HYWEL DDA UNIVERSITY HEALTH BOARD

Management of Suspected Fetal Ectopic Beats, Irregular Fetal Heart Rhythms / Fetal Heart Arrhythmias Guideline

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Brief Summary of Document:	To appropriately manage the care of the woman when a fetal heart irregularity is suspected.
Scope	Healthcare professionals involved in the care of women in the antenatal period when a fetal heart irregularity is suspected.

To be read in conjunction with:	
Patient Information	
Owning group	Obstetric Guideline, Audit and Research Group

Reviews and updates		
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Keywords	Arrhythmia, Ectopy, Fetus, Heart block, Tachycardia, Bradycardia, Ectopic beats

Glossary of Terms	
AFI	Amniotic fluid index
ANC	Antenatal Clinic
CLC	Consultant-led care
CMW	Community Midwife
DAU	Day Assessment Unit
FMU	Fetal Medicine Unit
GGH	Glangwili General Hospital
PACs	Premature atrial contractions
MLC	Midwife-Led care
SLE	Systemic Lupus Erythematosus
UHW	University Hospital of Wales
USS	Ultrasound Scan

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1. Introduction

An irregular rhythm is the most common cause of fetal arrhythmia seen in clinical practice. Most are caused by frequent ectopic beats. Ectopic beats are usually atrial in origin, though occasionally they are ventricular in origin. Transient fetal bradycardia and isolated premature atrial contractions (PACs) are the most common cause of ectopic beats and irregular rhythms; they make up 90% of fetal irregularities. Most cases of irregular fetal heart rhythms will not require any treatment and resolve spontaneously. However, ectopic beats can be associated with sustained fetal tachycardia, bradycardia and haemodynamic instability. Delayed diagnosis or ineffective treatment may result in cardiac failure, hydrops, neurological deficit, or death.

2. Definition

Fetal arrhythmias are abnormalities of the fetal heart rate (FHR) and/or rhythm (regular or irregular) with or without missed or late beats.
Fetal tachycardia can be defined as a heart rate of more than 160 beats per minute (bpm) these are broadly classified as sinus tachycardia, SVT, atrial flutter and ventricular tachycardia.
Fetal bradycardia is defined as persistent fetal HR of less than 110 bpm.

The gestation of the fetus should be considered in context with the fetal heart rate due to the development of the parasympathetic system as the fetus matures.

3. Objectives

For healthcare professionals to appropriately manage the care of women presenting with fetal heart rate irregularities with appropriate care pathways, consultant reviews, ultrasound investigations and suitable referral to specialist services.

4. Risk Factors

The detection of fetal irregularities are usually found during a routine antenatal appointment. They are most likely to present from 28-32 weeks of gestation but can be detected as early as 18 weeks onwards. Most ectopic beats are benign and can be caused by excessive consumption of caffeinated drinks such as coke, coffee tea etc.; excessive amounts of polyphenol foods such as vanilla or chocolate; active or passive smoking; excessive use of antihistamines, some medications and illicit drug use. Some ectopic beats have a 2–3% risk of developing a sustained fetal tachyarrhythmia’s, and bradycardia episodes; some are conducted and some blocked, resulting in an irregular rhythm or a short pause, respectively.

The normal fetal heart rate is between 110bpm and 160 bpm. However, the gestation of the fetus should be considered in context as development of the fetus’ parasympathetic nervous system will lower the fetal heart rate as the fetus matures.

As stated earlier, ectopic beats can be associated with fetal tachycardia. There are two types of tachycardia, the most common is fetal sinus tachycardia where the fetal heart ranges from 160 to 180 bpm and can be caused by factors such as fetal hyperthyroidism, hypoxia, chorioamnionitis, hypovolaemia, maternal anxiety, maternal or fetal infection. However, when

the fetal heart rate is above 180 with no (or little) variation then this is suggestive of fetal supraventricular tachycardia which can lead to hydrops fetalis. It is difficult to determine which tachycardia is presenting and can only be diagnosed by ultrasound scans and specialist input.

Short lasting fetal bradycardia may occur in a normal fetus and can be ignored. Sustained fetal bradycardias are not physiological and must initiate a referral for fetal cardiac assessment. A fetal atrial ventricular heart block is rare, occurring in1: 20,000 pregnancies however, women with connective tissue disorders such as systemic lupus erythematosus or Sjõgren's disease are at particular risk of having a fetus with an atrioventricular block, they make up 60-90% all cases. The rest is caused by cardiac problems or the presence of hydrops.

5. Associated Conditions

Connective tissue disorders such as systemic lupus erythematosus (SLE), or Sjõgren's' Disease. The risk increases 4 fold with consecutive pregnancies. Women presenting with connective tissue disorders should be under consultant-led care with serial growth, Doppler and AFI scans.

6. Referral

- Not all women with a fetus with an ectopic fetal heartbeat need referral to the fetal medicine consultant.
- A referral to fetal medicine is only necessary if there is a concern with the fetal heartrate such as sustained tachycardia or bradycardia, or fetal heartrate irregularity. If an ectopic fetal heartbeat is present, weekly scans will need arranging. This is to check for hydrops and check the presence of the ectopic beat and rate.
- If a woman is under midwife led care referral to consultant led care within their geographical boundary is needed next available date.
- ANC appointments are required at least fortnightly, as the interim scans can be arranged and reviewed by the Day Assessment Unit and a follow up appointment is in place within the next week.

7. When to stop surveillance:

Surveillance of an ectopic or irregular fetal heartbeat can stop once there is one ultrasound scan where the ectopic fetal heartbeat is no longer found. The community midwife should auscultate the week after and if no longer heard return to normal surveillance of the pregnancy. If the ectopic fetal heartbeat or irregularity is heard again then refer back to the flow chart.

8. ADVICE FROM FETAL MEDICINE, UHW.

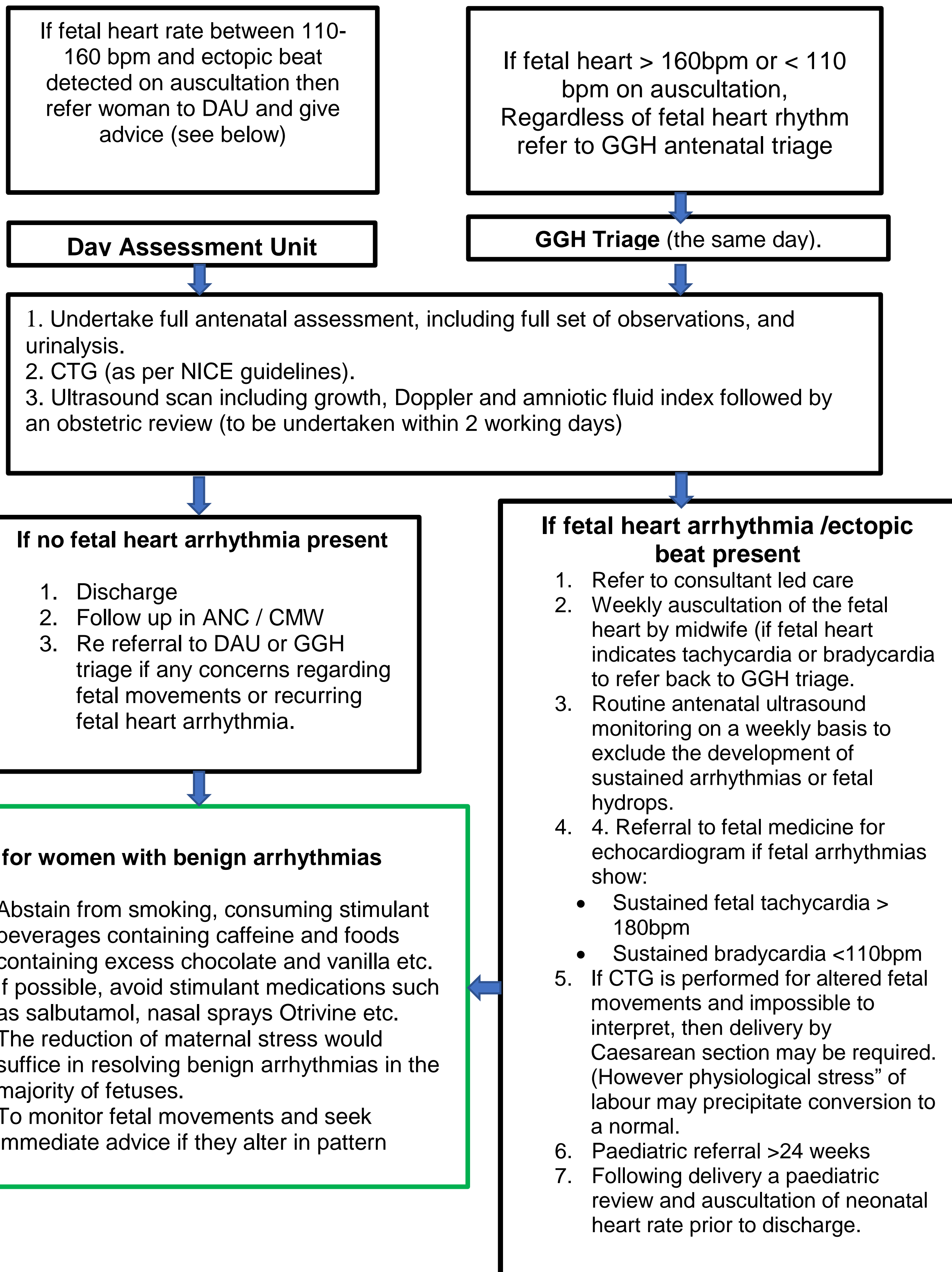
- "On the basis of ectopic beats or irregular heart rate we would not recommend a routine cardiac referral, but an obstetric heart rate check twice weekly, once by the community midwife and once by antenatal ultrasound monitoring on a weekly basis".
- Simple reassurance and advice should be given to women.
- Abstain from smoking.
- Avoid Consuming excess amount of calcium containing foods (milk products).

- Avoid Stimulant beverages (Excess caffeine, tea, coffee, hot chocolate, coke, energy drinks) and food (excess vanilla, chocolate etc.).
- Avoiding stimulant medications (Ephedrine, Salbutamol, nasal sprays, Otrivine etc.)
- Reduction of maternal stress would suffice in resolving these benign ectopic beats in the majority of cases
- Women should be advised to monitor fetal movements, if concerned inform woman to contact hospital immediately if fetal movement is significantly reduced or altered pattern.
- We would advise that patients with irregular heart rate in their fetus should be simply reassured and weekly obstetric ultrasound be performed, just to make sure that there is no emerging sustained bradycardia (less the 110 bpm) or tachycardia (more than 180 bpm) or development of fetal hydrops.
- In such cases where there is genuine obstetric concern about the wellbeing of the fetus or the mother and, in the case of sustained arrhythmia, we would strongly recommend that the individual consultant should ring the on-call paediatric cardiologist to discuss the best type of action, investigation and recommendation.

See in conjunction with:

Uzun, Orhan & Goynumer, Gokhan & Sen, Cihat & Beattie, Robert. (2015). Systematic Appraisal of Diagnosis and Management of Arrhythmias in the Fetus.
https://www.researchgate.net/publication/285384080_Systematic_Appraisal_of_Diagnosis_and_Management_of_Arrhythmias_in_the_Fetus

9. Flowchart for Initial antenatal management of suspected fetal heart irregularities/ectopic beats



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11. Appendix 1 - Patient Information Leaflet

Ectopic or Irregular fetal Heartbeat

We have scanned your baby's heart and found that there is no abnormality of the structure or function of the heart.

What is an irregular fetal heartbeat?

Occasionally when your midwife listens to your baby's heartbeat she may hear an irregular beat or rhythm. This is commonly caused by extra beats. These beats are called ectopic beats, which are of no significance to your baby and are caused by the hearts immaturity.

Why do they occur?

A small area of baby's heart sends out electrical impulses, which regulate a normal heart rate. These impulses spread throughout the heart muscle and cause it to contract in a regular rhythm. However, sometimes another area of the heart sends out an extra electrical impulse, which will cause an extra heartbeat. The heart then rests while the heart muscle gets back to a normal rhythm. This can make your baby's heart sound irregular. An irregular heartbeat is not associated with any abnormalities in the way a baby's heart is formed. We would expect it to settle as pregnancy progresses, but it occasionally persists until birth.

What will happen during my pregnancy?

Your midwife will listen to your baby's heart rate when you attend for your antenatal appointments. You will also be scanned weekly whilst the ectopic beat or irregularity is noted. It is very rare but occasionally your baby's heartbeat may develop a continuous fast rhythm. This is called tachycardia*.

Cutting down on your intake of tea, coffee and Cola/energy drinks is advisable. The caffeine content in these drinks can stimulate the electrical activity of the baby's heart. You can also reduce your intake of chocolate and vanilla. Some medications can contribute to the heartbeat such as salbutamol for asthma. We also advise you avoid undue stress and smoking.

What will happen when baby is born?

This is usually a condition that has no significance for baby in future life. The paediatrician will listen to your baby's heartbeat before you are discharged from hospital and perform further tests if necessary. *If your baby's heartbeat remains at a fast rhythm for a long period of time it could rarely damage baby's heart or other organs. Your obstetrician may recommend a referral to a fetal medicine specialist if this occurs.

What else do I need to do?

You will be advised to keep an eye on the pattern of your baby's movements and if you are concerned to contact the hospital. Also, please refer to our fetal movement leaflet.

Atodiad 1 – **Llyfryn Gwybodaeth Cleifion**

Curiad calon ectopig neu afreolaidd y ffetws

Rydym wedi sganio calon eich babi a chanfod nad oes annormaledd yn strwythur na swyddogaeth y galon.

Beth yw curiad calon afreolaidd y ffetws?

Weithiau pan fydd eich bydwraig yn gwrando ar guriad calon eich babi efallai y bydd yn clywed curiad neu rythm afreolaidd. Mae hyn yn cael ei achosi gan guriadau ychwanegol gan amlaf. Gelwir y curiadau hyn yn guriadau ectopig, nad ydynt o unrhyw arwyddocâd i'ch babi ac a achosir gan anaeddfedrwydd y galon.

Pam mae nhw'n digwydd?

Mae rhan fach o galon babi yn anfon ysgogiadau trydanol, sy'n rheoleiddio cyfradd curiad y galon arferol. Mae'r ysgogiadau hyn yn ymledu trwy gyhyr y galon ac yn achosi iddo gontractio mewn rhythm rheolaidd. Fodd bynnag, weithiau mae rhan arall o'r galon yn anfon ysgogiad trydanol ychwanegol, a fydd yn achosi curiad calon ychwanegol. Yna mae'r galon yn gorffwys tra bod cyhyr y galon yn mynd yn ôl i rythm arferol. Gall hyn wneud i galon eich babi swnio'n afreolaidd. Nid yw curiad calon afreolaidd yn gysylltiedig ag unrhyw annormaleddau yn y ffordd y mae calon babi yn cael ei ffurfio. Byddem yn disgwyl iddo setlo wrth i feichiogrwydd fynd yn ei flaen, ond weithiau bydd yn parhau tan enedigaeth.

Beth fydd yn digwydd yn ystod fy meichiogrwydd?

Bydd eich bydwraig yn gwrando ar gyfradd curiad calon eich babi pan fyddwch chi'n mynychu ar gyfer eich apwyntiadau cynenedigol. Byddwch hefyd yn cael eich sganio'n wythnosol tra nodir y curiad neu'r afreoleidd-dra ectopig. Mae'n anghyffredin iawn ond weithiau gall curiad calon eich babi ddatblygu rhythm cyflym parhaus. Gelwir hyn yn tachycardia *.

Fe'ch cynghorir i leihau faint rydych chi'n ei yfed o de, coffi a Cola / diodydd egni. Gall y cynnwys caffîn yn y diodydd hyn ysgogi gweithgaredd trydanol yng nghalon y babi. Gallwch hefyd leihau eich cymeriant o siocled a fanila. Gall rhai meddyginiaethau gyfrannu at guriad y galon fel salbutamol ar gyfer asthma. Rydym hefyd yn eich cynghori i osgoi straen gormodol ac ysmygu.

Beth fydd yn digwydd pan fydd y babi yn cael ei eni?

Mae hwn fel arfer yn gyflwr nad oes ganddo arwyddocâd yn nyfodol y babi. Bydd y pediatregydd yn gwrando ar guriad calon eich babi cyn i chi gael eich rhyddhau o'r ysbyty ac yn perfformio profion pellach os oes angen. * Os yw curiad calon eich babi yn aros ar rythm cyflym am gyfnod hir, anaml y gallai niweidio calon babi neu organau eraill. Efallai y bydd eich obstetregydd yn argymell eich atgyfeirio at arbenigwr meddygol y ffetws os bydd hyn yn digwydd.

Beth arall sydd angen i mi ei wneud?

Fe'ch cynghorir i gadw llygad ar batrwm symudiadau eich babi ac os ydych yn bryderus dylech gysylltu â'r ysbyty. Hefyd, cyfeiriwch at ein taflen symudiad y ffetws.