PURPOSE AND INTENT
To provide the responsible healthcare practitioner with a test for the presence of fetal metabolic acidosis in the intrapartum period.

1. PRACTICE OUTCOME
Fetal scalp sampling for pH and lactate is an ancillary test to clarify the significance of abnormal fetal heart rate tracings (ACOG, 2009). This test can detect hypoxia/acidosis in the fetus and guide 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 but a poor specificity for predicting fetal acidemia. Fetal pH and lactate can be measured by fetal scalp blood sampling. Fetal blood lactate samples are more likely to be successfully performed, are quicker, and requires with fewer scalp incisions than pH (East et al., 2010, Westgren et al., 1998). No differences were found between the use of pH versus fetal scalp lactate in regards to neonatal outcomes such as umbilical cord gases, Apgar scores, encephalopathy, or neonatal intensive care admissions (East et al., 2010).

3. GUIDELINES
Note: The decision to preform fetal scalp sampling is one of clinical judgement.
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

3.4 Relative contraindications
• Maternal infection (HIV, hepatitis viruses, herpes simplex, suspected intrauterine sepsis)

3.5 Consider dilatation of cervix (minimum cervical dilatation of 3-4 cm) and status of amniotic membranes (Ruptured membranes required).
3.6 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.
3.7 Include scalp sampling site examination in the postnatal examination of the baby.
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, a wedge under the right hip to reduce the risk of supine hypotension may be used.

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 manufactures instructions for testing the fetal scalp blood.

Note: once blood sample is available insert the test strip into the meter.

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.

4.1.6 Tap the blood to the bottom of the capillary tube.

4.1.7 Place a microdrop of blood onto the lactate test strip.

4.1.8 Touch and hold the end of the capillary tube on the tip of the test strip and blood will be draw into the test strip reaction space.

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

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 personal 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, a wedge under the right hip to reduce the risk of supine hypotension may be used.

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.

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

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

4.2.7 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.

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

4.3 Documentation

4.3.1 Document the time when the scalp incision is made on the monitor strip.

4.3.2 Document the time sample was obtained (i.e. 0400 FSS) on the fetal monitor strip.

4.3.3 Document the procedure in the IPN and/or nursing notes.

4.3.4 Document the results on the fetal monitor strip and the IPN/EPR.

5. **REFERENCES**


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


6. **APPENDIX**

**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 4.1</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>4.2-4.8</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 4.8</td>
<td>Less than or equal to 7.20</td>
<td>Immediate delivery is indicated.</td>
</tr>
</tbody>
</table>