

Clinical Guideline

# ORGANISATION OF CARE FOR WOMEN WITH CARDIAC RHYTHM DISORDERS IN PREGNANCY

<b>SETTING</b>	<b>University Hospitals Bristol and Weston</b>
<b>GUIDELINE FOR</b>	The cardiac obstetric team, cardiologists and cardiology nurse specialists
<b>PATIENT GROUP</b>	Pregnant women with pre-existing heart rhythm disorders or those presenting for the first time in pregnancy.

## GUIDANCE

Arrhythmia risk is increased in pregnancy, especially in women with pre-existing heart rhythm disease. Some patients required specialist input from a cardiologist with special expertise in electrophysiology (EP). Many patients have co-existing congenital heart disease and care needs to be co-ordinated between the named EP consultant and obstetric cardiology consultant.

Heart rhythm issues in pregnancy can be related to either atrial or ventricular tachy- or bradyarrhythmias, and pacing or implantable cardioverter defibrillator (ICD) issues. Co-existing diagnoses can include arrhythmogenic right ventricular cardiomyopathy or inherited channelopathies.

### **Inappropriate sinus tachycardia (IST)**

This is not uncommon in pregnancy and usually responds to a beta-blocker, if the patient wishes to take medication. EP advice may be useful to exclude hidden atrial tachycardia.

### **Supraventricular tachycardia (SVT )**

This is common in pregnancy and often occurs in patients with no previous history of arrhythmia. Management is usually straightforward and does not require input from an electrophysiologist during pregnancy.

### **Atrial tachycardia/atrial flutter/atrial fibrillation**

This occurs less commonly in pregnancy and EP advice should be sought during pregnancy within two weeks of diagnosis.

### **Brady-arrhythmia**

This is rare in pregnancy and EP advice should be sought urgently.

### **Single or dual chamber pacemaker (including CRT-P) or ICD/CRT-D**

Management in pregnancy does not require EP input. Patients with sinus node disease need to have the lower tracking rate of the pacemaker increased to simulate the usual physiological increase in heart rate of 10-20 beats per minutes that occurs in normal pregnancy. This can be reduced back to the pre-pregnancy setting six weeks postpartum when the cardiovascular physiology has returned to normal.

Device details should be recorded in the maternity notes from the first obstetric/cardiology contact during pregnancy, including manufacturer, location of generator (abdominal or prepectoral), if the woman is pacing dependent and contact details for the cardiac physiology team. A critical alert should be applied to the patients records to clearly identify to care providers that a cardiac device is in situ.

During delivery It is important to note that, if a PPM has been implanted for sinus node disease and the woman is pacing dependent, she will not mount a tachycardic response to hypotension. Therefore, bleeding needs to be carefully monitored.

If a caesarean section is performed, minimal use of diathermy is advised and bipolar preferred. The device should be checked prior to discharge if unipolar diathermy is used. The electrodes should be as far as possible from the device and leads.

ICDs should not be deactivated during labour so long as a magnet is available in case of pacemaker inhibition or inappropriate ICD shock. Monitoring for inappropriate therapies or pacemaker inhibition throughout the operation is important.

Staff should be aware of the location of magnets for device inactivation. If required, the magnet should be taped in place over the ICD. This will temporarily prevent shocks. Pacing will be unaffected. Continuous cardiac monitoring (3 lead ECG with alarm) should be used for the duration of the deactivation with a magnet and an external defibrillator should be immediately available. A device which has been altered needs to be checked prior to discharge.

### **Ventricular tachycardia (VT)**

VT is rare in pregnancy, but when it occurs, patients are at high risk of sustained VT or VF. Urgent EP advice should be sought as soon as the diagnosis is made and a named EP consultant should see the patient during pregnancy (and co-ordinate their care post-partum), in conjunction with the cardiac obstetric medicine team.

### **Channelopathies, including long QT syndrome/Brugada syndrome/catecholaminergic VT**

These are rare disorders of heart rhythm. EP advice should be sought at the time of the patient's first visit to the cardiac antenatal clinic. A named EP consultant should co-ordinate their care post-partum in conjunction with the cardiac obstetric medicine team.

### **Arrhythmogenic cardiomyopathy (ACM)**

Most commonly affecting the right ventricle (ARVC), this is a rare condition. Urgent EP advice should be sought as soon as the diagnosis is suspected and a named EP consultant should see the patient during pregnancy (and co-ordinate their care post-partum) in conjunction with the cardiac obstetric medicine team.

## **SUMMARY OF EP REFERRAL REQUIREMENTS**

<b>NO ADVICE USUALLY NEEDED</b>	<b>ADVICE WITHIN TWO WEEKS OF PRESENTATION</b>	<b>URGENT ADVICE AND ONGOING MANAGEMENT</b>
SVT	Atrial fibrillation	Bradyarrhythmia
Pacemaker/ICD	Atrial tachycardia	VT
IST	Atrial flutter	Channelopathies
		ACM/ARVC

## **Appendix 1 – Evidence of Learning from Incidents**

The following table sets out any incidents/ cases which informed either the creation of this document or from which changes to the existing version have been made.

<b>Incidents</b>	<b>Summary of Learning</b>
Death of a patient six months post-partum in whom the diagnosis of ARVC was made posthumously.	Several consultants were involved with her care throughout pregnancy and post-partum with no clear EP lead. A diagnosis of RVOT VT was made, she was well throughout pregnancy but experienced further arrhythmia post-partum and was seen by several different doctors. MRI and genetics were normal. She died suddenly when out running, whilst awaiting an EP study. The diagnosis of ARVC was made by specialist post mortem.

**Table A**

<b>REFERENCES</b>	<p>Regitz-Zagrosek V et al. ESC Guidelines on the management of cardiovascular diseases during pregnancy. <i>European Heart Journal</i> 2018; Sep 7;39(34):3165-3241.</p> <p>Enriquez AD et al. Contemporary Management of Arrhythmias During Pregnancy. <i>Circulation: Arrhythmia and Electrophysiology</i> 2014;7:961-967.</p> <p>Crossley GH, Poole JE, Rozner MA, Asirvatham SJ, Cheng A, Chung MK, Ferguson TB, Jr., Gallagher JD, Gold MR, Hoyt RH, Irefin S, Kusumoto FM, Moorman LP and Thompson A. The Heart Rhythm Society (HRS)/American Society of Anesthesiologists (ASA) Expert Consensus Statement on the perioperative management of patients with implantable defibrillators, pacemakers and arrhythmia monitors: facilities and patient management this document was developed as a joint project with the American Society of Anesthesiologists (ASA), and in collaboration with the American Heart Association (AHA), and the Society of Thoracic Surgeons (STS). <i>Heart Rhythm</i>. 2011;8:1114-54.</p> <p>Gifford J, Larimer K, Thomas C and May P. ICD-ON Registry for Perioperative Management of CIEDs: Most Require No Change. <i>Pacing Clin Electrophysiol</i>. 2017;40:128-134.</p>
<b>RELATED DOCUMENTS AND PAGES</b>	Regional Referral Pathway
<b>AUTHORISING BODY</b>	Cardiac Executive Group, Bristol Heart Institute
<b>SAFETY</b>	<b><u>Careful management with an experienced multi-disciplinary team is advised with an individual care plan for each woman</u></b>
<b>QUERIES AND CONTACT</b>	<p>Contact any of the following via UHBristol switchboard – 0117 923 0000</p> <p>Dr S Curtis, Consultant Cardiologist          Dr V North, Consultant Cardiologist          Dr A Nisbet, Consultant Cardiologist          Miss J Trinder, Consultant Obstetrician          Miss A Mohan, Consultant Obstetrician          Miss L Ashelby, Consultant Obstetrician</p>
<b>AUDIT REQUIREMENTS</b>	Adherence to guideline will be audited periodically as part of obstetric cardiology/maternal medicine Network audit

Plan Elements	Plan Details
<b>The Dissemination Lead is:</b>	Dr Stephanie Curtis
<b>Is this document: A – replacing the same titled, expired SOP, B – replacing an alternative SOP, C – a new SOP:</b>	A
<b>If answer above is B: Alternative documentation this SOP will replace (if applicable):</b>	
<b>This document is to be disseminated to:</b>	South West and South Wales Congenital Heart Network South West Maternal Medicine Network
<b>Method of dissemination:</b>	Email
<b>Is Training required:</b>	No

**Document Change Control**

Date of Version	Version Number	Lead for Revisions	Type of Revision	Description of Revision
April 2023	4	Consultant Cardiologist	Minor	Updated contacts and related documents. Evidence of Learning From Incidents Changes in keeping with upcoming UK Position Statement on Device Management in Pregnancy.