OBSTETRICS AND GYNAECOLOGY
CLINICAL PRACTICE GUIDELINE

Intrapartum fetal scalp blood sampling

Scope (Staff):	WNHS Obstetrics and Gynaecology Directorate staff
Scope (Area):	Labour and birth areas

This document should be read in conjunction with this Disclaimer

Background

The avoidance of adverse outcomes from intrapartum insult remains the objective of intrapartum fetal surveillance.[1] Continous cardiotocography (CTG) monitoring is recommended for intrapartum women with risk factors and is widely used in contemporary practice.[1] CTG interpretation and management remains an ongoing challenge for maternity services due to the human factors associated with interpretation.[1] One intervention aimed at improving CTG interpretation and management is Fetal Blood Sampling (FBS).

Contemporary evidence for whether FBS improves outcomes or reduces intervention is limited [2,3]. The 2017 Cochrane Collaboration systematic review of CTG monitoring during labour found that access to FBS did not appear to influence differeneces in neonatal seizures or other outcomes, and reported an absence of evidence to support benefits from this practice[3]. The Royal Australian College of Obstetricians and Gynaecologists (RANZCOG) suggest that it is possible that the availability of FBS in labour may lessen the increase in caesareans that is associated with continuous CTG monitoring, but do not have robust evidence to support this[1]. This guideline will be reviewed again when the 5th edition of RANZCOG's "Intrapartum Fetal Surveillance" guideline is reviewed.

Access to Fetal Blood Sampling (FBS) is recommended by RANZCOG for units with CTG monitoring to support decision making and management of labours where the fetus is demonstrating equivocal CTG changes.[1] Currently the two types of fetal blood sampling (FBS) analysis used are pH and lactate levels. Both options are considered reasonable, with current evidence suggesting there are no differences in newborn or maternal outcomes associated with either approach.[1,5] Lactate testing however, is more likely to be successfully achieved.[5]

Key points

1. FBS should not be performed if there is clear evidence of serious fetal compromise, the clinical picture indicates that birth should be expedited, or if there are any contra-indications to performing FBS.[1,2,4] FBS should not delay decision making in these scenarios[1]
2. Clinical management plans following a pH or lactate result should take into account previous measurements, progress of labour, and current clinical situation.
3. A clean homogenous sample of blood will provide the most accruate results. Air bubbles and the presence of other vaginal fluids (e.g. amniotic fliud) can affect results.[6] Ensure the fetus' scalp is cleaned with a dry swab prior to sampling. FBS samples are to be analysed immeadiately.[6]
4. If only a small scalp blood sample is able to be obtained a lactate measurement should be performed in preference to a pH analysis which requires more blood.[figo]
5. Continous CTG monitoring should be continued throughtout the sample collection.

Contra-indications

Contra-indications to FBS include:

- Evidence of serious, sustained fetal compromise[1,4]
- Risk of fetal bleeding disorders e.g. fetal thrombocytopenia, haemophilia[1,2,4]
- Non-vertex presentation[1,4]
- Intact membranes or less than 3cm dilated[2]
- Maternal infection* e.g. HIV, hepatitis viruses, active primary herpes, suspected fetal sepsis[1,2,4]
    - GBS carrier status does not preclude FBS[1,4]

FBS is not generally recommended:

- For pregnancies less than 34 weeks gestation, as FBS may inapproriately delay delivery for an "at risk" fetus that may sustain damage earlier than a term fetus.[1,4]
- Idiopathic thrombocytopenic purpura (ITP)

Interpretation and management of intrapartum FBS results[2]

pH sampling results

pH result	Interpretation
> 7.25	Normal
7.20 – 7.25	Intermediate
< 7.20	Abnormal.

Lactate sampling results

Lactate result	Interpretation
<4.2 mmol/L	Normal
4.2 – 4.8 mmol/L	Intermediate
>4.8 mmol/L	Abnormal.

Actions

If the FBS is abnormal:

- Intervention is indicated in cases of pH less than 7.20 or lactate greater than 4.8 mmol/L. Actions should result in rapid normalisation of the CTG or birth[2].
- Inform senior obstetrician, midwifery coordinator and neonatal team.
- Talk to the woman and her support person about the results of the FBS

If the FBS is intermediate:

- Implement measures to increase fetal oxygenation.[2]
- If CTG abnormality persists or worsens, FBS should be repeated within 20-30 minutes.[2]

If the FBS is normal:

- Continue monitoring. If ongoing CTG concerns repeat FBS within 1 hour.[2]

Equipment

- Fetal Blood Sampling Sterile Pack
- Sterile gloves
- Sterile saline / water for cleansing
- Spare capillary sampling tubes

Procedure

- Medical staff willl be trained through credentialling to perform FBS sampling.
- FBS should be performed in left lateral if possible to maintain blood flow to the placenta. If technically difficult it may be necessary to perform in lithotomy.

References

1. RANZCOG. Intrapartum fetal surveillance: Clinical guideline- 4th ed. East Melbourne, VIC: RANZCOG. 2019. Available from: https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/IFS-Guideline-4thEdition-2019.pdf?ext=.pdf
2. FIGO consensus guidelines on intrapartum fetal monitoring: Adjunctive technologies, 2015. Visser GH, Diogo Ayres-de-Campos, for the FIGO Intrapartum Fetal Monitoring Expert Consensus Panel. DOI: https://doi.org/10.1016/j.ijgo.2015.06.021
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6. Higgins C. Fetal scalp blood sampling. Radiometer Medical ApS. 2014. Available from: https://acutecaretesting.org/en/articles/fetal-scalp-blood-sampling

Related legislation and policies

Department of Health WA

- Mandatory Policy: MP 0076/18: Cardiotocography Monitoring Policy and associated Cardiotocography Monitoring Standard

Related WNHS policies, procedures and guidelines

WNHS Clinical Guidelines, Obstetrics and Gynaecology: Fetal Heart Rate Monitoring

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Version history

Number	Date	Summary
1	May 2008	First version- 'Section B 5.7.2 Fetal Scalp Blood Sampling'
2	May 2011	New section covering the interpretation and management of both lactate and pH sampling results

3	Sept 2014	Routine review
4	Feb 2015	Amended- wording in lactate interpretation table. Titled 'Fetal Scalp Blood Sampling'.
5	April 2016	Amended- wash solution changed to sterile saline / water
6	Aug 2021	• Shortened background • Discuss with Consultant Obstetrician if considering FBS if sepsis or significant meconium present as results may be falsely reassuring • Not to perform if clinical picture indicates birth should be expedited • Updated contraindications and when not generally recommended - added non-vertex presentation, active primary herpes, suspected fetal sepsis, ITP, trial of labour after caesarean. Caution for covid 19 patients (until further information is available) - links to state-wide covid in pregnancy guideline. • Interpretation pH and lactate tables updated; actions updated -now below the tables
7	Mar 2025	• Guideline content amended in accordance with, and in anticipation of, the 2019 RANZCOG guideline currently under review and due for publishing late 2025. • Content removed regarding consultant discussion for women with sepsis or significant meconium. Could not find any current data to suggest this makes results "falsely reassuring" or affects results. Edits made in alignment to reference 6 which supports clean sampling. • COVID19 contraindication removed. • Interpretation ranges amended to match FIGO guidelines – reference 2 - small change in upper and lower category limits. • Management aligned to FIGO guidelines – reference 2. • Procedural steps rationalised as medical staff must be credentialed to undertake FBC sampling. Also noting FBS should be performed in left lateral if possible to maintain blood flow to the placenta. If technically difficult it may be necessary to perform in lithotomy.

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