Government of Western Australia
North Metropolitan Health Service
Women and Newborn Health Service

OBSTETRICS AND GYNAECOLOGY CLINICAL PRACTICE GUIDELINE	
# Fetal heart rate monitoring	
Scope (Staff):	WNHS Obstetrics and Gynaecology Directorate staff
Scope (Area):	Obstetrics and Gynaecology Directorate clinical areas at KEMH, OPH and home visiting (e.g. Visiting Midwifery Services, Community Midwifery Program and Midwifery Group Practice)
This document should be read in conjunction with this Disclaimer	

This guideline must be read in conjunction with the Department of Health WA Mandatory Policy: MP 0076/18: Cardiotocography Monitoring Policy **and** Standard.

See also supporting information within the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Intrapartum Fetal Surveillance (external website).

Contents

Background

The aim of this guideline is to ensure that the Women and Newborn Health Service (WNHS) maintains compliance with the mandatory requirements outlined in the WA Health Mandatory Policy MP 0076/18 Cardiotocography Monitoring Policy and the Cardiotocography Monitoring Standard.

Education requirements

For all education requirements refer to WNHS Cardiotocography (CTG) Monitoring Mandatory Education Requirements for Midwives and Medical Practitioners.

Fetal heart rate (FHR) monitoring requirements

Informed consent and FHR monitoring

- An individualised discussion about FHR monitoring recommendations should take place in the antenatal period between the woman and her care providers[1,2]. If this has not taken place by the onset of labour, this should be included in labour admission discussions.
- Verbal consent should be obtained prior to FHR monitoring and documented in the clinical record.
- The woman and birthing companion(s) should be kept informed about findings from FHR monitoring, if escalation is required, or if there is a need to reconsider the chosen method of monitoring[1].
- If a woman declines the recommended method of FHR monitoring (intermittent or continuous) this should be managed in accordance with the **"Partnering with the woman who declines recommended maternity care"** clinical practice guideline. A doctor (registrar or higher) must be informed of the woman's decision.

Fetal heart rate assessments

Methods of FHR auscultation at WNHS include;

- **A hand-held electronic doppler device used for intermittent auscultation (IA). Pinards are not to be used for IA.**
- **A CTG machine used for periods of continuous monitoring (not to be used for IA).**

Notes about maternal and FHR differentiation

RANZCOG (2019) suggests that regardless of the mode of FHR monitoring, it is important to obtain an accurate record of fetal wellbeing. Fetal and maternal heart

rates should be clearly differentiated, ideally using monitors capable of simultaneous recording, and evidenced in documentation[2].

- Continuous maternal heart rate monitoring is recommended if there are concerns about differentiation or FHR/maternal heart rate synchronicity[3]. For example;
    - Maternal pulse above 100bpm.
    - During a bradycardia.
    - Ongoing loss of contact.
    - Accelerations with pushing during second stage[1,3].

Women with a previous caesarean section considerations;
WNHS recommends continuous maternal and FHR monitoring for all women contracting with a previous caesarean scar **attempting VBAC or prior to planned caesarean.** Continuous differentiation supports clinicians to promptly identify fetal compromise in women at risk of uterine rupture **[RCA recommendation 2023].**

- Either a CTG transducer or pulse oximetry cable can be used granted there is a continuous recording of the maternal pulse on the CTG.

Challenges with FHR auscultation

If there is difficulty auscultating a FHR or confirming maternal fetal differentiation for any period equal to or greater than 10 minutes* **escalate as per CTG Monitoring Standard Section 4.5 Clinical Care Escalation. Actions include;**

- Alert midwife coordinator and/or doctor (registrar or above).
- Ensure differentiation. Commence continuous maternal heart rate monitoring[1,3].
- Consider placing a Fetal Scalp Electrode (FSE) if intrapartum. FSE's should be considered for all intrapartum CTGs where there is difficulty recording a high quality trace [1,2,3].
- Transfer to hospital for home/birth centre labours.
- Bedside ultrasound scanning[1,3]. If fetal death is suspected confirm with real-time ultrasound assessment if time and clinical presentation permits.
- Consider if Code Blue escalation is required.

** upper time limit. Above interventions may be implemented as soon as the clinician deems appropriate.*

Uterine activity assessments

- Uterine activity (UA) must be assessed in conjunction with the FHR to ensure accurate interpretations, as per CTG monitoring Standard Section 4.2 Uterine Activity Assessment.

Excessive uterine activity

Excessive uterine activity is defined by RANZCOG[2] as;

- **Tachysystole:** More than five active labour contractions in ten minutes, without fetal heart rate abnormalities[2].
- **Uterine Hypertonus:** Contractions lasting longer than two minutes in duration or contractions occurring within 60 seconds of each other, without fetal heart rate abnormalities[2].
- **Uterine hyperstimulation**: Excessive uterine activity, (either tachysystole or uterine hypertonus) **with FHR abnormalities[2]**.
- Refer to **Appendix 4: Interpretation and Escalation of Uterine Activity** for management of excessive UA.

CTG interpretation and recording

- **RANZCOG terminology** is to be used for all documentation related to FHR monitoring.
- Any written or verbal CTG interpretation is to include all features of the CTG and use the **DRCBRAVADO acronym** (see Appendix B: Example of standardised CTG reporting acronym in Cardiotocography Monitoring Standard)
- Any time a CTG is performed the documentation requirements outlined in the CTG Monitoring Standard Section 4.4 Cardiotocograph recording and reporting must be met.

Antenatal Auscultation

Key points

- There is little evidence to define or support the practice of FHR auscultation during antenatal appointments. Auscultation confirms the fetus is alive at the time of auscultation and may be reassuring for the mother and those present[4,5].
- Midwives and/or doctors should undergo collaborative decision making with the woman to agree on when to commence FHR auscultation at antenatal appointments.

- This includes advising the woman that further screening and/or assessment may be indicated or offered if any unexpected features are identified.

When performing FHR auscultation;

- Auscultate for at least one minute.
- Record the FHR as an average and one number.
- Palpate and document the maternal pulse.
- If there is difficulty auscultating the FHR, refer to Challenges with FHR auscultation

Antenatal CTG monitoring

Key points

- An antenatal CTG should be performed if there is an indication/s or concern for fetal wellbeing following assessment of the clinical presentation. A CTG should not be performed in the absence of risk factors.
- For guidance on performing antenatal CTGs in the context of a specific maternal or fetal condition, refer to the associated guideline for further information.
- CTGs for extremely preterm pregnancies **< 28 weeks**;
    - The senior registrar and consultant require notification of CTG monitoring at gestations below 28 weeks.

Antenatal CTG Interpretation and Escalation Requirements

A normal CTG is defined by Baker, Beaves & Wallace[6] as;

- A baseline FHR between 110 and 160bpm
- Baseline variability of 6-25 bpm
- No decelerations
- A minimum of two accelerations within a 20-minute period

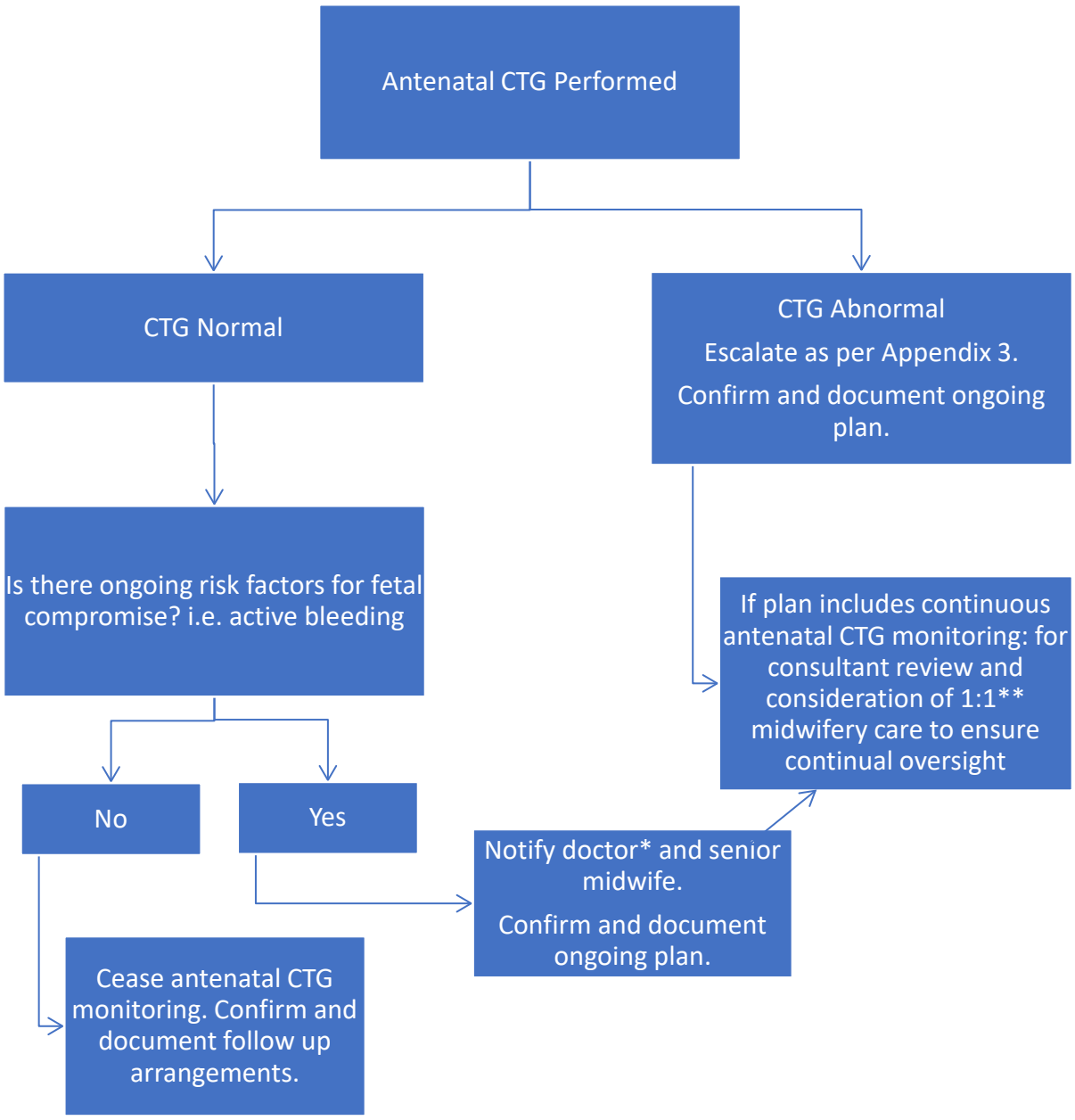
Whilst all CTGs require interpretation those that **DO NOT** meet normal criteria are **abnormal** and require immediate escalation as per Appendix 3: WNHS CTG Interpretation and Escalation Pathways.

If review is delayed and fetal condition continues to deteriorate, press the assistance bell, document events and consider Code Blue Medical.

- For CTGs conducted within PIP interpretations are to be completed using the **CTG assessment – AP** template and digitally signed by two clinicians.

- For CTGs conducted in non-PIP areas, interpretations are to be documented using the nominated CTG review sticker (Appendix 5: Paper CTG Labelling). The sticker must be fully completed and clearly document the two reviewing clinicians name, designation and signature.
- All antenatal CTGs must be reviewed, interpreted, and signed by two clinicians who are either Level 2 or 3 FSEP practitioners (not students**) before the woman leaves the unit.**
- Continuous antenatal CTGs are to be interpreted every 30 minutes by the primary clinician and receive 2 hourly fresh eyes.

Management of Antenatal CTGs



*Doctor = Consultant or Senior Registrar

**If 1:1 midwifery care cannot be facilitated due to staffing levels, escalate to midwifery management and prioritise resources in accordance with the relevant staff business continuity plan.

Risk Assessment for Intrapartum FHR Monitoring

- The decision to use IA or continuous CTG monitoring requires a risk assessment as per the CTG Monitoring Standard Section 4.3 CTG monitoring in clinical practice.
- Document the risk assessment and chosen method of FHR monitoring in the medical record on admission.
- Identified clinical risks where continuous intrapartum CTG monitoring is recommended are classified as per Appendix 1: Maternal and Fetal indications for Continuous Intrapartum CTG monitoring.

Refer to the WNHS specific Guidelines to define the following risk factors:

- **Prolonged first stage**: *Labour (first stage): Management of delay*
- **Prolonged second stage**: *Second stage of labour – management of delay*

Intrapartum Intermittent Auscultation (IA)

Key Points:

- If possible, the initial assessment should include auscultating the fetal heart for at least one full minute in between contractions when the fetus is at rest to establish a baseline[7].
- CTG transducers and pinards are **not** to be used to perform intrapartum IA. A handheld electronic doppler is to be used.
- Each auscultation episode should commence towards the end of a contraction and be continued for at least 30-60 seconds after the contraction has finished[2].
- When auscultating the FHR, listen to the rate, rhythm and the presence of accelerations or decelerations[7].
- The maternal pulse is to be assessed concurrently with every auscultation of the FHR to ensure differentiation[8].

Documentation requirements of IA

Each episode of IA is to be documented contemporaneously in the medical record and needs to include:

- The FHR recorded as the baseline value (a single number or narrow range ≤ 5 bpm)
- The maternal pulse[8].
- The features of IA. This includes;
    - The presence of accelerations[1,7].

  - The presence of decelerations[1,7]. If decelerations are auscultated document the features (length, depth, timing with contraction, return to baseline).
  - Changes to the FHR baseline.
- Any action taken or escalation in response to IA.
- If there have been challenges adhering to the required intervals of IA, noting that ongoing challenges with performing IA should be escalated.

Auscultation in labour should be undertaken and documented;

Every 15-30 minutes in the active phase of the first stage of labour[2].
With each contraction or at least every five minutes as soon as the second stage of labour is suspected or confirmed.
After events which may affect the FHR, such as rupture of membranes.

Interpretation of IA

Clarification of what is defined as abnormal IA is summarised in Appendix 2: Abnormalities of intermittent auscultation indicating conversion to continuous CTG monitoring.

If abnormal IA is auscultated listen in more frequently e.g. over 3 consecutive contractions and review[1];

- Clinical picture[1].
- Maternal observations[1].
- Maternal position[8].
- Contraction frequency[1].
- Progress of labour[1].
- Vaginal loss.

Implement corrective strategies based on the clinical picture. This may include assessing progress, changing maternal position to alleviate aortocaval compression and exiting the bath and/or shower[8].

Confirmation of Abnormal IA:

- If rapid normalisation does not occur and abnormalities persist throughout 3 consecutive contractions escalation is required as per below[1,8].

Escalation of abnormal IA;

- Advise of the change in recommended FHR monitoring and recommend conversion to continuous CTG monitoring as soon as possible[1].
- If labouring in Labour and Birth Suite, escalate to the midwife coordinator.

- If labouring at home or in the Family Birth Centre escalate to;
    - The Labour and Birthsuite Coordinator and Registrar out of hours.
    - The Clinical Midwife Manager or Clinical Midwifery Specialist during working hours.
    - Advise transfer to Labour and Birth Suite is required to commence continuous CTG monitoring if the birth is not imminent.
    - If the birth is imminent with abnormal IA, escalate and prepare for delivery and/or resuscitation.
        - If labouring at home consider calling an ambulance.
        - If labouring at FBC consider calling a Code Blue Paediatric and/or Medical.
- Where an intrapartum CTG has commenced due to concerns arising from IA but results in a normal trace after 20 minutes, the woman may, after a full clinical review, return to IA unless the woman asks to remain on CTG monitoring[1].
- Where the woman has transferred from the FBC to LBS for this reason, provided the woman still meets FBC criteria, care may be resumed back in the FBC following a full obstetric medical review by a doctor (Registrar or higher).

Intrapartum CTG monitoring

Key points

- The use of CTG monitoring does not replace the need for one-to-one midwifery care.
- CTG alarms must be acknowledged, acted upon and documented in the medical record.

Intrapartum CTG Interpretation and Escalation Requirements

A normal intrapartum CTG is defined by RANZCOG[2] as;

- A baseline FHR between 110 and 160bpm
- Baseline variability of 6-25 bpm
- Accelerations
- No decelerations

If an intrapartum CTG does not meet the above criteria refer to Appendix 3: WNHS CTG Interpretation and Escalation Pathways for corrective strategies and escalation pathways.

Note that although the presence of accelerations in an intrapartum CTG is reassuring, their absence does not necessarily indicate compromise. An intrapartum CTG is not abnormal in the absence of accelerations when all other features are normal.

Minimum requirements for intrapartum CTG interpretation and documentation is every 30-minutes, unless more frequent assessments are clinically indicated.

- For CTGs conducted within PIP 30 minutely interpretations are to be documented using the **CTG assessment – IP** template with 1x digital signature.
- For CTGs conducted in non-PIP areas interpretations are to be documented in the integrated progress notes and signed.
- All features of DRCBRAVADO are required to evidence CTG interpretation.

A 2 hourly "Fresh Eyes" is required for all intrapartum CTGs, or more frequently if clinically indicated.

- Fresh Eyes is a checking system that promotes accurate CTG interpretations.
- Fresh Eyes requires 2 clinicians to independently interpret the CTG and is recommended to be conducted at the bedside.
    - In exceptional cases where a bedside review is not feasible, a verbal Fresh Eyes can be conducted granted iSOBAR handover is completed and both clinicians have access to view and sign the CTG within PIP.
- For CTGs conducted within PIP areas "Fresh Eyes" interpretations are to be documented using the **CTG assessment – IP** template with the 2x reviewing clinicians digital signatures recorded.
- For CTGs conducted in non-PIP areas "Fresh Eyes" are to be documented using the CTG review sticker (Appendix 5: Paper CTG Labelling). The sticker is to be fully completed and clearly document the 2x reviewing clinicians' names, designations and signatures.
- CTG interpretation is subject to disagreement at times, even when experienced clinicians use widely accepted guidelines[3]. If there is

disagreement with CTG interpretation findings refer to WNHS Policy Recognising and Responding to Acute Clinical Deterioration (Physiological and Mental Health for communication flowcharts.

Interruptions and Transfers during CTG monitoring

- If the CTG is normal and clinically appropriate, monitoring can be interrupted for brief periods of up to 15 minutes to allow personal care (e.g. toilet, shower)[2].
    - Interruptions should be infrequent and not occur immediately after events or during procedures that may affect the FHR (i.e. epidural insertion/top up, amniotomy)[2].
- If the CTG is abnormal, it should not be discontinued without the required escalation as per Appendix 3: WNHS CTG Interpretation and Escalation Pathways[2].
- Interruptions to fetal monitoring should be minimised during transfer to the operating theatre and prior to the birth of the fetus, especially in the context of suspected fetal compromise[2].
- If there is an unavoidable interruption to CTG monitoring during a transfer, the FHR should be monitored using intermittent auscultation during periods of potential fetal vulnerability, with the continuous CTG to be re-commenced as soon as feasible[2].
- CTGs continued in the operating theatre must be stored as per CTG storage requirements (electronic and paper).

Intrapartum FHR assessments for multiple pregnancies

Key Points:

- Multiple pregnancy is an indication for continuous CTG monitoring in labour[2].
- Identify each fetus' presentation and locate the fetal hearts with a bedside ultrasound on admission in labour[9].
- During CTG Monitoring:
    - Use CTG machines capable of dual FHR monitoring and document which recording belongs to which fetus[9].

  - Ensure the fetal traces are differentiated, by using different coloured CTG recordings or the CTG machine “offset” function (see user manuals for more information)[9].
  - Monitor the maternal heart rate continuously[9].
  - Interpret each CTG separately. When interpreting the CTG be aware of the possibility of monitoring the same fetus twice and confirm synchronicity is not occurring[9].
  - Continue monitoring the remaining fetus/es after the birth of each baby[9].
- If it is difficult to maintain continuous monitoring of multiple fetuses in labour refer to challenges with FHR auscultation. In addition;
  - Consider application of a fetal scalp electrode on the presenting fetus, and external monitoring for the other fetus/es[9].
  - Consider caesarean section if FHR monitoring remains unsatisfactory[9].

Centralised CTG monitoring systems

Phillips Intellispace Perinatal System

- The Phillips Intellispace Perinatal (PIP) program is the centralised fetal monitoring system and primary platform used to generate, record and store CTG traces and related documentation at WNHS.
- Centralised CTG monitoring is not a replacement for 1:1 midwifery care.
- An e-document* summarising the episode of care and CTG trace is automatically produced and uploaded to the patient’s digital medical record (DMR) when the episode is closed.
  - **Until DMR goes live at Osborne Park Hospital, e-documents are not available. Only the progress notes will be printed from PIP and placed within the physical medical record. To access additional clinical information from PIP, access to the application is required.*
- Clinicians are accountable for;
  - Using PIP in accordance the NMHS Clinical Documentation Policy.
  - Closing CTG episodes in PIP at the end of each presentation to ensure publishing to DMR and prevent further entries.
- On-call obstetric consultants can have remote access to PIP if required.

- If the PIP system is unavailable downtime procedures are to be implemented as per;
    - **Philips IntelliSpace Perinatal (PIP) Fetal Monitoring System: Downtime Procedure - KEMH**
    - **[OPH Downtime Procedure pending and will be uploaded and linked here when available]**

CTG storage requirements (electronic and paper)

- CTG records are considered confidential data, form part of the patient medical record and must therefore comply with the retention and storage of confidential information.
- All staff will follow the process for managing CTG traces from the point of CTG generation to the filing and storage in the patient's medical record. This must occur for each presentation.
- All electronic CTGs performed using PIP are stored within the Department of Health data warehouse for long term storage.
- If a paper CTG is performed, upload to PIP retrospectively as the **first** method for long term storage (if feasible).
    - If paper storage is required, the CTG must be labelled with commencement and completion stickers as per the CTG Monitoring Standard Section 4.4 Cardiotocograph recording and reporting and Appendix 5: Paper CTG Labelling;
    - **At KEMH,** send the CTG to medical records for scanning and upload to the patient's DMR.
    - **At OPH**, place the CTG securely in the dedicated CTG envelope MR660.01 (one envelope per pregnancy). The envelope must have the date and time of each CTG stored within it recorded on the front.
- Paper CTGs are to be stored as per MP 0144/20 Information Retention and Disposal Policy.
- If CTGs are not filed appropriately, medical records staff are to return the documentation to the initial sender for rectification.

Compliance Monitoring, Auditing and Reporting

- An annual audit of compliance to the Cardiotocography Monitoring Policy MP0076/18 and Cardiotocography (CTG) Monitoring Standard is submitted to the Chief Nursing and Midwifery Office.
- Appendix C: Cardiotocography (CTG) Monitoring Compliance Audit Tool of the standard is to be used.
- The results of any audits are to be tabled at the Midwifery and Obstetrics Clinical Practice and Outcomes Committee (MOCPOC) for endorsement prior to submission.
- Any issues pertaining to the use of this guideline are to be escalated to MOCPOC for review.

Fetal scalp electrode (FSE) application

Key points

1. Application of the FSE should be used when clearly identified risk factors are present, and signal quality from external monitoring is poor. If there is an inability to accurately monitor the FHR for more than 10 minutes a FSE should be considered.
2. Repeated application of the FSE should be avoided.
3. FHR monitoring using a FSE may detect maternal pulse in rare cases where there is no FHR[1]. A FSE should always be used in conjunction with continuous maternal heart rate monitoring[1].

Contraindications

- Fetus less than 34 weeks gestation
- Intact membranes
- Placenta praevia
- Maternal carrier of haemophilia with affected fetus or with unknown status
- Maternal clotting disorders or thrombocytopenia
- Known or suspected fetal bleeding disorders
- If the fetal presenting part is unable to be identified or anything other than vertex presentation
- Face presentation
- In the presence of:
  - active herpes lesions
  - Hepatitis C

- Hepatitis B
- HIV

Note: In event of any maternal infections, the FSE should not be applied without Consultant approval. This may include discussion with the Microbiology Consultant

Equipment

- Sterile FSE
- Sterile gloves
- Sterile water based lubricant
- Cardiotocograph monitor
- Fetal scalp electrode monitor lead and leg adaptor for selected FSE

Procedure

Prior to procedure

1. Obtain verbal consent from the woman.
2. Ensure the woman's bladder is empty prior to examination.
3. Establish the membranes are ruptured prior to application of the FSE.
    - Membranes should be ruptured and ideally cervix dilated 2-3cm prior to application.
4. Establish there are no risk factors prior to application.

Procedure

1. Perform a vaginal examination (VE)
    - confirm membranes are ruptured
    - identify presenting part
    - do not place FSE over the fontanelles, on the face, or genitalia
2. Choose FSE and refer to manufacturer's instructions for application

Following procedure

1. Document commencement of FSE.
2. Inform the paediatric staff of any abnormalities of the insertion site e.g. lacerations or infections.

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Related policies

Department of Health WA

- Mandatory Policy: MP 0076/18: Cardiotocography Monitoring Policy and Cardiotocography Monitoring Standard
- Mandatory Policy: MP 0144/20: Information Retention and Disposal Policy

North Metropolitan Health Service (NMHS)

- NMHS Clinical Documentation Policy

Related WNHS policies, procedures and guidelines

WNHS Guideline: Abdominal pain: Non-specific in pregnancy

WNHS Guideline: Abdominal Trauma

WNHS Guideline: Abnormalities of Lie / Presentation

WNHS Guideline: Antepartum haemorrhage

WNHS Guideline: Cervical cerclage: Post-insertion nursing observations and suture removal medical procedure

WNHS Guideline: Cholestasis in pregnancy

WNHS Procedure: CTG Monitoring: Mandatory Education Requirements for Staff

WNHS Guideline: Decreased Fetal movements: Management of

WNHS Guideline: Diabetes

WNHS Guideline: Fetal scalp blood sampling

WNHS Guideline: Induction of labour: Methods (Intranet Access Only)

WNHS Protocol: Kleihauer Test for Fetomaternal Haemorrhage (Intranet Access Only)

WNHS Guideline: Labour: First Stage

WNHS Guideline: Labour (first stage): Management of delay

WNHS Guideline: Labour and birth: Planned birth timing (indications and gestations for booking inductions and caesareans)

WNHS Guideline: Labour and birth: Neonatal team attendance at births

WNHS Guideline: Misoprostol protocol for induction of labour from 37+0 weeks

WNHS Guideline: Multiple Pregnancy

WNHS Guideline: Neuraxial analgesia (Intranet Access Only)

WNHS Guideline: Partnering with the woman who declines recommended maternity care

WNHS Procedure: Patient Identification (Intranet Access Only)

WNHS Procedure: Philips IntelliSpace Perinatal (PIP) Fetal Monitoring System: Downtime Procedure (Intranet Access Only)

WNHS Guideline: Preterm Labour

WNHS Guideline: Prolonged pregnancy: Care beyond 40 weeks gestation

WNHS Policy: Recognising and Responding to Acute Clinical Deterioration (Physiological and Mental Health) (Intranet Access Only)

WNHS Guideline: Review at another hospital: Consultation request for obstetrics and gynaecology review of inpatient at other tertiary hospital

WNHS Guideline: Rupture of membranes- spontaneous

WNHS Guideline: Second stage of labour and Birth

WNHS Guideline: Second stage of labour – management of delay

WNHS Guideline: Small for Gestational Age and Intrauterine Growth Restriction: Management of

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Version history

Version	Date	Summary
1	July 2018	First version. History: June 2018 Amalgamated 4 individual guidelines (from section Obstetrics & Midwifery), dated from September 2001, into one document Superseded: 1. Antepartum FHR monitoring (dated March 2016) 2. Intrapartum FHR monitoring (date last amended April 2014) 3. Intrapartum FHR QRG (date last amended May 2016) 4. Fetal scalp electrode (FSE) application (dated Sept 2014)
2	August 2020	• Description of an acceleration changed to: ≥15bpm above baseline and lasting ≥15 seconds at the baseline • Added list of indications for antenatal CTG • Indications for intrapartum CTG updated- see table in guideline for details. Changes include: ➢ oligohydramnios and polyhydramnios- MVP described and AFI updated ➢ maternal age ≥42 ➢ abnormal placental cord insertion; abnormal cerebroplacental ratio ➢ details added to describe altered fetal movements, tachysystole, uterine hypertonus and hyperstimulation ➢ Following a decision to insert an epidural block, a CTG should be commenced to establish baseline features prior to the block's insertion ➢ Updated the antenatal risk factors where intrapartum CTG is not indicated when occurring in isolation (but considered if multiple conditions are present) to include: maternal age 40 – 41; AFI 5-8cm (or MVP 2-3cm) ➢ The table in the guideline is not an exhaustive list and intrapartum CTG may be commenced at clinician or maternal request

		• CTG trace review / signing, education/ FSEP, and storage details updated- read sections • CTG commencement- Confirm patient identity (name and details) • Intermittent auscultation - every 15-30 minutes in the active phase of first stage of labour • Phrase “Fresh eyes” added for CTG interpretation by two clinicians every 2 hours • Added details regarding managing CTG interruptions ➢ Where continuous CTG is required, and if the electronic fetal monitoring to date is considered normal, monitoring may be interrupted for short periods of up to 15 minutes to allow for personal care. Such interruptions should be infrequent and not occur immediately after any intervention that might be expected to alter FHR. ➢ Additional notes about interruptions for personal care and patient transfers added (transferred from another guideline) • Escalation of care- intrapartum: Table updated. ➢ Abnormal (yellow) - variability and decelerations sections amended, and added to action plan to consider IV rehydration ➢ Abnormal (red)- amended to ‘immediate’ notification required • Fetal scalp electrode section- contraindications amended: ➢ ‘Known or suspected’ added to fetal bleeding disorders ➢ Anything other than vertex presentation ➢ COVID-19 (known or suspected) until further information available. Refers to Department of Health state-wide guidance when seeking updated advice.
3	January 2025	Major update under guidance of Fetal Surveillance Working Party. One clinical guideline replacing two x WNHS Clinical Guidelines and one WNHS Policy : • O&G Clinical Guideline: Fetal Heart Rate Monitoring Clinical Guideline • O&G Clinical Guideline: Fetal Compromise Distress Acute • WNHS Policy: Cardiotocography (CTG) Paper Records Management and Storage Updates included: • Removal of procedural steps to perform a CTG • Addition of informed consent and escalation. • Addition of fetal maternal HR differentiation section. • Review of Antenatal CTG process, indications for monitoring and escalation process. Included removing the list of reasons to do a CTG in the AN period as it was not fit for purpose. • Introduction of antenatal FHR auscultation using a doppler. • Rewrite of intermittent auscultation. Expanded significantly, methods described and classification of abnormal IA provided.

		• Review of non RANZCOG recommendations and updated where feasible; • Gestation for postdates changed from >41 weeks to >42 weeks as per RANZCOG and D. Owen. • Addition of stickers in use @OPH • Addition of Antenatal Auscultation • Consolidation of information from Fetal Compromise: Acute if Suspected guideline. • Re-alignment of escalation criteria to new and revised State Standard and Policy – now pending clarification and consultation with peer sites and CNMO office. Disclaimer in guideline and escalation aligned to previous version. • Revision of CTG interpretation stickers and flow charts.

This document can be made available in alternative formats on request for a person with a disability.

Appendix 1: Maternal and Fetal indications for Continuous Intrapartum CTG monitoring

Antenatal and intrapartum factors that increase risk of fetal compromise	
Antenatal risk factors	**Intrapartum (IP) risk factors**
• Abnormal antenatal CTG • Abnormal Doppler umbilical artery velocimetry • Suspected or confirmed intrauterine growth restriction (IUGR) • Oligohydramnios (MVP < 2cm or AFI < 5cm) • Polyhydramnios (MVP > 8cm or AFI > 20cm) • Prolonged pregnancy ≥42 weeks • Multiple pregnancy • Breech presentation • Antepartum haemorrhage • Prolonged rupture of membranes ≥ 24 hours • Known fetal abnormality which requires monitoring • Uterine scar (e.g. previous caesarean section) • Essential hypertension or pre-eclampsia • Diabetes where medication is indicated or poorly controlled, or with fetal macrosomia • Other current or previous obstetric or medical conditions which constitute a significant risk of fetal compromise (e.g. cholestasis, isoimmunisation, substance abuse) • Fetal movements (FM) altered unless there has been demonstrated wellbeing and return to normal FMs • Morbid obesity (BMI ≥40) • Maternal age ≥42	• Induction of labour with prostaglandin / oxytocin • Abnormal auscultation or CTG • Oxytocin augmentation • Regional analgesia (e.g. epidural * or spinal) • Abnormal vaginal bleeding in labour • Maternal pyrexia ≥38°C • Meconium or blood stained liquor • Absent liquor following amniotomy • Delay in the first or second stage of labour • Pre-term labour less than 37 completed weeks • Tachysystole (more than 5 active labour contractions in 10 minutes, without FHR abnormalities) • Uterine hypertonus (contractions lasting more than 2 minutes in duration or contractions occurring within 60 seconds of each other, without FHR abnormalities) • Uterine hyperstimulation (either tachysystole or uterine hypertonus with FHR abnormalities)

• Abnormalities of maternal serum screening associated with an increased risk of poor perinatal outcome (e.g. low PAPP-A <0.4MoM or low PIGF) • Abnormal placental cord insertion • Abnormal cerebroplacental ratio	
* Following a decision to insert an epidural block, a CTG should be commenced to establish baseline features prior to the block's insertion.	
Conditions where continuous intrapartum CTG monitoring is not indicated when the condition occurs in isolation, but if multiple conditions are present should be considered.	
• Prolonged pregnancies between 41+0 and 41+6 weeks. • Gestational hypertension • Gestational diabetes mellitus without complicating factors • Obesity (BMI 30-40) • Maternal age ≥40 and < 42 years • AFI 5-8cm (or MVP 2-3cm)	• Maternal pyrexia ≥37.8ºC and < 38ºC

Note- This list is not exhaustive and an intrapartum CTG may be commenced at clinician or maternal request.

Appendix 2: Abnormalities of intermittent auscultation indicating conversion to continuous CTG monitoring.

Maternal	Fetal
• Any indication for CTG monitoring Appendix 1: Maternal and Fetal indications for Continuous Intrapartum CTG monitoring. • Pulse over 100 beats/minute on 2 occasions 30 minutes apart *. • Persistent uterine / abdominal pain in between contractions.	• Any indication for CTG monitoring Appendix 1: Maternal and Fetal indications for Continuous Intrapartum CTG monitoring. • Evidence of a rising baseline[1]. • Decelerations: **1st stage of labour**: Presence of recurrent (>3) decelerations OR prolonged or late decelerations during auscultation[8]. **2nd stage of labour**: Head compression decelerations can occur. Abnormal if late in timing, slow recovery to baseline, prolonged >3 minutes or bradycardia[8]. • Baseline FHR below 110 or above 160 beats/ minute, or if it is perceived as inappropriate for gestational age. • Irregular FHR rhythm or ectopic beats[7].
* measured between contractions	

Note- This list is in addition to Appendix 1: Maternal and Fetal indications for Continuous Intrapartum CTG monitoring, and is not exhaustive. An intrapartum CTG may be commenced at clinician or maternal request.

Appendix 3: WNHS CTG Interpretation and Escalation Pathways

Interpretation and Escalation to Antenatal CTG

Classification		Baseline	Accelerations	Variability	Decelerations	Action Plan
Normal	Low probability of compromise	110 – 160 bpm	2 in 20 minutes (Reactive)	6-25 bpm	Absent	Confirm follow-up arrangements as per clinical picture and document a plan. Remove trace once all normal features are present, if clinically appropriate. If 2 accelerations in 20 mins are not present after 1 hour, a further management plan is required
Abnormal *Any of these features*	**REQUIRES ACTION**	<110 or >160 bpm Rising Baseline	Absent OR <2 in 20 minutes	3-5 bpm for >45 minutes <3 bpm	Present	Notify doctor* and midwife coordinator Review clinical picture, including current medications/infusions. Treat reversible causes Continue CTG until medical review and management plan confirmed. Refer to Management of Antenatal CTG.

* Doctor = Consultant or Senior Registrar

Disclaimer

The above escalation charts will be updated to align with the 2024 revision of the state wide Cardiotocography Monitoring Standard pending further review.

Interpretation and Escalation to Intrapartum CTG

Classification		Baseline	Variability	Decelerations	Action Plan
Normal	Low probability of compromise	110 – 160 bpm	6-25 bpm	Absent	Nil
Abnormal *Any of these features*	In isolation unlikely to be associated with compromise	100 – 109 bpm	3-5 bpm or >25 bpm for <30 minutes	Early Variable	Notify doctor and/or midwife coordinator Continue CTG Review clinical picture, including current medications/infusions Treat reversible causes +/- Scalp stimulation or FBS Review 30 minutes
Abnormal *Any of these features*	**REQUIRES ACTION** May be associated with fetal compromise	>160 bpm Rising Baseline <100 bpm	3-5 bpm or >25 bpm for >30 minutes	Complicated variables Late Prolonged (below baseline >90 sec & <5 mins)	Notify doctor* and midwife coordinator Review clinical picture, including current medications/infusions Treat reversible causes Scalp stimulation +/- FBS VE to assess progress Review management in light of above interventions – delivery may be indicated
Abnormal *Any of these features*	**IMMEDIATE ACTION** Very likely to be associated with fetal compromise	Bradycardia (fall in baseline FHR for >5 mins)	<3 bpm Sinusoidal		Notify doctor* and midwife coordinator As above: immediately Consider tocolysis Early assisted delivery Reduce second stage or Category 1 (Urgent) C/S

* Doctor = Consultant or Senior Registrar

Abnormal requires review by senior midwife and/or doctor **30 minutes**.

Abnormal requires ACTION including medical review within **15-30 minutes**. Escalate further if clinical acuity means timely review unachievable.

Abnormal requires **IMMEDIATE ACTION** – Code Blue or equivalent site-specific MET ACTION protocol

Disclaimer

The above escalation charts will be updated to align with the 2024 revision of the state wide Cardiotocography Monitoring Standard pending further review.

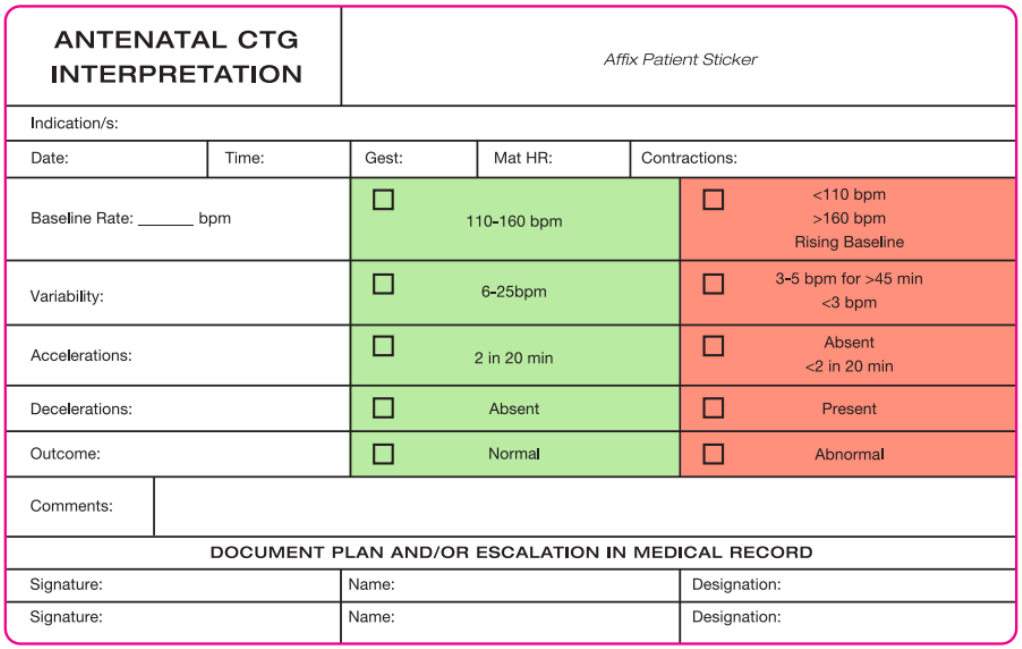
Appendix 4: Interpretation and Escalation of Uterine Activity

Classification			Action Plan
Normal	Low probability of compromise	0-4 contractions in 10 minutes Lasting 30 seconds to 2 minutes Resting tone > 60 seconds between contractions	Continue to monitor contraction strength, timing and length Document with CTG interpretations
Abnormal ***Tachysystole***	May lead to FHR changes.	>5 active labour contractions in 10 minutes without FHR abnormalities.	Notify Senior Midwife and/or Doctor* Continue CTG Midwife to remain with the woman until normal uterine activity returns Review clinical picture **Treat reversible causes;** Review medications and/or infusions Consider reducing or ceasing the oxytocin infusion or removing cervidil if insitu Consider tocolysis
Abnormal ***Hypertonus***	May lead to FHR changes.	Contractions lasting >2minutes or contractions occurring within 60 seconds of each other, without FHR abnormalities.	
Abnormal ***Hyperstimulation***	**REQUIRES ACTION** May be associated with fetal compromise depending on CTG findings.	**Excessive uterine activity, (either tachysystole or uterine hypertonus) with fetal heart rate abnormalities.**	Notify Senior Midwife and Doctor* Continue CTG **Treat reversible causes;** Review medications and/or infusions **CEASE** oxytocin infusion or **REMOVE** cervidil if insitu. **Medical review for tocolysis consideration** VE to assess progress, +/- Scalp stimulation or FBS Doctor to review management in consultation with Specialist Obstetrician in light of above indications (birth may be indicated)

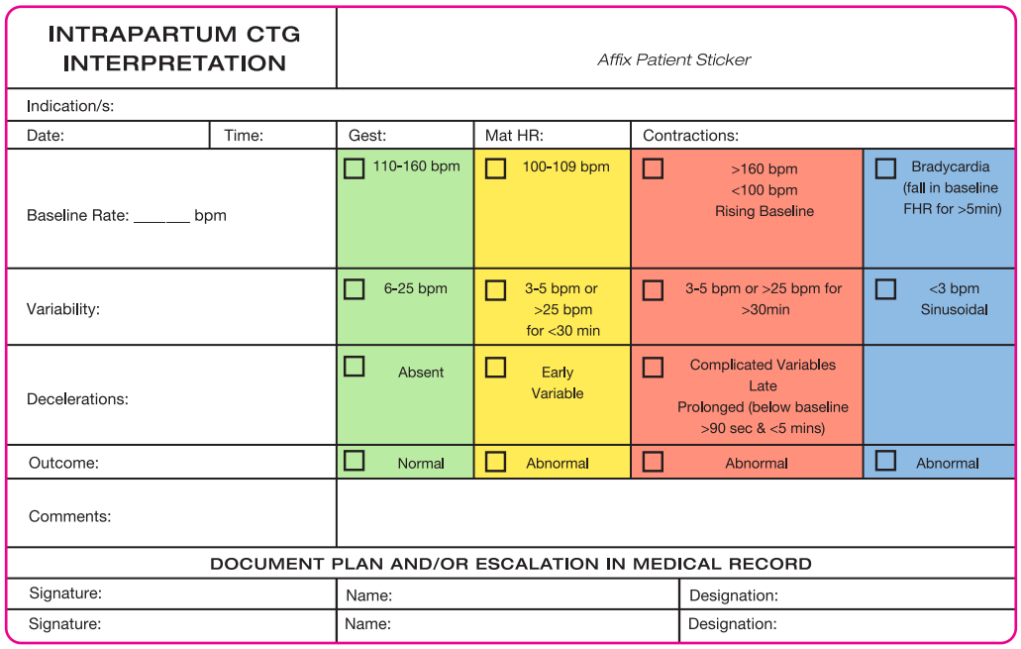
* Doctor = Consultant or Senior Registrar

Tocolysis: See Clinical Guidelines, Pharmacy, A-Z Medications, Terbutaline for current guidance.

Appendix 5: Paper CTG Labelling



ANTENATAL CTG INTERPRETATION		*Affix Patient Sticker*		
Indication/s:				
Date:	Time:	Gest:	Mat HR:	Contractions:
Baseline Rate: _____ bpm		☐ 110-160 bpm		☐ <110 bpm >160 bpm Rising Baseline
Variability:		☐ 6-25bpm		☐ 3-5 bpm for >45 min <3 bpm
Accelerations:		☐ 2 in 20 min		☐ Absent <2 in 20 min
Decelerations:		☐ Absent		☐ Present
Outcome:		☐ Normal		☐ Abnormal
Comments:				
DOCUMENT PLAN AND/OR ESCALATION IN MEDICAL RECORD				
Signature:		Name:		Designation:
Signature:		Name:		Designation:



INTRAPARTUM CTG INTERPRETATION		*Affix Patient Sticker*			
Indication/s:					
Date:	Time:	Gest:	Mat HR:	Contractions:	
Baseline Rate: _____ bpm		☐ 110-160 bpm	☐ 100-109 bpm	☐ >160 bpm <100 bpm Rising Baseline	☐ Bradycardia (fall in baseline FHR for >5min)
Variability:		☐ 6-25 bpm	☐ 3-5 bpm or >25 bpm for <30 min	☐ 3-5 bpm or >25 bpm for >30min	☐ <3 bpm Sinusoidal
Decelerations:		☐ Absent	☐ Early Variable	☐ Complicated Variables Late Prolonged (below baseline >90 sec & <5 mins)	
Outcome:		☐ Normal	☐ Abnormal	☐ Abnormal	☐ Abnormal
Comments:					
DOCUMENT PLAN AND/OR ESCALATION IN MEDICAL RECORD					
Signature:		Name:		Designation:	
Signature:		Name:		Designation:	

Disclaimer

The paper CTG interpretation stickers and labelling will be updated to align with the 2024 revision of the state wide Cardiotocography Monitoring Standard pending further review.