University Hospitals Plymouth NHS Trust

MATERNITY GUIDELINES

Fetal blood sampling

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1. Introduction

Fetal blood sampling is a method of ascertaining further information surrounding intrapartum fetal wellbeing by assessing the fetal acid-base balance. This is achieved by obtaining a fetal scalp blood sample (FBS) via an amnioscope. This can be performed during the first or second stage of labour.

2. Indications for initial FBS analysis

A pathological fetal heart rate trace, where conservative measures have failed or immediate reassurance about fetal wellbeing is required.

Take into account the woman's preferences and the whole clinical picture.

Before carrying out fetal blood sampling, start conservative measures and offer digital fetal scalp stimulation. Only continue with fetal blood sampling if the cardiotocograph trace

remains pathological: If digital fetal scalp stimulation (during vaginal examination) leads to an acceleration in fetal heart rate, regard this as a sign that the baby is healthy. Take this into account when reviewing the whole clinical picture**.**

3. Contra-indications for FBS

Do not carry out fetal blood sampling if:

- There is an acute event (for example, cord prolapse, suspected placental abruption or suspected uterine rupture) or
- The whole clinical picture indicates that the birth should be expedited or
- Contraindications are present, including risk of maternal-to-fetal transmission of infection (Hep B/C, HIV, and primary herpes) or risk of fetal bleeding disorders (haemophilia). However, if the HIV viral load is undetectable (less than 50), then the woman can have normal care in labour, including FBS if needed.
- During or immediately after a prolonged deceleration.

4. Caution with FBS

Prematurity - between 34 and 36+6 weeks
The following may give a falsely reassuring result on the FBS.

- Signs of intrapartum infection/ chorioamnionitis, maternal pyrexia > 38^0C.
- Significant meconium stained liquor.

5. Taking the sample

Explain the following to the woman and her birth companion(s):

- Why the test is being considered and other options available, including the risks, benefits and limitations of each.
- The blood sample will be used to measure the level of acid in the baby's blood, which may help to show how well the baby is coping with labour.
- The procedure will require her to have a vaginal examination using a device similar to a speculum.
- A sample of blood will be taken from the baby's head by making a small scratch on the baby's scalp. This will heal quickly after birth, but there is a small risk of infection.
- What the different outcomes of the test may be (normal, borderline and abnormal) and the actions that will follow each result.
- If a fetal blood sample cannot be obtained but there are fetal heart rate accelerations in response to the procedure, this is encouraging and in these circumstances expediting the birth may not be necessary.

- If a fetal blood sample cannot be obtained and the cardiotocograph trace has not improved, expediting the birth will be advised.
- A caesarean section or instrumental birth (forceps or ventouse) may be advised, depending on the results of the procedure.

Take fetal blood samples with the woman in the left-lateral position.

Use either pH or lactate when interpreting fetal blood sample results.

6. Interpretation of results

Take action based on the most abnormal result obtained (either pH or lactate). Ideally 2 samples should be obtained.

Lactate (mM)	pH	Interpretation	Action
≥4.9	≤7.20	Abnormal	Category 1 delivery
4.2-4.8	7.21-7.24	Borderline	Repeat in <30minutes if still indicated. Sooner if CTG deteriorates
≤4.1	≥7.25	Normal	Repeat in <1 hour if still indicated. Sooner if CTG deteriorates

Interpret fetal blood sample results taking into account:

- any previous pH or lactate measurement and
- the clinical features of the woman and baby, such as rate of progress in labour.

If the fetal blood sample result is abnormal**,** inform a senior obstetrician and the neonatal team and expedite the birth taking the woman's preferences into account.

If the fetal blood sample result is borderline and there are no accelerations in response to fetal scalp stimulation, consider taking a second fetal blood sample no more than 30 minutes later if this is still indicated by the cardiotocograph trace.

If the fetal blood sample result is normal and there are no accelerations in response to fetal scalp stimulation, consider taking a second fetal blood sample no more than 1 hour later if this is still indicated by the cardiotocograph trace.

- A drop in pH or increase in lactate, even if still in the normal range, might be clinically relevant.
- Inform consultant obstetrician if a third fetal blood sample is thought to be needed.

7. When a fetal blood sample cannot be obtained

- If the associated fetal scalp stimulation results in fetal heart rate acceleration, decide whether to continue the labour or expedite the birth in light of the clinical circumstances.
- If there has been no improvement in the cardiotocograph trace, expedite the birth.

8. Second stage FBS

Where a difficult assisted birth is contemplated in the presence of a pathological CTG, FBS should be undertaken. If the result is abnormal Cat 1 LSCS might be the most appropriate course of action.

9. Documentation and record keeping

It is expected that every episode of care be recorded clearly, in chronological order and as contemporaneously as possible by all healthcare professionals as per Hospital Trust Policy.

Documentation and record keeping MUST include:

- Rationale for undertaking FBS together with documented management plan in notes dependent upon the outcome.
- All FBS results must be recorded in the patient records; additionally the machine print out must be secured within the labour record taking care not to obscure any written documentation.
- Blood samples must be labelled in the room prior to being taken to the blood gas analyser

All entries must have the **date and time** together with **signature and printed name.**

Training requirements

Audit of training needs compliance – please refer to TNA policy

Training needs analysis:
Please refer to 'Training Needs Analysis' guideline together with training attendance database for all staff

Cross references

Maternity Hand Held Notes, Hospital Records and Record Keeping:
http://staffnet.plymouth.nhs.uk/Portals/1/Documents/Clinical%20Guidelines/Maternity/Maternity%20hand%20held%20notes%20and%20hospital%20records.pdf?timestamp=1539605100467

The monitoring of fetal well-being during labour:
http://staffnet.plymouth.nhs.uk/Portals/1/Documents/Clinical%20Guidelines/Maternity/The%20monitoring%20of%20fetal%20well-being%20during%20labour.pdf?timestamp=1539605043340

Guideline development within the maternity services:
http://staffnet.plymouth.nhs.uk/Portals/1/Documents/Clinical%20Guidelines/Maternity/Guideline%20development.pdf?timestamp=1539604980553

References

National Institute for Clinical Excellence (2017) Clinical Guideline 190. **Intrapartum Care for healthy women and babies**. NICE, London.

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Changes	Introduction of Taking the sample and discussion advise with the woman and her partner Table 1 change of "intermediate" to "borderline". Advise on when a FBS sample cannot be obtained.		
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