



OBSTETRICS AND GYNAECOLOGY
CLINICAL PRACTICE GUIDELINE

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

An abnormal fetal heart rate (FHR) shown by electronic fetal monitoring indicates suspected fetal acidosis, however fetal blood sampling will provide a reliable diagnostic tool to confirm or disprove the case.¹ Currently the two types of fetal (scalp) blood sampling (FBS) analysis used are pH and lactate levels.

Prolonged collection time increases the risk of fetal blood reacting with air causing changes to the sample and making it more prone to clotting and blocking the analyser machine. Contamination with meconium and other fluids can affect pH measurements, so cleaning of the blood collection area is important to reduce this risk.²

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.³
2. Clinical management plans following a pH or lactate result should take into account previous measurements, progress of labour, and current clinical situation.³
3. Discuss with the Consultant Obstetrician if considering FBS in women with sepsis or significant meconium as the results may be falsely reassuring.⁴
4. The use of the FBS lactate rather than pH measurement provides an easier and more affordable adjunct to external fetal monitoring.³
5. 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.



Contra-indications

Contra-indications to FBS include:

- Evidence of serious, sustained fetal compromise³
- Risk of fetal bleeding disorders e.g. fetal thrombocytopenia, haemophilia³
- Non-vertex presentation³
- Maternal infection* e.g. HIV, hepatitis viruses, active primary herpes, suspected fetal sepsis³

*Notes-

- GBS carrier status does not preclude FBS³
- COVID 19: Caution until further information available. For information about patients with COVID 19 (known or suspected)- refer to current guidance within [Management of COVID-19 Infection in Pregnant Women](#) Department of Health WA state-wide guideline

FBS is not generally recommended:

- Prematurity – gestation less than 34 weeks. Delayed delivery due to the procedure may be associated with an increased risk of adverse outcome. A small “at risk” fetus may sustain neurological damage earlier than a term fetus.³
- Woman attempting a trial of labour after caesarean section (TOLAC)
- Idiopathic thrombocytopenic purpura (ITP)

Interpretation and management of intrapartum FBS results⁴

pH sampling results

pH result	Interpretation
≥ 7.25	Normal
7.21 – 7.24	Borderline
≤ 7.20	Abnormal. Birth is indicated

Lactate sampling results

Lactate result	Interpretation
≤4.1 mmol/L	Normal
4.2 – 4.8 mmol/L	Borderline
≥4.9 mmol/L	Abnormal. Birth is indicated

Note: Values of cut-off action should be assessed taking into account any previous pH or lactate measurements and the clinical features of the woman and fetus, including rate of progress in labour.⁴

Actions

If the FBS is abnormal:

- Inform senior obstetrician, midwifery coordinator and neonatal team.
- Talk to the woman and her support person about the results of the FBS
- Expedite the birth.⁴

If the FBS is borderline:

- If there are consider repeating FBS no more than 30 minutes later if still indicated by the CTG trace.⁴

If the FBS is normal:

- Continue monitoring. If ongoing CTG concerns repeat FBS within 1 hour.⁴

Management of suspected fetal compromise

See KEMH Clinical Guideline, Obstetrics & Gynaecology: [Fetal Compromise \(Acute\): Management if Suspected](#)

Procedure

Equipment

- Pelvic pack
- Sterile gloves
- Cotton wool balls for external cleansing
- Sponge holder forceps
- White soft paraffin
- Fetal scalp blood sampling blade
- Capillary tube holder
- Pelvic pack
- Amnioscope – the size is selected according to cervical dilatation and station of the fetal head.
- Sterile gown
- Adequate lighting source
- Sterile saline / water for cleansing
- Lithotomy sheet
- Vapo Coolant spray (skin freezing spray)
- Fetal scalp blood sampling blade holder
- Disposable heparinised capillary tubes

Procedure	Additional information
1 Preparation	
1.1 Explain the procedure and obtain maternal consent.	The procedure must be supervised or performed by a credentialed doctor. Document maternal consent.
1.2 Ensure the blood gas analyser machine is ready to receive the sample.	
1.3 Position the woman in the left lateral position.	The left lateral position minimises the risk of fetal compromise caused by aortocaval compression. ¹ Should the lithotomy position be used, ensure the woman has a wedge in situ to assist tilt.
1.4 Continuously monitor the fetal heart rate throughout the procedure. ¹	
2 Procedure	
2.1 Scrub, gown and glove Cleanse the woman's external labia with the sterile saline, or water, and cotton wool balls. Place the lithotomy sheet over the area Perform a vaginal examination to assess cervical dilatation, presentation, and station of the presenting part.	Performing FBS is a sterile procedure to minimise maternal and fetal infection Allows selection of the correct sized amnioscope.
2.2 Pass the amnioscope into the vagina and position it against the fetal head.	Check to ensure there is no maternal tissue trapped between the amnioscope and the fetal head. ¹ The amnioscope should be positioned away from caput or the fontanelles. ¹
2.3 Clean the fetal scalp with the jumbo swab sticks or dry cotton wool using sponge holding forceps. ¹	

Procedure	Additional information
2.4 An assistant sprays skin coolant down the amnioscope to the area where the blood sample is to be obtained for 3 seconds. Wait 30 seconds. ¹	Produces hyperaemia. Inform the women prior using the spray.
2.5 Apply a thin smear of soft paraffin over the scalp with a jumbo swab stick.	Assists in droplet formation.
2.6 Hold the fetal scalp blade holder firmly between the fingers and thumb and apply firm pressure to the fetal scalp to make a small incision with the blade	If no bleeding occurs check to confirm that the position is not over a large area of caput, and that the pressure applied is constant. ¹ Obtain the sample during a contraction if the head floats away when pressure is applied with the blade. ¹
2.7 Allow a droplet of blood to form on the scalp; apply the capillary tube and aim to collect 2 samples. ¹ Gently rock the capillary tube from side to side to heparinise the sample If sufficient sample is available analysis of lactate and pH levels may both be done.	The blood column collected in the tube should be 20 -25mm. Fill the sample without bubbles by ensuring the blood falls to the lower end of the tube.
3 Post procedure	
3.1 Apply pressure over the puncture site for 3-5 minutes. ¹	Ensures haemostasis. In the presence of persistent scalp bleeding, risk of coagulopathies may be suspected.
3.2 Check and ensure correct count of all swabs and instruments	
3.3 • Document the procedure and paste the analyser printout result on the MR 250 and record the result on the CTG trace.	
3.4 Discuss the results and ongoing management plan with the woman.	

References

1. Whitworth MK, Bricker L. How to perform intrapartum fetal blood sampling. **British Journal of Hospital Medicine**. 2006;67(9):M162-4.
2. Roberts P. Measuring up to the challenges of fetal blood sampling. **British journal of Midwifery**. 2006;14(5):283-6.
3. RANZCOG. Intrapartum fetal surveillance: Clinical guideline- 4th ed. East Melbourne, VIC: RANZCOG. 2019. Available from: https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/IFS-Guideline-4thEdition-2019.pdf?ext=.pdf
4. National Institute for Health and Care Excellence. Intrapartum care: Care of healthy women and their babies during childbirth: CG190UK: NICE. 2014 (last updated 2017). Available from: <https://www.nice.org.uk/guidance/cg190/resources/intrapartum-care-for-healthy-women-and-babies-pdf-35109866447557>

Related legislation and policies

Department of Health WA









- Mandatory Policy: MP 0076/18: [Cardiotocography Monitoring Policy](#)
- [Cardiotocography Monitoring Standard](#)
- Statewide guideline: [Management of COVID-19 Infection in Pregnant Women](#)

Related WNHS policies, procedures and guidelines

WNHS Clinical Guidelines, Obstetrics & Gynaecology:

- [Fetal Compromise \(Acute\): Management if Suspected](#)
- [Fetal Heart Rate Monitoring](#)

Keywords:	fetal blood sample, FBS, fetal scalp, abnormal fetal heart rate, fetal compromise, fetal pH, lactate		
Document owner:	Obstetrics and Gynaecology Directorate		
Author / Reviewer:	Head of Department, Obstetrics		
Date first issued:	May 2008	Version:	6
Reviewed dates:	May 2011; Sept 2014, amended Feb 2015, amended April 2016, Aug 2021	Next review date:	Aug 2024
Supersedes:	This Aug 2021 version supersedes the April 2016 amended version		
Endorsed by:	Obstetrics & Gynaecology Directorate Management Committee [OOS approved with Medical and Nurse Midwife Co directors]	Date:	19/08/2021

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	<input checked="" type="checkbox"/>  3: Preventing and Controlling Healthcare Associated Infection	<input type="checkbox"/>  7: Blood Management
	<input type="checkbox"/>  4: Medication Safety	<input checked="" type="checkbox"/>  8: Recognising and Responding to Acute Deterioration
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Version history

Version 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	<ul style="list-style-type: none"> • 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

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