Worcestershire Acute Hospitals NHS Trust

Fetal Blood Sampling (FBS)

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Key Amendments

Date	Amendments	Approved by

Indications of fetal Blood Sampling

Fetal Blood Sampling is indicated in presence of pathological CTG. (See NICE guideline on intrapartum CTG) unless there is clear evidence of acute fetal compromise requiring urgent delivery.

Technique for fetal blood sampling

1. Explain procedure to mother and partner.
2. Check gas analyser is ready for use to facilitate immediate results
3. Position mother in left lateral and support leg
4. Insert lubricated Amnioscope to visualise fetal scalp.
5. Dry fetal scalp.
6. Assistant to spray fetal scalp with ethyl chloride to achieve hyperaemia.
7. Apply soft paraffin wax to encourage droplet formation.
8. Scalp incision with guarded blade only.
9. The sample should not contain any air and should fill a small capillary tube and should be analysed immediately. **NB: The sample should be mixed using an iron filing and magnet which should be removed before analysing. A clot catcher should always be used with the capillary tube.**
10. The FBS results should be hand written in the labour records, with the printed FBS reports securely stored in the CTG envelope.
11. Medical staff performing the first FBS should clearly document the further plan for repeat FBS if required. The time interval for repeating FBS should be decided on an individual basis depending on the clinical situation.
12. If a 3rd FBS is necessary it should be discussed with a Consultant Obstetrician.
13. If for any reason, the FBS result is not obtained (technical difficulty, rejected sample by the machine), the further plan of action depends on the clinical situation. The options such as continuation of CTG with a repeat FBS or delivery must be discussed with on call consultant.

N.B. Sources of Error

- Contamination with amniotic fluid (error in pH value)
- Contamination with meconium (↑ or ↓ pH value)
- Presence of air bubbles (↑ pH value)
- Fetal scalp oedema or caput (↓ pH value)
- Delay in processing (↓ pH value)

Contraindications of fetal blood sampling

- Where there is clear evidence of acute fetal compromise (e.g. prolonged deceleration greater then three minutes) FBS should not be taken and baby should be delivered urgently or steps taken to correct a reversible cause of fetal compromise.
- Maternal viral infections, including HIV, hepatitis and herpes simplex virus as FBS increases transmission risk to the baby.

- Suspected or confirmed chorioamnionitis.
- Known or suspected clotting disorders, such as haemophilia A, maternal ITP. (platelets less than 80)
- Less than 34 weeks of gestation. The use of FBS in the presence of abnormal FHR patterns in premature babies (less than 34 weeks of gestation) may be associated with an increase in adverse neonatal outcome.

Classification of FBS to guide management

FBS (pH)	ACTION
>/= 7.25	FBS should be repeated if the FHR abnormality persists When a third FBS is considered necessary, the Consultant Obstetrician on call must be informed.
7.21-7.24	Repeat FBS in 30 min or consider delivery if rapid fall since last sample
</=7.2	Delivery indicated
All scalp pH estimations should be interpreted taking into account the previous pH, base excess (BE), rate of progress of labour and clinical features of mother and baby.	

Cord Bloods Sampling:

It is the responsibility of the person performing the delivery to make sure cord blood has been sampled.

Indications

Paired cord blood samples (arterial and venous) must be taken and documented in labour records following delivery for:

- All instrumental deliveries
- All caesarean sections performed for suspected or confirmed fetal compromise
- Where there has been a suggestion of fetal distress in labour, e.g.
  - Fetal heart rate abnormalities
  - Meconium
  - Prolonged labour
  - If a fetal blood sample is done during labour, then at delivery cord pH should be performed
- Babies delivered at less than 36 weeks gestation
- Unanticipated birth of compromised infant, e.g. low apgar score, neonatal emergency e.g. shoulder dystocia
- Assisted Breech delivery

Technique for collecting cord blood

- Clamp a 10cm segment of cord using 2 pairs of Spencer Wells forceps.
- Apply the clamp nearest the baby first and allow blood from the placenta to fill the cord vessels before applying further clamps. (This will ensure that an adequate amount of blood is trapped in the clamped section of cord.)
- Blood from the artery should be taken first. The umbilical vein is a single bulging thin walled vessel while the arteries are narrow and more tortuous.
- Collect blood into pre-heparinised syringe and analyse as soon as possible.
- Cord pH must be documented in the Birth Notes.
- Cord gases must be documented in the appropriate section on page 20 of the Birth notes.

- Cord pH results must be documented on page 3 of the neonatal record.
- When it has not been possible to obtain a paired cord sample document the reasons why.
  NB: The sample should be obtained and analysed within 30 minutes of delivery.

The results should be recorded in the Birth notes, and in the baby notes. The printed paired cord report should be filed in the CTG envelope

An arterial pH <7.1 is an obstetric trigger, complete an incident form on DatixWeb.
Please inform a paediatrician if the arterial pH <7.0 and refer to WAHT-OBS-082 for management of neonate with pH <7.0. Normal values for cord blood at delivery are:

	pH	P02	pCO^2	Base Deficit
Mean Arterial ± ISD	7.26 ± 0.1 (7.16 – 7.36)	21 ± 8 (13 – 29)	53 ± 13 (40 – 66)	4.5 ± 3.6 (0.9 – 8.1)
Mean Venous ± ISD	7.31 ± 0.06 (7.25 – 7.37)	30 ± 7.5 (22.5 – 37.5)	42 ± 9 (33 – 51)	4.0 ± 2.7 (1.3 – 6.7)