OBSTETRICS AND GYNAECOLOGY
CLINICAL PRACTICE GUIDELINE

Cardiac disease and pregnancy

Scope (Staff):	WNHS Obstetrics and Gynaecology Directorate staff
Scope (Area):	Obstetrics and Gynaecology Directorate clinical areas at WNHS

This document should be read in conjunction with this Disclaimer

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Quick Reference Guide

QRG: Cardiac disease and pregnancy

Antepartum

1. **Preconception:** Refer early to MFM team and patient's cardiologist for assessment and counselling.
2. **Baseline evaluation** Risk assessment carried out early in pregnancy by consultant obstetrician, physician and anaesthetist. **Careful check-up of people from developing countries.** Complete physical examination, arrange maternal Echo as required, ECG and other tests; all results to be reviewed by Obstetric Physician.
3. Fetal **Ultrasound** (1st trimester screen; tertiary fetal anatomy scanning at 20-24 weeks; consider other scans as required).
4. Maternal Echocardiogram: At 13 weeks and physician review of echocardiogram result
5. **Regular antenatal care**
   - Visits are individualised based on clinical condition, see section in guideline
   - Patients with valvular disease, including Rheumatic Heart Disease are seen by physician in early pregnancy and again at 28-32 weeks (at minimum) AND to ensure a plan regarding management in labour is documented on MR 004.
   - Check blood pressure (BP) manually; check for signs/ symptoms of cardiac failure (auscultate lungs, pulse rate/rhythm, jugular venous pressure) and monitor for atypical signs of ischaemia.
   - MSU at first appointment to screen for asymptomatic bacteriuria (if not already done)
   - Anaemia prevention and management
6. **Birth planning** (Multidisciplinary team approach)
   - **Document intrapartum plan** (analgesia, labour supervision, birth mode, second stage management, oxytocic, PPH prevention, thromboprophylaxis and antibiotic prophylaxis (if indicated) and length of postnatal stay **in medical record on MR004**
   - Vaginal birth (where appropriate) usually carries the lowest risk of complications.
7. **Encourage rest** and admit if chest infection or cardiac failure occurs. **Note**: Patients with cardiac failure should be transferred to Fiona Stanley Hospital where there is on-site cardiology support.
8. **Ask** Obstetric Physician about endocarditis prophylaxis and antibiotics for dental/surgical procedure

Intrapartum

1. **Notify** Obstetric Registrar (and in **major risk cases**: Registrar, Senior Registrar, Labour Ward Consultant, Anaesthetic Registrar and Consultant).
2. Additional **observations/care** (as per the birth planning meeting outcome e.g. Cardiac exam frequency, strict fluid balance chart, oxygen if required, haemodynamic monitoring and pulse oximetry if indicated; respirations, pulse and BP half hourly)
   - If major cardiac risk: Position in sitting or semi-Fowlers.
3. **Continuous fetal heart rate monitoring.**
4. **Consider**: Analgesia (e.g. epidural) and monitoring intravenous fluids; Antibiotics and shortened second stage when major cardiac risk present.
5. **Prevent PPH: Refer to plan for** oxytocin infusion administration.
6. Do **not** use ergometrine routinely.

Postpartum

1. **Manage** high risk cases in Adult Special Care Unit (ASCU) until maximum risk period passed.
2. **Thromboprophylaxis**: Anti-embolic stockings & early ambulation; delay warfarin (where applies).
3. **Breastfeeding**: Encourage, where not medically contraindicated. Encourage rest & educate on signs/ symptoms of mastitis/ infection & action to take if develops.
4. **Discuss** contraception, future pregnancy guidance & regular cardiac reviews.
5. **Follow up** at 6 weeks (& 6 months if continued concerns), then return to usual cardiac care.

Note: This flowchart represents minimum care and should be read in conjunction with the following full guideline & disclaimer.
Additional care should be individualised as needed.

Aim

- To provide information on the management of cardiac disease in pregnancy for the antenatal, intrapartum and postnatal periods.

Background

Cardiovascular disease (CVD) affects approximately 0.2% to 4% of pregnant people.[1] Furthermore, 22.5% of maternal deaths were caused by CVD between 2009 and 2014 in the United Kingdom.[2] In western countries CVD is increasing[2, 3] and is a major cause of maternal mortality in pregnancy.[1, 4] Congenital heart disease (CHD) is the predominant type of CVD in first world countries,[4, 5] whilst rheumatic cardiac disease is still an important cause of morbidity and mortality in developing countries, groups living in poor socio economic conditions, and Indigenous Australians.[3] Furthermore, ischaemic heart disease in pregnancy is becoming more prominent with a higher number of older persons giving birth, obesity, smoking, hypertension,[2] hypercholesterolaemia and the incidence of diabetes increasing.[3]

Mortality of persons with cardiac disease is low except in certain conditions such as Eisenmenger's syndrome, pulmonary hypertension, severe systemic ventricular dysfunction, and Marfan's syndrome with pathology of the aorta, where pregnancy may be contraindicated[3]. Careful monitoring through pregnancy is required as there are altered physiological demands on the persons body, including cardiovascular system, glucose, cholesterol and coagulation homeostasis.[1]

Classification of cardiac disease

Modified World Health Organization classification of maternal cardiovascular risk[1]:

1. Class I: conditions associated with no detectable increased risk of maternal mortality and no/ mild increase in morbidity
2. Class II: conditions associated with small increased risk of maternal mortality or moderate increase in morbidity
3. Class III: conditions associated with significantly increased risk of maternal mortality or severe morbidity
4. Class IV: conditions associated with extremely high risk of maternal mortality or severe morbidity; pregnancy is contraindicated

Key points

1. All patients with chest pain suspicious for cardiac disease should have an electrocardiogram (ECG) and troponin.
2. If the patient has congenital heart disease the risk of fetal congenital heart disease varies between 6 to 50%.[1]
3. Pregnant people with cardiac disease are at risk of serious morbidity such as heart failure, arrhythmias and stroke.
4. Because there are so many types of cardiac disease, often with very different implications, it is important that a risk assessment of any patient with a heart murmur or a history of any cardiac defect (e.g. Valvular Heart disease or Rheumatic Heart disease) should be carried out early in pregnancy by a consultant obstetrician, obstetric physician and / or cardiologist and anaesthetist. [1]

5. All patients with valvular heart disease, including those with Rheumatic Heart Disease, are seen by a physician or cardiologist in early pregnancy and 28-32 weeks gestation as a minimum AND to ensure a plan regarding management in labour is documented on MR004.
6. Mitral valve stenosis is the most common lesion in rheumatic heart disease and the one that carries the highest risk. This may be a difficult clinical diagnosis and there should be a low threshold for maternal echocardiography and high index of suspicion in the population with risk factors for rheumatic heart disease.

Acute cardiac failure

If **acute cardiac failure** develops:

- Sit the patient up and lower their legs
- Administer oxygen[6]
- Intravenous furosemide 20- 40 mg (diuretics[6]) and/or intravenous morphine[6] 1 - 5 mg administered slowly
- Consult the physician.

Except in an emergency, digoxin is to be commenced by the obstetric physician and is rarely utilised.

Postpartum: Angiotensin Converting Enzyme (ACE) Inhibitors including enalapril and ramipril may be used, and are safe to use in breastfeeding mothers.

Transfer: Patients with cardiac failure should be transferred to Fiona Stanley Hospital where there is on-site cardiology support.

Antenatal

1. **Pre-conception counselling**, education and assessment.[1, 3, 7] Ideally patients with known cardiac disease, particularly those with mWHO Class II-IV will have been assessed in the preconception period.[1] Significant pulmonary hypertension in pregnancy is a high risk situation.[3] Preconception counselling should be undertaken with multidisciplinary specialists as to the risks posed by the pregnancy, including risk of maternal death. Advice regarding changes in medication from those contraindicated in pregnancy should be provided. Cardiopulmonary exercise testing (CPET) coupled with stress cardiacmagnetic resonance (ExeCMR) may be useful for assessing functional status. In the event of an unplanned pregnancy, early consultation is essential for assessment of maternal risk if the pregnancy continues and discussion of all options.[8]
2. **Referral** of high risk patients to a tertiary maternity service (dependent on CVD complexity, risks and services available) and early pregnancy management.[3, 7]

   Referral sent to MFM in KEMH, in conjunction with Maternal Heart Clinic in Fiona Stanley Hospital (for acquired heart conditions) and Adult Congenital Heart Disease Clinic in Fiona Stanley Hospital (for congenital heart disease) Obstetric Physician for patients with:

- A past history of cardiac disease
- Symptoms or signs of cardiac disease

3. **Baseline evaluation** early pregnancy with physical examination.
   - An **ECG** shall be done on referral; other investigations should be left to the obstetric physician.
   - Risk stratification assists in determining appropriate level and timing of antenatal care.
   - **Careful screening with a physical examination should be performed on patients who come from developing countries as the incidence of rheumatic heart disease is high in these areas**.[9]
4. **Fetal ultrasound**:
   - First trimester ultrasounds, particularly around 13 weeks, have been shown to detect major congenital heart disease with 85% sensitivity and 99% specificity, thus providing earlier detection, consideration of options and management.[1] In the case of congenital heart disease of the mother, increased nuchal thickness of the fetus at the 13-14 week gestation scan is associated with fetal congenital cardiac disease (some studies suggest it may have a sensitivity of up to 90% for cardiac lesions).
   - Careful tertiary fetal anatomy scanning at 20-24 weeks should be performed looking for cardiac abnormality.[1]
   - Consider (not routine): Fetal echocardiography if required
5. **Maternal echocardiogram**: Baseline echocardiogram in the first trimester of pregnancy and Cardiologist/Physician review of echocardiogram result.
6. **Antenatal care**:
   - Prevent anaemia.
   - A patient with significant cardiac disease will require more frequent antenatal assessments. The suggested frequency is every 2-4 weeks after 24weeks[7], fortnightly after 28 weeks gestation and weekly after 36 weeks gestation. Nonetheless, the frequency of antenatal visits needs to be individualised.
   - At each assessment check blood pressure manually and check for signs and symptoms of cardiac failure (e.g. auscultate lungs, check jugular venous pressure, pulse rate and rhythm). Patients with cardiac failure should be transferred to Fiona Stanley Hospital where there is on-site cardiology support.
   - Monitor for any atypical signs of ischaemia such as shortness of breath, dizziness or vomiting, with a low threshold for cardiac investigations (e.g. ECG, troponin levels, stress testing).[3]
   - Routinely offer and recommend screening for asymptomatic bacteriuria at the first antenatal appointment if not previously completed, due to the risk of pyelonephritis.[10]
7. **Planning for birth** should be undertaken by the maternal fetal medicine (MFM) team in consultation with the patient and other members of the

multidisciplinary team which may include cardiologists, anaesthetists and midwives.[11]

- The obstetric management plan is to be discussed with the patient and documented in the medical record on the MR 004 Obstetric Special Instruction Sheet. This should occur early in pregnancy[7] and again at 28-32 weeks. Plans include analgesia[1], who should supervise the labour, planned birth mode, second stage management, postpartum haemorrhage (PPH) prevention, oxytocic, thromboprophylaxis, and length of postpartum stay.
- Vaginal birth usually carries the lowest risk of complications, although ideally long and difficult labours should be avoided.
- Induction of labour may be appropriate for optimising anticoagulation, specialist medical staff presence, or deteriorating maternal cardiac function as decided by the MFM team. Induction may increase the chance of caesarean birth.
- Document specific instructions for intrapartum antibiotics (where applicable).

8. **Encourage rest** in the third trimester (symptomatic people may need to finish work earlier[7]) and admit to hospital if there is a major risk of cardiac failure. Admit if chest infection or cardiac failure occurs (see note). Patients with significant cardiac disease require thromboprophylaxis when admitted to hospital for bed rest in pregnancy, and may require it in the postpartum period.
   - **Note**: Patients with cardiac failure should be transferred to Fiona Stanley Hospital where there is on-site cardiology support.
9. For **venous thromboembolism (VTE)** information and **prophylaxis** see VTE in Cardiac Conditions (section below) and Clinical Guideline, Obstetrics and Gynaecology: Venous Thromboembolism (VTE): Prevention and Management: 'Newly Diagnosed VTE' (if occurring in the present pregnancy)
10. **Consult** the Obstetric Physician or Clinical Microbiologist on infective endocarditis (IE) prophylaxis. Generally, endocarditis antibiotic prophylaxis is not required for obstetric indications except in those with other risk factor for IE such as those with previous IE, bioprosthetic heart valves or recent IV drug use. However routine antibiotic prophylaxis is required for surgical prophylaxis for caesarean section, prevention of group B streptococcal disease, preterm prelabour rupture of membranes and prophylaxis for third & fourth degree tears. See specific guidelines for prophylaxis.
    Rationale: IE is a rare, but serious, condition in pregnancy. It has not been established that labour is a risk factor for IE, and UK (NICE) and European (ESC)[1] guidelines summarise the evidence and state antibiotic prophylaxis for IE is not routinely recommended during any gynaecological or obstetric procedure, including childbirth. The Australian Therapeutic guidelines recommend targeting patients with high risk cardiac disease (table 1) who have an established genitourinary or gastrointestinal infection.[12]

Intrapartum

Labour is a period with great increase in cardiac output.

Consider two groups:

- **Major risk** - those people with increased risk of cardiac failure - such as people with Grade III and IV cardiac disease, mitral stenosis and atrial fibrillation.
- **Minor risk** those people with relatively minimal disease - such as people with mitral valve prolapse or a small atrial septal defect.

Management in labour

There is usually an intrapartum delivery plan in the Digital Medical Record (DMR) for these patients.

1. **Notify**:
   - In all cases - Obstetric Registrar.
   - In all major risk cases inform Obstetric Registrar, Senior Registrar, Labour Ward Consultant, and Anaesthetic Registrar and Consultant; refer to MR004 for any other necessary notifications and plan. Consult the MFM team (if there are concerns)
2. In addition to routine labour **observations**:
   - Intrapartum care should be as per the Obstetric Special Instruction Sheet (MR004). This may include cardiac examination, consideration of other requirements, **and strict fluid balance chart**,
   - Half-hourly blood pressure, pulse and respirations. Patients with a major cardiac risk must be nursed in a sitting or semi recumbent 45^{o} position as much as possible. Auscultate lung fields if there is any change in respiratory status. Any deterioration in clinical status should be reported to the Senior Registrar. See also WNHS Acute Deterioration policy.

3. **Antibiotic cover**: (see table 1 below)

   Use in all people with cardiac conditions described in table 1 who have an established genitourinary or intra-abdominal infection.[12]

   Note: Routine labour antibiotic prophylaxis is not indicated for people with cardiac disease of low risk. Additionally, continuation of antibiotic prophylaxis **postnatally is not** routinely recommended.

Table 1. From Therapeutic Guidelines Australia[12]:

High risk cardiac disease:
Prosthetic cardiac valve, including transcatheter-implanted prosthesis, bioprosthetic valves or prosthetic material used for cardiac valve repair
Previous infective endocarditis

Rheumatic heart disease
Congenital heart disease but only if: - unrepaired cyanotic defects, including palliative shunts and conduits - repaired defects with residual defects at or adjacent to the site of a prosthetic patch or device (which inhibit endothelialisation)
Patients with a heart transplant who have developed cardia valvulopathy may be at risk- consult the patient's cardiologist for specific recommendations

Therapeutic antibiotics

- Treat any suspected infection aggressively with parenteral antibiotics after blood and other appropriate cultures are taken.
- Contact the on-call Clinical Microbiologist for specific advice.

Patients **NOT allergic** to beta-lactam antibiotics (e.g. penicillin or cephalosporin antibiotics):	
Amoxicillin	2 g intravenously [12]

Patients **hypersensitive / allergic to beta-lactams** (e.g. penicillin or cephalosporin antibiotics):	
Vancomycin	15 mg/kg intravenously up to 2 g over 2 hours (recommended rate 10 mg/minute) [12]

Note: Dose adjustment may be required in patients with renal impairment, please contact a pharmacist or on call microbiologist for advice.

Prophylactic antibiotics

Patients having an elective / non-elective **Caesarean birth**
Initial: Antibiotic prophylaxis at the time of Caesarean in accordance with clinical guideline: Infections (Obstetric and Gynaecological): Infections: Antibiotic Prophylaxis for Caesarean Section i.e. no supplementary IE prophylaxis required for Caesarean section.

4. **Epidural** analgesia may be used for obstetric indications. For high-risk patients managing their pain well will decrease their cardiac workload during labour.[1] The Anaesthetic Registrar must first discuss major risk cases with the Anaesthetic Consultant.[11]
5. Continuous electronic **fetal heart rate monitoring** for the mWHO class II-IV. Indications for mWHO Class I will be individualised. See also Clinical Guideline (O&G): Fetal Heart Rate Monitoring- Intrapartum

6. May require shortened **second stage**- refer to MR004 Obstetric Special Instructions Sheet
    - Assisting vaginal birth and limiting active maternal pushing may be necessary dependent on the patient's clinical situation to reduce additional load on the cardiovascular system.
7. [1]**Prevent PPH** (particularly if surgical intervention) which may lead to cardiovascular instability.
    - **Do not** use ergometrine or carboprost routinely, unless stated (can cause acute hypertension). May consider misoprostol 1 mg PR in the event of a PPH.
    - Use **oxytocin** by slow intravenous infusion in preference to oxytocin 10 units intramuscular or intravenous bolus (as bolus doses may cause hypotension).[1] See individualised management plan.
    - In caesarean, uterine compression sutures may be beneficial to control PPH from uterine atony.

Postpartum

The 24 hours postpartum is the most dangerous period for many patients as this is the period with great increase in cardiac output.

1. Manage high-risk cases in Adult Special Care Unit (ASCU) **postpartum**. Haemodynamics do not return to normal for several days. Monitoring in ASCU should be continued until the maximum risk period has passed. This will depend on the nature of the cardiac disease.[11]
2. For VTE prevention: Encourage anti-embolic stockings and early ambulation after birth.[1] Resumption of warfarin anticoagulation (where applicable) should be delayed by 2 days postpartum due to the increased risk of PPH, and close monitoring is required.
3. The patient's choice to breastfeed should be promoted, where not medically contraindicated. Educate on breast care, adequate rest, the signs/ symptoms of mastitis and what to do if she develops these. The risk of bacteraemia from mastitis is low[1], but early antibiotic treatment should be commenced in high risk patients. Bottle feeding may be medically indicated in patients with high risk cardiac condition and severe mastitis.[1]
4. Discuss safe and effective contraception options, future pregnancy guidance and importance of people with significant heart disease having regular cardiac reviews prior to any future pregnancy.
5. Postnatal multidisciplinary follow up assessment at 6 weeks (and at 6 months if there are continued concerns), with the patient then returning to their routine cardiac outpatient care.

Transfer to other sites

If urgent inpatient transfer is considered, please contact the KEMH MFM Consultant on call.

Peripartum cardiomyopathy

Peripartum cardiomyopathy is a cardiac condition that develops in the absence of pre-existing heart disease or identifiable cause.[13] It can cause serious complications and maternal mortality,[1, 4] and should be considered in patients who present with shortness of breath/ dyspnoea/ orthopnoea (particularly when supine or at night) usually in the third trimester or up to 6 months after birth.[13] Other symptoms include tachypnoea, tachycardia, palpitations, peripheral oedema (pitting), excessive third trimester weight gain, chest pain, cough, and frequent night urination.[13] Risks include multiparity, ethnicity, smoking, diabetes, hypertension or pre-eclampsia, and advanced or teen maternal age.[3] A bNP, chest x-ray, echocardiogram and ECG should be considered by the obstetric medical team.[3]

VTE: Cardiac conditions (in pregnancy and puerperium)

Aim

- To guide appropriate anticoagulation of pregnant patients with a cardiac condition.

Key points

1. Patients with cardiac disease shall be managed by a multidisciplinary team[3] consisting of:
    - An obstetric physician or a cardiologist with expertise in the management of pregnant people,
    - An obstetrician or MFM specialist,
    - An obstetric anaesthetist,
    - A neonatal paediatric registrar / consultant, and
    - A midwife
2. Optimal management of the pregnant patient with congenital and acquired heart disease includes accurate diagnosis and an appreciation of the haemodynamic consequences of pregnancy on the cardiac disorder, of the cardiac disorder on the pregnant patient and of the cardiac disorder and its treatment on the baby's development and well-being.[2]
3. Because of the increased risk of thrombosis associated with pregnancy, adequate anticoagulation therapy is important for patients at risk of thromboembolic events such as those with mechanical heart valves,[14] atrial fibrillation, impaired ventricular function, or certain abnormal shunts.

4. All patients on anti-coagulation outside of pregnancy should have a haematology review in pregnancy and a plan made for anti-coagulation around the time of birth and post-natally.
5. High risk patients, such as those with first generation mechanical heart valves, have a significant risk of thromboembolic events and anticoagulation regimes are generally more aggressive.[15]
6. Low molecular weight heparins (LMWH) with peak and trough anti Xa monitoring if used for mechanical heart valves is the treatment of choice during pregnancy, and warfarin or a suitable oral alternative is safe in the post-partum period. This choice varies dependent on the individual health, circumstances, and co-morbidities of the patient in collaboration with the physician and multidisciplinary team.[14] Warfarin is restricted to situations where heparin is unsuitable (e.g. some patients with mechanical heart valves).

   Warfarin, pregnancy category D,[16] is associated with a higher rate of fetal complications, including miscarriage, stillbirth, small for gestational age and congenital malformations.[16, 17] UHF, pregnancy category C,[18] is associated with higher risk of thromboembolic events in pregnant patients with mechanical heart valves. LMWH, pregnancy category C,[19] provides more consistent anticoagulation over 24 hour period, without crossing the placenta and may be preferred in pregnancy[17], however is associated with slightly higher maternal complications in pregnant patients with mechanical heart valves, including valve thrombosis, PPH, and maternal death.[14]
7. When UFH is used, heparin induced thrombocytopenia needs consideration,[20] and the platelet count should be checked[18] every 6-8 weeks.
8. UFH may also cause osteopenia[20], and osteoporosis[18, 21]. Patients receiving UFH for more than 2 weeks should also receive calcium and vitamin D,[21]
9. Patients who require therapeutic anticoagulation before pregnancy also require it during pregnancy e.g. those with mechanical heart valves, atrial fibrillation or complex intracardiac shunts.[14] Patients with impaired cardiac function are usually treated with prophylactic dose anticoagulation using low molecular weight heparin or UFH.
10. Low-dose aspirin (100-150 mg daily[17]) is a safe and possibly effective adjunct to LMWH in pregnant patients with mechanical heart valves or an otherwise increased risk of intracardiac thrombosis.[17, 21] Aspirin is inadequate on its own as a thromboprophylacxis in obstetric patients.[22]
11. Because of the increased risk of PPH in patients with heart disease who are anticoagulated, the introduction or reintroduction of warfarin should be delayed until at least two days postpartum, (and longer in patients at increased risk of PPH)[23] with INR checked on day 2. Meticulous monitoring of anticoagulation and prescription of anticoagulation medication is essential. Note: Refer to Haematology comprehensive plan of anti-coagulation around the time of delivery that should be referred to and followed.

12. These patients may require regional analgesia and or anaesthesia for labour and birth, therefore consultation with the anaesthetist is essential if complications related to the timing of anticoagulation are to be avoided.[24] Provide education and monitor for signs of neuraxial haematoma.[17]

Management

- Therapeutic anticoagulation with UFH or warfarin requires careful monitoring with APTT/INR[16] and should be supervised by the Obstetric Physician, and not by junior staff.
- Prophylactic/therapeutic doses of LMWH anticoagulation do not need routine blood monitoring. However, some patients using LMWH, will require doses to be carefully monitored, guided by anti-Xa levels.[3]
- The choice of which regimen to use is complex, requiring a detailed discussion with the patient to individualise their management. This is ideally performed before pregnancy, but in the event of an unplanned pregnancy should be resolved with urgency. Anticoagulation in pregnancy may take one of three forms as detailed below:
  - LMWH in **therapeutic** doses in the first trimester changing to warfarin in mid pregnancy, then transferring to LMWH[25] from approximately 36 weeks [7] until postpartum.
  - LMWH in **therapeutic** doses throughout pregnancy.[7, 26] LMWH is safer, its pharmacodynamics more predictable, and more effective than UFH,[20] so the latter is only used close to birth, in late pregnancy.
  - LMWH in **prophylactic** dosage throughout pregnancy.

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Related WNHS policies, procedures and guidelines

WNHS Clinical Guidelines:Obstetrics and Gynaecology

- Venous Thrombosis and Embolism: Prevention and Management: (section 'Therapeutic Anticoagulation Occurring in the Present Pregnancy')
- Fetal Heart Rate Monitoring: Intrapartum
- Infections: Antibiotic Prophylaxis for Caesarean Section
- Acute Deterioration (adult): Resuscitation and life support

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

WNHS Pharmacy: Obstetrics and Gynaecology Medication Guidelines: Amoxycillin; Enoxoparin; Heparin; Vancomycin; Warfarin

Keywords:	Cardiac disease, heart disease, cardiac failure, birth planning, peripartum cardiomyopathy, acute heart failure, antibiotic prophylaxis, thromboprophylaxis, therapeutic anticoagulation, warfarin, enoxaparin, clexane, LMWH, heparin, pregnancy with mechanical heart valves, venous thromboembolism, VTE, cardiac conditions in pregnancy		
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NSQHS Standards (v2) applicable:	☒ 1: Clinical Governance ☐ 2: Partnering with Consumers ☐ 3: Preventing and Controlling Healthcare Associated Infection ☒ 4: Medication Safety	☐ 5: Comprehensive Care ☐ 6: Communicating for Safety ☐ 7: Blood Management ☒ 8: Recognising and Responding to Acute Deterioration	
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Version history

Date	Summary
Prior to Feb 2018	Archived- contact OGD Guideline Coordinator for previous versions. Original titled as B.3.2: 'Cardiac Disease in Pregnancy'
Feb 2018	• RCA recommendation- updated guideline. • Maternal ECG at 13 weeks and physician review of ECG result • Patients with valvular disease, including Rheumatic Heart Disease are seen by physician in early pregnancy and again at 28-32 weeks (at minimum) AND to ensure a plan regarding management in labour is documented on MR 004. • Mitral valve stenosis is the most common lesion in Rheumatic Heart disease and the one that carries the highest risk. This may be a difficult clinical diagnosis and there should be a low threshold for maternal echocardiography • Observations section- added: Auscultate lung fields if there is any change in respiratory status. Report any deterioration in clinical status to Senior Registrar. Consider oxygen, invasive haemodynamic monitoring and pulse oximetry if indicated, chest xray, arterial blood gas, nebuliser if indicated. • Management of VTE in patients with cardiac conditions in pregnancy and puerperium: gestation for therapeutic anticoagulation changed when transferring from warfarin to heparin- now 36 weeks
Jan 2019	Hyperlinks amended

May 2025	• Guideline and QRG reviewed, references updated, changed to modified WHO classifications. • Refer early to MFM team and patient's cardiologist • Adjusted antenatal visit frequency to be individualised; Gestation changed for anatomy scan to 20-24 weeks; consider other scans as required. • Maternal ECG timing adjusted; All patients with chest pain suspicious for cardiac disease should have an ECG and troponin. • Antenatal visit timing has been adjusted, with a note added that frequency of appointments is to be individualised to the presenting clinical condition • Less prescriptive in sections to enable individualisation by medical staff when planning. Refers in several sections to the MR004 Obstetric Special Instructions Sheet to find planning that has been individualised to the specific needs of the patient. Intrapartum additional observations and individualised requirements are as per the birth planning meeting outcome. • Note added- Patients with cardiac failure should be transferred to Fiona Stanley Hospital where there is on-site cardiology support. • For VTE Cardiac Conditions section, refers to Haematology comprehensive plan of anti-coagulation around the time of delivery that should be referred to and followed.