Pre-term Pre-labour Rupture of Membranes

Classification :	Guideline
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Departments/Group this Document applies to:	Maternity

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Guideline to be followed by (target staff): All midwives and obstetricians in the maternity department, providing care to women with preterm, pre-labour rupture of membranes.

To be read in conjunction with the following documents: None

CQC Fundamental standards:
Regulation 9 – person centred care
Regulation 10 – dignity and respect
Regulation 11 – Need for consent
Regulation 12 – Safe care and treatment
Regulation 13 – Safeguarding service users from abuse and improper treatment
Regulation 14 – Meeting nutritional and hydration needs
Regulation 15 – Premises and equipment
Regulation 16 – Receiving and acting on complaints
Regulation 17 – Good governance
Regulation 18 – Staffing
Regulation 19 – Fit and proper

Disclaimer –
Since every patient's history is different, and even the most exhaustive sources of information cannot cover every possible eventuality, you should be aware that all information is provided in this document on the basis that the healthcare professionals responsible for patient care will retain full

and sole responsibility for decisions relating to patient care; the document is intended to supplement, not substitute for, the expertise and judgment of physicians, pharmacists or other healthcare professionals and should not be taken as an indication of suitability of a particular treatment for a particular individual.

The ultimate responsibility for the use of the guideline, dosage of drugs and correct following of instructions as well as the interpretation of the published material **lies solely with you** as the medical practitioner.

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Guideline Statement

To assist midwives and medical staff in the management of pre-term pre-labour rupture of membranes.

Executive Summary

Preterm pre-labour rupture of membranes (PPROM) is defined as rupture of the membranes in the absence of uterine activity at less than 37 weeks gestation. These guidelines apply to a situation where rupture of membranes occurs in a singleton pregnancy that is otherwise uncomplicated.

1.0 Roles and Responsibilities:

It is the responsibility of all staff working with mothers and their newborn baby to be aware of, and adhere to this guideline. It is the responsibility of the Maternity Guideline Group to ensure that this document is reviewed and updated.

2.0 Implementation and dissemination of document

This document will be placed on the Trust's central database (Guidelines and Patient Information System) which can be accessed via the Trust's Intranet.

3.0 Processes and procedures

3.1 Risks

- Preterm prelabour rupture of membranes (PPROM) 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. (RCOG, 2019, p.e153)

3.2 Assessment & Diagnosis

- Establish diagnosis from history and inspection of sanitary pad.
- Fetal heart auscultation if <28 weeks, CTG if >=28
- SHO/Registrar should be asked to attend to confirm the diagnosis by sterile speculum examination, demonstrating pooling of fluid in posterior vaginal fornix.
- If on speculum examination no amniotic fluid is observed, perform ***AmniSure*** test to confirm PPROM to guide further management.(see section 3.3)
- Obtain a low vaginal/ perineal/ perianal swab for GBS
- Do not perform a digital examination when PPROM unless there is a high index of suspicion that the cervix is dilating i.e. progressive preterm labour.

- If the results of the AmniSure test are negative and no amniotic fluid is observed,
    - do not offer antenatal prophylactic antibiotics. Explain to the woman that it is unlikely that she has P-PROM, but that she should return if she has any further symptoms suggestive of P-PROM or preterm labour (NICE NG25, 2015, Section 1.3.3)

- Use a combination of clinical assessment and tests (C-reactive protein, white blood cell count and measurement of fetal heart rate using cardiotocography) to diagnose intrauterine infection in women with P-PROM. The above tests must not be used in isolation confirm or exclude intrauterine infection in women with P-PROM. If the results of the clinical assessment or any of the tests are not consistent with each other, continue to observe the woman and consider repeating the tests.(NICE NG 25, 2015, Section 1.5)

- If there is a clinical suspicion of infection e.g. maternal temperature or uterine tenderness, send vaginal swab, midstream specimen of urine (MSU) and full blood count (FBC) urgently and start empiricial antibiotics .If no improvement occurs after 24 hrs , call on call Microbiologist for further advice.
-
- If the diagnosis is confirmed and there is no evidence of chorioamnionitis or any other obstetric indication for delivery the woman should be managed expectantly and transferred to the antenatal ward.

- Women treated as inpatients should be observed for signs of clinical chorioamnionitis at least 4-8 hourly. Criteria for diagnosis of clinical chorioamnionitis include maternal pyrexia, tachycardia, leucocytosis, uterine tenderness, offensive vaginal discharge and fetal tachycardia.

- Neonatal Unit (NNU) should be informed of the admission, and if they would be unable to cope with the baby if delivery occurs then the case should be discussed with the Consultant to decide if in-utero transfer is advisable.

- Perform C - reactive protein (CRP) & Full blood count (FBC) twice weekly.

- RCOG guideline recommends offering steroids to women who have PPROM between 24^{+0} weeks and 33^{+6} weeks' gestation & to consider up to 35^{+6} weeks' - (RCOG, 2019, p.e153).

  At MKUH, steroids should be offered from 23 weeks.

- In women who have PPROM and are in established labour or having a planned preterm birth within 24 hours, offer intravenous magnesium sulfate between 23 and 32 weeks of gestation. Consider MagSO4 upto 33+6 weeks .(*see section 3.5 Magnesium sulphate preparation & administration).*

  At MKUH, neonatal team do not routinely attend deliveries for resuscitation at <23 weeks. Therefore, the decision to offer steroids and magnesium sulphate between 22+3 weeks and <23 weeks should only be made after discussing with oncall obstetric team at OUH.

- Following the diagnosis of preterm prelabour rupture of the membranes (PPROM) ,erythromycin 250mg 4 times a day should be given for 10 days or until the woman is in established labour (whichever is sooner). (RCOG Grade A recommendation 2019)
  Do not offer women with P-PROM co-amoxiclav as prophylaxis for intrauterine infection. **[2015]**" (NICE NG25, 2015, Sections1.4.3)

(A Cochrane review found that "Routine prescription of antibiotics for women with preterm rupture of the membranes is associated with prolongation of pregnancy and improvements in a number of short-term neonatal morbidities, but no significant reduction in perinatal mortality. Despite lack of evidence of longer-term benefit in childhood, the advantages on short-term morbidities are such that we would recommend antibiotics are routinely prescribed." (Kenyon, Boulvain & Neilson, 2013, p.2)

- For women with P-PROM who cannot tolerate erythromycin or in whom erythromycin is contraindicated, consider an oral penicillin for a maximum of 10 days or until the woman is in established labour (whichever is sooner). (NICE NG25, 2015 (updated 2019), Section 1.4.2)

- "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."** (RCOG guideline No.36, 2017, p.e283)

- 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 Grade A recommendation 2019) (RCOG, 2019, p.e153)

3.3 AmniSure test :

It is a rapid qualitative immunochromatographic test for invitro detection of amniotic fluid in vaginal discharge in pregnant women. Kit is stored at a dry place at 4 to 25C.
TEST PROCEDURE:
Amnisure ROM test should not be performed within 6 hours after removal of any disinfectant solutions or medicines from vagina. Performing digital examination prior to sample and placenta previa can lead to inaccurate test results.
1: Shake solvent vial , keep in vertical position and open solvent vial.
2:Use swab provided. Hold swab by the middle of shaft and while patient is lying on her back carefully insert the swab into the vagina until fingers contact the skin (no more than 5-7 cm deep). Withdraw the swab from vagina after 1 minute.

3:Place the swab in the solution provided and rinse the swab by rotating for 1 minute. Remove and dispose the swab.
4: Test the sample within 30 minutes after collection.
5: Insert white end of Amnisure ROM strip into the solution vial for 5 minutes.
Interpretation: Two lines: There is a rupture
One line: No rupture\No lines: invalid test ; Run another test.

Limitations: In rare cases when a sample is taken after 12 hours or later after rupture of membranes. Periodic retesting in such cases can be considered.
In cases of trace amount of blood test functions properly, but in presence of significant amount of blood, the test malfunctions and is not recommended.
Results should be used in conjunction with other clinical information.
The test claims 98.9% sensitivity and 100% specificity.

3.4 Management

(Please refer to Oxford AHSN ALGORITHM version 2 (APPENDIX 1)

3.4.1 Gestational age < 22+3 weeks

"The probability of neonatal death and morbidity associated with PROM decreases with longer latency and advancing gestational age (25). In a review of preterm PROM between 14 weeks and 24 weeks of gestation, perinatal deaths were more or less equally divided between stillbirths and neonatal deaths. Survival rates were much improved with expectant management following membrane rupture after 22 weeks of gestation compared with membrane rupture before 22 weeks of gestation (57.7% versus 14.4%, respectively) (26).

Most studies of second-trimester and previable PROM are retrospective and include only expectantly managed cases. Thus, they likely overestimate survival rates because of selection bias. Survival data may vary by institution." (ACOG, 2018, p.e2)

The rate of pulmonary hypoplasia after PROM before 24 weeks of gestation varies widely among reports, but is likely in the range of 10–20%." (ACOG, 2018, p.e2)

Discuss further management with on call consultant at OUH.

3.4.2 Gestational age ≥ 22+3 to < 27 weeks (singleton) OR <28+0 (multiple) OR EFW <800g

- Inform neonatal team and Consultant Obstetrician.
- Request In-utero transfer (IUT) ASAP if delivery unlikely <1 hr.
- If between 22+3 to < 23 weeks & risk of imminent delivery, **give MAGSO4 ONLY after discussing with oncall obstetric team at OUH.**
- If >= 23 weeks, Offer two doses of betamethasone 12 mg intramuscularly (IM) 24 hours apart.

- If >= 23 weeks, Offer MagSO4 if in established labour.
- Tocolysis in patients with PPROM is not recommended (RCOG, 2019, p.e158) Consider tocolysis for IUT only. (Impey on behalf of Oxford AHSN, 2019 – see Appendix 1)
- Follow unit tocolysis guideline. ***Do not use Nifedipine if Magnesium given or to be given.*** (Impey on behalf of Oxford AHSN, 2019 – see Appendix 1)
- Following the diagnosis of preterm prelabour rupture of the membranes, (PPROM) an antibiotic (preferably erythromycin) should be given for 10 days or until the woman is in established labour (whichever is sooner). (RCOG Grade A recommendation 2019) (RCOG, 2019, p.e153). NICE guideline NG25 recommends 250mg of erythromycin given 4 times a day. (NICE, 2015, section 1.4.1).

- If unsuitable for IUT due to active labour or imminent delivery, give Intrapartum antibiotic prophylaxis (Benzyl penicillin or Clindamycin)) (NICE CG149, 2012, Section 1.3).

- Decision regarding mode of delivery at this extreme of gestational age should be made by obstetric consultant on-call after discussing with patient. Caesarean section in the fetal interests is rarely indicated < 25/40 gestation.
  Caesarean section in preterm birth can be a difficult procedure and therefore must be performed by an experienced operator.

3.4.3 Gestational age ≥ 27 to < 37 weeks

Admit to Hospital for the first 2 –3 days and inform Neonatologists.

- Confirm dates with early ultrasound scan
- Administer two doses of betamethasone 12 mg intramuscularly (IM) 24 hours apart. Steroids can be considered up to 35^{+6} weeks(RCOG, 2019, p.e153)
- There is insufficient evidence to support the use of tocolysis in women with PPROM, as there is an increase in maternal chorioamnionitis without significant benefits to the neonate. (Mackeen, et al., 2014, p.2)
- If in established preterm labour , Offer Magnesium sulphate if <32+0 .Consider Magnesium sulphate between 32- 33+6 weeks.
- Leave cervical cerclage (if present) in situ unless decision taken to deliver
- Inform Maternal Medicine Consultant/ ANC sister if patient has T4 cell disorder.
- Arrange ultrasound scan for fetal presentation, growth, EFW, Doppler, residual AFV with / without biophysical profile.
- Exclude clinical chorioamnionitis (CCA) - defined as any 2 or more of: maternal / fetal tachycardia, pyrexia ≥ 38^0 C, leucocytosis > 15,000, CRP raised by ≥ 30% above baseline, tender/irritable uterus, purulent or offensive vaginal discharge
- Chase up microbiological samples
- If known to be GBS positive and PPROM is to be managed conservatively – please discuss with the Consultant Obstetrician and a plan to be documented.
  - . Following the diagnosis of preterm prelabour rupture of the membranes, (PPROM) an antibiotic (preferably erythromycin) should be given for 10 days or until the woman

is in established labour (whichever is sooner). (RCOG Grade A recommendation 2019) (RCOG, 2019, p.e153). NICE guideline NG25 recommends 250mg of erythromycin given 4 times a day. (NICE, 2015, section 1.4.1).

- For women with P-PROM who cannot tolerate erythromycin or in whom erythromycin is contraindicated, consider an oral penicillin for a maximum of 10 days or until the woman is in established labour (whichever is sooner).

- CTG daily, Maternal pulse, temperature 4 hourly, FBC, CRP twice weekly

- Women 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, 2019, p.e153)

- Offer Intrapartum antibiotic prophylaxis (Benzyl penicillin or Clindamycin)) (NICE CG149, 2012, Section 1.3).

- For cephalic presentations, IOL should be started with PGE_2 unless cervix is 3 cms dilated.
- D/W consultant if previous Caesarean section
- See birth plan & inform Maternal Medicine Consultant /ANC sister if patient is T4 cell positive.

3.5 **Magnesium sulphate preparation & administration**

From 23+0 to 31+6 weeks, Magnesium Sulphate can be given just prior to birth and is effective within minutes.(consider giving between 32-33^{+6} weeks.
Birth should not be delayed to administer MgSO4

- **Take one 20 ml syringe and fill with the contents of two 10ml ampoules of 20%**
- **Magnesium Sulphate. This contains 4g (16mmol) of Magnesium Sulphate**
- **Give the 4g (16mmol) Magnesium Sulphate by slow IV bolus, over 5-10 minutes.** (Impey on behalf of Oxford AHSN, 2019 – see Appendix 1)
- **If birth is imminent >12 hrs after a bolus has been given, the loading dose can be repeated**.

The 4g bolus is sufficient because of lack of evidence for better outcomes with infusions, in conjunction with manpower /risk issues with prolonged infusions (Hemelaar, Greenwood & Impey, 2019; Crowther et al., 2017)

3.6 Out patient management of PPROM <37 weeks

The decision to offer outpatient care to women with PPROM should be made on an individual basis, taking into account markers of delivery latency. (RCOG, 2019, p.e159-60).
Women can be considered for outpatient monitoring of PPROM only after agreement with Consultant Obstetrician .
A management plan should be documented with frequency of outpatient appointments and what tests should be carried out.

- Assess home / social / domestic situation, available adult accompany to hospital
- Fetus in cephalic presentation and no evidence of fetal compromise
- Should live within a reasonable distance of the hospital + access to telephone
- Can and willing to attend ADAU twice a week, monitor own temperature, heart rate and vaginal loss.
- Outpatient management should involve twice weekly review in ADAU to assess for any signs of symptoms of chorioamnionitis. This should include C reactive protein (CRP), white cell count (WCC) ,a full set of maternal observations and a CTG (if ≥28/40, or auscultation of the FH if <28/40) and obstetric review.
- Weekly high vaginal swab need not be performed.
- Individualised plans for repeat tests and ultrasound scans should be made in agreement with the Consultant Obstetrician.
- Women being managed as outpatients should be advised to take their temperature three times a day (8 hourly) whilst at home and counselled regarding other signs and symptoms of chorioamnionitis to look out for including:
  Abdominal pain
  PV bleeding
  Reduced fetal movements
  Feeling non-specifically unwell
  Change in colour or smell of liquor
- Avoid sexual intercourse (protected or not)
- Following the diagnosis of preterm prelabour rupture of the membranes, (PPROM) an antibiotic (preferably erythromycin) should be given for 10 days or until the woman is in established labour (whichever is sooner). (RCOG Grade A recommendation 2019) (RCOG, 2019, p.e153). NICE guideline NG25 recommends 250mg of erythromycin given 4 times a day. (NICE, 2015, section 1.4.1)
- Women 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, 2019, p.e153)

The on call Paediatrician must be alerted to the delivery of any infant where there has been a history of PPROM.

4.0 Statement of evidence/references

References:

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Guideline No.73. [Online]. Available from: https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg73/ [Accessed 10 October 2019]

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Additional references

These documents are presented for you to consider and add to the list of references for this guideline as appropriate.

Abou El Senoun, G., Dowswell, T. and Mousa, H.A. (2014) Planned home versus hospital care for preterm prelabour rupture of the membranes (PPROM) prior to 37 weeks' gestation. *Cochrane Database of Systematic Reviews* 2014, Issue 4. Art. No.: CD008053. DOI: 10.1002/14651858.CD008053.pub3. Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008053.pub3/full [Accessed 10 October 2019]

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5.0 Governance

5.1 Record of changes to document

Version number: 6		**Date:** 01/2020		
Section Number	**Amendment**	**Deletion**	**Addition**	**Reason**
Version 5	Betamethasone changed to Dexamethasone			Updated
3.4.3	MagSO4 Repeat dose	<30 weeks Magnesium SO4 infusion	Offer if <32 weeks, consider up to 33+6 If birth is imminent >12 hrs after a bolus has been given, the loading dose can be repeated.	New network Algorithm & evidence NICE guidance 2015
3.2, 3.4	Steroids		Consider up to 35+6 weeks	RCOG guidance 2019
3.2, 3.4	Erythromycin		Offer for 10 days or until in established labour (whichever occurs sooner)	RCOG guidance 2019
3.3			AmniSure test	NICE 2015
3.4	Delivery		Expectant management until 37 weeks if no contraindications to continuation of pregnancy	RCOG guidance 2019
Appendix 1	Algorithm for Management of Preterm Prelabour Spontaneous Rupture of Membranes		Algorithm for Management of Preterm Prelabour Spontaneous Rupture of Membranes version 2	(Updated June 2019) V2
3	Viability cutoff for OUH changed from 22+5 tom 22+3 weeks		22+3 weeks	Update from OAHSN

5.2 Consultation History

Stakeholders Name/Board	Area of Expertise	Date Sent	Date Received	Comments	Endorsed Yes/No
Tracey Payne	Head of Midwifery	29/1/15	11/2/15	Yes	Yes
Kristy Hart	Midwife	12/6/15	13/6/15	Yes	Yes
Grainne Millwood	Audit Midwife	11/8/15	12/8/15	Yes	Yes
All Women's Health Staff		29/1/15			
Obstetric Medical staff	Obstetrics	30/01/2019		Nil comments received	
Midwives in Women's Health	Maternity	30/01/2019	08/02/2019	Yes	Yes
Sam Mathewlynn	Obstetrics	30/01/2019	31/01/2019	Yes	Yes
Guideline Review Group meeting	Obstetrics	01/03/2019	01/03/2019	Yes	Yes

5.3 Audit and monitoring A = Auditable Criteria

Audit/Monitoring Criteria	Tool	Audit Lead	Frequency of Audit	Responsible Committee/Board
That all PPROM receive required corticosteroids and antibiotics	Audit	Audit Midwife	18-24 months	Labour Ward Forum, Staff Meetings, Maternity Risk Meeting.
All women who deliver between 23 to 32 weeks receive Magnesium sulphate	Audit	Audit midwife	Monthly	Labour Ward Forum, Staff Meetings, Maternity Risk Meeting,

5.4 Equality Impact Assessment

As part of its development, this Guideline and its impact on equality has been reviewed. The purpose of the assessment is to minimise and if possible remove any disproportionate impact on the grounds of race, gender, disability, age, sexual orientation, religion or belief, pregnancy and maternity, gender reassignment or marriage and civil partnership. No detriment was identified. Equality Impact assessments will show any future actions required to overcome any identified barriers or discriminatory practice.

Equality Impact Assessment			
Division	Women's and Children's Health	Department	Maternity
Person completing the EqIA	Miss Faryal Nizami	Contact No.	87851
Others involved:	Guideline Review Group	Date of assessment:	01/03/2019
Existing policy/service	Yes	New policy/service	No

Will patients, carers, the public or staff be affected by the policy/service?	Yes
If staff, how many/which groups will be affected?	*For example: community midwives, phlebotomists, all staff*

Protected characteristic	Any impact?	Comments
Age	NO	Positive impact as the policy aims to recognise diversity, promote inclusion and fair treatment for patients and staff
Disability	NO	
Gender reassignment	NO	
Marriage and civil partnership	NO	
Pregnancy and maternity	NO	
Race	NO	
Religion or belief	NO	
Sex	NO	
Sexual orientation	NO	

What consultation method(s) have you carried out?
Via email, guideline review group meeting with consultants present
How are the changes/amendments to the policies/services communicated?
Via email, Grapevine newsletter
What future actions need to be taken to overcome any barriers or discrimination?

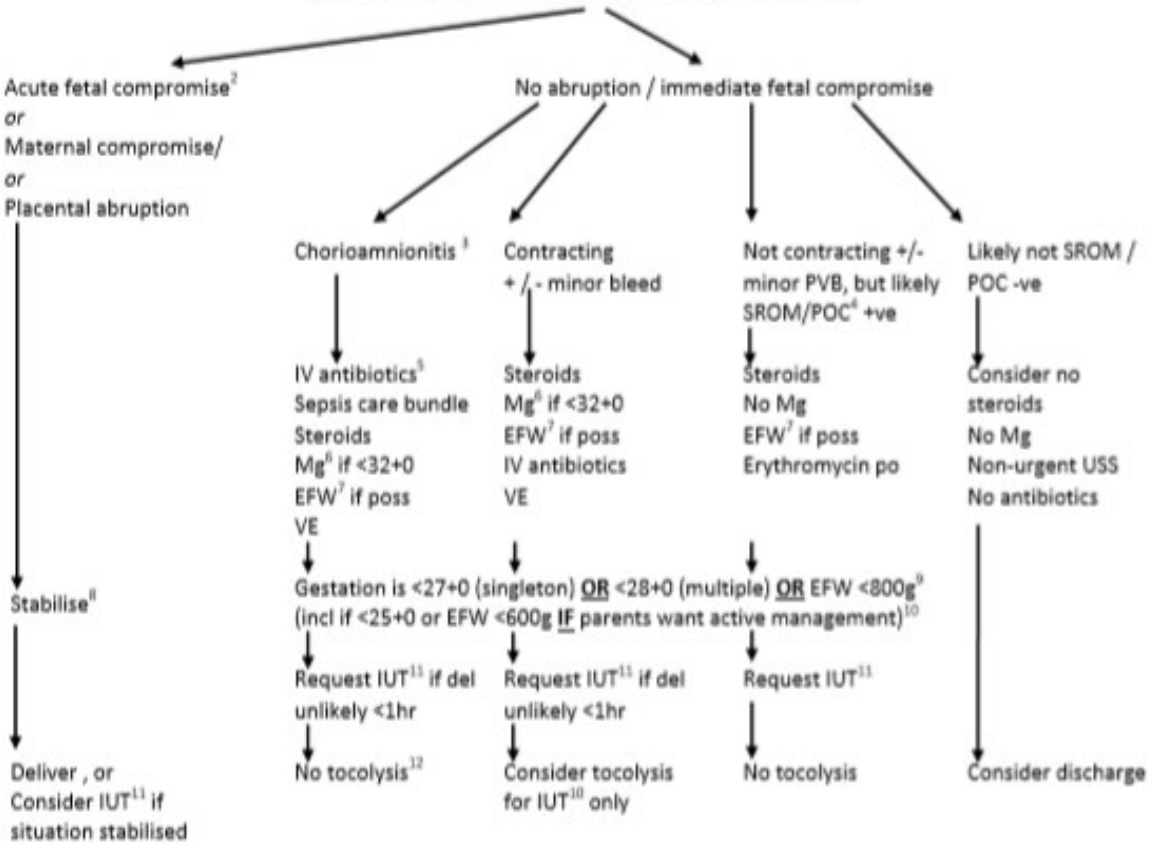
What?	Who will lead this?	Date of completion	Resources needed
Review date of EqIA			

Appendix 1

Oxford Academic Health Science Network

Oxford AHSN Regional Maternity Guideline

Algorithm for Management of Preterm Prelabour Spontaneous Rupture of Membranes (Updated June 2019) V2



Footnotes:

1. Note active resuscitation for neonates <23+0 will not usually be performed. The management pathway should not be followed prior to 22+5 the 2 day difference allowing for steroids etc. Dates according to CRL excl in IVF pregnancies.
2. CTG to be used only >/=26+0 weeks
3. Chorioamnionitis is very common at presentation of severely preterm SROM and may be subtle. Early IVABs (<1hr of diagnosis), see local sepsis guideline. Confirmed chorioamnionitis requires delivery, but this can usually be after transfer, if IUT criteria are met.
4. POC: point of care test for SROM (e.g. Actim PROM).
5. IV antibiotics. Follow unit antibiotic guideline; avoid co-amoxiclav
6. Mg: Magnesium bolus 4g (16mmol) Magnesium Sulphate as 20mls of 20% magnesium sulphate IV over 5 – 10 minutes. If <32+0 weeks. Note PReCePT suggests 30 but clinical benefit up to 32 weeks.
7. EFW: estimated fetal weight +/-15% if possible
8. Stabilisation of acutely unwell mother beyond scope of this. Early IVABs (<1hr of diagnosis) essential, see local sepsis guideline.
9. Criteria for delivery in Level 3 Neonatal Unit. If criteria not met follow local guideline
10. If time, offer discussion with paediatrician. Document any discussion regarding IUT with parents. Consider providing Thames Valley Neonatal Network patient information leaflets if available.
11. IUT: in utero transfer, try OUH first. 8-5pm call Delivery Suite (01865 221988/7), and specifically request to speak to the consultant obstetrician on Delivery Ward. From 5pm to 8am, hospital switchboard (01865 741166), with the request to speak to the obstetric consultant on call. DO NOT call neonatal unit or delivery ward manager first.
12. Tocolysis. Follow unit tocolysis guideline. Do not use nifedipine if magnesium given or to be given