INTRAPARTUM CARE

FETAL HEART RATE MONITORING: INTRAPARTUM

Keywords: FHR, fetal monitoring, CTG, cardiotocograph, fetal heart rate, fetal surveillance, indications for CTG, intrapartum, antenatal risk factors, intrapartum risk factors, intermittent auscultation

AIM

- To provide guidelines for intrapartum caregivers that will lead to the best possible fetal outcomes while maintaining the lowest possible rates of intervention.

KEY POINTS\(^{(1)}\)

1. Fetal surveillance in labour, whether by intermittent auscultation or by electronic fetal heart rate monitoring, is mandatory.
2. There is neither strong evidence that an admission cardiotocograph (CTG) in low risk pregnancies confers significant benefit, in terms of reducing adverse perinatal outcomes, nor does it appear to be associated with an increase in major interventions providing it is removed once a reassuring trace is evident.
3. Intermittent auscultation may be used for women who, at the onset of labour, are identified as having a low risk of developing fetal compromise.
4. Intermittent auscultation shall be performed using a Doppler monitor. It is recommended that the Doppler monitor be on speaker mode.
5. Each auscultation episode should commence toward the end of a contraction and continue for at least 1 minute after the contraction has finished\(^{(2-4)}\).
6. Auscultation shall be undertaken:
   - At least every 30 minutes in the active phase of the first stage of labour\(^{(2-4)}\).
   - At least every 5 minutes in the second stage of labour\(^{(2, 5)}\).
   - Toward the end and for at least 1 minute after each contraction\(^{(2)}\) during active pushing in the second stage of labour.
7. With continuous, electronic fetal heart rate monitoring, the Midwife / Resident Medical Officer shall:
   - Explain the procedure of fetal monitoring to the woman, including upper and lower limits of a normal baseline.
   - Review the fetal heart rate trace on a regular basis (as determined by maternal and fetal condition). This assessment shall be recorded in the woman's medical record (MR 250) with comments on:
     - Baseline heart rate
     - Variability and accelerations
     - FHR decelerations
     - An assessment of the trace as normal, non-reassuring or pathological.
   - Notify the Labour and Birth Suite shift co-ordinator and Registrar / Senior Registrar of any FHR abnormalities.
8. In the presence of any CTG abnormality, the midwife shall initiate measures, where appropriate, to improve the fetal status e.g. change of maternal position, the administration of intravenous fluids or reducing / suspending an oxytocin infusion. See Clinical Guidelines, O&M: Intrapartum Care, Fetal Compromise (Acute): Management if Suspected
9. The Registrar must:
   - Be aware of all women within the Labour and Birth Suite requiring continuous FHR monitoring
   - Be notified immediately of all abnormal fetal heart rate traces.
   - Immediately assess any reported abnormal fetal heart rate trace (or contact a Senior Registrar if he / she is unable to do this). This assessment shall be recorded in the woman’s medical record (MR 250) with comments on:
     - Baseline heart rate.
     - Variability and accelerations.
     - FHR decelerations.
An assessment of the trace as normal, non-reassuring or pathological.
A plan for subsequent management.

Institute appropriate measures to assess fetal status which may include:

- Conservative measures such as change of maternal position, giving intravenous fluids or reducing / suspending an oxytocin infusion.
- An assessment of progress.
- Fetal scalp stimulation.
- Fetal blood sampling.
- Amnioinfusion.
- Birth of the baby.

Clinical Guidelines, O&M: Intrapartum Care: **Fetal Compromise (Acute): Management if Suspected**

- Notify the Senior Registrar / Consultant on call of abnormal patterns if they persist.

10. The Consultant shall review the trace and woman, where there is uncertainty about the CTG, as soon as possible and document a management plan in the woman’s medical record (MR 250).

11. If the CTG is considered normal, monitoring may be interrupted for short periods for patient comfort or personal care e.g. toilet and shower. Such interruptions should not be frequent or at times when the fetus may be at an increased risk of compromise, e.g. shortly after an epidural top up, or artificial rupture of membranes¹.

### INDICATIONS FOR CONTINUOUS FETAL HEART RATE MONITORING¹

#### ANTENATAL RISK FACTORS

- Suspected or confirmed intrauterine growth restriction.
- Previous antepartum monitoring suggesting an ‘at risk’ fetus, such as an abnormal antenatal CTG, abnormal Doppler ultrasound, oligohydramnios.
- Essential hypertension or Pre-eclampsia.
- Gestational hypertension
- Antepartum or intrapartum haemorrhage.
- Prolonged rupture of membranes ≥ 24 hours
- Chorioamnionitis.
- Prolonged pregnancy ≥ 42 weeks.
- Multiple pregnancy.
- Breech presentation.
- Diabetes – where medication is indicated, suspected or confirmed macrosomia, diabetes poorly controlled.
- Prior uterine scar or previous Caesarean birth.
- Current or previous obstetric or medical conditions which constitute a significant risk of fetal compromise e.g. cholestasis, isoimmunisation, substance abuse.
- Morbid obesity (BMI ≥ 40)
- Maternal age ≥ 42 years
- Abnormalities of maternal serum screening associated with an increased risk of poor perinatal outcomes e.g. low PAPP-A < 0.4 MoM

#### INTRAPARTUM RISK FACTORS

- Induction of labour with prostaglandins / oxytocin.
- Abnormal fetal heart rate pattern on auscultation.
- Oxytocin augmentation.
- Regional anaesthesia e.g. epidural or spinal, and paracervical block
- Abnormal vaginal bleeding in labour.
- Maternal pyrexia ≥ 38°C.
- Meconium or blood stained amniotic fluid.
- Absent amniotic fluid volume following amniotomy.
- Prolonged active first stage of labour > 12 hours (i.e. regular uterine activity, cervix 4cm or more dilated).
- Prolonged active second stage (i.e. pushing) of greater than 1 hour when delivery is not imminent
- Pre-term labour less than 37 completed weeks.
- Tachysystole (more than five active labour contractions in ten minutes without fetal heart rate abnormalities)
- Uterine hypertonus (contractions lasting more than two minutes in duration or contractions occurring within 60 seconds of each other, without fetal heart rate abnormalities).
- Uterine hyperstimulation (either tachysystole or uterine hypertonus with fetal heart rate abnormalities).

CONDITIONS WHERE INTRAPARTUM CTG IS NOT INDICATED WHEN THE CONDITION OCCURS IN ISOLATION, BUT IF MULTIPLE CONDITIONS ARE PRESENT, INTRAPARTUM CTG SHOULD BE CONSIDERED

ANTENATAL RISK FACTORS
- Pregnancy gestation 41.0-41.6 weeks gestation
- Gestational diabetes mellitus without complicating factors
- Obesity (BMI: 30-40)
- Maternal age ≥ 40 and < 42 years

INTRAPARTUM RISK FACTORS
- Maternal pyrexia ≥ 37.8 and < 38 degrees

RISK OF FETAL COMPROMISE

It is recognised that CTGs have high sensitivity in detecting the potentially compromised fetus but low specificity. Fetuses go through sleep / wake cycles or may be affected by maternal drugs and thus CTGs may alternate between appearing normal and non-reassuring (decreased baseline variability and no accelerations) due to a sleeping fetus or a sedated fetus. This normal physiological response must be distinguished from the hypoxic fetus.

The normal CTG is associated with a low probability of fetal compromise:
- Fetal heart baseline rate of 110 to 160 beats per minute (bpm)
- Fetal heart baseline variability of 6 to 25 bpm
- If over 30 weeks gestation fetal heart accelerations greater than 15 bpm – occurring spontaneously or elicited by a vaginal examination.
- If 23 to 30 weeks gestation fetal heart accelerations greater than 10 bpm - occurring spontaneously or elicited by a vaginal examination.
- No decelerations

Other CTG patterns are, by definition, abnormal and require careful evaluation taking into account the duration of the abnormal pattern and other clinical features.

The following CTG features, occurring in isolation, are unlikely to be associated with significant fetal compromise:
- Fetal heart baseline rate of 100 to 109 bpm.
- Absence of accelerations
- Early decelerations
- Variable decelerations with no complicating features (previously mild variable decelerations)
The following features may be associated with fetal compromise:

- Fetal tachycardia or rising baseline
- Reduced baseline variability
- Complicated variable decelerations
- Late decelerations
- Prolonged decelerations

The following features are very likely to be associated with significant fetal compromise and require immediate management, which may include urgent birth:

- Prolonged bradycardia
- Absent baseline variability
- Sinusoidal pattern
- Complicated variable decelerations with reduced baseline variability
- Late decelerations with reduced variability

Birth should be undertaken when there is:

- Significant fetal acidosis suspected and it cannot be reasonably excluded
- Clear evidence of serious fetal compromise (fetal blood sampling)
- Persistent CTG abnormalities that require further assessment but fetal blood sampling is unavailable, contraindicated, clinically inappropriate or not feasible.

COMPETENCY

Refer to O&M, Antenatal Care: Fetal Heart Rate Monitoring: Antenatal for competency requirements.

PROCEDURE

Refer to Clinical Guideline, O&M, Antenatal, Fetal Heart Rate Monitoring: Antenatal for procedure.

Note: Adjust the speed of CTG tracing as indicated – usually 1cm per minute for a labouring woman.

REFERENCES / STANDARDS


National Standards – 1.7.1,1.8.1
Legislation - Nil
Related Policies/ Guidelines – Clinical Guidelines: O&M: Antenatal Care: Fetal Heart Rate Monitoring: Antenatal; Intrapartum Care: Fetal Compromise (Acute): Management if Suspected
Other related documents – Nil

RESPONSIBILITY

Policy Sponsor | Medical Director OGCCU
Initial Endorsement | September 2001
Last Reviewed | November 2013
Last Amended | April 2014
Review date | April 2017

Do not keep printed versions of guidelines as currency of information cannot be guaranteed. Access the current version from the WNHS website