POLICY STATEMENTS

1. All viable, unborn babies will receive ongoing fetal health surveillance while in labour.

2. The use of a fetal spiral electrode (FSE) for internal monitoring may be indicated when the external tracing is inadequate for interpretation and must be ordered by an authorized prescriber through either a patient specific order or a care directive.

3. This care will occur in the Birth Unit at the IWK Health Centre.

4. Application of a fetal spiral electrode (FSE) is a beyond entry level competency (BELC) for registered nurses which requires initial certification and ongoing recertification.

5. The provision of this care may only be performed by Birth Unit RN’s who have:
   - Completed a fetal monitoring course approved by the IWK Health Centre Childbirth Care Team;
   - A minimum of six months Birth Unit experience;
   - Have successfully completed the IWK’s ‘Application of Spiral Electrodes’ Self Directed Learning Package;

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• Have successfully completed the IWK’s ‘Vaginal Examination’ Self-Directed Learning Package; and
• Have been supervised and have demonstrated competency by an RN (with experience applying fetal spiral electrodes) or a physician the first time they perform this intervention.

6. A physician’s order and consultation for the application of a spiral electrode is preferred when the clinical situation and timing allows. In an emergency situation a RN who has satisfied the BELC requirements may apply the FSE according to Care Directive 7050.1.

GUIDING PRINCIPLES AND VALUES
The fetal spiral electrode provides instantaneous and continuous recording in clear detail of the fetal heart rate and pattern. The direct fetal scalp electrode (FSE) is the most accurate way to assess fetal heart rate (FHR) but is invasive and should not be used unless cervix is at least 2 centimeters dilated and the membranes have ruptured (Simpson & Creehann, 2014)

PROCEDURE
Equipment
• electronic fetal monitor
• disposable spiral electrode
• leg plate/cable
• cable securement device
• sterile gloves

1. Obtain consent. Explain the procedure to the patient and their support person(s) using terms they can understand before application. Provide emotional support.

2. Prior to application of a fetal spiral electrode, assess the patient for the following contraindications:
   • Face presentation
   • Unknown presentation or presenting part
   • Placenta Previa or vasa previa, active vaginal bleeding of unknown cause
   • Insufficient dilation
   • possible fetal coagulopathy (i.e. maternal carrier of hemophilia)
   • Active maternal genital infection (i.e. herpes)
   • HIV seropositivity/hepatitis
   • Chorioamnionitis (relative contraindication)

3. Perform hand hygiene.
4. In the presence of intact membranes, a physician/midwife will need to perform an artificial rupture of membranes (ARM) prior to the application of the FSE.

5. Once membranes are ruptured FSE can be inserted by a RN, midwife or physician. The cervix should be at least 2 centimeters dilated and presenting part should be accessible and identifiable.

6. Using aseptic technique, open the electrode package and don sterile gloves.

7. Gently shape the outer guide tube to accommodate the anatomy of the patient, as needed.

8. Leave wires locked in the retention notch at the top of the FSE.

9. Perform vaginal examination to assess presenting part. Feel for firm bone and avoid the fetus’ face, sutures, fontanels and genitalia; maintain fingers on target areas.

10. Introduce the guide tube between two examining fingers and position firmly against fetal presenting part at a right angle.

11. Pull the grip out from the outer guide tube, enough to release the protection cap from the guide tube.

12. Push the grip back in until the spiral tip contacts the presenting part.

13. Maintain pressure against the presenting part and turn the inner tube clockwise (about 1 full turn) until mild resistance is met. DO NOT OVER ROTATE.

14. Release wires from the retention notch and slide guide and drive tubes off wires.

15. Check placement of the electrode before withdrawing examining fingers.

16. Connect the EKG lead electrode to the bottom of the leg plate adapter cable.

17. Apply the adhesive side of the EKG lead electrode to the mother.

18. Verify the FSE connector is clean and dry, then insert into the end of the leg plate adapter cable.

19. Plug cable into monitor.
20. Observe monitor tracing (compare fetal heart rate with maternal pulse). Color of tracing will change in OBTV to reflect internal device used for obtaining FHR.

21. Assist patient into a comfortable position, avoiding the supine position. Maternal positioning will not affect fetal heart rate tracing and readjustments need not be made with position changes.

Special Considerations
When experiencing difficulty obtaining a continuous fetal heart rate tracing attempt troubleshooting measures which may include repositioning the patient or obtaining assistance from a second RN.

| The following clinical situations may cause difficulty obtaining consistent continuous FHR tracing with an external fetal monitor |
| Maternal | Fetal |
| High BMI (abdominal and adipose tissue) | Very active fetus |
| Polyhydramnios | Fetal position (i.e. posterior position) |
| Oligohydramnios | Intrauterine death |
| Detecting maternal pulse | Cardiac dysrhythmias |
| Maternal movement |

Adapted from SOGC Table 13 (2007)

It is important to avoid confusing the maternal heart rate with the fetal heart rate. Clinical conditions that increase risk of confusion include:

- a low FHR baseline,
- maternal pushing efforts during second stage labour,
- maternal repositioning,
- maternal obesity and
- maternal tachycardia which may be associated with an elevated temperature, anxiety or medications

A **coincidence alarm** occurs if any two of the heart rates (FHR1, FHR2, FHR3, and MHR) picked up by the Philips fetal monitor show the same value for 50 seconds within one minute. Usually this indicates that two sensors are measuring a single physiological process, thereby losing one signal. Any subsequent coincident events are ignored for five (5) minutes after the acknowledgement of this alarm. Confirming the maternal heart rate by palpation, SPO2 monitoring or ECG is recommended.

Potential strategies to minimize the risk of confusing maternal heart rate with the fetal heart rate include: confirming maternal heart rate by palpating the maternal pulse during initiation of
EFM and comparing it with fetal heart rate. This should be repeated periodically throughout labour (Simpson & Creehan, 2014)

REMOVAL

1. For Cesarean Birth remove the fetal electrode prior to skin preparation or immediately prior to delivery

2. For a vaginal delivery remove prior to delivery when possible.

3. To remove the electrode:
   - detach the FSE from the leg plate adapter cable
   - grasp the electric wires as close as possible to the fetal presenting part and
   - rotate the electrode counterclockwise until it is free from the fetal presenting part.
   - Do not pull the electrode from the fetal skin.
   - inspect the electrode to ensure the spiral tip is attached to the hub.
   - if separated remove tip using aseptic technique.

4. After delivery assess the point of insertion on the newborn. Cleanse the area. When transferring the newborn inform the receiving nurse an electrode was used and identify the points of insertion.

DOCUMENTATION

1. Document the following:
   - indications for the procedure
   - results of the pelvic exam
   - completion of the procedure (including time start, time finish, attempts to apply and name of clinician applying the spiral electrode)
   - patient’s response to the procedure
   - interpretation of the fetal heart rate following application of the spiral electrode
   - removal of the spiral electrode and how tolerated by patient
   - post delivery assessment of insertion site on baby

2. During monitoring, if the electrode falls out, do not reinsert the same device; a new one should be applied.
REFERENCES


Philips: Simple tips for cleaning and applying your Direct ECG Legplate Adapter Cable 2004

Philips: New fetal scalp electrode solution- video guide. Retrieved from

http://www.theonlinelearningcenter.com/scorm/module1371/index.html-

Philips: Instructions for Use: Philips Fetal Spiral Electrode 989803137631


**Additional References Reviewed:**


**RELATED DOCUMENTS**

**Policies**

IWK Health Centre Policy #7070 Intrapartum Fetal Health Surveillance

IWK Health Centre Policy #7115 Print Policy: Obstetrical TraceVue System

IWK Health Centre Policy #7116 Electronic Documentation: Obstetrical TraceVue System

IWK Health Centre Policy #7117 Down Time Procedures: Obstetrical TraceVue System

IWK Health Centre Policy #7118 Quality Practices for Paper Tracings

IWK Health Centre Policy #7119 Roles & Responsibilities: Obstetrical TraceVue System

IWK Health Centre Policy #7172 Vaginal Examinations

IWK Health Centre Approval and Performance of Beyond Entry Level Competencies (BELC’s) by Registered Nurses at the IWK Health Centre (Administrative Policy #324.2)

**Self Directed Learning Packages**

IWK Health Centre SDLP Vaginal Examinations

IWK Self Learning Package (2015) Fetal Spiral Electrodes – Application and Management

**Appendix (es):**

- Appendix A: Definitions
- Appendix B: FSE Application and Set Up
APPENDIX A: DEFINITIONS

Fetal spiral electrode (FSE) - The spiral electrode is inserted through the maternal vagina and cervix and attached to the fetal scalp or other presenting part (SOGC, 2007)
Appendix B: FSE Application and Set Up

Connecting to:

**Philips fetal monitors**

- Connects to Philips fetal monitors
- Attachment Electrode
- Fetal Spiral or Double-Spiral Electrode
- DECG Patient Module
- DECG Leadplate Adapter Cable

**Philips wireless solution (Avalon)**

- Avalon cordless ECG Transducer (M2727A)
- Attachment Electrode
- Fetal Spiral or Double-Spiral Electrode
- DECG Leadplate Adapter Cable

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OP3PO150710
District Health Authority/IWK Policies Being Replaced

Version History
(To Be Completed by the Policy Office)

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