**INTRODUCTION**

1.1 Definition of premature labour

Labour is the process of progressive dilatation of the cervix leading to the birth of a baby. Preterm labour is defined as labour before 37 completed weeks of gestation. Premature birth is a leading cause of perinatal morbidity and mortality and requires careful management. Threatened preterm labour is when a pregnant woman has painful contractions more than 1 in 10 minutes for at least 30 minutes. Various other factors can be considered in the assessment of the risk of preterm birth. The length of the cervix, the presence of fetal fibronectin, abnormal vaginal pH, evidence of vaginal infection, uterine anomalies and past history are all important factors to be considered.

1.2 Survival rates in preterm birth

The chances of survival of a preterm baby are highly dependant on gestation. Intact survival is rare before 24 weeks. Premature babies of 24 and 25 weeks of gestation are at high risk for death or significant handicap, with 26 weeks being the earliest time when a good outcome is more likely than not. Gestations of 27 and 28 weeks are generally associated with more than 90% survival with more than 90% of survivors having no significant handicap. Survival and handicap rates at 34 weeks and beyond are similar to those at term.

1.3 Extreme prematurity

Every effort should be made to prevent birth before 26 weeks of gestation, with careful assessment of cases at risk, consideration of cervical length assessment, consideration of cervical cerclage and regular bacteriological assessment being possible interventions. If threatened preterm labour occurs there should be a careful assessment of the whole situation by a senior obstetrician, with a frank and open discussion with the family regarding the situation, and the likely outcomes.

Women will often express a desire to “do anything” to allow their child to survive. This natural instinct to protect children must not be allowed to convince the obstetric and midwifery team that early interventions, prolonged use of tocolysis, in the face of...
complications or caesarean section delivery are the correct management.

The risks to the mother of obstetric complications must be given consideration in decisions regarding the management of the labour, including the risks to her future reproductive health. Injury to the cervix, injury to the uterus and sepsis are possible consequences of inappropriate attempts to rescue an irretrievable situation. At less than 26 weeks the decision to use tocolysis must consider maternal contraindications, and the use of caesarean section delivery should be reserved for exceptional cases. This will mean that some babies will die, or be bruised or injured during the process of vaginal birth.

There is no evidence of benefit for steroids or tocolysis at less than 24 weeks of gestation.

The management of cases of threatened preterm labour at less than 23 weeks should take place in the consultant unit of booking, or the local consultant obstetric unit in cases booked for midwifery only care. There is no requirement for transfer to centres with neonatal facilities. It is vital that patients are given accurate information and have realistic expectations of the management of their baby. Babies born before 23 weeks will not be admitted to a neonatal unit and will be given comfort care with emotional support to the family during the difficult process of miscarriage (if the baby is born with no signs of life) or neonatal death and bereavement. Emotional support during bereavement is best delivered locally, and can be provided equally well in small and large hospitals.

Consultants in units without neonatal intensive care may wish to discuss cases with colleagues working at other centres in the network. The expectation will be that case less than 23 weeks will be considered non-viable and will only be transferred once 23 weeks has been achieved.

1.3.1 23 weeks of gestation
The current area of uncertainty in extreme prematurity is 23 weeks gestation. This covers 23+0 to 23+6 weeks of gestation as calculated from the final due date following an early dating scan. The majority of babies given full neonatal intensive care following birth at this gestation will either die or will have significant and serious handicap. Optimal management of these cases involves individualised care taking into account all relevant factors. The current poor results for babies of 23 weeks gestation may be improved by concentrating resources and expertise. This guideline cannot define the cases where neonatal intensive care is the best treatment option. A full and frank discussion with the parents must be undertaken if delivery at 23 weeks is anticipated. If, despite fully understanding the likely outcomes, the parents are still keen to pursue active and intensive management the case should be transferred to a level 3 neonatal intensive care unit within the network.
1.4  Fetal assessment and monitoring  
Cases at 24 and 25 weeks gestation are particularly difficult and require both fetal medicine expertise and clear decision making. Ultrasound assessment can identify fetuses which will do particularly badly with poor growth, reduced liquor volume and abnormal blood flow studies. These cases should be discussed with the neonatal team, but the decision regarding delivery will ultimately rest with the consultant obstetrician. In these cases there should be the expectation that continuous electronic fetal monitoring will not be used. The decision to use fetal monitoring during labour will be made by the consultant obstetrician.

1.5  Management at 34 and 35 weeks of gestation – Provision of neonatal care locally  
The vast majority of premature babies who are 34 and 35 weeks of gestation, will have good outcomes and will have a low risk for high dependency and intensive care. Unless there are exceptional circumstances pregnant women of 34 and 35 weeks gestation should be managed in their hospital of booking, unless there is no paediatric provision on site. It is anticipated that the decision for in utero transfer at 34 and 35 weeks will be an exceptionally rare event.

2.0  GUIDELINE TO PATIENT MANAGEMENT IN THREATENED PREMATURE LABOUR

2.1  Patient assessment

2.1.1  Telephone advice  
a) If a patient is having contractions which are painful every 10 minutes or closer for 30 minutes or more she should be assessed in a Labour Ward environment.

b) If a women reports leaking fluid or having vaginal discharge the midwife will discuss the circumstances, and if she considers it is likely that the patient has premature ROM then she should be assessed in a Labour Ward environment.

c) If a woman reports fresh red bleeding she should be seen immediately, if brown loss or mucus loss is reported the midwife should assess the risk of premature labour and impress upon the woman the need to attend if contractions are felt. Where the midwife believes it is unlikely that the membranes have ruptured, assessment in an antenatal clinical within 72 hours is reasonable.

2.2  Assessment on Attendance  
All women should bring their patient held antenatal records, and wherever practical the antenatal records should be available at the time of presentation. Electronic records, particularly ultrasound and other results of investigation should be available to those professionals dealing with emergency and urgent referrals.

2.2.1  Contractions / Abdominal pains
The uterus contracts throughout pregnancy, painless contractions are often referred to as Braxton-Hicks and these can be felt by most pregnant women at some stage during their pregnancy. It can be very difficult to distinguish between the normal contractions which occur in pregnancy and those of labour. The diagnosis of labour is difficult, particularly in the early stages. The presence of rupture of membranes, vaginal bleeding or a mucus show is supporting evidence from the patient history and should always be elicited and recorded. As the labour process progresses the cervix dilates, and this is painful. Therefore painful contractions in the presence of either a show or rupture of membranes can be taken as very strong evidence of labour.

Abdominal pains and uterine contractions can also be caused by other things. Most commonly urinary tract infection will present with lower abdominal pains, with variable urinary symptoms. Symptoms of a urinary tract infection should be elicited and urine taken for bedside testing for protein, blood and nitrites. If any of these are positive an MSU should be taken and antibiotic treatment started. Bowel disturbance including constipation and diarrhoea can give abdominal pain and should be elicited. If significant diarrhoea with blood PR is present a stool sample should be taken to exclude infective causes. All patients with diarrhoea need isolation if admitted to hospital.

Uterine pain, either episodic or continuous can be caused by placental abruption. Severe abruption will cause continuous pain, continuous contraction of the uterus and uterine tenderness. Vaginal bleeding may not be apparent if the bleeding is concealed. Significant placental abruption is often associated with intrauterine fetal death. Rapid decisions need to be made regarding the optimal management of such cases and the gestation and fetal heart rate pattern will be central to management. An immediate assessment of the CTG by a Registrar or Consultant Obstetrician is required. Many other pathologies can present with abdominal pain. These presentations are familiar to medical staff who have undertaken recent work in acute surgical settings. The management of pregnant women with significant surgical pathology requires that she is assessed in the MATERNITY unit, not in casualty or a surgical assessment unit. The correct sequence to follow is for the maternity unit midwifery and medical staff to undertake their assessment and to involve the surgical team following this.

The gestation at which women with abdominal pain will be seen in the maternity unit will be defined in local hospital policy, but will not exceed 23 weeks of gestation such that all babies with potential for neonatal paediatric input are born in appropriate surroundings.

### 2.2.2 Examination

The examination of a pregnant women with contractions or abdominal pains will follow the sequence dictated by her history and presentation. The temperature, pulse and blood pressure are basic initial observations which should be done within 30
minutes of arrival within a maternity assessment area. A qualified midwife should make her assessment of the situation and involve medical staff if the woman does not fulfil the local criteria for midwifery care. Medical staff should generally be involved if the patient is less than 37 weeks (cases of potential premature labour).

General examination and abdominal examination are mandatory. The fundo-symphysial height should be measured and assessment made of the fetal lie and presentation. Premature labour is very commonly associated with malpresentation and it will frequently be necessary to establish the fetal lie and presentation using ultrasound. Breech presentation in labour is often requires delivery by caesarean section. The lower the gestation, the higher the risk of malpresentation, particularly breech. The expertise to make a diagnosis of breech presentation using ultrasound must be immediately available within the labour ward core staff team.

2.2.3 Speculum Examination

Speculum and digital vaginal examination should only be undertaken with a specific purpose in mind.

Cases in which a fetal fibronectin (fFN) might be necessary should be identified **BEFORE THE FIRST EXAMINATION** as the lubricants used for VE may interfere with the results. The testing kit and staff trained to undertake this test must be available. Speculum examination using a bivalve speculum allows low vaginal swabs for microbiology and fetal fibronectin to be taken. Arrangements for patient privacy and dignity to be maintained are essential, with midwifery, nursing or experienced HCA support being an absolute requirement for both male and female doctors undertaking this assessment. The issue of intimate examination has been the subject of an RCOG guideline (RCOG 2002) with support for the patient by a third party being recommended.

2.2.4 Digital vaginal examination (VE)

There is debate regarding the place of digital vaginal examination, with some circumstances where it may be best avoided. If the membranes are ruptured there is a theoretical risk of increasing the chances of ascending infection. If fFN testing is to be undertaken this should be done **prior to VE**. In the first instance it is therefore wise to undertake a sterile speculum examination with fFN testing where indicated. Following this in cases where the membranes are intact a VE will give the best assessment of the state of the cervix. If VE is undertaken the criteria used for the Bishop score (BS) should be used to standardise the assessment of the cervix. Cervical length, dilatation, consistency and position should be recorded along with the station of the presenting part. The degree of effacement of the cervix is judged by the cervical length measured in cm until it is fully effaced (0cm long). Terms such as partially effaced, 50% effaced, mostly effaced and multip’s os should be avoided.
2.3 Fetal Fibronectin (fFN)

2.3.1 Rationale
Fibronectin is produced in the decidua in pregnancy. In the normal course of events it is present until 22 weeks gestation. Prior to the onset of labour it is not detectable until 37 weeks gestation. Its appearance at any other time is due to production in the decidua and may indicate preterm labour. Studies have shown reasonable positive predictive values, but importantly a 97% negative predictive value. Thus in the absence of detectable fFN in the vagina, < 1% of women will deliver within 14 days (Peaceman et al 1997). **IT IS OF NO VALUE IF THE MEMBRANES HAVE RUPTURED** The use of fFN, should reduce not only the need for tocolysis, but perhaps more importantly reduce the number of unnecessary courses of betamethasone currently used. It will also be beneficial in reducing unnecessary transfers between units.

2.3.2 Indication
If preterm labour is suspected between 24 and 34 weeks gestation and steroids, tocolysis or inutero transfer are being contemplated.

**PRIOR TO DIGITAL EXAMINATION PERFORM fFN TEST**

**Method:**
1) Take test containing buffer **prior** to taking sample, remove cap and place in test tube rack
2) Sterile speculum using water only as lubricant
3) Rotate swab provided over the posterior fornix and ectocervix for 10 seconds
4) Mix the specimen in the test tube containing premade buffer. It is important to mix well by moving the swab up and down in the buffer for 15 seconds and then squeezing the residual fluid out against the side of the tube
5) Place the test strip into the buffer
6) Leave for 10 minutes, the timing should be exact
7) Read results
8) **ANY** colour change is positive.
9) The control line must always be present

If **positive** treat with tocolysis to allow inutero transfer or betamethasone administration (see protocol)
If **negative**, it may be necessary to consider admission if clinically indicated.
Repeat fFN testing should not be necessary within 10-14 days.
NB A low vaginal swab should be obtained
False positives may result from semen or significant bleeding but in the latter case steroids are likely to be indicated and delivery may be necessary.
3.0 CLINICAL PATHWAY - See algorithm

Management of Suspected Premature Labour –
(Painful contractions 1 in 10)

- Cx >3cm? → Yes → Imminent vaginal birth → Yes → Prepare & Deliver
  - No → SROM?
    - No → Give steroids & Consider tocolysis
    - Yes → IUT if no NNU spaces available
  - fFN +ve?
    - No → Needing pain relief?
      - Yes → Admit but DO NOT give steroids, tocolysis or transfer
      - No → Poor history or other factors → Home with management plan

Cx – Cervix; SROM – Spontaneous Rupture of Membranes; fFN – Fetal fibronectin;
IUT – In Utero Transfer; NNU Neonatal unit

3.1 Threatened Premature labour
(Painful contractions > 1 in 10 between 24 and 36 weeks gestation)

3.1.1 History
a) Review patient health records including past obstetric history and features of relevance (Multiple pregnancy, known fetal anomaly, conditions associated with polyhydramnios)
b) Accurately calculate the gestation in weeks and days from the agreed EDD based on an early ultrasound scan
c) Record the history of contractions, timing, duration and severity of pain
d) Record evidence of “Show” and Rupture of Membranes (SROM)
e) Record evidence of vaginal bleeding, urinary symptoms, bowel disturbance and other general symptoms.

3.1.2 Examination / Investigation
a) General and maternal observations including pulse, blood pressure (BP), temperature
b) Abdominal including Symphysio-fundal Height, uterine tenderness, determination of fetal lie, presentation and auscultation of the fetal heart.
c) Speculum examination including low vaginal swab (LVS) and fFN if suitable. Make diagnosis of SROM where appropriate
d) Digital VE if indicated (see previous notes) Urine sample for analysis for blood, protein and nitrites
f) Assess frequency of contractions and fetal condition using Cardiotocography (CTG) if gestation >= 26 weeks.

3.1.3 Estimate the risk of preterm delivery:
   a) Certain / Imminent
      i. Contracting & Cx 3cm dilated & fully effaced
   b) High risk
      i. Contracting with fFN positive & Cx changes (BS 5 to 13)
      ii. Bulging membranes visible on speculum examination
      iii. Contracting with APH
   c) Intermediate risk
      i. fFN positive & BS < 5
      ii. Any patient with previous preterm birth < 35 weeks
      iii. Requiring opiates (pethidine etc) for analgesia
      iv. Generally unwell
   d) Low risk
      i. fFN negative
      ii. Generally well
      iii. Coping with contractions
      iv. Intact membranes, no show, no APH

Abbreviations: fFN Fetal fibronectin; APH Antepartum haemorrhage; Cx Cervix; BS Bishop score; ROM Rupture of membranes; CTG Cardiotocograph; EDD Estimated due date;

3.2 Imminent delivery (24 to 34 weeks of gestation)
   a) Discuss case with consultant obstetrician and neonatal unit.
   b) Prepare for the birth of the baby.
   c) After 26 weeks gestation consider delivery by CS if presentation not cephalic
   d) Give Betamethasone 12 mg i.m. unless delivery anticipated within 1 hour or steroids given already at any time during pregnancy.
   e) Institute electronic fetal monitoring if more than 26 weeks
   f) Consider the options of in utero transfer vs ex utero transfer if neonatal care not available on site. See guidelines on transfer.
   g) Consider risk of infection and if required treat.

3.3 High risk (delivery anticipated in > 75% of cases within 72 hours)
   a) Discuss case with consultant obstetrician neonatal unit.
   b) Ask Paediatric team to review case
   c) Give Betamethasone 12 mg im and prescribe a second dose in 24 hours, (unless already given during the pregnancy).
   d) If no appropriate neonatal care/cot available on site make arrangements for in utero transfer to a unit with spaces for appropriate neonatal care. See guidelines on transfer.
   e) Start Tocolysis if contracting unless maternal contra-indication (Generally unwell, significant APH, pyrexia
>38°C) – Atosiban using standard regimen for a maximum of 48 hours, then stop. A Nifedipine regimen is enclosed with this guideline, but it is anticipated that Nifedipine, which is unlicensed for this indication, will be used only as a second line drug.

### 3.4 Intermediate risk

- a) Initiate treatment for any identified causes.
- b) Give Betamethasone 12 mg im and prescribe a second dose in 12 - 24 hours (see section 3.6).
- c) Do not use tocolysis.
- d) Admit to hospital and observe mother for a minimum of 12 hours. If becomes “high risk” consider tocolysis and transfer to unit with spaces for appropriate neonatal care. If settles discharge from hospital with care plan to manage the individual circumstances.

### 3.5 Low Risk

- a) Discharge home from labour ward / assessment area.
- b) Do not give steroids
- c) Do not give tocolysis
- d) Arrange appropriate follow-up care to manage individual circumstances

### 3.6 Steroids in preterm labour (RCOG 2004)

#### 3.6.1
There is strong evidence that maternal steroids reduced the incidence and severity of respiratory distress syndrome and should be given when there is a high risk of preterm birth.

#### 3.6.2
The recommended gestation range for giving maternal steroids is 24 to 34 weeks. Steroids may be used before this gestation at the individual instigation of a Consultant Obstetrician. The benefits of administering steroids at 35 and 36 weeks are less than at earlier gestation, it is reasonable to give steroids at this gestation, but tocolysis should not be considered.

#### 3.6.3
The 2nd dose of steroids should be administered 24 hours after the first dose, but can be given between 12 and 24 hours if circumstances dictate this to be more practical.

### 3.7 Tocolysis in pre-term labour

“It is reasonable not to use tocolytic drugs, as there is no clear evidence that they improve outcome. However, tocolysis should be considered if the few days gained would be put to good use, such as completing a course of corticosteroids, or in utero transfer” (RCOG, 2002).

Before tocolysis is commenced the consultant obstetrician must be informed of the patient’s condition. **Tocolysis is only used for a maximum of 48 hours to allow time for maximal fetal lung maturation under the action of exogenously administered betamethasone.**

The evidence supporting the use of tocolysis is presumed to be of benefit to the fetus. Delaying of the delivery process for sufficient time...
for steroids to take effect may produce benefits greater than that of using no tocolysis. Tocolysis should not be used in the case of equivocal cervical findings without a fetal fibronectin (fFN) test being performed. Any condition where tocolysis is considered and the patient is not a candidate for fFN needs prior consultation with the consultant obstetrician.

3.7.1 Candidates for tocolysis are as listed below;
   a)  23 - 34 weeks gestation
   b)  Intact membranes though ruptured membranes may be considered under extreme clinical conditions e.g. previous perinatal losses at premature ages.
   c)  No listed maternal or fetal contraindication as below.

3.7.2 Contraindications to the use of any tocolytic agents;
   a)  Significant haemorrhage i.e. not just from cervical dilation
   b)  Sepsis
   c)  Fetal distress
   d)  Maternal condition which precludes delaying delivery

3.7.3 Options for Tocolysis
   Atosiban (Intravenous only) is the first drug of choice.
   Nifedipine modified release tablets (NOT capsules) are second line. Beta agonists have been withdrawn due to their large side effect profile.

3.8 Atosiban® (Tractocile)

   Contra-indications to the use of atosiban include allergy to the drug and any obstetric condition that precludes the use of the any tocolytic agent.

   IV access is necessary with a 16 gauge (grey) cannula. Atosiban comes in two preparations, a vial containing 0.9mls equivalent to 6.75 mgs of Atosiban and a 5 ml vial containing 37.5 mgs of Atosiban. Two regimens are given below for the administration of atosiban, one using syringe drivers and the other volumatics to administer the drug. Where possible the use of syringe drivers is preferable in order to reduce the fluid input administered

3.8.1 Dosage for Atosiban

   6.75mg as a bolus dose over 1 minute
   Infusion 18mg/ hour for 3 hours
   Infusion 6mg per hour for a maximum of 45 hours

3.8.2 Discontinuation
   Tractocile should be discontinued if
   a)  The patient is having a significant adverse reaction to the drug.
   b)  Immediate delivery of the fetus is indicated
   c)  Uterine contractions have stopped for 12 hours
   d)  There has been a total dose of 48 hours of treatment
If Tractocile is to be recommenced then the dosage regime needs to commence from the bolus dose again, but still should not be continued for more than 48 hours.

3.8.3 Syringe driver Regimen

a) Add one 5ml vial of Tractocile (7.5ml/ml) to 45ml of Normal saline and set the syringe driver to run at 24ml/hour (18mg/hour), but do not commence infusion.
b) Draw up the IV bolus, 0.9ml from the vial containing Tractocile, and administer over 1 min.
c) Commence the syringe driver immediately after the bolus dose has been administered. This infusion will last for 2 hours.
d) Make up a second syringe as above and run for 1 hour at 24ml/hour and then decrease the rate to 8ml/hour (6mg/hour)
e) This infusion is continued at this rate until the Tractocile is discontinued.

3.8.4 Loading dose volumatic
Give the 0.9ml vial diluted with 5 mls of water for injections or saline over 1 minute. This is the loading dose to quickly achieve the necessary maternal blood levels of the drug.

3.8.5 Maintenance dose volumatic
The maintenance dose is in two stages.

Firstly, remove 10 mls of saline from a 100mls saline bag. Then add two 5 mls vials of Atosiban to the remaining 90 mls of saline. This will then give you 75mg of atosiban in 100 mls of normal saline.

Start the initial infusion for the first three hours at 24 mls per hour. This will deliver 18 mgs per hour of atosiban.

After 3 hours reduce the infusion rate to 8 mls per hour or 6 mgs per hour of atosiban.
Maximal time for administration is 48 hours.

3.9 Maternal and fetal observations whilst tocolysis is being used.
The following is only pertinent in the uncomplicated pre-term labour scenario. Any complicating factors at the initial presentation or arising during the management period need to be addressed individually.

3.9.1 Established Pre-term Labour
Whilst the mother is still actively contracting more than 3 contractions in 30 minutes continuous maternal observations should be performed every hour for blood pressure, pulse and temperature. If greater than 26 weeks gestation CTG monitoring should be employed.

3.9.2 Non established Pre-term Labour
When the contractions have reduced to less than 3 in 30 minutes, continuous CTG monitoring is no longer necessary. Listen to the fetal heart every hour. Once contractions have
ceased completely then listen to the fetal heart every 4 hours. This will allow the mother to rest if asleep etc. Maternal observations should be performed every 4 hours.

3.10 Nifedipine
Nifedipine is a calcium channel blocker. This is not licensed for tocolysis in the UK, but has been shown to have some effect. Where a licenced alternative (such as Atosiban) exists the local team should consult their own Medicine Management Policy to support the use of the licenced product as first line treatment. A consultant obstetrician MUST recommend its use.
Patient must have IV access if nifedipine is given

3.10.1 Specific contraindications
a) Maternal blood pressure > 140/90 (this may be changed with consultant approval)
b) Cardiac disease
c) Maternal hypotension BP < 100/60
d) Patients on Magnesium sulphate for Severe PET / eclampsia

Initial dose 20 mgs modified release (MR) orally followed by 7 further doses of 20 mgs 6 hours apart to a maximum of 8 doses. Review of the fetal and maternal condition may lead to cessation of the drug 24 hours after initial dose.
If any change in the clinical condition occurs contact the registrar or consultant.

3.10.2 Maternal and fetal observations
3.10.2a Established Preterm Labour
As per section 3.9.1

3.10.2b Non established Pre-term Labour
As per section 3.9.2

3.11 Management of Suspected Chorioamnionitis.
Chorioamnionitis is infection of the fetal membranes and amniotic cavity. “Evidence is emerging that chorioamnionitis is a significant contributor to permanent neurological damage and cerebral palsy”, “The relative risks for periventricular leucomalacia and cerebral palsy are 3.0 and 1.9 respectively when a pre term birth is complicated by chorioamnionitis” (Duncan and McEwan 2004).
Pyrexia in labour due to infection combined with hypoxia may increase the risk of cerebral palsy by 80 fold (Duncan and McEwan 2004).

3.11.1 Clinical findings of chorioamnionitis are:
- Increased fetal or maternal heart rate
- Abdominal pain
- Altered vaginal loss (blood/meconium/offensive discharge)
- Increased temperature
- Uterine pain and tenderness
3.11.2 Investigations
- Laboratory testing - rising WCC with neutrophilia
- CRP
- MSSU for culture
- Low vaginal Swab for culture
- Peripheral blood cultures

3.11.3 Care management-
- Consider delivery by the best possible route- discuss with consultant on call
- Maternal observations-pulse every 15 minutes, temperature hourly
- Fetal Observation- continuous CTG
- Control Maternal pyrexia
- Regular paracetamol
- Fan/cool sponging for maternal comfort
- Maintain maternal hydration
- Maternal Antibiotics
- Frequently IV antibiotics are required. The options should include broad spectrum cover with Cefuroxime and Metranidazole; Alternatively Penicillin G with or without appropriately monitored Gentamycin or a regime including Clindamycin can be considered. Do not use Co-amoxiclav (Augmentin) as this has been associated with an increased rate of Necrotising Enterocolitis (NEC)
- Advice can always be sought from the microbiology team regarding optimal antibiotics and will depend on local variation in response to local policies.
- Always inform the neonatal unit staff of the case
- Post Delivery placental swabs and histology
- Swabs from the infant as requested by the paediatrician

4.0 IN UTERO TRANSFER OF MOTHERS

4.1 Rationale

There is strong evidence that the outcome for premature babies is significantly better when they are transferred antenatally (in utero transfer) and delivered in a center with neonatal facilities, compared to delivery, stabilization and postnatal transfer. The benefit of IUT will almost always outweigh the small risk that the birth may occur in transit. The maternal condition and safety must also be taken into account when considering the option of in utero transfer.

4.2 When is in-utero transfer indicated?
- Patients with threatened or established spontaneous preterm labour
- Patients in which iatrogenic preterm delivery is indicated due to maternal and/or fetal compromise
- In both circumstances in-utero transfer should be done on advice from the NNU that no appropriate cots are available for in-hospital delivery, and Obstetric Consultant approval.
4.3 How to transfer the patient?

- Contact the on-call Consultant and get their approval of the transfer.
- Inform the patient about the situation and the need for transfer.
- Contact first response team on phone No. 01384 215666, they will need information about the patient and the pregnancy, they can inform you about the available neonatal cots in the region and will find a cot for you. They will require the following information:-
  - Name
  - Age
  - Gestation
  - Whether in labour
  - Number of fetuses
  - Membranes intact
  - Presence of vaginal bleeding
  - Fetal fibronectin test result
  - Number of previous babies
- Once First Response inform you of where the cot is contact the on-call obstetric registrar of that hospital, and confirm that they accept the transfer.
- Where necessary ask own trust Obstetric Consultant to speak to receiving hospital’s Obstetric Consultant as a matter of good professional conduct.
- If no neonatal cots are available in the West Midlands region, First Response will try hospitals in other regions, starting from the nearest to the midlands.
- When the transfer is accepted, call ambulance control and ask for transfer using “The Blue Light Ambulance”.

4.4 What to do before the transfer?

- Write to the accepting unit with brief details of the case, this letter should accompany the patient.
- Liaise closely with senior midwifery and neonatal staff to ensure appropriate personnel available to accompany the transfer.
- Photocopy the current admission – do not send original case notes with the patient.
- Midwifery staff to complete the transfer checklist.
- Give steroids where indicated (Steroids Protocol)
- Start tocolysis if required (Tocolysis protocol)

**REMEMBER: In-utero transfer is a Consultant-to-Consultant transfer and you are only deputised to facilitate it.**

5.0 TRAINING

Click on here (electronic links) for (separate Word documents)

6.0 LOCAL ADDITIONS (these should be locally specific but not in conflict with information in the main body)
7.0 SUPPORTING INFORMATION/REFERENCES

Prediction of survival (%) for infants known to be alive at the onset of labour

EUROPEAN

![Graph showing predicted survival for preterm births]

Prediction of survival for preterm births [Full text]

Elizabeth S Draper, et al. bmj.com, 26 Sep 2003

7.1 Management of established preterm delivery

Grading Of Evidence Synopsis

Grade A evidence

- Atosiban® is the tocolysis of choice for short-term reduction in the incidence of preterm delivery (<48hrs).

Grade B evidence:

- Evidence does not indicate that LSCS delivery for pre-term breech is of fetal benefit compared to vaginal delivery.

Grade C evidence:
• All methods of analgesia in labour are suitable in pre-term labour however IM narcotics such as pethidine should be discouraged due to its fetal effects.

• Continuous CTG monitoring is mandatory for pre-term labour after 26 weeks gestation.

• Fetal blood sampling in labour can be performed as required.

• Ventouse delivery should not be performed in gestations below 34 weeks due to an increased risk of significant cephalhaematoma, sub-retinal haemorrhages.

• Elective forceps delivery is not required for pre-term delivery but forceps are safe to use to expedite delivery in the pre-term infant as required.

• Paediatric staff will attend pre term deliveries in line with the neonatal unit guidelines.

Good communication is vital, midwifery, obstetric and neonatal staff should discuss progress and plans of care for the pre term labour, delivery and care of the infant.

The temperature of the delivery room should be > 25º at the time of delivery, the room temperature should be recorded in the intrapartum notes once the delivery has taken place.

8.0 RELATING PATIENT INFORMATION

9.0 AUDIT

10.0 REFERENCES


Peaceman et al Fetal Fibronectin as a predictor for premature birth AMJOG (1997); 177:13-18