association with neonatal necrotising enterocolitis (NEC).

The use of antibiotics reduces the risk of chorioamnionitis and prolongs interval to delivery. The delay in onset of labour may allow sufficient time

for effective prophylactic corticosteroids. Rates of neonatal infection, use of surfactant, oxygen requirements and abnormal cerebral ultrasound prior to discharge were also lower.

If the woman has a positive screening result for Group B Streptococcus (GBS) see CTMUHB GBS Guideline. It may be appropriate to expedite delivery.

Corticosteroid Administration

Between 22+0 and 34+6 weeks of gestation corticosteroids (2 doses of betamethasone 12mg i.m. 24 hours apart) should be offered, as benefits are likely to outweigh harm. Between 35+0 and 36+6 corticosteroids should be considered based on the balance of risk vs benefit and discussion with parents (see Appendix A).

Evidence supports the use of a course of antenatal corticosteroids to accelerate fetal lung maturation in women with PPROM. Steroids reduce the risk of perinatal mortality and respiratory distress syndrome and are likely to reduce developmental delay and intraventricular haemorrhage, if given between 22-34+6 weeks.

Repeat courses – if >7 days have passed since the last course of steroids and preterm birth is imminent/likely within 24h, there may be some reduction in respiratory morbidity if a repeat course is given. This should only occur following a discussion with the consultant obstetrician and neonatal team.

An increase in white blood cell count is expected within the first 24h after administration of corticosteroids. This should return to normal after 3 days.

Steroids in special circumstances

- Patients with diabetes requiring steroids should be admitted and blood glucose levels monitored as per the Diabetes in Pregnancy Policy.
- Patients with systemic infection should have senior clinician involvement prior to giving steroids as there is potentially a risk of exacerbating the maternal condition.

Magnesium Sulphate ($MgSO_4$)

Between 24+0 and 29+6 weeks of gestation, where labour is established or anticipated to establish within 24 hours, intravenous $MgSO_4$ should be offered.

Between 30+0 and 33+6 weeks of gestation its administration should be considered and discussed with a consultant obstetrician.

$MgSO_4$ should be administered for 24 hours or until the birth (whichever is sooner). This reduces the rates of cerebral palsy and motor dysfunction in the neonate.

Consult separate CTM UHB guidance for the regime and guidance on maternal monitoring. (wisdom.nhs.wales/a-z-guidelines/m/mm251-procedure-for-ready-made-iv-magnesium-sulfate-prefilled-syringes-maternity-final-pdf/)

Tocolysis

Tocolysis is not recommended after a diagnosis of PPROM as it is associated with an increase in chorioamnionitis without improved neonatal outcomes.

Neonatal Input

Neonatologists should be informed when diagnosis of PPROM is made and the woman should be given a chance to meet with them antenatally to discuss their baby's care.

If delivery is anticipated the neonatal unit must be informed to ensure appropriate staff and facilities are available.

If the woman is between 24+0 and 31+6 then transfer to a unit with level 2 neonatal care should be arranged.

Support

Patients and families should be offered access to emotional support services in pregnancy and the neonatal period. This has been shown to improve psychological outcomes and satisfaction with care. They can be signposted to the following websites for further information:

- www.little-heartbeats.org.uk
- www.aapprom.org

4. Ongoing Antenatal Care in the Inpatient Setting

After initial diagnosis of PPROM the woman should be admitted for:

- 4-6 hourly observations to include HR, BP, Temp, RR (recorded on MOEWS chart)
- Twice daily CTG monitoring/FH auscultation according to gestation.
- The woman should be advised to report any symptoms of

chorioamnionitis or concern (as above).
- Ultrasound assessment of the fetus for growth (unless performed in last 2 weeks), amniotic fluid levels +/- Doppler assessment.

A woman should only be considered for outpatient management after 24-48 hours of inpatient observation, following senior obstetric review and taking account of the following considerations:

- ✓ Close accessibility to the hospital with support at home and good transport
- ✓ Woman's preferences
- ✓ Gestation, cephalic presentation, engagement
- ✓ No signs of threatened preterm labour (bleeding, uterine activity, cervical dilatation)
- ✓ No evidence of infection (clinical and laboratory markers)
- ✓ No maternal or fetal risk factors
- ✓ No fetal compromise

Women with PPROM at **<26/40 with oligohydramnios and any malpresentation (including breech) must be offered inpatient monitoring** as this combination of risk factors conveys the highest risk of complications such as placental abruption, cord prolapse, delivery outside of hospital and perinatal death.

5. Ongoing Antenatal Care in the Community Setting

If a woman is deemed suitable for outpatient management she should:

- Be advised of the symptoms of chorioamnionitis and to attend hospital urgently if concerned about any of the following:
    - abdominal pain
    - abnormal vaginal discharge
    - fever (>37.5)
    - feeling generally unwell
    - altered fetal movements
- Attend 1-2x per week to day assessment unit (see below).
- Attend an antenatal clinic appointment for Obstetric Consultant review and ongoing plan of care.

Instruction and demonstration of temperature taking procedure should be performed and documented prior to discharge. Additional advice includes avoiding baths / swimming / sexual intercourse / tampons as they have the potential to increase the risk of infection.

The RCOG patient information leaflet should be given. A PPROM Surveillance form can also be given to the woman to complete if she would find this a helpful prompt (Appendix B and C).

6. Outpatient Fetal Surveillance

There is no clear evidence on the optimum frequency to perform fetal surveillance tests for women with PPROM. The frequency of tests is adjusted according to the maternal and fetal clinical situation. Most clinicians recommend growth ultrasound fortnightly, and weekly assessment of amniotic fluid volume and Doppler, though this is not supported by evidence.

7. Assessment in DAU (1-2x per week)

Care should be planned according to individual need. FBC and CRP should be taken at least weekly, and interpreted as part of full clinical picture due to the poor sensitivity and specificity for infection.

A full set of observations should be recorded on the MOEWS Chart at each visit.

CTG should be performed at each visit as fetal tachycardia may indicate chorioamnionitis. Senior obstetric review should be sought in the case of:

- Any CTG abnormalities
- Pyrexia >37.5^{0}C
- Maternal tachycardia >100bpm
- Vaginal loss with is offensive or discoloured
- Raised inflammatory markers (WCC >17, CRP >10)
- DVP <2cm
- Fetal biometry <10th centile or static growth
- Reversed or absent EDF (end diastolic flow)
- Abnormal Doppler (RI, PI)
- Positive HVS or MSU

High vaginal swab should not routinely be repeated after initial assessment.

8. Timing of Birth

Women with PPROM with no contraindications to continuing the pregnancy should be offered expectant management with careful monitoring until 37+0 gestation.
If Group B Streptococcus has been detected in the current pregnancy or in a previous pregnancy, then birth may be considered at 34 weeks. This is

because the risk of perinatal infection if the fetus remains in utero may outweigh the risk of preterm delivery.

Timing of birth should be discussed with each woman on an individual basis with careful consideration given to patient preference, ongoing clinical assessment and gestation at PPROM diagnosis.

9. Subsequent pregnancy following PPROM

In a future pregnancy following PPROM women should be cared for by a consultant obstetrician. The risk of recurrent PPROM is increased with an Odds Ratio of 8.7. Modifiable risk factors such as smoking should be addressed and genital tract screening for infection can be considered. Women should also be offered serial scans (2-4 weekly) for cervical length between 16 and 24 weeks of gestation.

10. Auditable Standards

Proportion of women with PPROM receiving erythromycin for 10 days or until in established labour (100%).

Proportion of women with PPROM between 22+0 and 34+6 offered corticosteroids (100%).

Proportion of women less than 30+0 who are offered magnesium sulphate within 24 hours prior to giving birth (100%).

Proportion of women with PPROM who are given the opportunity to discuss their care with a neonatologist (100%).

Proportion of women with PPROM who deliver in a birth centre without adequate facilities to care for their baby (0%).

11. References

Royal College of Obstetricians and Gynaecologists, Care of Women Presenting with Suspected Preterm Prelabour Rupture of membranes from 24+0 weeks: Green Top guideline 73. RCOG. 2019. Available at: www.rcog.org.uk/guidance

NICE Guidance (NG25) Preterm Labour and Birth. 2015 (updated 10 June 2022). Available at: https://www.nice.org.uk/guidance/ng25

Royal College of Obstetricians and Gynaecologists, Antenatal corticosteroids to reduce neonatal morbidity and mortality. Green Top guideline 74. RCOG. 2022. Available at: www.rcog.org.uk/guidance

Appendix A – Antenatal corticosteroids, information for counselling parents

Gestation (weeks)	Benefits	Harm	Uncertainties
22+0 - 34+6	**Highly likely** to reduce perinatal mortality and respiratory distress **Likely** to reduce intraventricular haemorrhage and developmental delay	**Likely** altered maternal blood glucose for up to 5 days **Likely** to reduce baby's birthweight if birth >7 days following steroids No benefits are likely to be seen if birth is >7 days following steroids **May** increase psychiatric and behavioural conditions if baby born at term.	Less evidence for multiple pregnancies No long term harms proven but larger studies required.
35+0 - 36+6	**Likely** to reduce need for respiratory support	**Likely** to increase neonatal hypoglycaemia **May** increase psychiatric and behavioural conditions if baby born at term.	No long term harms proven but larger studies required. Benefits unlikely if born >7 days after steroids given

Adapted from RCOG Green Top guideline 74

Appendix B – PPROM Patient Surveillance Form

Please contact in the case of:

- Temperature >37.5°C
- Offensive discharge or change in colour of liquor
- Feeling generally unwell
- Bleeding/abdominal pain
- Altered fetal movements

Date	Time	Temperature	Vaginal loss description	Are you feeling generally well?

Appendix C Ffurflen Cadw Golwg ar Gleifion PPROM

Cysylltwch yn achos y canlynol:

- Tymheredd >37.5°C
- Arllwysiad drewllyd neu hylif o liw gwahanol
- Teimlo’n dost yn gyffredinol
- Gwaedu/Poen yn yr abdomen
- Symudiadau gwahanol gan y ffetws

Dyddiad	**Amser**	**Tymheredd**	**Disgrifiad o’r Arllwysiad o’r Wain**	**Ydych chi’n teimlo’n dost yn gyffredinol?**