Greater Manchester and Eastern Cheshire SCN

Management of Pre-Labour Rupture of Membranes (PROM) before 37 weeks gestation guideline

Document Control

Ownership

Role	Department	Contact
Project Clinical Lead	Manchester University NHSFT	Teresa.Kelly2@cmft.nhs.uk
Project Manager	Greater Manchester & East Cheshire Strategic Clinical Network	Joanne.langton@nhs.net
Project Officer	Greater Manchester & East Cheshire Strategic Clinical Network	Fran.davies@nhs.net

Version control

v0.1	Draft v0.1 sent to Teresa Kelly for amendments.	23/05/2018
V0.2	Teresa Kelly amendments	24/05/2018
V0.3	Further amendments following feedback	21/06/2018
V0.4	Final amendments	30/07/2018
V1.0	Ratified at Maternity Steering Group	31/08/2018
V1.1	Amendments following the publication of RCOG Care of Women Presenting with Suspected Preterm Prelabour Rupture of Membranes from 24+0 Weeks of Gestation (Green-top Guideline No. 73)	31/07/19
V1.2	Amendments following consultation within the maternity network	12/9/19
	Version 2.0 finalised for ratification by SCN Maternity Steering Group	18/10/19

Ratification process

Formal ratification	Formal ratification by the Greater Manchester and Eastern Cheshire SCN Maternity Steering Group on 18/10/2019	
Application	All Staff	
Circulation	Issue Date: Circulated by	October 2019 sarah.west20@nhs.net
Review	Review Date: Responsibility of:	October 2021 GMEC SCN

Acknowledgements

On behalf of the Greater Manchester and Eastern Cheshire and Strategic Clinical Networks, I would like to take this opportunity to thank the contributors for their dedication in the development of this **Management of Pre-Labour Rupture of Membranes (PROM) before 37 weeks gestation guideline**.

I would also like to thank Dr T Kelly for producing this revised edition and ensuring our clinical guideline aligned to RGOC guideline (green top no 73 revised June 2019).

Miss K Bancroft
Maternity Clinical Lead
Greater Manchester & Eastern Cheshire Strategic Clinical Network

Contents

1 Introduction

Preterm (<37wk) prelabour rupture of membranes affects 2% of pregnancies and is associated with 40% of preterm deliveries. It can result in significant maternal and neonatal morbidity and mortality from prematurity, sepsis and pulmonary hypoplasia.

This guideline aims to provide information on the use in preterm prelabour rupture of membranes of antibiotic and corticosteroid prophylaxis and on tocolytic use and timing of delivery in order to optimise care and outcomes.

For women more than 37 weeks gestation - see Prelabour Spontaneous Rupture of Membranes (SROM) at Term guideline.

2 Management of PPROM

2.1 Diagnosis and Initial Assessment

If a woman presents with potential spontaneous rupture of membranes (SROM) and no contractions before 37+0 weeks gestation:

- Take a history
- Confirm normal maternal pulse rate, temperature and other observations i.e. no suspicion of infection. Document the observations and calculate the Maternity Early Warning Score (MEWs) as per local guideline
- Assess symphysis-fundal height, fetal lie and presentation (check presentation by scan if necessary)
- Confirm normal fetal heart rate pattern by electronic fetal monitoring
- Undertake a sterile speculum examination. Pooling of liquor confirms the diagnosis. Take High Vaginal Swab (HVS) or Low Vaginal Swab (LVS), if liquor is seen or if there is an abnormal vaginal discharge.
- If pooling of amniotic fluid is not observed, consider performing an insulin-like growth factor binding protein-1 test or placental alpha-microglobulin-1 test of vaginal fluid (e.g Actinprom).
- If the results of the insulin-like growth factor binding protein-1 or placental alpha-microglobulin-1 test are positive, do not use the test results alone to decide what care to offer the woman, but also take into account her clinical condition, her medical and pregnancy history and gestational age, and either: offer care consistent with the woman having prelabour preterm rupture of membranes, or re-evaluate the woman's diagnostic status at a later time point.
- Ultrasound scan may be helpful if there is doubt about the diagnosis (i.e. confirming low liquor volume but should always be discussed with a senior obstetrician (ST5 and above). This should not be carried out until at least 24 hours from the woman first reporting amniotic fluid leakage, as the liquor volume can be normal on initial

presentation. It should not be used in isolation to confirm or refute membrane rupture; however it is unusual for women to have normal liquor volume with prolonged, preterm rupture of membranes.

Avoid digital vaginal examination - unless contractions or abnormal Cardiotocograph CTG (which could suggest cord prolapse/presentation not visible on speculum).

2.2 Initial Management

2.2.1 Inform Neonatal Intensive Care Unit (NICU) coordinator of the potential for a preterm delivery.

2.2.2 Admission for a period of observation (72hr inpatient admission) is required as infection may be not be immediately evident but may become so soon after presentation. Early infection represents an increase in risk to fetus and mother and may influence timing of delivery. Women with intrauterine infection deliver earlier than non-infected women, and infants born with sepsis have a mortality rate of four times higher than those without sepsis. In addition, there are maternal risks associated with chorioamnionitis.

2.2.3 If the woman has a cervical suture in situ the plan of care must be discussed with the consultant on call – in the majority of cases the cervical suture should be removed once preterm pre-labour rupture of membranes has been confirmed. There may be no advantage to retaining cerclage after preterm pre-labour rupture of membranes and a possibility of increased infection with cerclage retention (Galyean et al, 2014).

2.2.4 If the woman has an Arabin cerclage pessary in situ, this should be removed on presentation with preterm pre-labour rupture of membranes. Removal is akin to withdrawal of a ring pessary within a gynaecological context, and must be carried out digitally without use of a speculum. The Arabin pessary should not be left in, in any circumstances, following confirmation of rupture of membranes. This is because a severe infection may follow if it is left in.

2.2.5 In PPROM, amnioinfusion is not recommended as part of routine clinical practice (RCOG Green Top guideline No 73, 2019)

2.2.6 Antibiotic prophylaxis

Unless contraindicated all women should be offered erythromycin 250mg 6 hourly for 10 days or until the woman is in established labour (whichever is sooner). The maximum dose is 1000mg in 24 hours. For women with PPROM who cannot tolerate erythromycin or in whom erythromycin is contraindicated, oral penicillin may be used for a maximum, of 10 days. Co-amoxiclav is not recommended as it is associated with increased incidence of necrotising enterocolitis (NEC) (Kenyon et al 2013).Antibiotics should not be given until the diagnosis of PROM is established.

The use of antibiotics following preterm pre-labour rupture of membranes is associated with a statistically significant reduction in (Kenyon et al, 2013):

- Chorioamnionitis (RR 0.66; 95% CI 0.46–0.96)
- Number of babies born within 48 hours (RR 0.71; 95% CI 0.58–0.87) and 7 days (RR 0.79; 95% CI 0.71–0.89).
- Neonatal infection (RR 0.67; 95% CI 0.52–0.85)
- Number of babies with an abnormal cerebral ultrasound scan prior to discharge from hospital (RR 0.81; 95% CI 0.68–0.98).

2.2.7 Corticosteroid prophylaxis

Between 24+0 and 33+6 weeks of gestation women should be offered a single course of antenatal corticosteroids i.e. Dexamethasone 12mg intramuscular. Two bolus doses 24 hours apart. Steroids can be considered up to 35+6 weeks gestation on an individual basis by a Consultant Obstetrician. If the woman is contracting the obstetrician should consider prescribing the steroids 12 hours apart. This is an unlicensed indication for this medication, but is commonly used within practice.

•Antenatal corticosteroids can be considered for women between 23+0 and 23+6 weeks of gestation who have pre-labour rupture of membranes. However, the decision to administer corticosteroids at gestations less than 24+0 weeks should be made by a senior obstetrician (ST5 and above) taking all clinical aspects into consideration.

2.2.8 Tocolytics

Tocolysis under 34 weeks gestation increases the risk of choriomanionitis without significant benefit to the Neonate. Thus tocolysis is not recommended. Tocolysis may be considered if a woman requires in utero transfer (RCOG Green top guideline 73, 2019) See Preterm Labour Guidelines

2.2.9 Monitoring

2.2.9.1 Women should be advised of and observed for, symptoms and signs of clinical chorioamnionitis (lower abdominal pain, abnormal vaginal discharge, fever, malaise and reduced fetal movements). The criteria for the diagnosis of clinical chorioamnionitis include maternal pyrexia, tachycardia, leucocytosis, uterine tenderness, offensive vaginal discharge and fetal tachycardia. During observation, the woman should be regularly examined for such signs of intrauterine infection, an abnormal parameter or a combination of them may indicate intrauterine infection.

- Whilst an inpatient maternal early warning score (see local Maternity Early Score Guidelines) and a fetal heart rate assessment should be performed at least 4-6 hourly.
- Full Blood Count (FBC) /C-reactive protein (CRP) to be sent at initial diagnosis – repeat will depend on initial values /clinical condition
- Twice Daily CTG - during initial 72 hour monitoring period.
- If Midstream Sample Urine (MSU) is positive treat accordingly

If the results of the clinical assessment or any of the tests are not consistent with each other, it is recommended that the women should continue to be observed and consideration should be given to repeating the tests as per NG25.

The white cell count will rise 24 hours following administration of corticosteroids and should return to baseline 3 days following administration. While a study investigating several maternal serum markers for predicting histological chorioamnionitis after PPROM concluded that a raised C-reactive protein was most informative, a systematic review and meta-analysis of 13 observational studies found that C-reactive protein has a sensitivity of only 68.7% and specificity of 77.1% in diagnosing histological chorioamnionitis (RCOG 2019). The whole clinical picture should be taken in to account when chorioamnionitis is suspected.

2.2.8.2 Ultrasound assessment – initial assessment for growth, presentation, liquor volume, fetal breathing movements and umbilical artery Dopplers may be required but must be discussed with a senior obstetrician (ST5 or above) as should the frequency of ultrasound monitoring.

2.2.8.3 Women with preterm rupture of membranes with non-cephalic presentation should be recommended admission as a measure to minimise the effects of cord prolapse (RCOG, 2014)

2.2.8.4 The decision to offer outpatient care to women with PPROM should be made on an individual basis, taking into account markers of delivery latency. Retrospective cohort studies have found no differences in maternal or neonatal outcomes when planned home versus hospital care was compared.

The optimal method of monitoring to predict adverse fetal outcome after PPROM has not been determined. Thus out-patient monitoring should only be offered following a detailed Consultant review of the current pregnancy and after a period of 72 hours as an inpatient. Consideration must be given to the appropriateness of outpatient monitoring looking at all medical and obstetric risk factors.

The decision to offer outpatient care to women with PPROM, following a period of in-patient care, should be made on an individual basis. Factors including past obstetric history, support at home and distance from the hospital should be taken into account in discussion with the woman about her preferences, and markers of delivery latency should be assessed (the presence of antepartum haemorrhage, amniotic fluid volume, gestational age at which PPROM occurs and clinical and laboratory markers of infection).34, 35 When considering the gestational age at which PPROM occurs, delivery latency remains relatively constant from 24+0 to 28+0 weeks' gestation at 8–10 days (median) and then decreases to 5 days (median) at 31+0 weeks.3All women deemed suitable for out-patient monitoring must receive a formal consultant review prior to discharge. Women and their families/carers must be informed of the signs and symptoms of chorioamnionitis/sepsis and under which circumstances to seek advice. Advice must also include instructions to check their temperature twice daily at home. It is not necessary to carry out weekly maternal full blood count FBC or CRP because the sensitivity of these tests in the detection of intrauterine infection is low (RCOG 2019)

A case–control study has shown that 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. (RCOG 2019). While an ultrasound is not required as a routine, it may be a useful adjunct to the clinical assessment in women with PPROM under 34

weeks.

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). The authors concluded that hospital-based care should be recommended to women who have all three of these features. (RCOG Green Top Guideline No 73, 2019)

All women deemed suitable for out-patient monitoring must have clear arrangements for follow up, normally in an Antenatal Assessment Unit (AAU). See local Referral to AAU Guideline.

2.3 Timing of Delivery

2.3.1 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. RCOG Green Top Guideline No 73, 2019.

A senior obstetrician should discuss the following factors with the woman before a decision is made about whether to induce labour/deliver by caesarean section:

- Risks to the woman, (refer to local caesarean section guidance.)
- Risks to the baby (for example, sepsis, problems relating to preterm birth)

2.3.2 For those women with evidence of colonisation with Group B Strep 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. Bacteriological testing for GBS carriage is not recommended for women with preterm rupture of membranes. IAP should be given once labour is confirmed or induced irrespective of GBS status.(RCOG Green Top guideline No 36)

2.3.3 Suspected Sepsis

Consider immediate induction /delivery (and give antibiotics) if clinical signs of chorioamnionitis:

- maternal pyrexia, hypothermia, tachycardia, tachypnoea
- uterine tenderness
- offensive discharge
- raised white cell count / raised CRP. (NB Steroids elevate white cell count and the trend of the WCC and/or CRP is more important than the actual values)
- Fetal tachycardia
- Meconium staining - this is almost diagnostic of sepsis in a pre-term pregnancy

2.3.4 Intervention requires consultant level input at early gestations i.e. <32 weeks, since the

risks associated with prematurity are high.

Intravenous intrapartum antibiotic prophylaxis should be recommended as per local guidelines.

2.3.5 No evidence of sepsis - planned delivery considerations

Induce labour/deliver at 37 weeks gestation if prior delivery has not occurred.

2.4 Induction of Labour (IOL)

A vaginal examination should be performed at the onset of labour as cord accidents tend to occur either after initial membrane rupture or when uterine activity begins, especially in the case of malpresentation. See: Induction of labour guideline. The woman will require antibiotics for prolonged rupture of membranes.

2.5 Management in labour

Discontinue erythromycin when in labour. Administer antibiotics in accordance with the local guideline.

Give magnesium sulphate to women who are between 24+0 and 29+6 weeks. Consider the administration of Magnsium sulphate from 23+0-23+6 and 30+0 to 33+6. Refer to the local policy.

2.6 Discharge/Postnatal/Neonatal Care

The woman should receive routine postnatal care. It is good practice for a senior obstetrician to be available to debrief in cases of premature delivery.

For neonatal management and observations guidance see: local guidelines on Infants at Risk of Early Onset Sepsis on the Postnatal Wards. Babies are risk assessed postpartum to decide treatment irrespective of whether mum has been given antibiotic prophylaxis in labour or had an elective LSCS.

Advice on reducing preterm delivery should be given to the mother where she has identifiable risk factors e.g. smoking, poor dental hygiene.

2.7 Care in a subsequent pregnancy following PROM

A population based cohort study found that pregnancies complicated by PPROM are at increased risk of recurrent PPROM in subsequent pregnancies (OR 8.7, 95% CI 6.7–11.4 in white women and OR 7.2, 95% CI 5.1–10.1 in African American women).44 This study also found that a short inter-pregnancy interval is associated with greater risk.

In a subsequent pregnancy following PPROM, women should be cared for by an obstetrician with an interest in preterm birth (RCOG Green top guideline No 73)

3 Communication and Documentation

All women with learning disabilities, visual or hearing impairments or those whose first language is not English must be offered assistance with interpretation where applicable, and where appropriate a telephone interpreter must be used. It is paramount that clear channels of communication are maintained at all times between all staff, the women and their families. Once any decisions have been made/agreed, comprehensive and clear details must be given to the woman thereby confirming the wishes of the women and their families.

The contents of any leaflet issued must be explained in full at the time it is issued. All communication difficulties (including learning difficulties) and language barriers must be addressed as outlined in the previous paragraph at the time the leaflet is issued.

Ensure the provision and discussion of information of the risks and benefits with women during the antenatal, intrapartum and postnatal periods.

4 Equality, Diversity and Impact Assessment

This document should be equality impact assessed using the Trust's Equality Impact Assessment (EqIA) framework.

Using the Manchester Foundation Trust tool, the EqIA score fell into low priority; no significant issues in relation to equality, diversity, gender, colour, race or religion are identified as raising a concern.

5 Consultation, approval and ratification process

This guideline has been approved and ratified in accordance with the agreed process.

Monitoring Compliance.

This guideline will be audited in accordance with the Obstetric Directorate audit plan. The findings of the audit report will be presented in line with the Units normal processes.

4 References and bibliography

- Buchanan SL,Crowther CA, Levett KM, Middleton P,Morris J (2010), Planned early birth versus expectant management for women with preterm pre-labour rupture of membranes prior to 37 weeks' gestation for improving pregnancy outcome, *Cochrane Database Syst Rev 2010 ;(3):CD004735. [Available on line]*
- Cotton DB, Hill LM, Strassner HT, Platt LD, Ledger, W. J. (1984), Use of amniocentesis in preterm gestation with ruptured membranes. *Obstet Gynecol; 63:38–43.*
- Douvas SG,Brewer J. M,McKay M.L,Rhodes P.G, Kahlstorf J. H, Morrison J. C. (1984) "Treatment of premature rupture of the membranes." *J Reprod Med; 29:741*
- Galyean A, Garite TS, MaurelK,Abril D, Adar CD, Brown P,et al (2014). Removal versus retention of cervical cerclage in PPROM: A randomized control trial. Am J Obstet Gynaecol. 211(4):399.1-7
- Kenyon S, Barlvain M, NeilsonJ (2013), Antibiotics for preterm rupture of membranes (Review). Cochrane database of systemic reviews, Issue 12. Art. No.:CD001058.DOI10.1002/14651858.CD001058.pub3
- Mackeen A, Seibel-Seamon J, Muhammad J, Baxter J, Berghella V (2014). Tocolytics for preterm premature rupture of membranes (Review). *Cochrane Database of Systematic Reviews. Available from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007062.pub3/pdf*
- Maxwell GL, (1993), Preterm premature rupture of membranes, *Obstet Gynecol Surv; 48:576–83.*
- Merenstein GB, Weisman LE. (1996), Premature rupture of the membranes: neonatal consequences, *Semin Perinatol; 20:375–80.*
- National Institute for Health and Care Clinical Excellence (NICE) (2008), Induction of Labour Guideline, London: NICE
- National Institute for Health and Care Clinical Excellence (NICE)(2015) NG25 Preterm Labour and Birth, London:NICE
- Royal College of Obstetricians and Gynaecologists (2010b) Antenatal Corticosteroids to Reduce Neonatal Morbidity and Mortality, London: RCOG
- Royal College of Obstetricians and Gynaecologists (2014) Green Top Guideline No 50: Cord Prolapse. London: Royal College of Obstetricians and Gynaecologists
- Royal College of Obstetricians and Gynaecologists (2017) Green-top Guideline No. 36 Group B Streptococcal Disease, Early-onset Royal College of Obstetricians and Gynaecologists Green-top Guideline No 73 Care of Women Presenting with Suspected Preterm Prelabour Rupture of Membranes from 24+0 Weeks of Gestation

5 Associated Documents

- Induction of labour guideline
- Maternity Early Warning Score policy
- Group B Strep guideline
- Obstetric Anti-Infective Prescribing Guidelines
- Referral to AAU Guideline
- Preterm labour Guideline

6 Abbreviations

Abbreviations	Definition
<	Less than
>	More than
≥	More than or equal to
AC	Abdominal circumference
AFFIRM	Awareness of Fetal movements and Focusing Interventions Reduce Fetal Mortality
AFI	Amniotic Fluid Index
RFM	Reduced Fetal Movements (RFM)
AN	Antenatal
ANC	Antenatal clinic
ANDU	Antenatal Day Unit
CESDI	Confidential Enquiry into Stillbirths and Deaths in Infancy
CTG	Cardiotocograph
DVP	Deepest Vertical Pool
EWS	Early Warning Score
FGR	Fetal Growth Restriction
IOL	Induction of Labour
IUGR	Intra Uterine Growth Restriction
LV	Liquor Volume
NHSE	NHS England
Outlying	Remote from centre
PAPP	Pregnancy-associated plasma protein
PET	Pre-eclampsia
SBL	Saving Babies' Lives
SFH	Symphysis Fundal Height
SGA	Small for Gestational Age
USS	Ultrasound