Approved by Quality & Patient Care Committee
6/10/16

RUPTURE OF MEMBRANES – PRETERM PRELABOUR – ASSESSMENT AND MANAGEMENT

1. AIM

- Timely and accurate diagnosis, and appropriate management of Preterm Prelabour Rupture of Membranes (PPROM)
- Woman receives individualised counselling regarding management options for PPROM

2. PATIENT

- Woman with suspected rupture of membranes <37 weeks' gestation, who is not in labour

3. STAFF

- Medical and midwifery staff

4. EQUIPMENT

- Sterile speculum
- Liquor detection kit (e.g. Actim Prom)
- Sterile vaginal swab
- Sterile gloves
- Light source
- Cardiotocograph (CTG) machine

5. CLINICAL PRACTICE

- Perform midwifery admission
- Organise obstetric medical assessment
- Take and document history including:
    - Gestational age and method for dating of pregnancy
    - Date and time of suspected rupture of membranes
    - Fluid volume, colour and odour
    - History, including uterine activity
    - Symptoms of infection e.g. fever, rigors, dysuria, malodourous vaginal discharge, uterine tenderness
    - Group B strep (GBS) status if known
    - Placental location
- Perform abdominal palpation and determine fetal lie, presentation and assess for uterine tenderness
- Auscultate fetal heart at all gestations and perform CTG if gestation ≥26 weeks
- Perform sterile speculum examination, take swabs for liquor detection test (if diagnosis is uncertain), and high and low vaginal swabs for microscopy and culture
- Perform sterile digital vaginal examination only if no contraindications exist and either:
    - premature labour is suspected on clinical history or examination
    - cervix appears effaced or dilated on speculum
- Discuss findings with woman and record findings in integrated clinical notes

<u>Once PPROM is confirmed:</u>

- Perform ultrasound to confirm lie and presentation. This may be performed at the bedside by an appropriately trained clinician, followed by formal ultrasound during normal working hours
- Perform mid-stream urine (MSU)
- Assess for signs of chorioamnionitis:
    - maternal signs: temperature >37.5C^{o}, tachycardia, malodorous vaginal discharge, uterine tenderness
    - fetal signs: fetal tachycardia

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- Discuss with obstetric consultant ongoing management based on likelihood of chorioamnionitis and gestational age
- Recommend delivery if chorioamnionitis
- Prescribe intravenous (IV) antibiotics if clinical signs of chorioamnionitis
- Prescribe erythromycin (ethyl succinate formulation) 400mg orally, 6-hourly for 10 days if no clinical signs of chorioamnionitis
- Do not prescribe tocolysis unless contracting
- Consider social work support according to individual circumstances
- Advise the woman to avoid sexual intercourse, immersion in water and using tampons
- Recommend removal of vaginally accessible cervical cerclage

<u>Gestational age <20 weeks</u>

- Counsel woman with PPROM and severe oligohydramnios (amniotic fluid index (AFI) <2cm) regarding poor pregnancy prognosis and maternal risks of conservative management
- Discuss with obstetric consultant
- Advise induction of labour
- Recommend second opinion from Maternal Fetal Medicine (MFM) specialist if woman requesting conservative management or more information

<u>Gestational age 20-22+6 weeks</u>

- Counsel woman with PPROM and severe oligohydramnios (AFI <2cm) regarding poor pregnancy prognosis and maternal risks of conservative management
- Discuss with obstetric consultant
- Discuss induction of labour with the woman
- Arrange second opinion from MFM specialist, if woman requesting conservative management or further information
- Arrange admission to Delivery Suite and augmentation if, after counselling, woman requesting induction of labour/termination of pregnancy
- Arrange second opinion from MFM specialist, if woman requesting conservative management or further information
- Arrange neonatal consultation if woman is requesting conservative management or further information
- Advise the following if conservative management is chosen:
    - admission to antenatal ward, observations (including temperature, pulse and respirations) and pad checks and changes approximately fourth hourly during the day
    - fetal heart rate auscultation at least once per day
    - avoid vaginal or speculum examination unless preterm labour is suspected or induction of labour is planned
    - induction of labour if clinical signs of chorioamnionitis and prescribe IV antibiotics in labour

<u>Gestational age 23-37 weeks</u>

- Counsel woman regarding maternal and fetal/neonatal risks of PPROM, expected latency period and management
- Inform Newborn Care Centre (NCC) and request neonatal consultation
- Administer antenatal maternal corticosteroids if between 24 and 34 weeks' gestation at presentation and after neonatal and obstetric counselling, neonatal resuscitation is planned

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- Admit woman to antenatal ward for:
    - Maternal observations, including temperature, pulse and respirations, and pad checks and changes approximately fourth hourly during the day
    - Fetal surveillance determined by gestation and individualized consultant lead management plan. This may include:
        - Auscultation
        - Ultrasound
        - CTG (routinely performed on fetuses ≥26 weeks' gestation)
- Avoid vaginal or speculum examination unless preterm labour is suspected or induction of labour is planned
- Advise delivery (induction of labour or caesarean section depending on obstetric indication) if clinical signs of chorioamnionitis
- Arrange admission to Delivery Suite and augmentation if, after neonatal and obstetric counselling giving poor prognosis, the woman requests induction of labour/termination of pregnancy at gestation < 26 weeks
- Prescribe IV antibiotics in labour if GBS positive or unknown and active resuscitation is planned
- Consider magnesium sulphate for fetal neuroprotection if ≤30 weeks' gestation and birth is expected within 24 hours
- Recommend delivery once gestation is ≥37 weeks

<u>Outpatient Management</u>

- Consider outpatient management in selected woman who is willing to consider this option (refer to Appendix 1). This may be an option after 3-7 days' inpatient admission, following consultant agreement and appropriate counselling of the woman regarding the risk of infection, antepartum hemorrhage and preterm birth
- Arrange Pregnancy Day Stay review 3 times a week for fetal surveillance and clinical assessment
- Arrange fortnightly Outpatient Antenatal clinic review
- Advise woman with regards to instructions when at home
- Provide Patient Information Leaflet regarding monitoring for signs of infection, and when to contact her midwife or delivery suite (Appendix 1)

6. DOCUMENTATION

- Integrated clinical notes
- ObstetriX
- CTG Stickers
- Antenatal Observation Chart
- Antenatal Short Stay Observation Chart

7. EDUCATIONAL NOTES

- Preterm prelabour rupture of membranes (<37 weeks' gestation) occurs in 2 % of pregnancies and is responsible for approximately 40% of preterm births
- Maternal morbidity:
    - chorioamnionitis 37%
    - postpartum endometritis 11%
    - sepsis 1%
    - placental abruption in at least 2%, with substantially higher risk if chorioamnionitis is present
    - caesarean delivery, including classical caesarean, for the very preterm neonate or malpresentation
    - retained placenta

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- Fetal/neonatal morbidity and mortality:
  - cord prolapse/risk of cord prolapse is 1-2% in PPROM with cephalic presentation and up to 11% in PPROM with non-cephalic presentation
  - pulmonary hypoplasia is associated with gestational age <26 weeks at time of PPROM, but is not universal even where PPROM occurs at <20 weeks' gestation. There is no absolute antenatal predictor of the presence or absence of pulmonary hypoplasia, however severity and duration of oligohydramnios worsens outcomes.
  - neonatal mortality is strongly associated with lesser gestational age at PPROM, presence of pulmonary hypoplasia at birth, and shorter latency period from PPROM to delivery. Quoted mortality rates vary widely. For neonates with pulmonary hypoplasia mortality rates of 70-95% have been reported. Regarding antenatal prediction, the combination of PPROM at <25 weeks and severe oligohydramnios for >14 days carries a mortality rate of approximately 90%.
  - prognosis is improved in:
    - pregnancies with PPROM after amniocentesis, which have higher likelihood of membrane resealing and fluid reaccumulation
    - pregnancies where AFI remains ≥2cm after PPROM. Survival rates of up to 85% if the pregnancy continues to a viable gestation are reported.
- There are no universal diagnostic criteria for chorioamnionitis and no one sign or investigation has adequate sensitivity or specificity for diagnosis. The criteria for the diagnosis of clinical chorioamnionitis include:
  - maternal temperature >37.5^{o}C
  - tachycardia
  - uterine tenderness
  - malodorous vaginal discharge
  - fetal tachycardia
- The sensitivity of leucocytosis ranges from 29-47% (a mildly elevated white cell count is normal in pregnancy) and is therefore not considered a useful predictor of chorioamnionitis
- Following corticosteroids administration there will usually be a transient rise in white cell count for 48 hours
- With PPROM, the sensitivity of high vaginal and endocervical swabs for intrauterine infection is 53% with a false positive rate of 25%
- In a systematic review of 8 studies on the use of C-reactive protein (CRP) as a predictor of chorioamnionitis in PPROM (with CRP cut-off values ranging between 5 and 40), only 3 of the 8 studies found that CRP had clinically useful predictive value
- The use of antibiotics following PPROM (in meta-analysis) is associated with:
  - statistically significant reductions in chorioamnionitis (average risk ratio (RR) 0.66, 95% confidence interval (CI) 0.46-0.96)
  - reduction in the numbers of neonates born within 48 hours (average RR 0.71, 95% CI 0.58-0.87) and seven days of randomisation (average RR 0.79, 95% CI 0.71- 0.89)
- The following markers of neonatal morbidity were reduced with use of antibiotics following PPROM (in meta-analysis):
  - neonatal infection (RR 0.67, 95% CI 0.52-0.85)
  - use of surfactant (RR 0.83, 95% CI 0.72-0.96)
  - oxygen therapy (RR 0.88, 95% CI 0.81-0.96)
  - abnormal cerebral ultrasound scan prior to discharge from hospital (RR 0.81, 95% CI 0.68-0.98)

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- Amoxicillin-clavulanate (in meta-analysis) was associated with an increased risk of neonatal necrotising enterocolitis (RR 4.72, 95% CI 1.57-14.23). It is therefore not recommended to be used, although this is different to what is recommended by Electronic Therapeutic Guideline (eTG)
- Erythromycin is recommended as the first choice antibiotic as it was used in the single largest randomised controlled trial (n = 4826), on antibiotics for PRROM. It does not appear to increase neonatal morbidity or childhood disability at 7-year follow-up
- The proportion of women remaining undelivered 10 days after PPROM is not higher in those given tocolysis than in those receiving none. As uterine contractions may be an indicator of chorioamnionitis in PPROM, tocolysis should only be considered for the purposes of transfer to a tertiary centre or to allow a course of antenatal corticosteroids to be completed.
- One or two digital internal examinations versus no digital examinations has not been found to worsen maternal or fetal outcome. However, it is associated with a shorter time from PPROM to delivery (3 vs 5 days).
- The PROMPT study found greater respiratory morbidity in fetuses induced at 34 weeks, than those managed expectantly and higher rates of caesarean section. Neonates born to woman in the immediate delivery group compared with neonates born to woman in the expectant management group:
    - had increased rates of respiratory distress (8% of 919 vs 5% of 910, RR 1·6, 95% CI 1·1-2·3; p=0·008)
    - had increased rates of any mechanical ventilation (12% of 923 vs 9% of 912, RR 1·4, 95% CI 1·0-1·8; p=0·02)
    - spent more time in intensive care (median 4·0 days [IQR 0·0-10·0] vs 2·0 days [0·0-7·0]; p<0·0001)
- The PROMPT study also found women assigned to the immediate delivery group compared to those assigned to the expectant management group had:
    - higher risks of antepartum or intrapartum haemorrhage (RR 0·6, 95% CI 0·4-0·9)
    - higher risks of intrapartum fever (0·4, 0·2-0·9)
    - higher use of postpartum antibiotics (0·8, 0·7-1·0)
    - longer hospital stay (p<0·0001)
    - lower risk of caesarean delivery (RR 1·4, 95% CI 1·2-1·7).
- A retrospective cohort study of PPROM at 14-23+6 weeks' gestation in Ireland (n=42) found an average latency of 13 days. The overall perinatal mortality was 95% (40/42), after 9/42 infants were resuscitated.
- A meta-analysis of studies of mid trimester PPROM found that gestational age at PPROM was the best predictor of pulmonary hypoplasia, compared with latency or oligohydramnios.
- In a small randomized trial comparing removing or retaining cervical cerclage in women with PPROM there was a numerical trend in the direction of less infectious morbidity, with immediate removal of cerclage. There was no statistical significance in primary outcome of:
    - prolonging pregnancy by 1 week comparing the 2 groups (removal 18/32, 56.3%; retention 11/24, 45.8%) P 0.59
    - chorioamnionitis (removal 8/32, 25.0%; retention 10/24, 41.7%) P 0.25

  There was no statistical difference in composite neonatal outcomes (removal 16/33, 50%; retention 17/30, 56%).
- There is limited data upon which to determine safety of outpatient monitoring in women with PROM. However, case series have shown this to be safe, with shorter inpatient stay.

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- Usual indications for outpatient monitoring include:
  - cephalic presentation
  - singleton pregnancies with appropriate growth
  - deepest pocket AFI >2cm
  - no evidence infection
  - compliant women with reliable transport who live within 20 minutes of the hospital
- Antenatal CTG in gestational age <26 weeks is contentious due to difficulty in interpretation, and limited studies. Antenatal CTG at gestations 23-26 weeks should only be performed on an individualised basis after women and families have been counselled with regards to their limitations

8. RELATED POLICIES/ PROCEDURES/CLINICAL PRACTICE GUIDELINES

- Admission - Midwifery Guideline
- ACTIM PROM: Qualitative Diagnosis of Preterm Premature Rupture of Membranes
- Cardiotocography (CTG) – Antenatal
- Estimating Due Date (EDD)
- Preterm Labour – Diagnosis and Management
- Vaginal swab – High
- Syntocinon Induction or Augmentation of Labour
- Vaginal Examinations in Labour
- Magnesium Sulphate Prior to Preterm Birth for Fetal Neuroprotection
- Corticosteroids for Woman at Risk of Preterm Birth or with a Fetus at Risk of Respiratory Distress - Antenatal
- Nifedipine for Tocolysis - Protocol
- Group B Streptococcus (GBS) – Screening and Prophylaxis
- Antimicrobial Guidelines (Obstetrics)

9. RISK RATING

- Low

10. NATIONAL STANDARD

- **CC – Comprehensive Care**

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FOR REVIEW : OCTOBER 2021

RUPTURED MEMBRANES - PRETERM PRELABOUR - FOR WOMEN CHOOSING TO GO HOME

These guidelines have been prepared for you as you have ruptured your membranes (broken your waters) preterm prelabour and are planning discharge home after you have had a stay as an inpatient.

In order for this to be an option, we would recommend:

- You are pregnant with only ONE baby
- Your baby is in a head down position
- There is some fluid around your baby
- Your baby is well grown
- You have no evidence of infection
- You live less than 20 minutes away from the hospital
- You have reliable transport to return to hospital promptly if needed

If you choose to return home, it is important to take some basic precautions and know when to call and come in:

- Take your temperature every 4 hours during the day. If your temperature rises above 37.5ºC please contact your midwife or delivery suite
- Take your pulse when you take your temperature. If your pulse rises above 100 beats per minute, please contact your midwife or Delivery Suite.
- You will need to wear a sanitary pad and change at least every 4 hours during the day. If you wake up during the night, please change your pad. The colour of the water (amniotic fluid) is normally clear. If the colour of the water changes to green, yellow or pink please contact your midwife or Delivery Suite.
- If the baby is quiet or not moving as your baby normally does, please contact your midwife or Delivery Suite.
- If contractions start, then please contact your midwife or Delivery Suite
- <u>If you are concerned for ANY reason or feel unwell in any way, please contact your midwife or Delivery Suite</u>

If any of these things happen, you will be asked to come in to the hospital for review.

What can you do?

- It is essential to maintain good hygiene by having twice daily showers and frequent pad changes as outlined above
- Do not use tampons
- Do not go swimming
- Do not have a bath
- Do not have sexual intercourse

Monitoring

- We recommend that you are reviewed three times a week in Pregnancy Day Stay (Level 4) for assessment of you and your baby
- Your appointment for Pregnancy Day Stay has been booked for

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- Once a fortnight you will have an ultrasound to check the amniotic fluid volume, growth and wellbeing or your baby and to confirm that your baby is still in a head down position
- Once you are 37 weeks' gestation, you will be recommended induction of labour/delivery
- If you are concerned at any time, or if you have any questions please contact your midwife or Delivery Suite

The direct telephone number to the Delivery Suite is 9382 6100 (24 hours).

Your midwife's telephone number is ……....