Preterm Labour – guideline for management in the absence of PPROM

University Hospitals of Leicester NHS Trust

Trust ref: C7/2014

Contents

1. Introduction and who the guideline applies to:

These guidelines are intended for the use of all Medical, Midwifery and Pharmacy Staff responsible for the care of women with threatened or confirmed preterm labour, in the absence of PPROM.

Related documents:

- Group B Streptococcus in Pregnancy and the Newborn UHL Obstetric Guideline
- Resuscitation at Birth UHL Neonatal Guideline

- Criteria for Transfer of Women from LGH to LRI with Expected Need for Neonatal Intensive Care UHL Obstetric Guideline
- Magnesium Sulfate for Fetal Neuroprotection UHL Obstetric Guideline
- Intrapartum Care UHL Obstetric Guideline
- Referral Handover of Care and Transfer UHL Obstetric Guideline
- Pre Labour Rupture of the Membranes UHL Obstetric Guideline
- Prematurity Prevention for Women at High Risk of Spontaneous Preterm Labour UHL Obstetric Guideline
- Peri-Prem clinical passport (paper work available in all clinical areas)

What's new?

- Use of fibronectin and the QUIPP App in assessing preterm labour
- Corticosteroid administration in relation to gestation has changed from 26/40-34/40 to 26/40-34+6/40. Also to now consider <24/40 if indicated but must be a Consultant decision. Repeat course information updated.
- Cautionary statement for the use of nifedipine in combination with magnesium sulfate amended.
- If instrumental delivery indicated, forceps gestation has increased from <35/40 to <36/40 and ventouse use should be avoided <32/40 and used with caution 32/40-36/40 (RCOG 2020)

Definition of preterm labour:

Diagnosis of preterm labour is notoriously difficult in the absence of advanced cervical dilatation.

The majority of women presenting with preterm contractions will subsequently deliver at term, regardless of management.

DEFINITION
Gestation < 37 weeks AND Contractions at least 4 in 20 minutes, or 8 in 1 hour AND Cervix ≥3cm dilated OR Documented cervical change by a single examiner

This definition is not rigid – the relevant features are preterm gestation, regular uterine activity, and cervical change. In cases of uncertainty, it may require more than one examination (preferably by the same examiner) to confirm the diagnosis.

Important definitions/terminology:

- **Symptoms of preterm labour**

The presence of symptoms of contractions at <37 weeks gestation prior to further assessment.

- **Suspected preterm labour**

The presence of regular contractions as above at <37 weeks gestation, but with insufficient cervical dilatation to confirm preterm labour

- **Established preterm labour**

The presence of regular contractions at <37 weeks gestation with cervical dilatation as above.

- **Fetal fibronectin:**

A vaginal swab taken to detect fetal fibronectin in vaginal secretions that assists in the prediction of which women will labour and deliver prematurely.

- **QUIPP App:**

  A clinical decision-making tool which helps to individualise the risk of preterm birth in an individual case, based on patient history and fetal fibronectin result +/- cervical length. The App can be used on a personal phone or on the Trust computers. No patient identifiable data is required.

2. Management of preterm labour:

2.1 Risk factors and symptoms:

On admission women with symptoms of preterm labour should be examined and investigated.

All women with symptoms of preterm labour or in suspected / established preterm labour should be cared for within a consultant unit, and not a low risk setting.

Table 1: Risk factors for Preterm Labour

Previous History	Current Pregnancy
Previous preterm labour / 2nd trimester or late miscarriage Previous cervical weakness Previous cervical surgery like LLETZ/Cone biopsy Abnormal uterine shape / anatomy Invasive fetal diagnostic tests Severe maternal illness Previous caesarean section when fully dilated	Multiple pregnancy Fetal IUGR APH Polyhydramnios PPROM Smoking Low BMI

2.2 Maternal observations/investigations

- Routine observations should be performed on admission. If preterm labour is suspected, maternal observations are to be carried out as specified in the Intrapartum Care Guideline:
    - Temperature
    - Blood pressure
    - Pulse
    - Respiratory rate
- Palpation of contractions to note duration and frequency
- Urinalysis
- Mid-stream specimen of urine (MSU) sent for culture and sensitivity
- Blood sent for full blood count (FBC) and C-reactive protein (CRP in cases of PPROM ref to the Pre Labour Rupture of the Membranes UHL Obstetric Guideline)
- Examination to assess cervical dilatation/confirm diagnosis of preterm labour
    - This should be performed by minimum of experienced SHO or above, or experienced midwife (both should discuss with SpR prior to examining)
    - Speculum examination and HVS should be performed.
    - If cervical dilatation appears <3cm, then use of a predictive test should be considered:
        - If the admitting doctor is trained to do so, then transvaginal ultrasound of the cervix should be undertaken if the woman is 34 weeks gestation

or less. Cervical length <15mm is suggestive of increased risk of preterm delivery.

- If cervical scan not performed, then use of a predictive test such as Fetal Fibronectin should be undertaken if the result would change the management of the woman (would not usually be performed at >34+6 weeks gestation).Test should be performed by ≥ST3 following D/W Cons or SPR

- Sterile speculum examination must be performed instead of digital VE if history is suggestive of PPROM.(see PPROM g/l)

- Digital VE should also be performed if the history is not suggestive of preterm prelabour rupture of membranes (PPROM) and the speculum findings are inconclusive.

2.3 Fetal observations/investigations

- Confirm presentation, using portable ultrasound if necessary

- Auscultate fetal heart. Hand held doppler if <26 weeks, CTG if regular contractions, Computerised CTG assessment/ Dawes Redman/NST if not contracting can be used.

Preterm labour is established if cervix ≥3cm dilated in the presence of contractions (as definition on page 2). If diagnosis is not confirmed, then re-examination by the same examiner should be performed 2-4 hours later if contractions persist.

2.4 Fetal fibronectin

Consider fetal fibronectin testing in women in threatened preterm labour if the result would alter the clinical decisions.

Fetal fibronectin (fFN) is a glycoprotein found between the amniotic sac and the decidua.
Although it's exact function is uncertain it is believed that fFN may have a role in implantation and placental –uterine attachment.

It can normally be found in women up to 22 weeks of gestation but is usually not found after that time. Detection of fFN in cervicovaginal secretions between 23 - 34+6 weeks gestation may indicate disruption of utero-placental interface and risk of preterm delivery. It is thought to be released through mechanical or inflammatory mediated damage to the membranes or placentabefore birth (Malak 1996).
fFN can be detected and measured in the cervicovaginal secretions by an enzyme linkedimmunosorbent assay (ELISA) containing FDC6 monoclonal antibody (Honest 2002**).**

See Appendix 1 on how to take sample.

A level of greater than 50ng/ml is considered to be a positive result.

The usefulness of the rapid fFN assay lies in its high negative predictive value (-ve predictivevalue >95%). This means that 95% of cases will not deliver in the next 14 days (IHE 2008). See appendix 2

A negative result provides reassurance and thus eliminates hospitalisation, tocolytic therapyand corticosteroid treatment in women who do not truly have pre-term labour.

However, the positive predictive value of fFN is poor (13-40%). There is only a 13-40% chance of delivering within the next 7-14 days with a positive result, so a positive result is clinically much less useful but should increase clinical vigilance.

Once the fFN result is known it should be interpreted using the following process:

- The readout number should be entered into the QUIPP mobile phone or computer application which is available to freely download or access via any computer terminal using the following link:
  https://quipp.org/

All available information should be entered into the symptomatic data panel.

- If exact cervical length (measured by ultrasound) is unknown, then this may be left blank.
- The app will generate a percentage risk of preterm birth within different timeframes and gestations. Only use the 7 day risk for decision making.
- A preterm birth risk of ≥5% within 7 days is considered a positive result

The fibronectin test is available in a kit on both UHL maternity sites and can be found at the Delivery Suite, Maternity Assessment unit and Preterm Prevention Clinic.

Indications and Contraindications for fFN Testing

Indications

Gestational age 23 - 34+6 weeks.
Uterine contractions.
Cervical dilation <3 cm.
Intact amniotic membranes.

Contraindications

Advanced cervical dilatation (3 cm or greater)
Ruptured membranes
Moderate or gross vaginal bleeding (Can be used but see note below)

- Contraindication to speculum examination – including patient not giving consent
- Sexual intercourse within last 24 hours- (Can be used but see note below)
- Use of vaginal lubricant within last 24 hours – speculum exam with lubricant, VE or TV scan

PLEASE NOTE: **contamination with semen (i.e., Intercourse within last 24 hrs or blood can produce a falsely elevated result. However, a negative result (under 50) can be considered accurate. (Update from Hologic April 2020)**

2.5 Communication

The neonatal unit should be informed of the presence of all women at <35 weeks gestation with a diagnosis of suspected preterm labour. Ensure the correct unit for gestation and level of care required is contacted. LGH can accept > 32/40 only, below this gestation should be referred to LRI. Out of area, confirm with accepting Hospital the level of neonatal care required.

- The Midwife (or Midwifery Coordinator) should inform the Nurse in Charge on the Neonatal Unit when the diagnosis of suspected preterm labour has been made.

- Consider informing the neonatal unit if the gestation is between 35- and 37-weeks' gestation where there are any other potential fetal concerns e.g., fetal growth restriction, maternal diabetes.

The results of the cervical length scan and/or predictive test should be used to inform the need for admission, the need for further treatment and the potential need for *in utero* transfer if neonatal cots are not available. These interventions would not normally be indicated in the presence of negative predictive testing.

2.6 Antenatal corticosteroids to reduce neonatal morbidity and mortality

Corticosteroid therapy

- This has been demonstrated to improve neonatal outcome in women of 26 – 33+6 weeks gestation, and it is thought likely to be beneficial from 24 weeks gestation. It may be considered in women prior to 24 weeks, if their risk of preterm birth is >5% on QUIPP app or they are in active labour or have delivery planned and they have been adequately counselled by the neonatal and obstetric teams. The decision should be by an obstetric consultant. Steroid administration may also be considered in women of 34 – 35+6 weeks gestation, although the 'number needed to treat' to derive benefit is much higher.

- The corticosteroid normally prescribed is dexamethasone.

- It should be prescribed as:

'Dexamethasone 12mg IM', 2 doses 12 hours apart

- Maximal benefit is achieved if administered between 24 hours and 7 days prior to delivery (timed from the 2nd dose).

- They should be given to all women up to and including 34^{+6} weeks gestation considered at risk of delivery within 7 days of presentation, and where survival-focussed care of the baby is planned.

- The safety of multiple courses of corticosteroids has not been established. Women should be informed that no reduction in serious morbidity or long-term benefits have been seen with repeat corticosteroids but babies who receive repeat doses of antenatal corticosteroids are smaller (lower birthweight and reduced length).

- There is currently limited evidence to recommend repeat courses of antenatal corticosteroids if a woman remains at imminent risk of preterm birth seven days after administration of antenatal corticosteroids. However, a further course may reduce the need for neonatal respiratory support.

- The maximum number of corticosteroid courses given in any one pregnancy should not exceed three. (RCOG Guideline 74). The rescue course should be discussed with a senior clinician.

- Consider a single repeat course of maternal corticosteroids for women less than 34 + 0 weeks pf pregnancy who:

    - Have already had a course of corticosteroids when this was more than 7 days ago, and are at very high risk of giving birth within the next 48 hours (Use fFN/cervical length and the QUIPP app to quantify this risk if possible).
    - Where the woman is less than 30+0 weeks pregnant of or if there is suspected growth restriction, take into account the possible impact on fetal growth of a repeat course of maternal corticosteroids. NICE 2022.

2.7 Tocolysis

- Tocolysis should only normally be considered up to 32 weeks gestation. It may be considered up to 34+6 weeks gestation where an in-utero transfer is required - this should be discussed with a senior Obstetrician.

- The most senior obstetrician available on site should review all women in whom tocolysis is being considered / prescribed.

- A predictive test should be performed in women with intact membranes in whom tocolysis is being considered. (See Predictive testing – Appendix II)

- The tocolytic of choice is Nifedipine (NICE NG25 2015) – see appendix 3.

- Nifedipine should be used with caution in combination with magnesium sulfate to avoid precipitous fall of maternal blood pressure or adverse neuromuscular

effects. Appropriate monitoring is advisable. Should they be administered simultaneously the magnesium sulphate bolus dose can be slowed down.

- Atosiban can be used as an alternative – see appendix 3

- Cervical dilatation of >3cm, vaginal bleeding and ruptured membranes are all relative contraindications to tocolysis.

- Tocolysis does not reduce perinatal mortality

2.8 Analgesia

- All women with symptoms of preterm labour, or suspected or established preterm labour, should be offered adequate analgesia.

2.9 Magnesium Sulfate

- Magnesium Sulfate should be offered as per the 'Magnesium Sulfate for use for fetal neuroprotection' guideline, prior to preterm birth at less than 32 weeks gestation.

- Nifedipine should be used with caution in combination with magnesium sulphate to avoid precipitous fall of maternal blood pressure or adverse neuromuscular effects. Appropriate monitoring is advisable. Should they be administered simultaneously the magnesium sulphate bolus dose can be slowed down.

2.10 Group B Streptococcus

- All women in confirmed preterm labour should receive antibiotic prophylaxis against Group B Streptococcus. Please see Group B Streptococcus in Pregnancy and the Newborn UHL Obstetric Guideline

2.11 Counselling

All women considered likely to give birth at less than 27 weeks gestation should receive counselling based upon the BAPM Framework 'Perinatal Management of Extreme Preterm Birth Before 27 Weeks of Gestation' See Appendix 4

The British Association for Perinatal Medicine have published guidance to assist in decision making at less than 27 weeks gestation. It provides a visual tool for risk factors for poor outcome. If it is agreed that life-sustaining care for the baby is appropriate ('survival focussed care'), then a plan should be agreed regarding the obstetric input. Where delivery is anticipated within 7 days, then antenatal corticosteroids should be given to the mother, and where delivery is likely within 24 hours magnesium sulfate and antibiotics should be given. An obstetric plan regarding fetal monitoring and mode of delivery should be discussed and agreed with the parents. If parents opt for palliative care ('comfort focussed care'), then only interventions required for maternal benefit should be undertaken.

The earliest gestation at which survival focussed care would be considered is 22^{+0} weeks.

See:
https://www.bapm.org/resources/80-perinatal-management-of-extreme-preterm-birth-before-27-weeks-of-gestation-2019

https://hubble-live-assets.s3.amazonaws.com/bapm/file_asset/file/31/outcome-of-births-infographic-201909111005-colour.pdf

2.12 Labour & Delivery

Care during labour and delivery should minimise the risks of preterm birth.

The neonatal unit must be informed about any woman in suspected or established preterm labour at <35 weeks gestation (see section 2.5).

Consider informing the neonatal unit if the gestation is between 35 and 37 where there are any concerns.

Monitoring and mode of delivery

- The on-call consultant should be notified of all women in established pre-term labour who are less than 28 weeks gestation, and all women of less than 32 weeks gestation with a non-cephalic presentation.

- ST6-7 or above must be involved in the assessment and decision making process (if there is only a ST4/5 in residence they should discuss the case /management with the consultant) in cases of pre-term labour <34/40. After 28 weeks, other clinical indicators may require the consultant attendance; discussion with the consultant on call is required.

- Intrapartum fetal monitoring should be offered where intervention on behalf of the fetus is considered appropriate. Where a decision is made to not offer monitoring or Caesarean section, this must be fully discussed with the mother and documented in the health record. Views and wishes of the mother should be respected.

- There is no clear evidence to suggest that either intermittent auscultation or CTG are superior in extreme prematurity. CTG may be more difficult to interpret under those circumstances. However, where intervention on behalf of the fetus is considered appropriate, it may be more appropriate to use continuous electronic fetal monitoring.

- Continuous Intrapartum Fetal monitoring should be carried out from 26 weeks gestation onwards, unless poor fetal outcome is expected and/or Caesarean section would not be considered appropriate in the presence of an abnormal

trace. Under certain circumstances, based on discussion between a senior clinician and parents, monitoring may be offered at earlier gestations.

- There is no evidence that Caesarean section will improve fetal outcome at extremely preterm gestations (e.g., before 26 weeks gestation), and is more likely to entail a classical Caesarean section with implications for future pregnancies. In gestations of 26 weeks and above Caesarean section should be offered based on other obstetric indications - there should be senior involvement in the decision-making process for all patients at less than 35 weeks gestation. Parents should be given adequate information and be involved in the decision-making process.

Intrapartum care

- Fetal scalp electrodes and fetal scalp blood sampling should be avoided at gestation of <35 weeks as there is limited data regarding safety of these procedures.

- A paediatrician should be present at the delivery of every baby of <35 weeks gestation.

- Ensure relevant equipment is available to keep the baby warm and initiate resuscitation where necessary (see Resuscitation of the Newborn Infant at Birth for full details).

Caesarean section

- If preterm Caesarean section is required, this should be performed by an experienced surgeon. This can be ST6 or above as long as there is evidence of them being signed off as competent.

- The consultant on call should be informed of all, and may need to attend Caesarean sections at <34 weeks gestation. Please see -Referral Handover of Care and Transfer UHL Obstetric Guideline

Instrumental delivery

- If assisted delivery is required forceps should be used for babies of <36 weeks gestation. However, great care is required particularly if the baby is below 32 weeks. These deliveries should be by ST6/7 or above. Care should be taken in the application of the forceps to ensure only the baby's head and not shoulders, or chest is included in the forceps.

- Ventouse should be avoided below 32 weeks gestation, and used with caution between 32^{+0}- and 36+0-weeks' gestation RCOG Greentop assisted delivery 2020 (13)

All cases

- Preterm babies are particularly vulnerable to trauma. This applies to deliveries by Caesarean Section as well as vaginal deliveries. Particular attention should be paid to delivering the baby in the least traumatic way possible. Consideration may be given to delivering the very preterm baby with the gestation sac intact ("en caul"). They should be removed from the 'caul', the cord clamped and divided, prior to transfer to the paediatric team.

- Babies born at <32 weeks gestation by any route should be placed immediately in a plastic bag at birth without drying, to minimise heat loss, then transferred to the waiting paediatric team.

Cord clamping

- For uncompromised term and preterm infants, a delay in cord clamping of at least one minute from the complete delivery of the infant, is now recommended. Yet there is insufficient evidence to recommend an appropriate time for clamping the cord in infants who are severely compromised at birth. For infants requiring resuscitation, resuscitative intervention remains the immediate priority. Stripping (or 'milking') of the cord is not recommended..

The preterm breech

- There is no evidence regarding the best mode of delivery in these babies, and delivery decisions should be made on an individual basis after discussion with the consultant obstetrician and the parents.

- If a decision is made for vaginal delivery, then epidural should be strongly advised, to reduce the risk of maternal expulsive effort prior to full dilatation. Full dilatation should be confirmed by examination by the specialist registrar prior to commencement of active pushing.

Neonatal review

- Every effort should be made for the woman to be reviewed by a neonatologist prior to delivery in order to discuss the management of the baby, and its prognosis. The neonatal survival figures for Trent Region are summarised in Appendix I for information.

2.13 In utero transfer

In utero transfer may be necessary if a neonatal cot is unavailable at the admitting hospital.

- LGH is currently functioning as a Level 1 unit. ALL women presenting at less than 32 weeks should be transferred out if time permits, unless predictive testing is negative. This should be decided by the SpR and discussed with the consultant and transfer should be to the LRI if a neonatal cot is available but if not, transfer out of the city will be required.

- → Refer to UHL "Criteria for Transfer of Women from LGH to LRI with Expected Need for Neonatal Intensive Care UHL Obstetric Guideline C1/2007
- *In utero* transfer out of the city may occasionally be necessary if a neonatal cot is unavailable at Leicester Royal Infirmary. Decision to make an *in-utero* transfer should be made by ST6/7 doctor or above, and the safety of the woman should remain a priority at all times. If transfer out is considered unsafe, then the neonatal team should be informed.

- A current list of hospitals to which transfer may be considered is available on Delivery Suites at LRI and LGH

- A predictive test should be performed in women without contraindications prior to arranging *in utero* transfer. If the fFN test is <50 negative, then the risk of delivery within 7 days is <1% and it is therefore reasonable to withhold transfer.

- CMG guidelines for *in utero* transfer should be followed at all times

3. Education and Training

All staff should be familiar with the use of fetal fibronectin testing. A laminated instruction manual for performing the test is available next to the fibronectin analyser on Delivery Suite/MAU/ANC.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
The number of fFN tests performed for suspected preterm birth (these should be recorded in a logbook	**An audit of fetal fibronectin testing**	Dunkerton	6 monthly	
The number of negative/positive tests recorded, and number of babies born pretermwithin 14 days of a negative or positive test result	Audit of time of delivery within 14 days of positive QUIPP app result	Dunkerton	6 monthly	

5. Supporting References

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6. Key Words

Atosiban, Corticosteroid, Fetal fibronectin, Magnesium sulphate, Nifedipine, Preterm gestation, QUIPP App, Tocolysis

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The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT			
Author / Lead Officer: P McParland and A Akkad		**Executive lead:** **Chief nurse**	
Reviewed by:	S Dunkerton		
Approved by:	Guidelines Group and Maternity Service Governance Group	**Date Approved:** September 2022	

REVIEW RECORD			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
30.03.16	2	P McParland	Use of Nifedipine as Tocolysis. Some definitions changed to be clearer
23.11.21	3	R Saxena, P McParland	Recommendation 2 considering fFN and Appendix 2
September 2022	4	S Dunkerton	• Use of fibronectin and the QUIPP App in assessing preterm labour added. Medical grade to perform test specified • Added risk factor for preterm labour table • Added reference to pre labour rupture of membranes guideline • Added consider VE if no evidence of PPROM and speculum inconclusive • Added that CTG should be used if >26/40, computerised if not contracting • Ensure transfer to unit that can offer appropriate level of care • Corticosteroid administration in relation to gestation has changed from 26/40-34/40 to 26/40-34+6/40. Also to now consider <24/40 if indicated but must be a Consultant decision. Repeat course information updated in line with NICE 2022 • Cautionary statement for the use of nifedipine in

			combination with magnesium sulfate amended. • Removed ABX info – now refer to relevant guideline and hyperlinked • Counselling section updated • Specification of obstetric grade required for being informed and required attendance updated • If instrumental delivery indicated, forceps gestation has increased from <35/40 to <36/40 and ventouse use should be avoided <32/40 and used with caution 32/40-36/40 (RCOG 2020)

Appendix 1: Performing the Test

Give appropriate information to the woman about the test and obtain verbal consent.

- Sterile speculum examination by doctor without lubricant. Lubricant can interferewith fetal fibronectin assay – if fibronectin test is to be performed, take the sample prior to any digital vaginal assessment or TV scan
- A high vaginal swab should be performed at speculum examination when performing thefetal fibronectin test.

Step 1

Open the fetal fibronectin collection kit which contains a sterile polyester swab for specimencollection and a test tube containing buffer solution.

Gently rotate the supplied swab across the posterior fornix of the vagina for 10 seconds toabsorb the cervicovaginal secretions.

Step 2

Remove swab and immerse tip in buffer. Gently mix the swab in the solution and remove the
swab. Take the fFN sample (buffer solution) to the Rapid fFN 10Q Analyser on MAU.
Note: A daily quality check of the 10Q analyser is carried out bythe health care assistant on Delivery Suite. A system pass or fail is then logged in the diary kept next to the analyser.

This swab can be kept up to 24 hours before processing in the fridge or 12 hours at room temperature.

Step 3

Remove the Rapid fFN Cassette from the plastic box next to the analyser.

Step 4

Select TEST PATIENT from the Analyser Main Menu and enter the necessary information untilthe analyser prompts for cassette insertion.

Step 5

Insert the cassette into the analyser and press ENTER. The reference code on the cassette willappear on the analyser and this should match with the number on the test cassette.

Step 6

Pipette 0.2mls of patient sample buffer solution into the well of the Rapid fFN cassette and press ENTER.
The analyser will complete the analysis of the fFN cassette in 10 minutes

Interpretation of Result

A positive or negative result as well as the fFN concentration will be printed and a permanentrecord will be available for the maternity notes. The test should always be used in conjunctionwith information available from the clinical examination.

The results should also be recorded with the woman's hospital identification label in thefibronectin result book kept next to the analyser for audit purpose.

If Fibronectin positive (50 or more) – consider to be at increased risk ofpreterm labour
The level of fibronectin correlates to the risk of delivery, with higher levelsindicating an increased risk
Level of risk is also dependent on individual risk factors (For example:previous preterm birth)
Use the QUIPP App with the fibronectin result and the individual patient riskfactors, to obtain a % risk of delivery in the next 7 days.
The Fibronectin result sticker, as well as the QUiPP App result needs to beplaced in the patient record.
The ongoing management of the patient is decided on an individual basisusing all the available information and in full discussion with the patient.

However, the decision to admit and treat, or to discharge home is a CLINICAL DECISION. The QUiPP App result is to be used to aid decision making and not solely for deciding.

If exact cervical length (measured by ultrasound) is unknown, then this may be left blank.
The app will generate a percentage risk of preterm birth within different timeframes and gestations. Only use the 7 day risk for decision making.

A preterm birth risk of ≥5% within 7 days is considered a positive result

In cases with a positive result consider:

- Admission – monitoring and observation
- Steroids – for neonatal lung maturity
- Tocolysis – with Nifedipine or Atosiban if needed
- Magnesium Sulphate – for fetal neuroprotection
- Antibiotics – for PPROM, GBS prophylaxis, treatment of chorioamnionitis
- In Utero Transfer – if neonatal cots are unavailable
- Discussion with Neonatal team and Parents
- Plan for delivery – monitoring and mode of delivery

Always consider that there may be a serious underlying reason for why labour has started early – For example: abruption, chorioamnionitis – the management of these

high-risk women should be discussed with a senior obstetrician as tocolysis and IUT may be detrimental and thus contraindicated

Depending on clinical situation and fibronectin level, the extent of management can betailored to the individual situation:

- If Fibronectin negative (under 50) – unlikely to be in preterm labour
- Consider alternative diagnosis
- Consider management at home or observation in hospital
- Fetal fibronectin has a high negative predictive value – i.e. A Negative result ishighly accurate at indicating which women will not go into labour in the following 14 days
- The QUiPP App can also be used in these circumstances as a way to help demonstrate the low level of risk to patient
- Specific Instructions

For accurate test results please ensure that the following instructions are followed

Specimens should be collected prior to

- Digital cervical examination
- Collection of culture specimens
- Vaginal probe ultrasound examination.
- Do not contaminate swab or specimen with.
- Lubricants
- Soaps
- Disinfectants
- Cream

Financial Implications

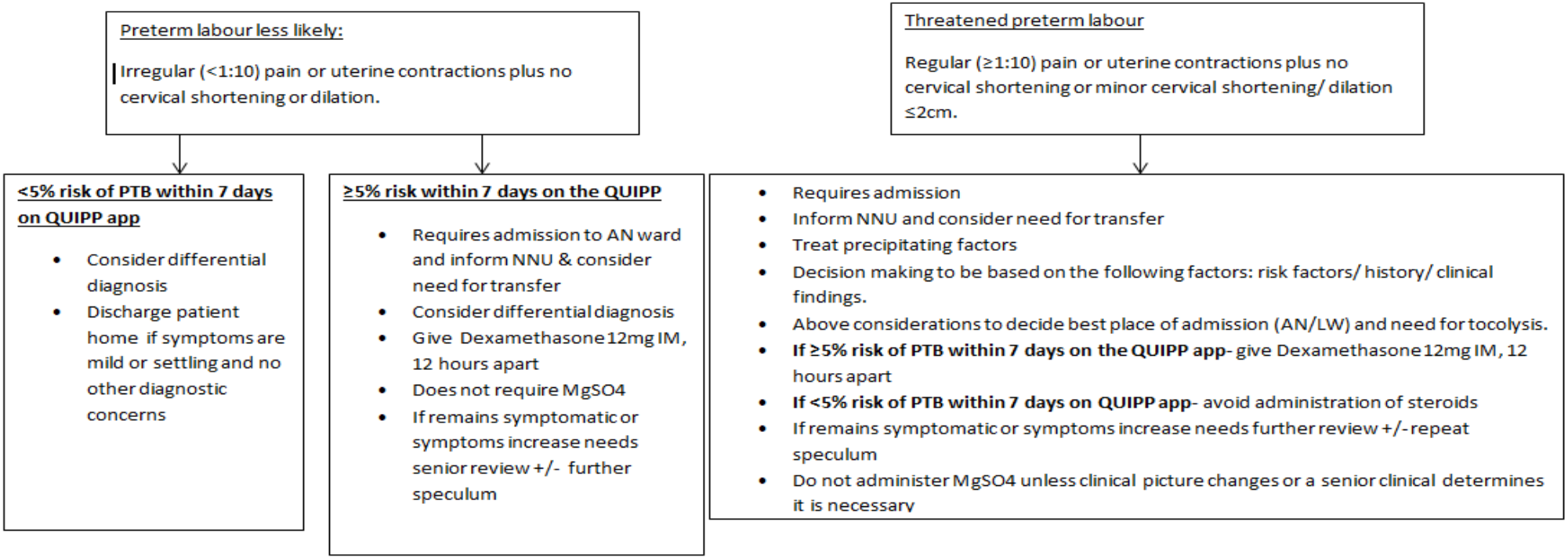
Preterm labour has considerable financial implications for the health service. Identifying women who are not in true pre-term labour by fetal fibronectin testing will avoid unnecessarytreatment, admission and associated high treatment costs with in-utero transfers.

Appendix 2 Flow chart

Management of patient following speculum examination and interpretation of fetal fibronectin (fFN) swab results

The readout number for the fFN result should be entered into the QUIPP computer/ mobile phone application which are available to access via the following internet link http://quipp.org/ . All available information should be entered into the symptomatic data panel. If exact cervical length (measured by ultrasound) is unknown then this can be left blank. The app will generate a percentage risk of preterm birth for different timeframes and gestations. Only use the 7 day risk for decision making.

A preterm risk of ≥5% is considered a positive result.



Appendix 3: TOCOLYSIS

Tocolysis should be considered with women with suspected preterm labour in whom 24 hour delay in delivery may be considered to confer clinical benefit to the baby (e.g. to allow time for administration of steroids, or for in utero transfer). It would not usually be administered at gestation of >32 weeks. It would not normally be administered if the predictive test used (e.g. Actim Partus, Partosure or fibronectin) is negative.

Contraindications to tocolysis:

- Fetal compromise
- Maternal compromise
- Active vaginal bleeding
- Suspected intrauterine infection
- Suspected abruption
- Established preterm labour
- Lethal fetal anomalies
- Ruptured membranes (relative contraindication)

Nifedipine

Nifedipine is the first line tocolytic drug. Nifedipine is not licensed for use as a tocolytic. However is it the first line tocolytic recommended in the NICE guideline on Preterm Labour and Birth (NG25, 2015)

Contraindications to nifedipine:

- Maternal cardiac disease
- Maternal hypertension/pre-eclampsia
- Hypotension (BP <90/50)
- Previous allergic or adverse reaction to nifedipine
- Use of beta-blocker
- Multiple pregnancy

Nifedipine must not be administered simultaneously with magnesium sulfate. Nifedipine should be used with caution in combination with magnesium sulphate to avoid precipitous fall of maternal blood pressure. Should they be administered simultaneously the magnesium sulphate bolus dose can be slowed down. (Wording of BHAM guidance)

Atosiban should be considered in women in whom nifedipine is contraindicated.

Nifedipine regime

10mg Nifedipine (Adalat) **capsule** orally (This is immediate release AND MUST NOT BE USED FOR HYPERTENSION - Adalat LA tablets – 'prolonged release' – once-daily administration is for use for hypertension in postnatal patients only)

Repeat 10mg Nifedipine **capsule** every 15 minutes if still contracting, up to a maximum 40mg over the **first hour**.

(Maximum 4 initial short acting doses of 10mg each)

Once contractions ceased, maintenance of 20mg **modified release** (Adalat Retard) 8-hourly for 24 hours, first dose to be given 30 minutes after the last short acting dose

(Dose may be varied and prescribed 20-40mg 6-8 hourly – consultant decision only to vary dose/timing - check total dose in 24 hours carefully)

Maximum 160mg nifedipine in 24 hours (check total dose carefully if 40mg is being administered and multiple initial doses required)

Common side effects of nifedipine are transient palpitations (0-6%), facial flushing (5-18%) and headaches (5-6%). Rare incidences of pulmonary oedema have been reported.

Nifedipine has minimal haemodynamic effects in normotensive women; however BP should be monitored carefully as below.

Monitoring

Prior to tocolysis:

- Maternal observations (Pulse, BP, temperature)
- IV access, blood sent for FBC, CRP, U&E, LFT

During contractions and administration of short acting nifedipine:

- Continuous CTG if 26 or more weeks (monitoring according to senior assessment if <26 weeks).
- Maternal observations every 30 minutes

During 24 hours of administration of long acting nifedipine:

- 4-hourly maternal observations
- 4-hourly CTG

Continuous CTG to be recommenced if contractions resume.

Atosiban

- Atosiban is a tocolytic drug used try to delay preterm delivery.
- It is an oxytocin antagonist.
- It is administered as an intravenous infusion.

Indications for use

Early preterm labour at 32 weeks gestation or less, with a positive predictive test, in whom delay of delivery of 24-48 hours may potentially confer clinical benefit (e.g. to allow steroid administration or in utero transfer).

Relative contraindications to use

- Vaginal bleeding
- Ruptured membranes
- Cervical dilatation of >3cm
- Fetal or maternal compromise

Administration of Atosiban

Give 6.75mg (0.9ml of 7.5mg/ml injection) IV over 1 minute

↓

Prepare infusion in 0.9% sodium chloride or 5% glucose

Withdraw 10ml from 100ml bag and discard
Add 10ml of 7.5mg/ml concentrate to the bag and mix well*

Resulting solution contains 750micrograms/ml

↓

Run infusion at 24ml/hr for 3 hours

↓

Decrease rate to 8ml/hr to continue
(for a maximum of 45 hrs)

*For subsequent bags withdraw 5ml from a 50ml bag and discard.
Add 5ml of 7.5mg/ml concentrate to the bag

<u>Total duration of treatment should not exceed 48 hours.</u>

- Review after 24 hours. In most cases, discontinuation is reasonable, and would have allowed for the administration of steroids.

<u>Monitoring whilst on Atosiban</u>

- Maternal blood pressure every 15 minutes for the first hour then hourly until the infusion rate is reduced. Then continue 4 hourly.

- A plan for the assessment of fetal wellbeing should be determined by the Obstetrician and will depend on gestation and cause for preterm labour

Appendix 4: Neonatal Survival Statistics

Predicted survival (%) for infants known to be alive at the onset of labour, figures from Trent region 1998-2001 (Draper et al).

Gestation (weeks)	European origin	Asian origin
22	7	3
23	15	11
24	29	27
25	47	51
26	65	72
27	79	85
28	88	92
29	93	96
30	96	97
31	97	98
32	98	99