

Department:	Obstetrics and Gynecology		
Document:	Multidisciplinary Policy and Procedure		
Title:	Cardiotocography (CTG) and Fetal Monitoring		
Applies To:	All Obstetrics and Gynecology Staff		
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1. PURPOSE:

- 1.1 To set guidelines for the use and interpretation of CTG: Cardiotocography.

2. DEFINITIONS:

- 2.1 **Cardiotocography**—is a record of the fetal heart rate (FHR) either measured from the transducer on the abdomen or a probe on the fetal scalp. In addition to the fetal heart rate another transducer measures the uterine contractions over the fundus.

3. POLICY:

- 3.1 Obstetrician on call will carry out clinical assessment of the pregnancy to identify high risk pregnancy.
- 3.2 Intermittent monitoring is sufficient if the labour is low risk.
- 3.3 The decision to use intermittent auscultation versus CEFM should be made jointly by the patient and her provider.
- 3.4 Indication for continuous CTG monitoring in labour include:
 - 3.4.1 Abnormal FHR detected by intermittent auscultation (less than 110 beats per minute; greater than 160 bpm, any decelerations after a contraction).
 - 3.4.2 Meconium stained liquor.
 - 3.4.3 Patient on Oxytocin.
 - 3.4.4 High risk pregnancy.
 - 3.4.5 The woman's request.
- 3.5 Fetal scalp electrode (FSE) will be used when there is:
 - 3.5.1 Diminished FHR variability.
 - 3.5.2 The quality of external transducer tracing is not good (repeated loss of contact).
 - 3.5.3 (FSE) should be avoided in cases with HIV, Hepatitis B&C, and check antenatal virology).
 - 3.5.4 CTG must be duplicated for legal purposes, preferably scanned (to avoid manipulations).

4. PROCEDURE:

- 4.1 On patient admission the assigned nurse will fix the CTG on the patient's abdomen.
 - 4.1.1 CTG paper speed must be adjusted to run at a minute, rate of 1 cm/minute, TOCO must not reach 0 mmhg.
- 4.2 The trace should be seen immediately by the resident on duty (ROD), dated, time, signed and stamped and hospital number to be written.
- 4.3 The tocographic transducer should be tightly applied to the uterine fundus in order to pick up uterine contractions.
- 4.4 If the quality of tracing is not good, the assigned nurse should stop oxytocin, change patient's position to relieve aortocaval compression and inform the ROD immediately.

- 4.5 Fetal Heart rate and any deceleration should be recorder in the partogram by the assigned nurse and any FHR abnormality should be passed immediately to the ROD.
- 4.6 Any abnormality in the CTG tracing (non-reassuring or pathological) should be notified to the SOD by the ROD and dealt with according to policy of "Intrapartumfetal distress in labor).
- 4.7 Relevant events (e.g. V.E epidural etc) to be marked on CTG.
- 4.8 Fetal scalp electrode (FSE) will be used when there is:
 - 4.8.1 Diminished FHR variability.
 - 4.8.2 The quality of external transducer tracing is not good (repeated loss of contact).
 - 4.8.3 (FSE) should be avoided in cases HIV, Hepatitis B & C antenatal virology).

4.9 **Table Classification of FHR trace features:**

Accelerations	Deceleration	Variability (bpm)	Baseline (bpm)	Feature
Present	None	≥ 5	110–160	Reassuring
The absence of accelerations with otherwise normal trace is on uncertain significance	Typical variable decelerations with over 50% of contractions, occurring for over 90 minutes Single prolonged deceleration for up to 3 minutes	< for 40–90 minutes	100–109 161–180	Non– Reassuring
	Either atypical variable decelerations with over 50% of contractions or late decelerations, both for over 30 minutes Single prolonged deceleration for more than 3 minutes	<5 for 90 minutes	<100 >180 Sinusoidal pattern ≥ 10 minutes	Abnormal

- 4.9.1 Consider effect of recent vaginal examination.
- 4.9.2 Consider effect of recent bed pan use.
- 4.9.3 Consider effect of recent vomiting or vasovagal episodes.
- 4.9.4 Consider effect of recent sitting or topping-up of epidural analgesia infusion.
- 4.9.5 Check BP and if low give 500 ml infusion of crystalloid if no contraindications to this.
- 4.9.6 Where trace continues to be suspicious despite these interventions then observe for other suspicious FHR features, consider whole clinical context and take appropriately obstetric advice on how to proceed.
- 4.10 For a Pathological CTG:
 - 4.10.1 If fetal blood sampling is indicated/ feasible:
 - 4.10.1.1 Encourage mother to use left lateral position and check BP, giving 500 ml crystalloid if appropriate.
 - 4.10.1.2 Proceed to fetal blood sampling with maternal consent.
 - 4.10.1.2.1 Decide further course on basis of fetal blood sampling results (See table below).
 - 4.10.1.2.2 All scalp pH estimations should be interpreted taking into account the previous pH measurement, the rate of progress in labor and the clinical features of the mother and fetal.
 - 4.10.2 If fetal blood sampling is not indicated or not feasible:
 - 4.10.2.1 Use left lateral position and BP check with crystalloids infusion as above.

- 4.10.2.2 Expedite delivery according to anesthetic, pediatric and experienced obstetrician opinion.
- 4.10.2.3 Speed of delivery should take into account the severity of FHR abnormalities and relevant maternal factors.
- 4.10.2.4 Following delivery, paired umbilical cord samples should be taken and 1–5 minutes APGAR scores calculated and all results recorded in the mother's and newborn's notes.
- 4.10.3 If abnormal CTG, reassessment by ROD needed:
 - 4.10.3.1 Abdominal examination for tenderness.
 - 4.10.3.2 Consider VE (for head on perineum, intrapartum cord prolaps, detection full dilatation, intrapartum hemorrhage, meconium).
 - 4.10.3.3 Encourage patient to adopt left lateral position.
 - 4.10.3.4 If there is evidence of epidural hypotension, 500ml of crystalloid solution should be rapidly infused, (unless the woman is known have cardiac disease or severe pre-eclampsia) and the anesthetist called.
 - 4.10.3.5 If suspicious due to:
 - 4.10.3.5.1 If the CTG trace is of inadequate quality:
 - 4.10.3.5.1.1 Check the following:
 - 4.10.3.5.1.1.1 Contact and connections of external transducer.
 - 4.10.3.5.1.1.2 Contact and connections of fetal scalp electrodes (FSE) if being used.
 - 4.10.3.5.1.1.3 Maternal pulse and ensure not recording this is error.
 - 4.10.3.5.1.2 Consider use of FSE if not currently being used.
 - 4.10.3.5.2 If there is evidence of uterine hyper contractility:
 - 4.10.3.5.2.1 Consider discontinuation of oxytocin if being used.
 - 4.10.3.5.2.2 Check whether vaginal prostaglandins have been utilized.
 - 4.10.3.5.2.2.1 Consider use of terbutaline or other tocolytic agents.
 - 4.10.3.5.3 If there is maternal tachycardia/ pyrexia.
 - 4.10.3.5.3.1 Consider the following:
 - 4.10.3.5.3.1.2 Screening investigations and empirical treatment for infection.
 - 4.10.3.5.3.1.3 Treatment of maternal dehydration.
 - 4.10.3.5.3.1.4 Consider the effect of tocolytics and discontinuation them if this may be causing the tachycardia.
 - 4.10.3.5.3.1.5 Check maternal BP and consider 500ml infusion of crystalloid if indicated.
 - 4.10.3.5.4 If there are other relevant maternal adverse factors:
 - 4.10.3.5.4.1 Check maternal position and if supine then move into left lateral position.

Fetal scalp pH results and appropriate courses of action	
Fetal blood sample (FBS) result/pH	Subsequent Action
≥ 7.25	Repeat FBS if fetal HR abnormalities persist
7.21 – 7.24	Repeat FBS within 30 minutes or consider Delivery if rapid falls in PH since last sample.
≤ 7.20	Delivery indicated.

- 4.10.4 Remember other diagnoses when CTG is abnormal.
 - 4.10.4.1 Sepsis.
 - 4.10.4.2 Abruptio/ Vasa Previa.

- 4.10.4.3 Dehiscence/ Scar rupture.
- 4.10.4.4 Fetal Asphyxia/ Meconium aspiration.
- 4.10.4.5 Cord Prolapse.
- 4.10.4.6 Physiological.
- 4.10.4.7 Medication.
- 4.10.4.8 Chromosomal/ Congenital.
- 4.10.4.9 Cerebral Haemorrhage.
- 4.10.5 Contraction Monitoring (by midwife in charge).
 - 4.10.5.1 Manual palpation with intermittent auscultation.
 - 4.10.5.2 External tocograph (+ manual palpation) with continuous CTG monitoring.

5. MATERIAL AND EQUIPMENT:

N/A

6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurse
- 6.3 Midwife



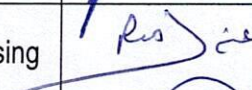


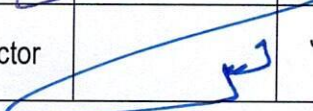
7. APPENDICES:

- 7.1 Partogram

8. REFERENCES:

- 8.1 Electronic Fetal Monitoring Algorithm Derived from NICE 2007 NICE Guidelines.
- 8.2 Electronic Fetal Monitoring Algorithm Derived from NICE/RCOG Guidelines Useful Algorithmic summary of the 2001 NICE/RCOG Guidelines.
- 8.3 Fetal monitoring in Practice 2nd Ed. London. Butterworth Heinemann. Baskett TF, Arulkumaran S, 2002, Intrapartum Care for the MRCOG and Beyond RCOG Press Lancet 2001,; 358:534:538.
- 8.4 Thecker S. Group D Continuous electronic fetal heart monitoring during labour 9The Cochrane review) Oxford: The Cochrane library issue 2, 200. Level 1.
- 8.5 MOH, Guidelines for Obstetrics and Gynecology, Clinical Policies and Procedures.
- 8.6 CBAHI Standard 3rd Edition 2016.

9. APPROVALS:

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[illegible]

OXYTOXIN	0	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DROPS/ MINUTE																								

Contractions 4 Per 3 Minutes 2	5																								
	1																								
Drugs And I.V Fluids	200																								
	190																								
	180																								
	170																								
	160																								
	Blood 150																								
	Pressure 140																								
	and 130																								
	pulse 120																								
	110																								
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URINE	PROTEIN																								
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	GLUCOSE																								
	TEMPERATURE																								