Guideline for the management of women with cardiac disease in pregnancy

Author/Owner	Lead obstetric consultant/ Guideline group	
Equality Impact Assessment	N/A if clinical guideline or procedure	
Version	7	
Status	Final	
Publication date	06/04/2021	
Review date	24/02/2024	
Approval recommended by	Maternity guideline group	Date: 3rd September 2020
	Women's Business and Governance Meeting	Date: September 2019 and 19th March 2021
Approved by	CBU 3 Overarching Governance Meeting	Date: 24th February 2021
Distribution	Barnsley Hospital NHS Foundation Trust – intranet Please note that the intranet version of this document is the only version that is maintained. Any printed copies must therefore be viewed as "uncontrolled" and as such, may not necessarily contain the latest updates and amendments	

Table of Contents

1.0 Introduction

Cardiac disease remains the leading indirect cause of maternal death

The confidential enquiry into Maternal deaths and morbidity (MMBRACE-UK 2015-2017) identified 48 women who died from heart disease associated with or aggravated by pregnancy.

Advances in medical treatment have allowed increasing numbers of patients with congenital heart disease to survive to childbearing age.
Pregnant women can present with any type of cardiac disease. Rheumatic disease may be present in immigrant populations without a cardiac history. The risk depends on the underlying problem (see Table 1).
Any underlying cardiac disease will be aggravated by the physiological changes that occur during pregnancy.

2.0 Objective

To ensure women with known cardiac problems receive care in accordance with an individualised management plan to minimise the risk of maternal morbidity and mortality.

3.0 Scope

All medical, nursing and midwifery staff have a responsibility to work within this guideline and attend training to ensure their competence is maintained.

Any deviations from the guideline, by a senior clinician, to meet the individual patient's need must be documented within the clinical record.

4.0 Main body of the document

4.1 Women who present with cardiac symptoms with no previous history of any cardiac issues

- Early involvement of senior clinicians from the obstetric, anaesthetic/intensive care and cardiology teams is important for any woman who presents with suspected cardiac disease (this includes women who present to the Emergency Department)
- A raised respiratory rate, chest pain, persistent tachycardia and orthopnoea are important signs/symptoms of cardiac disease and should always be investigated
- A normal ECG and/or negative initial Troponin does not exclude a diagnosis of acute coronary syndrome and therefore a second Troponin test should be performed six hours after the first.
- If heart disease is diagnosed in the intrapartum period urgent multidisciplinary discussions should be organised to ensure the woman is offered the same level of care as a woman with an existing diagnosis of heart disease.

4.2 Women with a known cardiac condition

Table 1 cardiac risk with various structural problems

- **Women in group 2 and 3 (table 1) should be referred to Sheffield (joint cardiac clinic).**
- **Most of the women in group 1 will be looked after locally in Barnsley unless stated otherwise.**
- **Some patients in group 1 may need their care transferred to Sheffield antenatally if their cardiac condition deteriorates.**

Group 1 - Low Risk (Mortality<1%) Care provided in Barnsley unless deteriorates
Small left to right shunt (ASD,VSD, PDA) Corrected lesions with no residual cardiac dysfunction (Discuss with the consultant) Porcine (tissue) valve Pulmonary or tricuspid valve disease Regurgitant valves with normal ventricular function Mitral valve prolapse without significant regurgitation Mitral stenosis (NYHA I and II)
Group 2 - Moderate Risk (Mortality 5%-15%) Care provided by Sheffield
Left ventricular dysfunction, moderate to severe Uncomplicated Coarctation of the aorta Large left to right shunt (unrepaired/palliated noncyanotic CHD) Moderate to severe mitral or aortic stenosis History of peripartum cardiomyopathy ***without*** residual ventricular dysfunction Mechanical prosthetic valve Previous myocardial infarction Marfan's syndrome where the aortic root diameter <4cm
Group 3 - High Risk (Mortality 25%-50%) Care provided by Sheffield
Severe Pulmonary hypertension Complicated Coarctation of the aorta Marfan's syndrome with aortic involvement (root diameter >4cm) Severe aortic stenosis History of peripartum cardiomyopathy ***plus*** ventricular dysfunction NYHA Class III and IV symptoms Eisenmenger's syndrome

Table 2 New York Heart Association functional classification

Class I	Asymptomatic
Class II	Symptomatic on exertion
Class III	Symptomatic on normal activity
Class IV	Symptomatic at rest

4.3 Antenatal care of women in group one

Women will be under consultant led care (Dr Khanem or Dr Fawzy).
Care is multi-disciplinary with the involvement of the cardiology and the anaesthetic team. As there are so many types of cardiac disease, often with very different implications, it is important that a risk assessment of any woman with a heart murmur or a history of any cardiac defect should be carried out early in pregnancy.

Cardiovascular assessment should be carried out at every antenatal clinic by the medical team:

Clinical procedure:	**Rationale:**
Blood pressure should be measured manually with a sphygmomanometer	More accurate reading
Measurement of pulse rate and rhythm	It may be the first sign of cardiac decompensation
Auscultation	To assess any change in murmur or any lung changes associated with pulmonary oedema

All women with structural congenital heart disease should be offered a fetal echocardiogram during the second trimester.

Please note – women with a pacemaker in situ will require assessment by a cardiology technician who will complete a Pacemaker Diathermy Checklist – please arrange an appointment with the cardiology department (ext. 1578)**.**

Care in the first trimester
• All women with significant cardiac disease should have their cardiac function assessed early in pregnancy. A cardiology review should be sought. • These women should be counselled about the prognosis for successful pregnancy outcome (fetal anomalies, fetal loss) and long term maternal health. • Advise that the presence of cardiac disease will mean delivery in a consultant led unit and may involve increased maternal and fetal surveillance in pregnancy. • Review of medications with cardiologist and discussion of risk/benefit for each medicine. • Anaesthetic referral should be made. • Refer the woman for fetal echocardiogram if applicable

Care in the second trimester	
It is in this trimester that major problems are most likely to occur as cardiac demand increases to a maximal state at **28-32 weeks**.	
Antenatal clinic review at 28- 32 weeks	• Consider repeat Echocardiography at this stage • Review fetal echocardiography results. • Dose adjustment of medications as required. • Obstetric anaesthesia review should take place. • Most women will not require additional fetal growth scanning unless there are other risk factors. • Atosiban can be used in preterm labour (avoid salbutamol or ritodrine), use of Nifedipine will depend on the nature of the cardiac condition

Care in the third trimester	
Antenatal clinic review at **32-34 weeks**	• Discuss management plans for labour and delivery • Take into consideration results of cardiology/ anaesthetic reviews
If necessary, arrange a Multidisciplinary Team (MDT) meeting at **34-36 weeks** to establish a plan for the management of delivery	• Mode of delivery • Instructions for second stage • Drugs to be used for the management of third stage • Drugs to be used for the management of postpartum haemorrhage

	• Thromboprophylaxis • Prophylactic antibiotics- see appendix three • Monitoring in labour • Recommendations for seniority of medical/midwifery staff to be involved in intra-partum care

4.4 Care of women in group one for Labour and delivery

Most women in group one will be treated as routine. Some women will need minimising of cardiovascular stress in labour which in most cases will be achieved by the use of early slow incremental epidural anaesthesia and assisted vaginal delivery. If applicable, this must be documented in the notes.

Management of the intrapartum period will be in accordance with the Guideline for the Management of Labour and the woman's individual management plan. In addition, the following recommendations should be followed:

Intrapartum management	
Establish plan	Review the woman's records, in particular the management plan for labour and delivery
Communication	Inform the members of the multi-disciplinary team, including: • Labour ward coordinator • Senior obstetrician on call (ST5 or above or consultant) • Obstetric Anaesthetist
Monitoring	Consider using HDU monitoring to record maternal observations. Frequency of observations should be agreed on an individual basis but as a minimum should comply with the Guideline for the Management of Labour.
Analgesia	Should be discussed with the woman and an epidural is recommended to reduce cardiovascular stress.
Fluid balance	Care should be taken not to overload the circulation and intravenous infusion rates should be closely monitored. A fluid balance chart is mandatory.
IV Prophylactic Antibiotics	If applicable depending on the cardiac abnormality patient may need prophylactic antibiotics (see appendix three)

Management of the third stage of labour for group one

Syntocinon 5i/u is the drug of choice for active management of the third stage

- **Avoid the use of Syntometrine and Ergometrine.**

Management of Postpartum Haemorrhage for group one

- Inform the Obstetric Consultant and the Anaesthetist on call
- Commence Syntocinon infusion with the regular dose according to postpartum haemorrhage protocol unless stated otherwise by the anaesthetist or the obstetrician
- Misoprostol 600mcg can be given rectally
- Consider the use of Rusch balloon or B-lynch suture
- Avoid the use of Haemabate or high dose Syntocinon
- Monitoring of fluid input and output is required
- Commence a High Dependency chart and transfer to High Dependency Care Transfer to Intensive Care if central or arterial lines are required
- Consider central access or arterial monitoring.

Care in the Immediate Postnatal Period for group one

Most Women in group one will be treated as routine.
Refer to management plan for recommendations regarding:

- Length of hospital stay
- Thromboprophylaxis
- Follow up care
- Contraception

4.5 Care of cardiac patients presenting in labour in group two and three

If delivery is not imminent, arrange urgent transfer to Sheffield.

- Inform the anaesthetist to help in arranging the transfer and ensure the patient is safe and stable.

If delivery is imminent:	
Communication	Inform the consultant on call, anaesthetist (will need to inform the consultant anaesthetist on call), Cardiology consultant (if during day time/ medical team if out of hours), Intensive care unit.
Bloods	Full blood count and electrolytes should be taken on admission. Clotting screen should be taken for those women on anticoagulant therapy.
Analgesia	Ensure good analgesia. If the woman is assessed as being suitable for vaginal delivery an epidural may be advised.
Fluid balance	Care should be taken not to overload the circulation and intravenous infusion rates should be closely monitored. A(fluid balance chart is mandatory.
IV Prophylactic Antibiotics	If applicable depending on the cardiac abnormality patient may need prophylactic antibiotics (see appendix three)
Monitoring	Consider ECG and invasive pressure monitoring
Second stage of labour	Should be kept as short as possible, to reduce the effort required by the mother. If an epidural is administered active pushing should not commence until the vertex is visible. If progress is slow, elective operative delivery will be required. The registrar should be kept informed about progress and asked to attend for delivery. Antibiotic prophylaxis should be considered according to the advice below.
Third stage of labour	Should be managed actively using IM oxytocin (see below).

NB Oxytocin must be used with great care in women with severe heart disease. It may cause profound hypotension. Ergometrine use is not recommended as it produces peripheral vasoconstriction. This may cause decompensation of the compromised heart.

Consider active management of the third stage of labour for women in group 3.

Please see appendix four for the Management of the third stage of labour for women in group three

4.6 Postpartum care of groups two and three

These women usually require admission to Obstetric HDU in the peripartum period and should be closely observed for at least 24 hours following delivery. Transfer to ICU may be necessary especially if invasive monitoring is required.

They may require higher level care in a specialist unit (Cardiac Care or Cardiac Intensive Care).

Appropriate cardiovascular assessment is essential before transfer to the ward and before discharge home.

5.0 Roles and responsibilities

5.1 Midwives/Support staff
To provide care for women with cardiac problems in accordance with the agreed management plan.

5.2 Obstetricians
To work in collaboration with the midwives and obstetric anaesthetists to provide care for women with cardiac problems in the antenatal, intrapartum and postnatal period.

5.3 Paediatricians
To review infants of women with known congenital heart problems in accordance with the instructions on the paediatric alert form.

5.4 Anaesthetists
To work in collaboration with the midwives and obstetric doctors to provide care for women with cardiac problems in the antenatal, intrapartum and postnatal period.

6.0 Associated documents and references

Knight M, Nair M, Tuffnell D, Kenyon S, Shakespeare J, Brocklehurst P, Kurinczuk JJ (Eds.) on behalf of MBRRACE-UK Saving Lives, Improving Mothers' Care -Lessons learned to inform maternity care from the
UK and Ireland Confidential Enquiries into Maternal
Deaths and Morbidity 2015-17. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2019. https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Maternal%20Report%202019%20-%20WEB%20VERSION.pdf

National Institute for Health and Clinical Excellence (NICE) (2014 – updated 2017) Clinical Guidance 55. Intrapartum Care for healthy women and babies. https://www.nice.org.uk/guidance/cg190/resources/intrapartum-care-for-healthy-women-and-babies-pdf-35109866447557

NICE clinical guideline 121: intrapartum care for women with existing medical conditions or obstetric complications and their babies (2019) https://www.nice.org.uk/guidance/ng121/resources/intrapartum-care-for-women-with-existing-medical-conditions-or-obstetric-complications-and-their-babies-pdf-66141653845957

NICE clinical guidelines 64 (2008 – updated 2016) Prophylaxis against infective endocarditis. https://www.nice.org.uk/guidance/cg64/resources/prophylaxis-against-infective-endocarditis-antimicrobial-prophylaxis-against-infective-endocarditis-in-adults-and-children-undergoing-interventional-procedures-pdf-975567956677

Siu SC, Colman JM. Congenital heart disease: heart disease and pregnancy. Heart2001; 85:710-715

Royal College of Obstetricians and Gynaecologists (2011) Good Practice No 13 Cardiac Disease in Pregnancy [online] https://www.rcog.org.uk/globalassets/documents/guidelines/goodpractice13cardiacdiseaseandpregnancy.pdf

Royal College of Obstetricians and Gynaecologists release: The growing toll of cardiac disease in pregnancy explored by leading doctor in congress (2013) [online] https://www.rcog.org.uk/en/news/rcog-release-the-growing-toll-of-cardiac-disease-in-pregnancy-explored-by-leading-doctor-at-congress/

7.0 Training and resources

Training will be delivered as outlined in the Maternity Training Needs Analysis. This is updated on an annual basis.

8.0 Monitoring and audit

Any adverse incidents relating to the management of women with cardiac disease in pregnancy will be monitored via the incident reporting system. Any problems will be actioned via the case review and root cause analysis action plans. The action plans are monitored by the governance midwife to ensure that improvements in care are made. The trends and any root cause analysis are discussed at the monthly risk meetings to ensure that appropriate action has been taken to maintain safety.

The guideline for the management of women with cardiac disease in pregnancy will be audited in line with the annual audit programme, as agreed by the CBU. The audit action plan will be reviewed at the monthly risk management meetings on a quarterly basis and monitored by the risk midwife to ensure that improvements in care are made.

9.0 Equality and Diversity

This section is mandatory for all Trust Approved Documents and must include the statement below:

The Trust is committed to an environment that promotes equality and embraces diversity in its performance as an employer and service provider. It will adhere to legal and performance requirements and will mainstream equality, diversity and inclusion principles through its policies, procedures and processes. This guideline should be implemented with due regard to this commitment.

To ensure that the implementation of this guideline does not have an adverse impact in response to the requirements of the Equality Act 2010 this policy has been screened for relevance during the policy development process and a full equality impact assessment is conducted where necessary prior to consultation. The Trust will take remedial action when necessary to address any unexpected or unwarranted disparities and monitor practice to ensure that this policy is fairly implemented.

This guideline can be made available in alternative formats on request including large print, Braille, moon, audio, and different languages. To arrange this please refer to the Trust translation and interpretation policy in the first instance.

The Trust will endeavor to make reasonable adjustments to accommodate any employee/patient with particular equality, diversity and inclusion requirements in implementing this guideline. This may include accessibility of meeting/appointment venues, providing translation, arranging an interpreter to attend appointments/meetings, extending policy timeframes to enable translation to be undertaken, or assistance with formulating any written statements.

9.1 Recording and Monitoring of Equality & Diversity

This section is mandatory for all Trust Approved Documents and must include the statement below:

The Trust understands the business case for equality, diversity and inclusion and will make sure that this is translated into practice. Accordingly, all guidelines will be monitored to ensure their effectiveness.

Monitoring information will be collated, analysed and published on an annual basis as part of Equality Delivery System. The monitoring will cover the nine protected characteristics and will meet statutory employment duties under the Equality Act 2010. Where adverse impact is identified through the monitoring process the Trust will investigate and take corrective action to mitigate and prevent any negative impact.

Appendix 1
Equality Impact Assessment – required for policy only

Appendix 2
Glossary of terms

ECG	Electrocardiogram
HDU	High Dependency Care
ICU	Intensive Care Unit
MDT	Multidisciplinary Team

Appendix 3

Prophylaxis of endocarditis

Some selected cases will require prophylaxis for infective endocarditis during delivery. This plan should be decided antenatally and documented clearly in the notes.

The following regimes are recommended for prophylaxis:

Elective caesarean section – 1.2 g co-amoxiclav and 120mg gentamicin IV

For labour:

Amoxicillin (1g IV) plus gentamicin (120mg IV) at induction of labour or at onset of spontaneous labour. Thereafter amoxicillin 1g IV 8 hourly and gentamicin 80mg IV every 12 hours until delivery. If delivery occurs within 2 hours of a dose being due, the next dose should still be given at the appropriate time.

Amoxicillin 1g should be diluted in 20 mls water for injection and given intravenously over 3-4 minutes or diluted in 50mls sodium chloride and infused over 30 minutes. When infusion bag is empty, flush through giving set to ensure the entire antibiotic has been given.

If allergic to penicillin:

Teicoplanin 400mg IV and gentamicin 120mg, repeated 12 hourly until delivery. If delivery occurs within 2 hours of a dose being due, the next dose should still be given at the appropriate time.

Appendix 4

Management of the third stage of labour for women in group 3

Condition	First-line uterotonic	Second-line uterotonics	Drugs to avoid because of potential harm
Significant aortopathy Marfan syndrome or Loeys–Dietz Syndrome with aortic diameter >40 mm. Bicuspid aortopathy and aortic diameter >45 mm. Previous aortic dissection. Turner syndrome and aortic size index >25 cm/m^2.	Oxytocin.	Misoprostol. Carboprost.	Ergometrine (because of risk of hypertension-induced aortic dissection or rupture).
Limited or fixed low cardiac output, or preload-dependent circulation Severe systemic ventricular dysfunction (ejection fraction <30%). Severe valvular stenosis. Hypertrophic cardiomyopathy with diastolic dysfunction or significant outflow tract obstruction.	Slow infusion of oxytocin to avoid sudden haemodynamic change.	Misoprostol. Carboprost.	Long-acting oxytocin analogues and ergometrine (because of risk of hypertension-induced heart failure).

Fontan circulation. Cyanotic heart disease.			
Pulmonary arterial hypertension.	Oxytocin.	Misoprostol.	Ergometrine, carboprost and long-acting oxytocin analogues (because of risk of worsening pulmonary hypertension).
Coronary artery disease.	Oxytocin.	Misoprostol.	Ergometrine (because of risk of coronary ischaemia).

Appendix 5

Guideline for care of women with heart failure in the intrapartum period

Heart Failure management v6 06 (

Appendix 6
Document History/Version Control
Maintain a record of the document history, reviews and key changes made (including versions and dates)

Version	Date	Comments	Author

Review Process Prior to Ratification:

Name of Group/Department/Committee	Date
Maternity guideline group	3rd September 2020
Women's Services Business & Governance meeting	September 2019 and 19th March 2021
CBU 3 Business and Governance meeting	24th February 2021
NICE Trust clinical guideline group meeting	25th March 2021

Trust Approved Documents (policies, clinical guidelines and procedures)

Approval Form

Please complete the following information and attach to your document when submitting a policy, clinical guideline or procedure for approval.

Document type (policy, clinical guideline or procedure)	Guideline
Document title	Guideline for the management of women with cardiac disease in pregnancy
Document author (Job title and team)	Lead obstetric consultant/ Guideline group
New or reviewed document	Reviewed
List staff groups/departments consulted with during document development	Consultant obstetricians
Approval recommended by (meeting and dates):	Maternity guideline group 3rd September 2020 Women's Services Business & Governance meeting September 2019 and 19th March 2021 CBU 3 Business and Governance meeting 24th February 2021
Date of next review (maximum 3 years)	24/04/2024
Key words for search criteria on intranet (max 10 words)	Cardiac disease management
Key messages for staff (consider changes from previous versions and any impact on patient safety)	
I confirm that this is the FINAL version of this document	Name: Charlotte Cole Designation: Practice Educator Midwife

FOR COMPLETION BY THE CLINICAL GOVERNANCE TEAM

Approved by (group/committee): **Date approved:**

Date Clinical Governance Administrator informed of approval:

Date uploaded to Trust Approved Documents page:

Guideline for the care of Women with heart failure in the intrapartum period

Author/Owner	Lead obstetric consultant/ Guideline group	
Equality Impact Assessment	N/A if clinical guideline or procedure	Date:
Version	6	
Status	Final	
Publication date	06/04/2021	
Review date	24/02/2024	
Approval recommended by	Maternity guideline group	Date: 3rd September 2020
	Women's Business and Governance Meeting	Date: September 2019 and 19th March 2021
Approved by	CBU 3 Overarching Governance Meeting	Date: 24th February 2021
Distribution	Barnsley Hospital NHS Foundation Trust – intranet Please note that the intranet version of this document is the only version that is maintained. Any printed copies must therefore be viewed as "uncontrolled" and as such, may not necessarily contain the latest updates and amendments	

Table of Contents

1.0 Introduction

These recommendations cover the diagnosis and management of heart failure for all women in the intrapartum period. This includes women with existing heart disease, and women with no existing heart disease who develop symptoms and signs of heart failure.

2.0 Objective

This guideline covers the diagnosis and management of heart failure in the intrapartum period in women with or without existing heart disease.

3.0 Scope

All medical, nursing and midwifery staff have a responsibility to work within this guideline and attend training to ensure their competence is maintained.

Any deviations from the guideline, by a senior clinician, to meet the individual patient's need must be documented within the clinical record.

4.0 Main body of the document

4.1 Suspected heart failure

Heart failure should be suspected if there is no other likely cause for the following signs and symptoms:

After taking a cardiac specific history from the woman:
Breathlessness when lying down or at rest (rule out Aortocaval compression)
Unexplained cough, particularly when lying down
Producing a frothy pink sputum
Paroxysmal nocturnal dyspnoea i.e. being woken from sleep by severe breathlessness and coughing which is improved by moving to an upright position
Palpitations (awareness of a persistent fast or irregular heart rate at rest)

On examination the woman has any of the following:
Is pale, sweaty, agitated with cool peripheries
A heart rate persistently >110bpm at rest
A respiratory rate persistently > 20 breaths per minute at rest
Hypotension – systolic blood pressure <100mmHg
Oxygen saturations <95% in air
Elevated jugular venous pressure
Added murmur or heart sound
Reduced air entry, basal crackles or wheeze on listening to the chest

If heart failure is suspected the woman should be reviewed by a senior clinician without delay.

4.2 Management of suspected heart failure

Clinical investigations:

- Obtain intravenous access and send bloods for U&E's, FBC
- Measure arterial blood gases
- Perform an ECG
- Perform a Chest X-ray

If a clinical suspicion of heart failure cannot be ruled out by the above investigations the woman should be reviewed by a cardiologist. Cardiologists are available on site from 9am-5pm weekdays and from 9am-1pm weekends. Outside of these hours the on call medical team should review the woman.

- Arrange a transthoracic echocardiogram
- Measure N-terminal pro-brain natriuretic peptide (NT-proBNP) levels
- Consider early birth for woman with heart failure due to cardiomyopathy, depending on the severity of the condition and how well the woman responds to treatment
- Optimise treatment for heart failure as soon as possible after birth even if the woman is breastfeeding
- Ensure continued involvement of a cardiologist if the heart failure persists after delivery

4.3 Prophylaxis for endocarditis

Some selected cases will require prophylaxis for infective endocarditis during delivery. This plan should be decided antenatally and documented clearly in the notes.

The following regimes are recommended for prophylaxis:

Elective caesarean section – 1.2 g co-amoxiclav and 120mg gentamicin IV

For labour:

Amoxicillin (1g IV) plus gentamicin (120mg IV) at induction of labour or at onset of spontaneous labour. Thereafter amoxicillin 1g IV 8 hourly and gentamicin 80mg IV every 12 hours until delivery. If delivery occurs within 2 hours of a dose being due, the next dose should still be given at the appropriate time.

Amoxicillin 1gm should be diluted in 20 mls water for injection and given intravenously over 3-4 minutes or diluted in 50mls sodium chloride and infused over 30 minutes. When infusion bag is empty, flush through giving set to ensure the entire antibiotic has been given.

If allergic to penicillin:

Teicoplanin 400mg IV and gentamicin 120mg, repeated 12 hourly until delivery. If delivery occurs within 2 hours of a dose being due, the next dose should still be given at the appropriate time.

4.0 Roles and responsibilities

Midwives/Support staff

To provide care for women with cardiac problems in accordance with the agreed management plan.

Obstetricians

To work in collaboration with the midwives and obstetric anaesthetists to provide care for women with cardiac problems in the intra-partum period.

Paediatricians

To review infants of women with known congenital heart problems in accordance with the instructions on the paediatric alert form.

Anaesthetists

To work in collaboration with the midwives and obstetric doctors to provide care for women with cardiac problems in the intra-partum period.

6.0 Associated documents and references

Knight M, Nair M, Tuffnell D, Kenyon S, Shakespeare J, Brocklehurst P, Kurinczuk JJ (Eds.) on behalf of MBRRACE-UK Saving Lives, Improving Mothers' Care - Surveillance of maternal deaths in the UK 2012-14 and lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009-14. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2016.

National Institute for Health and Clinical Excellence (NICE) (2014 – updated 2017) Clinical Guidance 55. Intrapartum Care for healthy women and babies. https://www.nice.org.uk/guidance/cg190/resources/intrapartum-care-for-healthy-women-and-babies-pdf-35109866447557

NICE clinical guideline 121: intrapartum care for women with existing medical conditions or obstetric complications and their babies (2019) https://www.nice.org.uk/guidance/ng121/resources/intrapartum-care-for-women-with-existing-medical-conditions-or-obstetric-complications-and-their-babies-pdf-66141653845957

NICE clinical guidelines 64 (2008 – updated 2016) Prophylaxis against infective endocarditis. https://www.nice.org.uk/guidance/cg64/resources/prophylaxis-against-infective-endocarditis-antimicrobial-prophylaxis-against-infective-endocarditis-in-adults-and-children-undergoing-interventional-procedures-pdf-975567956677

Siu SC, Colman JM. Congenital heart disease: heart disease and pregnancy. Heart2001; 85:710-715

Royal College of Obstetricians and Gynaecologists (2011) Good Practice No 13 Cardiac Disease in Pregnancy [online] https://www.rcog.org.uk/globalassets/documents/guidelines/goodpractice13cardiacdiseaseandpregnancy.pdf

Royal College of Obstetricians and Gynaecologists release: The growing toll of cardiac disease in pregnancy explored by leading doctor in congress (2013) [online] https://www.rcog.org.uk/en/news/rcog-release-the-growing-toll-of-cardiac-disease-in-pregnancy-explored-by-leading-doctor-at-congress/

7.0 Training and resources

Training will be delivered as outlined in the Maternity Training Needs Analysis. This is updated on an annual basis.

8.0 Monitoring and audit

Any adverse incidents relating to the management of women with heart failure in the intrapartum period will be monitored via the incident reporting system. Any problems will be actioned via the case review and root cause analysis action plans. The action plans are monitored by the governance midwife to ensure that improvements in care are made. The trends and any root cause analysis are discussed at the monthly risk meetings to ensure that appropriate action has been taken to maintain safety.

The guideline for the management of women with heart failure in the intrapartum period will be audited in line with the annual audit programme, as agreed by the CBU. The audit action plan will be reviewed at the monthly risk management meetings on a quarterly basis and monitored by the risk midwife to ensure that improvements in care are made.

9.0 Equality and Diversity

This section is mandatory for all Trust Approved Documents and must include the statement below:

The Trust is committed to an environment that promotes equality and embraces diversity in its performance as an employer and service provider. It will adhere to legal and performance requirements and will mainstream equality, diversity and inclusion principles through its policies, procedures and processes. This guideline should be implemented with due regard to this commitment.

To ensure that the implementation of this guideline does not have an adverse impact in response to the requirements of the Equality Act 2010 this policy has been screened for relevance during the policy development process and a full equality impact assessment is conducted where necessary prior to consultation. The Trust will take remedial action when necessary to address any unexpected or unwarranted disparities and monitor practice to ensure that this policy is fairly implemented.

This guideline can be made available in alternative formats on request including large print, Braille, moon, audio, and different languages. To arrange this please refer to the Trust translation and interpretation policy in the first instance.

The Trust will endeavor to make reasonable adjustments to accommodate any employee/patient with particular equality, diversity and inclusion requirements in implementing this guideline. This may include accessibility of meeting/appointment venues, providing translation, arranging an interpreter to attend appointments/meetings, extending policy timeframes to enable translation to be undertaken, or assistance with formulating any written statements.

9.1 Recording and Monitoring of Equality & Diversity

This section is mandatory for all Trust Approved Documents and must include the statement below:

The Trust understands the business case for equality, diversity and inclusion and will make sure that this is translated into practice. Accordingly, all guidelines will be monitored to ensure their effectiveness.

Monitoring information will be collated, analysed and published on an annual basis as part of Equality Delivery System. The monitoring will cover the nine protected characteristics and will meet statutory employment duties under the Equality Act 2010. Where adverse impact is identified through the monitoring process the Trust will investigate and take corrective action to mitigate and prevent any negative impact.

Appendix 1
Equality Impact Assessment – required for policy only

Appendix 2
Glossary of terms

FBC	Full Blood Count
ECG	Electrocardiogram

Appendix 3
Document History/Version Control

Version	Date	Comments	Author

Review Process Prior to Ratification:

Name of Group/Department/Committee	Date
Maternity guideline group	3rd September 2020
Women's Business and Governance Meeting	September 2019 and 19th March 2021
CBU 3 Overarching Governance Meeting	24th February 2021
NICE Trust clinical guideline group meeting	25th March 2021

Trust Approved Documents (policies, clinical guidelines and procedures)

Approval Form

Please complete the following information and attach to your document when submitting a policy, clinical guideline or procedure for approval.

Document type (policy, clinical guideline or procedure)	Guideline
Document title	Guideline for the care of Women with heart failure in the intrapartum period
Document author (Job title and team)	Lead obstetric consultant/ Guideline group
New or reviewed document	New
List staff groups/departments consulted with during document development	Consultant obstetricians
Approval recommended by (meeting and dates):	Maternity guideline group 3rd September 2020 Women's Services Business & Governance meeting September 2019 and 19th March 2021 CBU 3 Business and Governance meeting 24th February 2021
Date of next review (maximum 3 years)	24th February 2024
Key words for search criteria on intranet (max 10 words)	Heart failure
Key messages for staff (consider changes from previous versions and any impact on patient safety)	
I confirm that this is the <u>FINAL</u> version of this document	Name: Charlotte Cole Designation: Practice Educator Midwife

FOR COMPLETION BY THE CLINICAL GOVERNANCE TEAM

Approved by (group/committee): **Date approved:** **Date Clinical Governance Administrator informed of approval:**

Date uploaded to Trust Approved Documents page: