Continuous Intrapartum Electronic Fetal Monitoring Guideline

Guideline Number:	813	Supersedes:		Classification	Clinical
LOCSSIP Reference:	n/A	NATSSIP Standard:			

Version No:	Date of EqIA:	Approved by:	Date Approved:	Date made active:	Review Date:
1		Obstetric Guideline and Audit Group	12.3.2019	/	1.3.2021
		Obstetric Group - Extended whilst review is finalised	23.03.2022	23.03.2022	23.09.2022

Brief Summary of Document:	To provide safe care and management of high risk women who require continuous electronic fetal monitoring of their babies during labour
Scope	Maternity wards within the Health Board. High risk women who are confirmed to be in active under the care of obstetricians and midwives. 'The term "woman/women" in the context of this document is used as a biologically based term and is not intended to exclude trans and non-binary people who do not identify as women.'

To be read in conjunction with:	667 – Management of Induction of Labour
Patient Information:	Include links to Patient Information Library

Owning group	Obstetric Guideline and Audit Group

Reviews and updates		
Version no:	Summary of Amendments:	Date Approved:
1	New guideline	12.3.2019

Glossary of terms

Term	Definition
CLC	Consultant led care
CTG	Cardiotocograph
EFM	Electronic fetal monitoring
FHR	Fetal heart rate
FSE	Fetal scalp electrode
TENS	Transcutaneous Electrical Nerve Stimulation
MLC	Midwife led care

Keywords	Continuous electronic fetal monitoring, cardiotocograph, intrapartum, high risk women

Contents

1. AIM OF GUIDELINE

The purpose of this guideline is to provide guidance and standardise the documentation, interpretation and management of continuous electronic intrapartum fetal monitoring.

2. OBJECTIVES

The objective of continuous electronic fetal monitoring in labour is to reduce fetal mortality/morbidity by ensuring that any fetal hypoxic insult is identified in time to allow either:

- Removal/amelioration of the hypoxic insult
- Delivery of the fetus from the uterus before irreversible asphyxial damage occurs

3. SCOPE

Women assessed as being high risk and booked for Consultant-led care (CLC) will require continuous EFM once in established labour and where there is a risk factor for fetal compromise

4. INTRODUCTION

The aim of monitoring the fetal heart rate in labour is to detect those babies who may be compromised or potentially compromised by a shortage of oxygen (fetal hypoxia). If the shortage of oxygen is either prolonged or severe, babies are at risk of being born with a disability or of dying either during labour or shortly after.

When there are maternal or fetal conditions that increase the risk of intrapartum hypoxia continuous Electronic Fetal Monitoring (EFM) is recommended, to provide the clinician with a period of continuous tracing of the fetal heart.

5. MANAGEMENT

5.1 Technique for performing continuous electronic fetal monitoring

- Need to ensure the EFM monitor is clean, fully equipped and correct EFM tracing paper is used.
- EFM monitor must be checked to ensure the date and time clocks are correctly set.
- Settings on CTG machines should be standardised so that paper speed is set to 1 centimetre per minute
- Sensitivity displays are set to 20 beats per minute (bpm/cm)
- FHR range displays of 50-210 bpm are used
- Ensure the tocogaph pressure is correctly set to 10 to 20
- Perform abdominal palpation and auscultation of fetal heart using a Pinard stethoscope before continuous monitoring is commenced.
- The mother should lie on her left side in a comfortable and supportive position on a bed/couch to prevent aorto-caval compression
- The tocograph transducer should be placed where the fetal heart was heard
- The maternal pulse oximeter should be used continuously to ensure differentiation between maternal and fetal heart rate.
- Application of a fetal scalp electrode (FSE) should be considered where cardiotocograph tracing is of poor quality using an abdominal transducer.

5.2 Telemetry

- This should be offered, when available, to women to encourage mobility and normalisation.

5.3 Twins

- An ultrasound examination should be performed prior to commencing any CTG in a twin pregnancy to confirm location of two individual fetal hearts.
- An FSE should be applied to twin one if cephalic as soon as physically possible. The 20 beat separation of two fetal hearts should be applied to differentiate both fetal heart rates.

5.4 Uterine Activity

- In order for the CTG to be assessed accurately effectively recording contractions is a vital element therefore every effort should be made to record on the CTG the presence of contractions.
- Contractions should always be palpated and a perceived perception of frequency and strength recorded
- Any difficulties in monitoring the contractions should be evidenced within the maternal records including actions taken.
- Escalate to the midwifery co-ordinator.

5.5 Record Keeping

- A label must be completed and attached prior to the start of the tracing completed with:
- the woman's name
- Date of birth
- Hospital number
- The date
- The woman's pulse
- Reason for continuous EFM
- Following birth the following must be written on the CTG tracing:
- Mode of birth
- Time of birth
- The outcome
- Signature of midwife
- The paper CTG tracing needs to be stored in the designated wallet and placed appropriately in the maternal records and kept for 25 years.
- The woman's details must be clearly recorded on the front of the wallet. This may become electronic in the future.
- All relevant information that may affect the fetal heart should also be noted contemporaneously on the cardiotocograph (eg. vaginal examinations, administration of drugs, vomiting, sitting for epidural insertion).
- Any member of staff who is asked to provide an opinion on a trace should date/time and sign the cardiotocograph and note any findings in the maternal case notes. The same should happen at any staff change over.
- Following delivery the mode of birth, time, outcome and signature of midwife must be written on the cardiotocograph (CTG) tracing.

6. INTERPRETATION OF THE CTG RECORDING IN LABOUR (APPENDIX 1)

- The CTG should be reviewed continuously and the FHR baseline recorded in the partogram every 15 minutes.

- A structured review of the CTG tracing should be performed and documented in the notes every 60 minutes using the CTG Intrapartum Sticker (Appendix 1)
- This will take into account features indicating the fetal likelihood of hypoxia (Appendix 2)

6.1 Fresh Eyes

- Assessment by two people using the **Fresh Eyes** approach must take place **at least every two hours** using the CTG Intrapartum Sticker
- When reviewing a CTG consideration of previous CTG tracings should be made to identify when the CTG was last normal.
- The overall clinical picture must be taken into consideration at all times when reviewing the CTG tracing

6.2 Quality of Monitoring

- The quality of monitoring of both uterine activity and FHR must allow for accurate interpretation of the CTG tracing. If a problem is anticipated consider applying an FSE prior to the procedure being commenced.
- Refer to Troubleshooting for Fetal Heart Recordings Appendix 3.

7. COMMUNICATION: 'SAFETY HUDDLES'

- A Safety Huddle is a structured briefing for the leaders of key clinical teams. This will ensure everyone understands their roles and responsibilities in an incident and shares key clinical information relevant to patient safety.
- Where intrapartum care is complex or I. the event of an unexpected adverse outcome a safety huddle should be undertaken.

7.1 Communication: General Principles

- Maternal wishes and concerns should be discussed and recorded.
- The benefits, risks and limitations of continuous intrapartum fetal monitoring should be explained.
- Consent should be sought prior to any interventions.
- The woman should be included in the decision making process regarding her care.

8. EDUCATION AND TRAINING

Health professionals performing, interpreting and managing CTGs and performing intermittent auscultation of the fetal heart during labour should update their skills regularly.

The updates should be multidisciplinary to ensure use of common terminology and shared understanding. Midwives and obstetricians will be allocated:

- Two hours on the PROMPT Mandatory day.
- Two hours on the Maternity Update Day.
- Two hours to be accessed via weekly CTG and Intrapartum Case Reflection.

9. AUDITABLE STANDARDS

- The minimum data set that will be recorded on commencement of all CTG monitoring traces includes: woman's name, hospital number, date & time and maternal pulse.
- A minimum of hourly assessments on the CTG trace will be carried out during the intrapartum period by completing the **CTG Intrapartum Sticker,** signed and timed and attaching it to the CTG trace and in the maternal health record.

- Assessments will be aimed to be performed hourly
- Fresh eyes reviews will be carried within a maximum of 2 hours from previous fresh eyes assessment by a midwife or an obstetrician.
- All intrapartum events that may affect the FHR will be recorded, signed and timed on the CTG trace.
- All second opinions provided during labour will be recorded, signed and timed on the CTG trace by the person providing the second opinion.
- In all cases when the CTG trace is assessed as Suspicious or Pathological an action plan will be documented on the CTG Intrapartum Sticker and the Labour and Delivery
- All intrapartum CTG traces will be stored in the CTG envelope securely attached to the maternal health record.
- The minimum data set that will be recorded on completion of CTG following birth includes: mode of delivery, date & time, signature.

10. REFERENCES

- Ayres-de-Campos D, Spong C, Chandraharan E ; for the FIGO Intrapartum Fetal Monitoring Expert Consensus Panel (2015) “FIGO consensus guidelines on intrapartum fetal monitoring: Cardiotocography” International Journal of Gynaecology and Obstetrics; 131(2015)13-24
- NICE (2017) Intrapartum care for healthy women and babies (CG190)
- Visser GH, Ayres-de-Campos D, FIGO Intrapartum Fetal Monitoring Expert Consensus Panel. FIGO consensus guidelines on intrapartum fetal monitoring: Adjunctive technologies. Int J Gynecol Obstet 2015;131:25–

11. APPENDIX 1 - INTRAPARTUM CTG CLASSIFICATION

INTRAPARTUM CTG CLASSIFICATION *To be performed hourly as a minimum*					
Risk factors *(Please tick where applicable)*	**<37 weeks**	**>41 weeks**	**IUGR**	**SROM > 24 hrs**	**APH**
	Meconium liquor	**Oxytocin infusion**	**Pyrexia**	**Hyperstimulation**	**Epidural**
	Slow rate of progression	**Uterine Scar**	**Evidence of SEPSIS**	**Multiple pregnancy**	**Breech presentation**
CLASSIFICATION	**NORMAL**	**SUSPICIOUS**	**PATHOLOGICAL**		
Baseline *(Please tick)*	• 110 – 160 bpm	• Lacking at least one characteristic of normality but with no pathological features	• <100 bpm		
Variability *(Please tick)*	• 5 -25 bpm		• Reduced variability • Increase variability • Sinusoidal pattern		
Decelerations *(Please tick)*	• Non-repetitive decelerations		• Repetitive late or prolonged decelerations for > 30 min (or >20min if reduced variability) • Deceleration >5 min		
Interpretation *(Please tick)*	No hypoxia/acidosis	Low probability of hypoxia/acidosis	High probability of hypoxia/acidosis		
Clinical management *(Please tick)*	No intervention necessary to improve fetal oxygenation state	• Action to correct reversible cause if identified • Close monitoring or adjunctive methods	• Immediate action to correct reversible causes with adjunctive methods • If this is not possible expedite delivery • In acute situations immediate delivery should accomplished		
Management					
Reviewed by *(Print name)*			*FRESH EYES minimum every 2 hrs. (2 clinicians required)*		
Date and time					

12. APPENDIX 2 - FEATURES OF HYPROXIA CLASSIFICATION CHART

Hypoxia	Features	Management
No Hypoxia	• **Baseline appropriate for G.A.** • **Normal variability and cycling** • **No repetitive decelerations**	• **Consider whether the CTG needs to continue.** • **If continuing the CTG perform routine hourly review. (see CTG Assessment Tool below)**
Evidence of Hypoxia		
Chronic Hypoxia	• Higher baseline than expected for G.A. • Reduced variability and/ or absence of cycling • Absence of accelerations • Shallow decelerations • Consider the clinical indicators: reduced fetal • movements, thick meconium, bleeding, • evidence of chorioamnionitis, postmaturity, IUGR	• Avoid further stress • Expedite delivery, if delivery is not imminent
Gradually Evolving Hypoxia	**Compensated** • Rise in the baseline (with normal variability and stable baseline) preceded by decelerations and loss of accelerations	• Likely to respond to conservative interventions (see below) • Regular review every 30-60 minutes to assess for signs of further hypoxic change, and that the intervention resulted in an improvement. • Other causes such as reduced placental reserve MUST be considered and addressed accordingly.
	Decompensated • Rise in the baseline (with normal variability anstable baseline) preceded by decelerations and loss of accelerations	• Needs urgent intervention to reverse the hypoxic insult (remove • prostaglandin pessary, stop oxytocin infusion, tocolysis) • Delivery should be expedited, if no signs of improvement are seen
Subacute Hypoxia	• More time spent during decelerations than at the baseline • May be associated with saltatory pattern(increased variability)	**First Stage** • Remove prostaglandins/stop oxytocin infusion • If no improvement, needs urgent tocolysis • If still no evidence of improvement within 10-15 minutes, review situation and expedite delivery **Second Stage** • Stop maternal active pushing during contractions until improvement is noted. • If no improvement is noted, consider tocolysis if delivery is not imminent or expedite delivery by operative vaginal delivery
Acute Hypoxia	**Prolonged Deceleration (> 3 minutes)**	**Preceded by reduced variability and lack of cycling or reduced variability within the first 3 minutes** **IMMEDIATE DELIVERY IS THE SAFEST OPTION** **Preceded by normal variability and cycling and normal variability during the first 3 minutes of the deceleration (see 3-minute rule above)** **Exclude the 3 accidents (i.e. cord prolapse, placental abruption, uterine rupture - if an accident is suspected prepare for immediate delivery)** • **Correct reversible causes** • **If no improvement by 9 minutes or any of the accidents diagnosed immediate delivery by the safest and quickest route**
Unable to Ascertain fetal wellbeing (Poor signal quality, uncertain baseline, possible recording of the maternal heart rate)	• Escalate to senior team • Consider additional Techniques, if appropriate eg.) scalp stimulation, ultrasound scan • Consider the application of FSE to improve signal quality	

13. APPENDIX 3 - Troubleshooting for Intrapartum Continuous Fetal Heart Recording

Troubleshooting for Intrapartum Continuous Fetal Heart Recording	
Problem	**Action**
No fetal heart rate before the CTG is commenced	• The Registrar and Coordinator should be • informed immediately • A portable US machine should be brought to the bedside. • Visualise fetal heart beating with ultrasound. • Confirm fetal life • Reposition US transducer
Erratic recording, loss of contact with external transducer	• Perform Leopold's manoeuvres to locate fetal back • Reposition US transducer over fetal back • Readjust belt and apply enough gel over US transducer • If recording still suboptimal, locate fetal heart with ultrasound and reposition US transducer • If membranes ruptured and there are no contraindications, apply fetal scalp electrode.
Erratic or no recording with FSE	• Confirm presence of fetal heart beat with ultrasound or auscultation using pinard or sonicaid • Check that FSE wire is attached to the leg plate • Check FSE connection to fetus and replace it if detached • Check that external monitor is discontinued • Transcutaneous Electrical Nerve Stimulation (TENS) may interfere with the acquisition of FHR signal. • Call Obstetric middle grade and give full history and labour events to this point. • Consider expediting delivery if fetal wellbeing cannot be adequately confirmed