

# Fetal Health Surveillance in Labour

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## **Preamble**

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Guidelines outline recommendations, informed by both the best available evidence and by midwifery philosophy, to guide midwives in specific practice situations and to support their process of informed decision-making with clients. The midwifery philosophy recognizes the client as the primary decision maker in all aspects of her care and respects the autonomy of the client (1).

The best evidence is helpful in assisting thoughtful management decisions and may be balanced by experiential knowledge and clinical judgment. It is not intended to demand unquestioning adherence to its' doctrine as even the best evidence may be vulnerable to critique and interpretation.

The purpose of practice guidelines is to enhance clinical assessment and decision-making in a way that supports practitioners to offer a high standard of care. This is supported within a model of well-informed, shared decision-making with clients in order to achieve optimal clinical outcomes.

## **Background & Relevance**

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Intermittent auscultation (IA) of the fetal heart is the preferred method of fetal surveillance in low-risk women provided there is an appropriately trained professional in attendance. This approach has been outlined in the College of Midwives of British Columbia document: Guideline for Fetal Health Surveillance in Labour(2), as confirmed by the Society of Obstetricians and Gynecologists of Canada in their guideline issued in 2002 (3), by the American College of Obstetricians and Gynecologists(4), by the BC Reproductive Care Program in their 2005 guideline(5), and in *Care in Normal Birth* by the World Health Organization (6).

Meta-analysis of randomized clinical trials shows that EFM tracings that could be indicative of non-reassuring fetal status have poor predictive value (7). When outcomes for EFM versus IA for healthy women are compared, maternal morbidity is increased in the EFM group while there is no improvement in perinatal morbidity.

However, in spite of widespread consensus, EFM continues to be widely used. Recent data from a BCRCP report show that the average EFM rate for singleton pregnancies in BC in 2002/2003 was 78.6%. This rate is very high, but encouragingly it is down from a rate of 84.2% in 2000/2001 (8).

## **Definition**

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Fetal health surveillance refers to intrapartum monitoring of the fetal heart rate. This monitoring can be done in one of 2 ways: intermittent auscultation (IA) or continuous electronic fetal monitoring (EFM), which can be done either externally or internally. The goal of this is to detect potential fetal hypoxia, and thus prevent, by timely intervention, damage or death.

## **Contraindications**

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- Fetal anomalies incompatible with life
- Prematurity earlier than 23 weeks gestation

## **Technique**

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1. Perform Leopold's Maneuvers prior to first auscultation (after initial palpation, extensive palpation is not necessary prior to each auscultation when monitoring at 15 minute or more frequent intervals, unless there are indications of a change in fetal positioning).
2. Place doppler or fetoscope over fetal back or thorax.

3. Palpate maternal pulse to differentiate maternal and fetal heart on first auscultation and on any subsequent auscultations where the fetal heart rate (FHR) is in the range of the maternal heart rate
4. Palpate uterine contraction.
5. Note FHR as the contraction is ending and immediately after the contraction for 30 to 60 seconds.
6. On occasion, count FHR throughout and immediately after the contraction for at least 60 seconds. Because of maternal pushing during the second stage of labour, auscultation during contractions may not be feasible. In this case, auscultation should begin immediately after the contraction.

## Documentation

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### FHR DATA

- Baseline rate (e.g. FHR 140)
- Change in rate (acceleration or deceleration) – (e.g. acceleration heard to 160 lasting approx. 30 seconds)
- Nature of change (gradual or abrupt deceleration) – (e.g. abrupt deceleration heard to 90 lasting 10 seconds with quick recovery to baseline FHR of 140)
- Rhythm (note only if irregular)

### OTHER

- Uterine activity characteristics
- Other maternal observations and assessments
- Specific actions taken when findings abnormal
- Maternal and fetal responses to interventions
- Subsequent return to normal findings

## Intermittent Auscultation (IA)

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### BASIC REQUIREMENTS

- The woman is assessed to be low-risk at the onset of labour
- The midwife is skilled in the procedure
- The midwife uses this guideline or an equivalent evidence-based practice protocol addressing technique, frequency of auscultation, documentation standards and clinical management when non-reassuring findings are present

### FREQUENCY

#### First Stage

- Latent phase<sup>i</sup>: once every 30 minutes
- Active Phase<sup>ii</sup>: once every 15 to 30 minutes (depending on the length, strength and frequency of contractions)

#### Second Stage

- Latent Phase<sup>iii</sup>: once every 15 minutes
- Active Phase<sup>iv</sup>: after each contraction or once every 5 minutes

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<sup>i</sup> First stage, latent phase is defined by regular mild to moderate contractions causing discomfort to the woman and resulting in a progressive change in the effacement and/or dilation of the cervix prior to 4 cm dilation. The CMBC acknowledges that in the latent phase of labour the midwife may visit the woman at home for periodic assessments. If all assessments are normal and the woman is resting and coping well, it is not necessary for the midwife to remain and provide ongoing monitoring and support until the labour becomes more active.

<sup>ii</sup> First stage, active phase is defined by regular, painful (moderate to strong) contractions with progressive cervical effacement and progressive dilation of 4 cm. or more.

<sup>iii</sup> Second stage, latent phase is defined as the period of time after a woman is fully dilated when she experiences contractions that are usually less strong and frequent than those of the active phase of first stage and when she has no urge to push. Some women do not have a latent phase in second stage, while others may experience this phase lasting up to an hour.

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**Other**

## Before

- An intervention such as an amniotomy
- Administration of medications or analgesia
- Leaving the client after an assessment in the latent phase of labour
- Transfer of the client to another care provider

## After

- Arrival at the woman's home or on admission to hospital
- Spontaneous rupture of the membranes or amniotomy
- Vaginal exam
- Abnormal uterine activity e.g. particularly frequent, strong or prolonged contractions

**REASSURING FINDINGS**

- Baseline FHR 110-160 beats per minute (BPM)<sup>v</sup>
- Accelerations

**NON-REASSURING FINDINGS**

- Inability to clearly auscultate the FHR
- Baseline bradycardia or tachycardia
- Absence of accelerations for greater than one hour
- Abnormal fetal heart patterns unresponsive to repositioning

***Continuous Electronic Fetal Monitoring (EFM)***

The EFM tracing becomes a part of the record of care and relevant events and interventions are noted on the tracing.

Current evidence does not support the use of a baseline fetal heart strip.

**INDICATIONS FOR EFM**

- Inaudible or non-reassuring findings on intermittent auscultation - physician consultation may be recommended when non-reassuring findings are encountered. Where labour is being monitored in the home setting, this will necessitate transport to hospital.
- Assessment of increased risk for perinatal morbidity or mortality, e.g. intrauterine growth restriction, oligohydramnios, non-reassuring findings on fetal surveillance related to post-dates, antepartum or intrapartum hemorrhage, labour prior to 36 weeks gestation.
- When oxytocin is being used for induction or augmentation of labour.
- Note: The SOGC *recommends* EFM in cases of vaginal birth after caesarian (VBAC), as fetal heart rate is an important marker of uterine rupture. However, the same source says it is not *necessary*, in cases of VBAC, unless oxytocin is being used for induction or augmentation of labour.

**REASSURING FINDINGS**

- As with intermittent auscultation, plus normal variability.

***Variations of EFM*****FETAL SCALP ELECTRODE ELECTRODE (FSE OR SCALP CLIP)**

FSE provides continuous, accurate assessment of FHR baseline, variability, accelerations and decelerations, and can detect fetal arrhythmias.

FSE should be applied only to the fetal scalp or buttock, and attached to the connector. It must not be applied to the face, fontanelles, suture lines, genitals, or to an undiagnosed presenting part.

<sup>iv</sup> Second stage, active phase is defined as the period after full dilation of the cervix, until the birth of the baby, where the woman experiences regular contractions with an expulsive urge and/or is actively pushing.

<sup>v</sup> Normal fetal heart range for the term fetus (37-42 weeks gestation).

The use of an FSE should be initiated under consultation with an obstetrician. In most cases, the obstetrician will perform the insertion, however the midwife may insert the device in circumstances where both the obstetrician and the midwife are comfortable with this arrangement.

### Indications

- Non-reassuring finding on external tracing
- When external tracing is inadequate for accurate interpretation
- When unable to assess the FHR with any other method

### Contraindications

- Placenta previa
- Face presentation
- Unknown presentation
- HIV or hepatitis seropositive
- Active genital herpes or any other vaginal or intrauterine infection
- Fetal thrombocytopenia or hemorrhagic complications

**Risks** (rare and minimized by proper insertion, removal and aseptic technique)

- Scalp abscess
- Fetal trauma
- Infection

### ***Responsibilities Associated with Electronic Fetal Monitoring***

- Understanding the benefits and limitations of EFM and be qualified and able to assess the tracing every 15 minutes while it is being carried out.
- Explaining the reasons, benefits and limitations for EFM use to the woman so she can make an informed choice about its use in her labour.
- Obtaining an interpretable EFM tracing including both the fetal heart rate pattern and contraction pattern.
- Interpreting the EFM strip and consulting with a physician when a non-reassuring pattern is present. Consider asking physician consultant for fetal blood sampling to avoid false positives associated with apparent non-reassuring EFM findings.
- Consulting with obstetrics when a non-reassuring pattern ensues, as well as pediatrics at the time of birth.
- Ensuring that EFM data is documented on the client's chart.
- Carrying out appropriate emergency interventions when indicated including but not limited to: maternal position changes, vaginal assessments for progress and to rule out cord prolapse, providing oxygen by mask, initiating or increasing IV fluids, discontinuing oxytocin infusion, etc.
- Consider doing fetal scalp stimulation during a vaginal exam and observing presence or absence of accelerations. Presence of accelerations indicates a strong probability of a pH of >7.2.

### REFERENCES

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- (3) Society of Obstetricians and Gynecologists of Canada. Fetal Health Surveillance in Labour. SOGC Clinical Practice Guidelines 2002; 112: 1-7. <http://www.sogc.org/guidelines/> (accessed 20 Dec 2006)
- (4) American College of Obstetricians and Gynecologists. Utility of umbilical cord blood acid-base assessment. Committee Opinion Number 91 1991.

- (5) British Columbia Reproductive Care Program. Intermittent Auscultation in Labour. Obstetric Guideline 6A 2005. <http://www.rcp.gov.bc.ca/guidelines.htm> (accessed 20 Dec 2006)
- (6) World Health Organization, Department of Reproductive Health and Research. Care in Normal Birth: a practical guide. 1997. [http://www.who.int/reproductive-health/publications/MSM\\_96\\_24/MSM\\_96\\_24\\_table\\_of\\_contents.en.html](http://www.who.int/reproductive-health/publications/MSM_96_24/MSM_96_24_table_of_contents.en.html) (accessed 20 Dec 2006)
- (7) Society of Obstetricians and Gynecologists of Canada. Fetal Health Surveillance in Labour. SOGC Clinical Practice Guidelines 2002; 112: 1-7. <http://www.sogc.org/guidelines/> (accessed 20 Dec 2006)
- (8) British Columbia Reproductive Care Program. Intermittent Auscultation in Labour. Obstetric Guideline 6A 2005. <http://www.rcp.gov.bc.ca/guidelines.htm> (accessed 20 Dec 2006)

#### FURTHER READING

Society of Obstetricians and Gynecologists of Canada. ALARM Course Syllabus. 11<sup>th</sup> ed. 2004.

British Columbia Reproductive Care Program. Electronic Fetal Monitoring in Labour, Scalp Sampling & Cord Blood Gases. Guideline 6B. 2005.

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