PURPOSE AND INTENT
To provide the responsible healthcare practitioner with an indicator to determine the presence of fetal metabolic acidosis in the intrapartum period.

1. PRACTICE OUTCOME
Fetal scalp sampling for pH and lactate determination may be used as a supplement to assess the significance of abnormal tracings (ACOG, 2009). The collection of this sample is carried out by the obstetrician or resident to determine pH or lactate level of the fetal blood. The aim of this guideline is to determine the level of hypoxia/acidosis in the fetus and to facilitate further obstetric management.

2. BACKGROUND
“The goal of intrapartum fetal surveillance is to detect potential fetal decompensation and to allow timely and effective intervention to prevent perinatal/neonatal morbidity or mortality.” (SOGC, 2007). Intrapartum electronic fetal monitoring (EFM) has a high sensitivity to detect fetal heart rate abnormalities; however it has poor specificity for predicting fetal academia. Fetal pH and Lactate can be measured by fetal scalp blood sampling. Fetal blood lactate samples are more likely to be successfully performed with fewer scalp incisions and more quickly than for pH sampling (East et al., 2010, Westgren et al., 1998). No differences were found between pH and fetal scalp lactate in regards to a variety of neonatal outcomes such as umbilical cord gases, Apgar scores, encephalopathy, or neonatal intensive care admissions (East et al., 2010).

3. GUIDELINES
Note: Consider if fetal scalp blood sampling should be performed in consideration of the entire clinical picture.
3.1 Prior to fetal scalp sampling ensure that informed consent is obtained from the patient or patient designate. Document in the integrated progress note (IPN) or Electronic Patient Record (EPR).
3.2 Indication:
- Presence of atypical/abnormal EFM
3.3 Contraindications:
- Clear evidence of serious fetal compromise (do not delay delivery to perform sampling)
- Potential fetal bleeding disorders (suspected fetal thrombocytopenia or family history of hemophilia)
- Less than 34 weeks completed gestation
- Face presentation
- Maternal infection (HIV, hepatitis viruses, herpes simplex, suspected intrauterine sepsis)

3.4 Consider dilatation of cervix (sufficient dilatation is approximately 3-4 cm) and status of amniotic membranes (if not ruptured already consider artificial rupture of membranes).
3.5 Ensure fetal scalp blood sample is obtained using one of the two methods below: scalp lactate sampling 4.1 or fetal scalp pH sampling 4.2.
## 4. **PROCEDURE**

### 4.1 Fetal Scalp Lactate Sampling

4.1.1 Ensure quality control checks have been done on the Lactate meter in the last 24 hours prior to patient test.

4.1.2 Position the patient in a lateral position with the buttocks at the edge of the bed or in a lithotomy position with a wedge under the right hip to reduce the risk of supine hypotension.

4.1.3 The nurse assists the obstetrician or resident in preparing the scalp sampling equipment using sterile procedures.

4.1.4 The nurse prepares the Lactate meter as per the manufacturer’s instructions for testing the fetal scalp blood.

Note: wait until the obstetrician or resident passes the sample off prior to inserting the test strip.

4.1.5 The obstetrician or resident obtains the fetal blood sample in the provided pre-heparinized blood gas capillary tube while maintaining sterile technique.

Note: RN to **document** on the monitor strip the time when the scalp incision is made.

Note: To assist with the sample being drawn up on the lactate test strip tap the blood to the bottom of the capillary tube.

4.1.6 RN **documents** on the fetal monitor strip the time the sample was obtained (i.e. 0400 FSS).

4.1.7 Place a microdrop of blood onto the lactate test strip to obtain lactate reading and document on the fetal monitor strip the point when the sample was obtained. Document procedure in nurse’s notes on labour record at St. Boniface General Hospital (SBG) and in the IPN at Women’s Hospital.

Note: To assist with the sample being drawn up on the lactate test strip tap the blood to the bottom of the capillary tube.

4.1.8 The obstetrician or resident ensures that the patient care plan is communicated to all team (including but not limited to: the patient and support person, charge RN, primary RN) and documents the plan in the IPN/EPR.

Note: See Appendix A Fetal Blood Sampling Interpretations and Actions Reference Guide.

Note: Include scalp sampling site examination in the postnatal examination of the baby.

### 4.2 Fetal Scalp pH sampling

4.2.1 Prior to commencing the procedure, notify the respiratory therapist that the procedure is being done and ensure that there is personnel available to take the samples to the lab.

4.2.2 Position the patient in a lateral position with the buttocks at the edge of the bed or in a lithotomy position with a wedge under the right hip to reduce the risk of supine hypotension.

4.2.3 The nurse assists the obstetrician or resident in preparing the scalp sampling equipment using sterile procedures.

4.2.4 The obstetrician or resident obtains the fetal blood sample in the provided pre-heparinized blood gas capillary tube while maintaining sterile technique.

Note: RN **documents** on the fetal monitor strip the time when the scalp incision is made.

4.2.5 RN **documents** on the fetal monitor strip the time each sample was obtained (i.e. 0400 FSS #1).

4.2.6 Hand the filled capillary tube to the RN. The RN ensures both ends of the tube are sealed.

4.2.7 Transport the sample and addressographed sheet to the respiratory satellite lab.

4.2.8 Communicate results to the obstetrician and resident as soon as they become available and ensure they are documented on the fetal monitor strip at the point the sample was obtained as well as in the patient chart.
4.2.9 The obstetrician ensures that the patient care plan is communicated to all team (including but not limited to: The patient and support person, charge RN, primary RN) and documents the plan in the IPN/EPR.

Note: See Appendix A Fetal Blood Sampling Interpretations and Actions Reference Guide.

Note: Include scalp sampling site examination in the postnatal examination of the baby.

5. REFERENCES:


(3) SOGC. (2007). Fetal Health surveillance: Antepartum and intrapartum consensus guideline. JOGC, 29(9), s3-s56


APPENDIX A: Fetal Blood Sampling Interpretations and Actions Reference Guide

Note: The results should be interpreted taking into account the entire clinical picture.

<table>
<thead>
<tr>
<th>Interpretation</th>
<th>Lactate (mmol/L)</th>
<th>pH</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Less than or equal to 3.9</td>
<td>Greater than or equal to 7.25</td>
<td>Repeat the fetal scalp blood sampling in 1 hour if the EFM abnormality persists, or sooner if required. IF the EFM returns to normal, there is no need to repeat sampling.</td>
</tr>
<tr>
<td>Pre-Acidotic</td>
<td>4.0-5.0</td>
<td>7.21-7.24</td>
<td>Repeat fetal scalp blood sampling in 30 minutes, or consider delivery if significant change has occurred since the previous scalp blood sampling measurement.</td>
</tr>
<tr>
<td>Acidotic</td>
<td>Greater than 5.0</td>
<td>Less than or equal to 7.20</td>
<td>Immediate delivery is indicated.</td>
</tr>
</tbody>
</table>