



New Zealand
College of Midwives
TE KĀRETI O NGA KAIWHAKAWHANAU KI AOTEAROA

PRACTICE GUIDANCE



***Practice guidance
document
Intermittent Auscultation for the
Assessment of Intrapartum
Fetal Wellbeing***

July 2020

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Introduction

This midwifery guide for practice seeks to provide a practice description for undertaking intermittent auscultation (IA) of the fetal heart (FH) during labour. This will assist women and midwives in their decision-making regarding monitoring choice, clinical practice, interpretation, and action when using IA. The recommendations are based on the consensus of the profession and available evidence (Maude 2012; Maude, Foureur, Skinner, 2014; Maude, Skinner, Foureur 2016).

The intention of IA is to assess the continuing normality of the fetal cardiac response to labour and if concerns arise, to detect these in a timely manner in order to instigate conversion to continuous electronic fetal monitoring (CEFM) and/or medical consultation. The ultimate aim of fetal heart monitoring in labour, whether by IA or CEFM, is to optimise outcomes and prevent, where possible, “adverse perinatal outcomes related to fetal metabolic acidosis/cerebral hypoxia related to labour” (RANZCOG 2019, p. 5). The practice of IA is underpinned by an understanding of the physiology of the materno-utero-placental circulation and the fetal heart rate response to labour (Feinstein, Sprague, Trépanier 2008; Baker, Beaves, Trickey, Wallace 2009).

IA is the appropriate form of FH monitoring for well women with an uncomplicated pregnancy and spontaneous labour. CEFM by cardiotocograph (CTG) or fetal scalp electrode (FSE) is not recommended for these women as it is associated with an increase in caesarean sections without known long-term benefit to the woman or baby (Alfirevic, Devane, Gyte, Cuthbert 2017).

IA involves a set of foundational midwifery clinical skills including palpation, auscultation of the fetal heart and interpretation of findings in the context of the woman’s individual labour process. Fetal heart monitoring during labour is an extension of the woman’s antenatal care.

Literature/evidence

IA is an evidence-based modality for the screening and monitoring of fetal wellbeing in labour. Several trials have compared outcomes for women receiving IA with women receiving CEFM. This guideline is informed by three Cochrane systematic reviews, a number of existing obstetric guidelines and midwifery scholarship.

Alfirevic et al. (2017) compared intrapartum CEFM with IA and found that CEFM did not improve perinatal death rates, but resulted in increased rates of caesarean sections and instrumental vaginal births. The review found that CEFM was associated with a reduced rate of neonatal seizures compared to IA. There has been no long-term follow-up on the importance in the reduction in neonatal seizures, but the review found that there was no difference in cerebral palsy rates. It is worth noting the overall findings that the absolute risk of seizures is low at approximately 3 per 1000, and that 667 women would have to have intrapartum CEFM to prevent one case of neonatal seizures. For the same number of women there would be 15 more caesarean sections. These results were consistent when data was stratified to low risk, high risk and preterm pregnancy subgroups.

Devane et al. (2017) compared admission CTG with IA on admission to labour ward for low risk women and found no benefits to admission CTG. Admission CTG was associated with increased rates of CEFM and fetal blood sampling in labour. The authors also concluded that “the probability is that admission CTG increases the caesarean section rate by approximately 20%” (p.2) compared with women who had IA only.

Martis et al. (2017) considered tools and timing for intermittent auscultation. The review highlighted the lack of good quality evidence to definitively recommend one device over another or to identify optimal frequency and duration of FH monitoring.

National and international obstetric guidelines recommend IA for well women with an uncomplicated pregnancy and spontaneous labour (‘low-risk women’) (American College of Nurse-Midwives 2015; American College of Obstetricians and Gynecologists (ACOG) 2009; Lewis, Downe (FIGO) 2015; Liston, Sawchuck, Young 2018 (SOGC); National Institute for Health and Clinical Excellence (NICE) 2014; Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) 2019; World Health Organization 2018).

Some authors have recommended differentiating the language used for IA from the language used for CEFM, as continuous monitoring is primarily a visual assessment of a printed trace, while IA is an active listening and counting method (Maude et al. 2016). In the action of listening, the midwife is necessarily close to the woman and assesses the quality of the sound, the rate, the rhythm and the context of the woman’s progress in labour. Because the midwife counts the beats over a period of time, documentation is most appropriately a single number (Maude et al. 2016; Harding 2014), similar to documenting a pulse. In addition, the digital display of numbers on some Doppler devices does not represent variability so it is not appropriate to document FHR as a range of viewed numbers as this obscures the ability to recognise a baseline/average heart rate, and therefore a rising FHR (Maude et al. 2016; Harding 2014; American College of Nurse-Midwives 2015). Midwives may hear variation in the FHR while listening, including increases and decreases in the rate (Maude et al. 2016), and this contributes to the midwife’s understanding of the situation. This is different to variability, as assessed visually on a printed CEFM trace.

Principles

1. This guidance is based on the understanding that midwifery in NZ is provided in a partnership model which includes one-to-one care and continuity of care.
2. Continuity of care through the antenatal and intrapartum periods enables a continuous holistic assessment of the woman and baby's wellbeing which in turn supports informed decision-making.
3. Midwives share relevant information about recommendations for intrapartum fetal heart monitoring with women during antenatal care and in labour.
4. One-to-one care in labour is essential for optimal outcomes for all women, is an expected standard within NZ maternity services (MERAS 2014), and is integral to the practice of IA (RANZCOG 2019).
5. Women have the right to decide on how they and their babies are monitored in labour, and women's informed decisions are supported (Health & Disability Commissioner 1996; New Zealand College of Midwives 2016; Ministry of Health 2012).
6. When a woman declines the monitoring modality that is usually recommended for her clinical situation, she makes an individualised plan with the midwife for fetal monitoring during labour.
7. Midwifery assessment and decision-making is central to midwifery care. This guide for practice does not replace clinical judgement.
8. The context and stage of the woman's labour are factors that influence when and how the fetal heart is auscultated.
9. Understanding normal process of labour and the normal fetal response to labour is an integral part of IA. This enables the modification of frequency and length of IA according to findings, as well as the recognition of abnormal findings to enable timely conversion to CEFM if required.
10. IA is the recommended form of fetal monitoring for women with uncomplicated pregnancies who are in spontaneous labour.
11. Admission CTGs are not recommended for well women with uncomplicated pregnancies in spontaneous labour.

Language

This guideline uses terms that are specific to IA as detailed in the next section, such as *average FHR*, *increases* and *decreases*, rather than using the terms that relate to the interpretation of a CEFM trace including *baseline*, *accelerations* and *decelerations*. This is because IA is an active listening and counting method which is reported as a single number and continuous monitoring is primarily a visual assessment of a printed trace.

Equipment

Evidence is lacking on which is the most appropriate device to use for IA. The three most common options are: Pinard stethoscope (monaural stethoscope), fetoscope (Allen stethoscope) and hand-held Doppler. Whichever device is used, it is important to be able to auscultate as per the practice points below.

It is not recommended to use a CTG machine transducer for IA. A CTG is more likely to detect maternal heart sounds and a CTG recording with long gaps between periods of auscultation poses potential issues from a medico-legal perspective, as a CTG paper is a legal part of documentation.

Assessment at first face-to-face contact in labour

A comprehensive midwifery assessment is made at first contact in labour to assess maternal and fetal wellbeing and to identify any factors where CEFM may be warranted. "This information enables joint decisions to be made in relation to any changes to the birth plan that may need to be made" (College of Midwives 2015, p.38).

Assessment will be dependent on stage of labour with midwifery actions prioritised accordingly. The priority is to provide immediate clinical care, for example when the first contact occurs in advanced labour and birth is imminent.

1. Discuss and assess the woman's general wellbeing, including her emotional and behavioural responses and how she is managing her labour*.

An assessment of the woman's wellbeing generally includes vital signs including temperature, blood pressure and pulse.

Maternal pulse

Palpating the maternal pulse in conjunction with fetal heart auscultation enables the midwife to differentiate between the two heart rates.

2. Assess how frequent the contractions are; how long the contractions are lasting*.

Assess uterine activity (UA)

The midwife assesses uterine activity to determine the frequency, duration, and strength of contractions as well as resting tone and any uterine irritability or tenderness.

Abdominal palpation

This is a useful tool:

* Adapted from New Zealand College of Midwives 2015. Midwives Handbook for Practice.

- to make an assessment of UA
- to identify normalcy or any concerns
- that enables the midwife to time auscultation accurately according to uterine activity
- that informs the midwife where to place the auscultation device
- that informs the midwife in her assessment of labour and factors to consider for ongoing monitoring, for example if breech presentation is detected.

3. Assess baby movements and heart rate*

Assess fetal movements

During pregnancy, fetal movements provide reassurance about fetal wellbeing, however, there is currently insufficient evidence to inform understanding of what constitutes normal fetal movements in labour. At first contact in labour, it is recommended to assess the woman's perception of fetal movements and where concerns are identified, this should be investigated as per local guidance on decreased fetal movements, which includes a CTG assessment.

Assess FHR

The midwife auscultates the fetal heart to assess the average rate, the rhythm, and the presence or absence of fetal heart rate increases or decreases. It is important to differentiate the maternal and fetal heart rates.

FHR: The FHR is determined by listening to and counting the beats for 30-60 seconds immediately after the end of a contraction. The FHR is documented as a single number of beats per minute, not a range. When counted in the absence of increases and decreases, this single number represents an average or baseline heart rate, which can be used as an initial baseline from which to compare as labour progresses. It is not recommended to use the number displayed on a Doppler device's screen as these devices have the potential to miscalculate the FHR.

Fetal heart rhythm: Consider whether the rhythm is regular or irregular. Further assessment may be required for irregular FH rhythm.

FHR increases: A FHR increase during IA is when the counted FHR is at least 15bpm above the average FHR. Most FHR increases coincide with fetal movements and are considered to be reassuring.

It is important to differentiate a normal transient FHR increase from abnormal findings. Abnormal findings which would require review and a plan made for ongoing assessment and care include:

- a rising average FHR
- a persistent FHR tachycardia above 160 bpm

FHR decreases: A decrease is noted when the counted FHR rate has decreased from the average FHR. An abrupt or gradual decrease in the FHR is considered an abnormal finding. The clinical situation requires review and a plan made for ongoing assessment and care.

Normal findings

Normal fetal heart rate findings are when the FHR is between 110 bpm and 160 bpm, the rhythm is regular, and there is an absence of FHR decreases.

Uterine activity: normal activity and tone.

Abnormal findings

Abnormal fetal heart rate findings are when the FHR is consistently greater than 160 bpm (tachycardia) or less than 110 bpm (bradycardia), the average FHR is rising, the rhythm is irregular, and/or there are abrupt or gradual decreases of the FHR.

Uterine activity: abnormal activity and/or tone.

4. **Assess whether the membranes are intact and colour of the liquor if they are not*.**
5. **Review history to date including antenatal history, documentation, laboratory results, any scan results, outcomes of referrals made and plans for birth*.**
6. **Revisit the antenatal plan for intrapartum FHR monitoring, discuss any new factors for consideration and support the woman's informed decision on mode of monitoring.**
7. **Act on any assessments which require additional investigation/care*.**

Ongoing FHR monitoring when the woman wants continuous midwifery support

Monitoring fetal wellbeing involves dynamic, holistic and ongoing assessment involving multiple criteria throughout the woman's labour, all of which informs the ongoing plan of care including the most appropriate form of fetal heart monitoring. All midwifery assessments inform ongoing care plans and are documented in the woman's clinical record.

Frequency of FHR auscultation

There is insufficient evidence to provide strong recommendations on frequency of FHR monitoring in established labour. Most midwifery and obstetric guidelines recommend the following:

- Active first stage of labour: auscultate every 15-30 minutes.
- Active second stage of labour: auscultate at least every 5 minutes or after every contraction.

This guide for practice recognises that midwives work with women in partnership during labour and FHR monitoring is a negotiated process, taking into account the woman's and baby's specific circumstances. This may mean that at times, FHR monitoring is also undertaken opportunistically and may be outside of these timeframes, to work with the woman's individual labour rhythm and progress, and any concerns identified by the woman or midwife.

Frequency of maternal HR assessment

An assessment and documentation of the maternal pulse is an important aspect of fetal heart monitoring. The frequency of this assessment is determined by the midwife's holistic assessment of labour progress, with more frequent assessment if FH abnormalities or maternal concerns are identified. Palpating the maternal pulse approximately hourly or more often if there are any concerns enables the midwife differentiate between the fetal and maternal heart rate and to consider further assessment and plan if either are abnormal (NICE 2014).

Indications for additional auscultation in established labour

It is recommended to auscultate the FHR after:

- spontaneous rupture of the membranes (SRM)
- vaginal examination (VE)

* Adapted from New Zealand College of Midwives 2015. Midwives Handbook for Practice.

It is recommended to auscultate the FHR before and after:

- artificial rupture of the membranes (ARM)

Indications for additional auscultation or CEFM

If concerns arise about maternal or fetal wellbeing, a full midwifery assessment is undertaken and frequency and mode of FHR monitoring is planned accordingly. These concerns may include, but are not limited to:

- FHR consistently below 110 bpm (bradycardia) or above 160 bpm (tachycardia)
- Fetal heart decreases
- Irregular fetal heart rhythm
- Rising FHR over time (not including FH increases)
- Abnormal contraction pattern: eg more than five contractions in a 10 min period (also known as tachysystole)
- Other fetal concerns
- Maternal concerns eg. bleeding, signs of infection and other indications.

Abnormal findings necessitate a discussion and plan with the woman. Depending on the finding, resolution may be achievable by midwifery actions or may require conversion to CEFM monitoring and consultation with a midwifery or obstetric colleague.

Following conversion to CEFM it may become apparent that the fetal heart trace is normal and the factors which indicated CEFM have resolved. Following discussion with a colleague and a full clinical assessment, it may be reasonable to return to IA in some circumstances with the woman's consent.

Documentation

The midwife accurately and comprehensively documents all assessments to support and demonstrate clinical decision-making, including:

- the counted FHR in bpm
- any FHR increases
- any FHR decreases
- any abnormality/irregularity of rhythm.

Any abnormal findings should be documented with follow-up assessments and plan of care.

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