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Electronic Fetal Monitoring Policy

Hutt Maternity Policies provide guidance for the midwives and medical staff working in Hutt Maternity Services. Please discuss policies relevant to your care with your Lead Maternity Carer.

Purpose

To provide guidelines for the use of electronic fetal monitoring in the intrapartum period.

Scope

- All obstetric staff employed by the Hutt Valley DHB.
- All midwifery staff employed by Hutt Valley DHB.
- All Hutt Valley DHB Maternity access holders.
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Introduction

During labour, the fetal heart rate can be monitored by either structured intermittent auscultation or by continuous electronic fetal monitoring. Research has shown that the use of continuous EFM is associated with a reduction in neonatal seizures. However, continuous EFM is also associated with an increase in operative vaginal deliveries and caesarean sections. (Thacker, Stroup & Chong, 2004). Whatever mode of monitoring is chosen the decision should be made between the woman and her caregivers and must take into consideration the woman's pregnancy and any risk factors.

As per section 88 of the New Zealand Public Health and Disability Act 2000 Access Agreement, all access holders are responsible for having appropriate clinical competencies to interpret CTG recordings.

This document is based on the RANZCOG clinical guidelines: Intrapartum fetal surveillance (2014).

Continuous Electronic Fetal Monitoring (CEFM)

Cardiotocography (CTG) is recommended in cases where there are maternal or fetal risk factors.

Structured Intermittent Auscultation (SIA)

This is defined as auscultation of the fetal heart, using a hand held Doppler, undertaken at regular intervals and for a pre-defined time during labour.

Abbreviations used in this document

bpm	Beats per minute
CTG	Cardiotocograph
CEFM	Continuous Electronic fetal monitoring
EFM	Electronic Fetal Monitoring
FBS	Fetal blood sampling

FSE	Fetal scalp electrode
FHR	Fetal Heart Rate
LSCS	Lower segment caesarean section
LMC	Lead maternity carer
SIA	Structured Intermittent Auscultation

Procedure

Antenatal

- In the antenatal period all women should be informed of the practice of electronic fetal heart rate monitoring in labour. This discussion should occur between the woman and her LMC. The woman's care plan should include her preferences for the type of monitoring. Systematic review of CEFM versus SIA recommends that the decision on the type of monitoring should be made between the woman and her caregiver. (Thacker, Stroup and Chang, 2004). This practice is recommended by the professional colleges (NZCOM, 2005 & RANZCOG, 2006). Antenatal EFM is not performed routinely in healthy pregnancy rather; a specific indication is required where there is an increased risk of fetal compromise. (Baker, Beaves, Trickey & Wallace, 2006)
- The discussion that occurs between the woman and her LMC including primary & secondary care women booked with the DHB should include
 - The rationale for EFM
 - The risks and benefits of different types of EFM
 - Indications for continuous monitoring

Intrapartum

When the woman is admitted a further risk assessment can be undertaken which will help decide the type and frequency of monitoring that is required.

Continuous electronic foetal monitoring is recommended for high-risk pregnancies where there is an increased risk to the baby (NZCOM, 2005)

The use of admission CTG should be personalised to each individual woman, weighing the probable increase in intervention against the potential foetal benefit in a small number of low risk pregnancies (RANZCOG, 2004).

- **The New Zealand College of Midwives does not support the routine use of continuous electronic foetal monitoring on admission or in labour for women who have uncomplicated pregnancies.**
- An admission CTG may be helpful in pregnancies between 41 and 42 weeks in the absence of any other recent assessment of fetal well-being. (RANZCOG, 2006)
- While use of abdominal transducers is the preferred method of obtaining a fetal heart recording, there may be times when the use of a fetal scalp electrode is necessary.
- When a practitioner has concerns about a recording or is not sure about the trace, they must consult according to referral guidelines as soon as possible.
code 5011 Foetal Heart Rate Abnormalities; consultation, 2012
- When an abnormal fetal heart rate is obtained the practitioner should:
 - Where possible find a cause – (e.g. maternal hypotension, hyperstimulation, cord prolapse) and correct it Correction includes measures to;
 - improve blood flow (repositioning the mother)
 - Reduce uterine contractions (stopping a syntocinon infusion, with or without administration of tocolytics). Refer to Management of Acute Uterine hyperstimulation policy
- Action taken will depend on the clinical scenario. This includes

- Fetal blood sampling
- Expediting delivery (Operative vaginal or LSCS).
- Delivery should be expedited when
 - There is clear evidence of sustained fetal compromise
 - CTG abnormalities are of a degree requiring further assessment, but FBS is contraindicated, clinically inappropriate or not feasible (RANZCOG, 2004, p.16)
- The LMC has the professional responsibility to advise the core midwives/obstetric team of the day if she suspects an abnormal CTG and to consult including activating the Emergency call system.
- **When there has been concern about the fetal heart rate in labour, a paired (arterial and venous) cord blood gas is required.**
- All recordings and actions taken during EFM should be recorded in the body of the woman's notes. A full and accurate description of the recording is required.

The use of CEFM does not mean that the woman must remain in bed. Use of telemetry allows the woman to ambulate during monitoring. However the midwife observes both the mother and the fetal heart rate recording. There is telemetry in delivery suite.

Where continuous EFM is required and the EFM is normal then the monitoring may be interrupted for up to 15 minutes to enable care of the mother (RANZCOG, 2004)

Indications for continuous EFM are listed in Appendix 1: Clinical Practice Algorithm.

Good Practice Guidelines for CTG Application

A good quality tracing must be obtained with minimal disruption to the woman.

Wherever practical the midwife should remain with the woman whilst the tracing is being performed.

- The CTG should be performed with mother sitting upright
 - Have date and time correctly set
 - Be labelled with the woman's name and NHI number and maternal pulse rate documented on trace.
 - Have the date and time that the tracing was commenced written on them
 - Have the paper speed set at 1cm/minute
- For twin pregnancies, the babies should be monitored simultaneously
 - The CTG should be programmed using the Twin Offset feature to separate the fetal heart rates
 - The artificial separation in FHR should be taken into consideration when results are documented.
- Any event that affects the fetal heart rate should be noted in the body of the clinical notes. The recording should be signed and dated at the time of the event
- When performed antenatally, the fetal movement indicator should be used for the initial period of monitoring
- Both the fetal heart rate and uterine activity should be recorded concurrently on the EFM trace.
- Anyone who views a trace should document they have done so, write their opinion on the trace and any further action that is required.
- Each trace should be secured in the mother's notes in the plastic packets supplied.
- Make a photocopy of relevant CTG's as they fade over time.

Parameters of the Intrapartum CTG and normal values

(RANZCOG, 2014)

	Normal
Baseline Rate	110 – 160 beats/minute
Variability	5 - 25 beats/minute between contractions
Acceleration	Increase in heart rate of at least 15 beats for at least 15 seconds. Minimum of two in a twenty minute period
Decelerations	None
Contractions	Usually occur with a frequency of 3 – 4 every 10 minutes. Lasting up to 75 seconds
	Abnormal
Baseline Rate	Tachycardia >160 bpm Bradycardia < 110bpm
Variability	< 5 bpm or absent (3 bpm) Increased baseline variability > 25 bpm
Decelerations	Early - The onset of the deceleration coincides with the onset of the contraction. Often can be described as mirroring the contraction. Normally benign if no other abnormalities are noted and probably indicate fetal head compression. Uniform and repetitive.
	Late - The onset of the deceleration occurs after the onset of the contraction. The lowest point is past the peak of the contraction and there is a delay in returning to the baseline. Uncorrected late decelerations are frequently associated with uteroplacental insufficiency and fetal hypoxia. Uniform and repetitive
	Variable shape and relationship to the contractions. They are extremely common. They have rapid descent and recovery with good variability and accelerations at the onset and end of the contraction. Time relationships with contraction cycle may be variable but most commonly occur simultaneously with contractions. Complicated variable decelerations increase the likelihood of hypoxia : <ul style="list-style-type: none"> • Rise in baseline • Reducing baseline variability, loss of shouldering • Presence of a smooth post deceleration overshoot • Slow return to baseline after the end of the contraction • Large amplitude and/or long duration
	Prolonged -A decrease in FHR to levels below the baseline that lasts at least 90 seconds but not longer than 5 minutes.
Sinusoidal	A regular oscillation of the baseline long-term variability resembling a sine wave. Baseline variability is absent
Contractions	
Hyperstimulation	More than 5 contractions in 10 minutes – rest phase < 90 seconds – may lead to hypoxia
Tonic Contraction	Contraction lasting more than 2 minutes – again may lead to hypoxia

CTG Classification

The fetal features of a CTG that are reviewed are

- Baseline - read between contractions
- Variability
- Accelerations
- Decelerations.

Maternal contraction pattern is needed to diagnose the type of deceleration.

The features are then described as

- Normal
- Abnormal Consultation see Appendix 1

From these parameters, a CTG can therefore be described as:

Normal All elements of the CTG are reassuring or fall within normal parameters

Abnormal One or more of the parameters of the recording is abnormal

Guidelines for application of a fetal scalp electrode

Internal fetal scalp monitoring is recommended when the quality of the external recording is poor despite efforts to reposition the transducer. Such instances include:

- When application is extremely difficult
- When it is difficult to differentiate between the maternal and fetal pulse
- When it is difficult to differentiate between fetal heart beats when there is a multiple pregnancy
- When you have a high risk situation for fetal compromise or if the CTG is abnormal but the pH is normal

Fetal scalp electrodes are contraindicated for women with HIV, hepatitis or Fetal bleeding disorders.

Fetal Blood Sampling

Fetal blood sampling is required when the fetal condition requires further evaluation. Delivery suites employing EFM are strongly encouraged to have access to Fetal blood sampling facilities (RANZCOG 2006).

Results should be interpreted in light of previous FBS results, the woman's progress in labour and clinical circumstances (RANZCOG, 2004).

RANZCOG, (2004) contraindications to FBS are

- EFM shows evidence of sustained fetal compromise
- Fetal bleeding disorders
- Gestation < 34 weeks
- Face presentation
- Maternal infection including Hepatitis B, HIV and suspected intrauterine infection. However Group B streptococcus carrier status does not preclude FBS. (RANZCOG, 2004, p.16)

When a FBS has been taken in labour then umbilical artery and vein (paired samples) acid-base status to be collected after the birth.

Umbilical artery and vein lactate can be done

Documentation for maternal record

Documentation of EFM should include a description of all elements of the trace, a classification of the recording and an ongoing plan for care as the clinical situation demands but at least every hour and when changes occur. Appendix 2 provides a mnemonic that can be used to document EFM.

All recordings should be documented.

Where there is suspicion of fetal heart rate abnormality the decision to change to CEFM should also be documented.

Education

RANZCOG, 2005, recommend that staff with responsibility for performing and interpreting CEFM should receive regular training with assessment to ensure maintenance and competence of skills.

RANZCOG online FSEP programme available to all staff and access holders to provide ongoing self-directed education and all are encouraged to attend the RANZCOG training held each year.

Online access to Foetal Surveillance Electronic Programme (OFSEP) :- go to www.fsep.edu.au then click on OFSEP icon – this will bring you to the ‘Site Policy Agreement’ – click on ‘yes’ scroll down to start the course.

Clinical Audit

EFM practice affects a lot of clinical decision making. Audits of practice should include reference to EFM.

Such audit can include

- Decision to delivery interval for caesarean section
- Caesarean section outcome
- Reasons for caesarean
- Multidisciplinary guideline adherence

Related documents

Induction and augmentation of labour

Management of acute uterine hypercontractility

Postpartum Haemorrhage Prevention and Treatment policy

Reference

AAFP, (2005). Intrapartum fetal surveillance in labour, ALSO manual. USA: AAFP

Baker, L.S., Beaves, M.C., Trickey, D.J., Wallace, E.M. (2006). Fetal Surveillance, A Practical Guide, Australia: FSEP.

Beech, B.L. electronic fetal monitoring – inherited clinical guidelines. In Wickham, S. (2004). Midwifery best practice (2). Edinburgh: Books for midwives.

Blix, E., Svuggum, O., Koss, K. & Oian, P. (2003). Interobserver variation in assessment of 845 labour admission tests: comparison between midwives and obstetricians in the clinical setting and two experts. BJOG: 110, 1-5.

Hawley, J., Calvert, S. & Coles, C. (2003). *Intrapartum Electronic fetal monitoring (EFM) and Fetal Blood Sampling (FBS)*. Wellington: Capital and Coast DHB.

Impey, L., Reynolds, M., MacQuilland, K., Gates, S., Murphy, J. & Sheil, S. (2003). Admission cardiotocography: a randomised controlled trial. *Lancet*, 361, 465 – 470.

Ministry of Health. (2012) Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines). Wellington: Ministry of Health

Mires, G., Williams, F. & Howie, P. (2001). Randomised controlled trial of cardiotocography versus Doppler auscultation of fetal heart at admission in labour in low risk obstetric population. *BMJ*, 322, 1457 – 1460.

Neilson, J. (1993) Cardiotocography during labour. An unsatisfactory technique but nothing better yet. *BMJ*, 306, 347 – 348.

New Zealand Guidelines Group (2004). *Care of women with breech presentation or previous caesarean section*. Wellington: New Zealand Guidelines group

NZCOM. (2002). *Consensus Statement: Foetal monitoring in labour*. Christchurch: NZCOM, www.midwife.org.nz/index.cfm/Consensus

RANZCOG, (2006). *Clinical Guidelines: Intrapartum fetal surveillance*. Australia: RANZCOG. www.ranzcog.edu.au

Steer, P. J. & Danielian, P. (2000). Fetal distress in labour. In James, P.K., Steer, P.J Weiner, C.P & Gonik, B. (eds). *High Risk pregnancy (2nd edition)*. London: WB Saunders.

Thacker, S. B., Stroup, D. & Chang, M. (2004). *Continuous EFM for fetal assessment during labour*. Cochrane Database of Systematic Review, 2.

Walsh, D. (2004). Care in the first stage of labour, in Henderson, C. & McDonald, S. eds. *Mayes Midwifery a textbook for midwives*. China: Balliere Tindall.

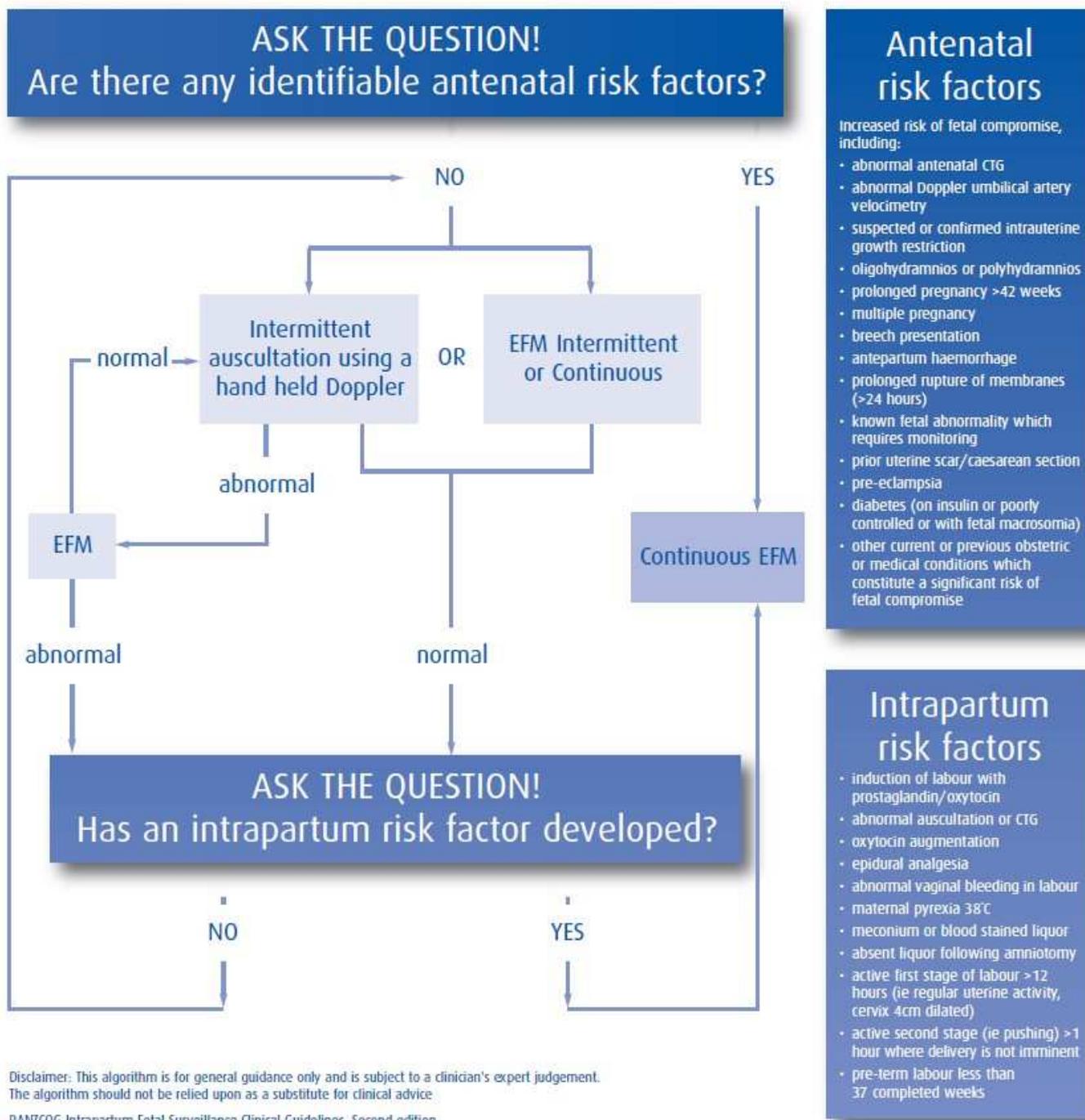
Informed Consent

The right of a consumer to make an informed choice and give informed consent, including the right to refuse medical treatment, is enshrined in law and in the Code of Health and Disability Consumers' Rights in New Zealand. This means that a woman can choose to decline treatment, referral to another practitioner, or transfer of clinical responsibility. If this occurs follow the process map on page 18 of the Referral Guidelines (Ministry of Health, 2012).

Appendix 1
Referral Guidelines

See the Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines) MOH, 2012.

Appendix 2



Disclaimer: This algorithm is for general guidance only and is subject to a clinician's expert judgement. The algorithm should not be relied upon as a substitute for clinical advice.
 RANZCOG Intrapartum Fetal Surveillance Clinical Guidelines. Second edition.
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