Fetal Monitoring Guideline

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Disclaimer: The term woman is used through this guideline, but covers people identifying as any gender who are pregnant.

Contents

1. Introduction

Fetal monitoring is used to monitor the heart rate of the fetus and is used as part of the assessment of the wellbeing of that baby. There are various ways that this can be undertaken and midwifery and obstetric staff should be familiar with the different techniques.

2. Training

Every midwife and obstetrician is required to attend annual fetal surveillance training to update his or her skills. Within Wales, this is provided by the Intrapartum Fetal Surveillance team and consists of:

- 1 x 7.5 hour in person study day
- 6 x case reviews (MDT reflections, attendance at case reviews etc.)

In addition, all midwives are required to complete additional e-learning on intermittent auscultation.

3. Informed Decision Making

Women should be informed of all options for fetal monitoring and the reason for the different methods, so they can make an informed decision on their care. Support the woman's choice and document the preferred method of monitoring in her records.

4. Types of monitoring

Prior to any monitoring, an abdominal palpation should be undertaken. The fetal heart is most reliably located by listening over the anterior shoulder of the fetus.

Antenatal assessment can be performed using a sonicaid to auscultate the fetal heart for a minute at routine antenatal checks. Where concerns arise then electronic monitoring should be undertaken in the form of a CardioTocoGram (CTG). All pregnancies between 26^{+0}/40 and 33^{+6}/40 gestation inclusive, who require a CTG, should have a computerised CTG (cCTG) undertaken as long as there is no significant uterine activity (see cCTG guideline).

Consider Intermittent Auscultation (IA) for women in labour who have a pregnancy at low risk of hypoxia.

Women with high-risk pregnancies are advised to have continuous CTG monitoring. CTGs are recorded digitally using the K2 system, and can be seen in the clinical Hub on labour ward.

NB. Monitoring of the fetal heart rate is only one part of the assessment of fetal wellbeing. Interpretation of any monitoring should always be taken in context with the clinical situation for the individual woman and baby.

5. Antenatal CTG

When undertaking fetal monitoring in the antenatal period the process should first be explained to the woman including the rationale. This should be documented in her records.

CTGs should not be undertaken as 'routine' because a woman is an inpatient on the maternity ward. CTGs should be undertaken where there are concerns around fetal wellbeing and risk of hypoxia. Reasons for undertaking a CTG are shown in Appendix 1.

Where women are attending but have no risk factors for hypoxia and normal fetal movements are reported, then IA is appropriate, for example transverse lie or maternal mental health concerns.

5.1 Under 26 week's gestation

Under 26^{+0}/40 gestation fetal surveillance should be by auscultation. CTGs are not validated for use under this gestation, and immaturity of the fetal nervous system makes interpretation difficult. Any CTGs undertaken prior to this gestation should be at the discretion of a senior obstetrician.

5.2 26-33^{+6}weeks gestation / cCTG

In the absence of uterine contractions, CTGs should be undertaken using computerised CTG (see cCTG guideline). If this is not available or appropriate, a non-computerised CTG should be performed and the reason documented in the medical records. A Datix should be completed where a cCTG is not available to use. (See cCTG guideline)

For CTGs undertaken by K2 in the absence of a cCTG, please refer to the K2 antenatal classification (Appendix 2).

As with any CTG consideration should always be given to the whole clinical picture and not acted upon in isolation. This includes maternal pulse, temperature and the colour of liquor if membranes ruptured. The CTG should continue until a clear plan is made by a senior obstetrician.

On discontinuing the CTG, the person removing the CTG should sign to indicate a medical professional stopped the CTG. The cCTG should be filed securely in the woman's medical records in a CTG envelope (non-computerised CTGs are stored electronically on the K2 system). An antenatal CTG sticker should be completed and placed contemporaneously in the hand held records.

5.3 34 weeks onwards

From 34/40, a non-computerised CTG should be performed utilising the K2 system. When starting a CTG, check the maternal demographics are correct and indicate the reason for performing a CTG. These CTGs should be interpreted using the algorithm in the software (based on NICE 2014 standards) and are stored digitally. When a CTG is undertaken this should be recorded in the medical records, along with the overall classification and the plan of care. If the K2 system is not available, a paper CTG should be undertaken and documented on antenatal stickers and placed in the notes. A Datix should then be completed for the non-availability of the K2 system.

6. Intrapartum Surveillance

6.1 Intermittent Auscultation

For women with low risk of fetal hypoxia surveillance in labour, intermittent auscultation (IA) should be the method of choice following discussion with the woman. This is associated with reduced interventions without an increase in cerebral palsy or neonatal death rates. (See the IA guideline).

6.2 CTG

Women who have risk factors for hypoxia are advised to have continuous monitoring in labour (see Appendix 4). This should be performed using the K2 central monitoring system which will digitally store the CTG and is based on FIGO classification. The woman should be admitted onto the K2 system.

- Abdominal palpation should be undertaken to identify where to place the transducer.
- A tocograph transducer should be placed at the fundus to document the frequency and duration of uterine activity, however an abdominal palpation of contractions should still occur to identify the strength of contractions.
- The pulse oximeter should be attached to differentiate maternal pulse to fetal heart.
- Classify the CTG hourly on K2 using the FIGO classification tool.
- Hourly fresh eyes review to be undertaken.
- Where there is a difference in classification then a senior obstetric review should occur.
- The K2 classification tool should also be used at any obstetric review.
- Where there is difficulty in getting a CTG of adequate quality or in differentiating between maternal and fetal heart rates, consideration should be given to the application of a fetal scalp electrode (FSE). Contraindications for FSE include:
    - the presence of maternal blood borne infections such as HIV or Hepatitis
    - where there is a risk of fetal haemorrhage such as ITP
    - maternal haemophilia (male infant)
    - gestations under 34+0 weeks.

Once removed FSEs should be disposed of in a sharps box, and the removal documented in the maternity records. **FSE wires should not routinely be cut to remove the FSE.**

Conservative measures for concerns with fetal monitoring include:

- Position change, especially if supine. A supine position is associated with aortocaval compression which reduces uterine blood flow. Position change may also help alleviate cord compression.
- Stop or reduce oxytocin if used. This will reduce uterine activity and thus the stress placed on the fetus.
- Terbutaline 250mcg given subcutaneously. This will reduce uterine activity and the stress on the fetus. It has a rapid onset of action and can be repeated after 15 minutes if required. The first dose of terbutaline can be administered by midwives using PGD. Should not be used if the working diagnosis is significant abruption or uterine rupture
- IV fluids ONLY if there are concerns about hypotension from epidural, sepsis or haemorrhage. Care should be given to the risk of hyponatraemia, which is common in pregnant women; therefore, IV fluids should NOT be given unless medically indicated for a maternal problem.

For any birth where continuous CTG has been the method of monitoring, paired cord samples should be taken and documented in BOTH the maternal and neonatal records.

7. Central Monitor / K2

- New staff including agency to request K2 logins via fetal surveillance midwife or labour ward manager. Training will be discussed at time of request
- All women to be admitted onto K2 system prior to starting CTG
- CTG review must take place at the bedside not in the hub
- All records will be stored digitally
- Document in woman's handheld record outcome of CTG review and any plan

Appendix 1. Indications for Antenatal CTG

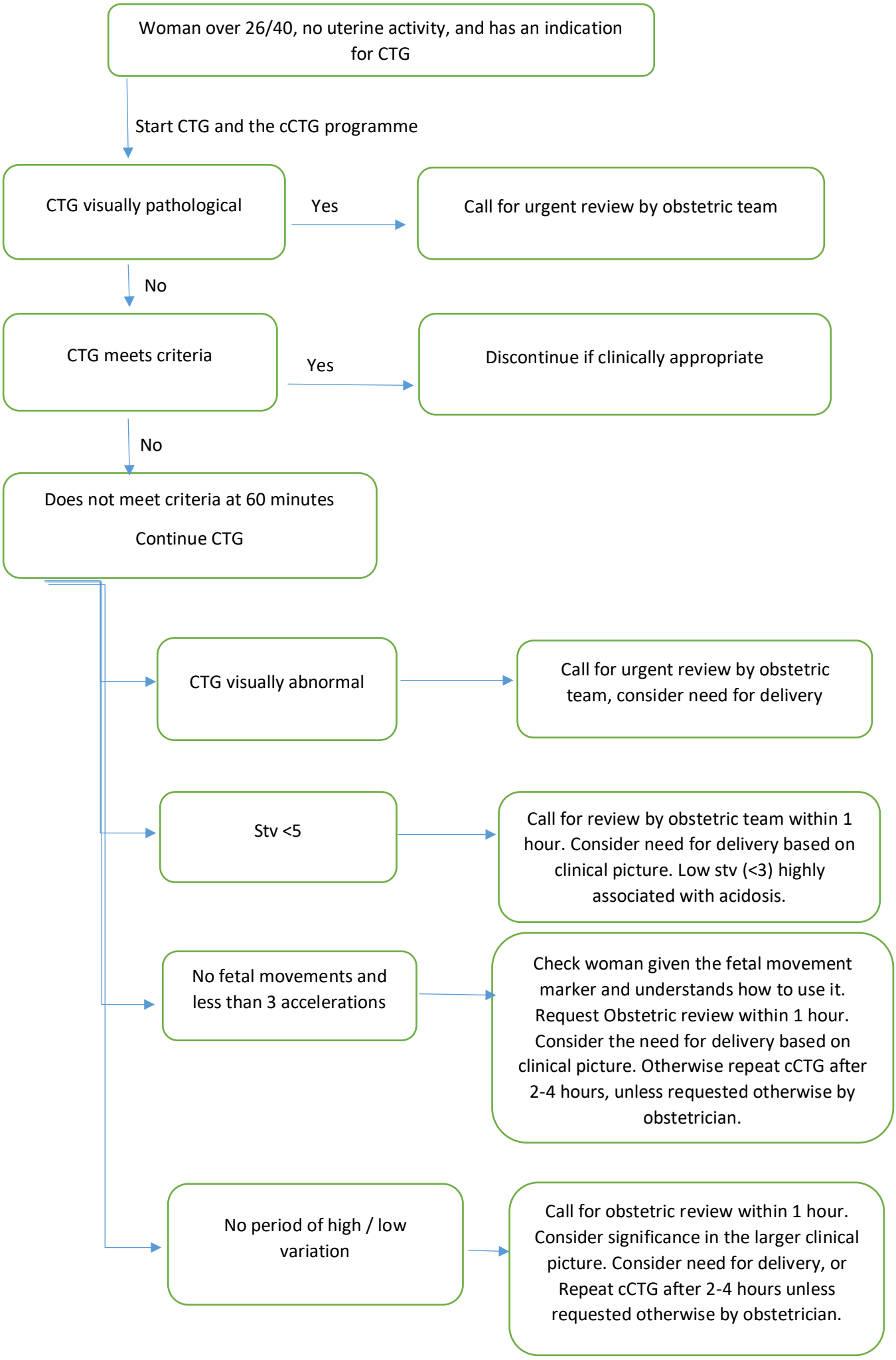
The following list are indications for women to have a CTG during the antenatal period. CTG to be performed from 26+0 gestation or sooner at the discretion of a senior obstetrician. This list is not exhaustive, but represents the situations where a CTG is expected to be performed.

1. Reduced fetal movements
2. Hypertension
3. Pre-eclampsia
4. Antenatal haemorrhage
5. Threatened pre-term labour (beyond 26 weeks)
6. Preterm rupture of membranes
7. Prolonged rupture of membranes (>24 hours and not in labour)
8. Pre/Post procedure e.g. ECV
9. Maternal Sepsis
10. Induction of labour
11. Diabetes

Appendix 2 Antenatal CTG Interpretation Sticker

Antenatal CTG Proforma	Reassuring	Non-Reassuring		
Baseline rate (bpm)	110 - 160 Rate:	Less than 109 Rate: More than 161 Rate: Sinusoidal pattern for 10 minutes or more	Comments:	
N.B Rising baseline rate even within normal range may be of concern if other non-reassuring features present				
Variability (bpm)	5 - 25 bpm	Less than 5 bpm for more than 40 minutes	Comments:-	
N.B If variability > 25bpm continue CTG until normal range (5-25bpm)				
Accelerations	Present	None for 40 minutes	Comments:-	
Decelerations	None	Unprovoked deceleration/s Decelerations related to uterine tightenings (not in labour)	Comments:-	
Opinion	*Normal CTG* (All 4 features reassuring)	*Abnormal CTG* (1 or more non reassuring feature)		
Maternal Temp	Maternal pulse:	Membranes ruptured: Y / N If yes, date and time:	Liquor colour:	Gestation (wks):
Reason for CTG:				
Action: (An abnormal CTG requires prompt review by experienced obstetrician/senior midwife)				
Date:	Time:	Signature: ..... Print: ..... Designation:		

Appendix 3 cCTG flowchart



Appendix 4 Indications for continuous CTG monitoring in labour:

Pre-existing Risk Factors (in addition to those listed Appendix 1)

- Full thickness uterine surgery Inc. caesarean section, myomectomy
- Hypertension requiring medication
- Pre-existing diabetes mellitus, or gestational diabetes on medication
- Growth under the 10th centile on Gap Grow chart, or tailing growth using Gap Grow Calculator
- Polyhydramnios or oligohydramnios
- Induction of labour requiring prostaglandin gel
- Reduced fetal movements in the 24 hours prior to established labour
- Rupture of membranes for more than 24 hours (unless in established labour when the 24 hours occurs)
- Maternal medical conditions (severe cardiac, respiratory or renal disease)

Developing Risk Factors

- Vaginal bleeding (not a show)
- Suspected chorioamnionitis / maternal sepsis
- Maternal pyrexia (ONE reading 38 degrees Celsius or more, or 2 consecutive temperatures of 37.5 degrees or more 1 hour apart)
- Maternal tachycardia of 120 beats per minute or more on 2 consecutive readings 30 minutes apart
- Tachysystole (>5:10)
- Meconium
- Regional anaesthesia e.g. epidural
- Remifentanil use
- Oxytocin infusion

Appendix 5. Figo Classification for intrapartum CTG.

CTG Classification FIGO

Tracings should be classified into one of three classes: normal, suspicious or pathological, according to the criteria below

	NORMAL	SUSPICIOUS	PATHOLOGICAL
BASELINE	110-160BPM	Lacking at least one characteristic of normality, but with no pathological features	< 100 BPM
VARIABILITY	5-25BPM		Reduced variability for more than 50 minutes, Increased variability for more than 30 minutes, or sinusoidal pattern for more than 30 minutes
DECELERATIONS	NO REPETITIVE[1] DECELERATIONS		Repetitive late or prolonged decelerations during more than 30 minutes or 20 minutes if reduced variability, or one prolonged deceleration for more than 5 minutes
INTERPRETATION	FETUS WITH NO HYPOXIA/ACIDOSIS	Fetus with a low probability of having hypoxia/acidosis.	Fetus with a high probability of having hypoxia/acidosis
CLINICAL MANAGEMENT	NO INTERVENTION IS NECESSARY TO IMPROVE FETAL OXYGENATION STATE	Action to correct reversible causes if identified, close monitoring or additional methods to evaluate fetal oxygenation	Immediate action to correct reversible causes, additional methods to evaluate fetal oxygenation or if this is not possible expedite delivery. In acute situations(cord prolapse, uterine rupture or placental abruption) immediate delivery should be accomplished

Appendix 6 Management of Prolonged Deceleration

The following applies if the preceding monitoring is normal and there is normal variability in the first 3 minutes of the prolonged deceleration

By 3 Minutes

Call for Help

Change position

Stop Oxytocin/ Remove Propess

By 6 Minutes

Assess for non-reversible causes (Abruption, Uterine Rupture, Cord Prolapse) – Abdominal palpation and VE. If identified expedite birth

Maternal Observations – bp, pulse

Administer Terbutaline (except in abruption / rupture)

Treat reversible causes

By 9 Minutes

Make plans to expedite birth and transfer if required

By 15 minutes

Delivery of baby

Appendix 7. Types of Pathology and CTG changes

Chronic Hypoxia

- Often reduction in growth velocity and/or reduced fetal movements.
- Higher than expected for gestation baseline
- Loss of accelerations
- Chemoreceptor / Non-V decelerations
- Altered variability / loss of cycling

Gradually Evolving Hypoxia

- Decelerations
- Loss of accelerations
- Rise in Baseline
- Changes in variability / loss of cycling (DECOMPENSATION)
- Step down pattern in baseline

Subacute Hypoxia

- Seen in hyperstimulation and second stage
- Decelerations lasting longer than at baseline rate

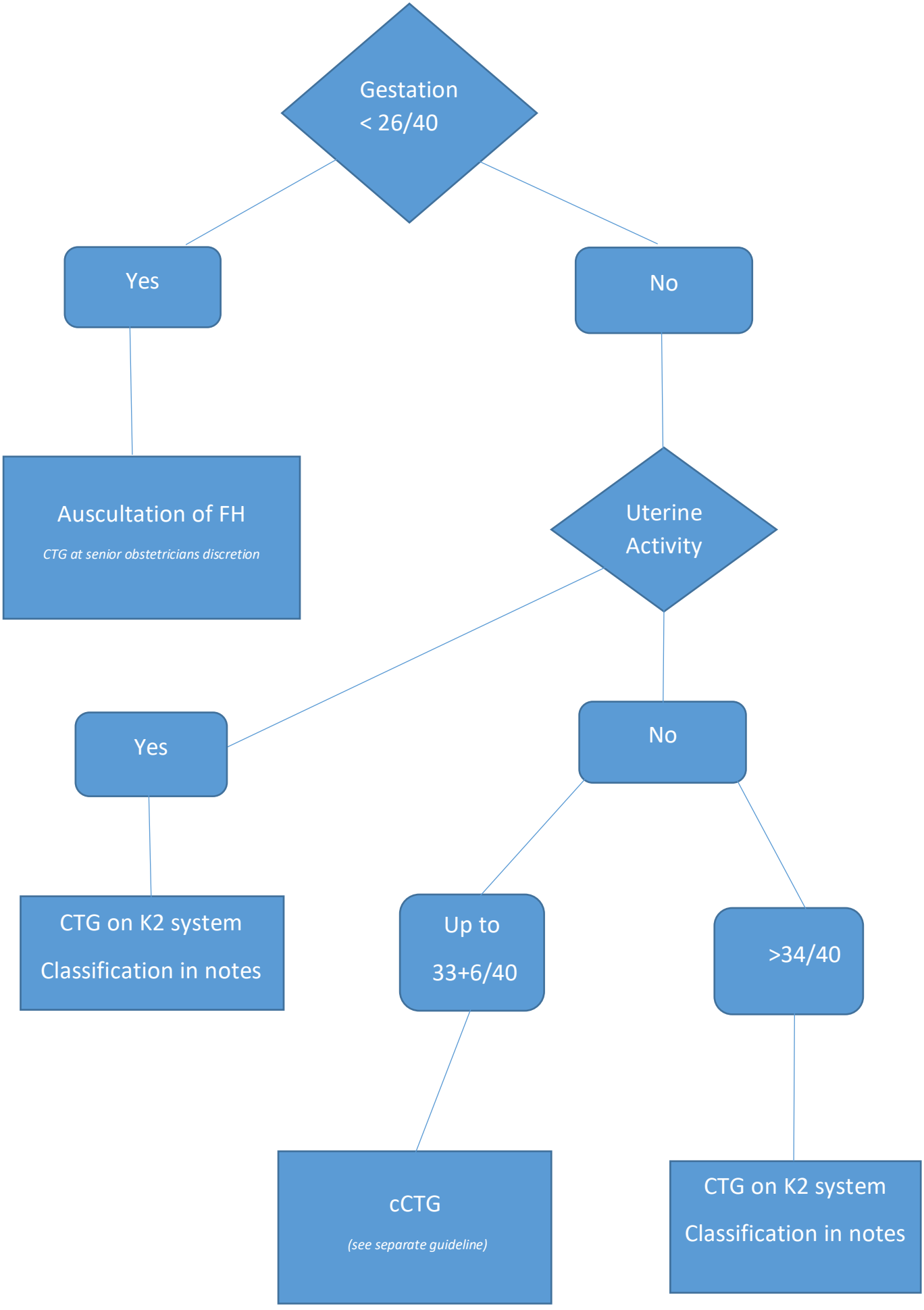
Acute Hypoxia

- Drop in baseline rate of 20 beats or more / prolonged deceleration lasting more than 3 minutes

Chorioamnionitis (Only 10% have maternal pyrexia or tachycardia)

- Rise in baseline rate
- Loss of cycling
- Changes in variability

Appendix 8. Fetal Monitoring Overview Flow Chart



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Maternity Services

Checklist for Clinical Guidelines being Submitted for Approval by Maternity Quality & Safety Group

Title of Guideline:	Fetal monitoring guideline
Name(s) of Author:	Clinical Guideline Group
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Brief outline giving reasons for document being submitted for ratification	Guideline review
Name of Pharmacist (mandatory if drugs involved):	NA
Please list any policies/guidelines this document will supercede:	Fetal monitoring 2018
Keywords	Monitoring, CTG, EFM, surveillance
File Name: Used to locate where file is stores on hard drive	ABM Group (Z:)\Maternity\policies and guidelines\Obs\2020 onwards