Addressing the Heart of the Issue

Good clinical practice in the shared obstetric and cardiology care of women of childbearing age

Setting standards
Developing healthcare leaders
Delivering excellence

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF GLASGOW

ROYAL COLLEGE OF
PHYSICIANS AND
SURGEONS OF GLASGOW

Addressing the heart of the issue: Standards of good clinical practice in the shared obstetric and cardiology care of women of childbearing age. Produced by the Royal College of Physicians and Surgeons of Glasgow.

Lead authors:

Dr Janet Brennand, Consultant in Maternal & Fetal Medicine, The Queen Elizabeth University Hospital, Glasgow

Dr Rebecca Northridge, ST7 Obstetrics and Gynaecology

Professor Hazel Scott, Vice President (Medical), Royal College of Physicians and Surgeons of Glasgow

Dr Niki Walker, Consultant Cardiologist, Golden Jubilee National Hospital

Attendees who contributed to the development of the standards at a multi-disciplinary workshop in September 2016: Lynne Ayton, James Bingham, Jennifer Boyd, Ros Burns, Gillian Campbell, Victor Chong, Jackie Church, Ian Davidson, Jill Duguid, Ann Duncan, Hany Eteiba, Patrick Gibson, Susan Gordon, Andrew Hannah, Mary Hannaway, Shahzya Huda, Stuart Hutcheon, Kirsten Kruszewski, Catherine Labinjoh, Arrianne Laws, Corrine Love, Pauline Lynch, Colin Malcolm, Mirmala Mary, Lynne Miller, Margaret Morgan, Michelle McLaughlan, Jennifer McInerney, Kathryn McIntosh, Alastair McKay, Lorna Murphy, Robin Northcote, Jane Ramsay, Anne Reoch, Jane Richmond, Katrina Shearer, Margaret Simpson, Liz Terrace, Fiona Wardell.

Introduction

The most recent audit into maternal mortality in the UK and Ireland found that in 2012-2014, 8.5 women per 100,000 die during pregnancy, or up to six weeks after giving birth or the end of pregnancy.[1]

2 women per 100,000 died from heart disease making this the leading cause of maternal mortality and deaths from cardiac disease have increased. Contributing factors include increasing maternal age and increasing levels of obesity.[1]

In the last 10 years maternal deaths from "direct causes" have halved.[1] However there has been no significant decrease in the women dying from "indirect causes" like heart disease.[1] Two thirds of all maternal deaths are the result of a medical or mental health problems rather than a direct cause of complications related to the pregnancy itself.[2]

Cardiac conditions account for the single largest cause of indirect death therefore, this is a key area of focus of the 2016 MBRRACE-UK report entitled 'Saving Lives, Improving Mothers' Care'.[1]

Of those women who died several had a pre existing medical condition before embarking on pregnancy. However 77% were not known to have pre-existing cardiac problems. Therefore there is a need for all health professionals to be alert to the possibility of new onset or unmasked cardiac disease in women of childbearing age.[1] In addition, for every woman that dies, many more suffer serious morbidity with potential for profound psychological as well as physical impact.[1]

MBBRACE UK 2014 called for coordinated action across a wide range of health services to address the problem of indirect maternal death. Responding to this and with the support of expert clinical leads and stakeholders from territorial health boards in Scotland, the Royal College of Physicians and Surgeons of Glasgow has developed standards that outline best practice in the inter-professional care of women of child-bearing age who have cardiac disease.

We believe that the implementation of this guidance will safe guard against inequalities in care provision. Better and targeted access to specialist advice will support appropriate care for women locally. Early consideration of the issues relevant to each woman and advanced care planning will prevent crisis presentations and enhanced inter-professional contact during each stage of the woman's care will ensure better patient outcomes.

The College calls on Health Boards to adopt these standards and reduce unnecessary morbidity and mortality from cardiac disease in women of child-bearing age.

Pre-pregnancy counselling

Safe patient care for women with heart disease requires an enhanced approach to pre-pregnancy counselling:

- Women with heart disease need the opportunity to make informed choices about risks associated with pregnancy.
- In women with heart disease there can be a variety of increased risks to the successful outcome of the pregnancy e.g. pre-eclampsia, intrauterine growth restriction, teratogenesis related to cardiac medications and pre-term delivery with its consequent sequelae.[3]
- In women with heart disease who become pregnant there is a potential risk of mortality or impact on their long term cardiac function.[4]
- It is estimated that only 55% of pregnancies are "planned" with 16% being "unintentional" and the remaining 29% classed as "ambivalent".[5]
- It is also known that obesity and smoking are risk factors for poor pregnancy outcomes in women with heart disease.[6]
- Once adolescence is reached, girls with heart disease should have access to pre-pregnancy counselling and contraceptive advice.[7]

Impact of implementation of these standards

For patients: women will be able to make informed choices ahead of and in the early stages of pregnancy.

For service providers: Individualised specialist advice regarding the women's medication and condition should be given by someone with the right experience (see table 1).

a) Primary care providers will make greater use of opportunistic contact with women with heart disease to provide pre-pregnancy counselling and contraceptive advice and document these conversations.

b) Secondary care providers will
- proactively provide pre-pregnancy counselling during routine contact with women with heart disease e.g. clinic attendance, transition from paediatric to adult services.
- document functional status with the New York Heart Association class prior to pregnancy and also cardiac risk stratification with the modified WHO classification of maternal risk (see table 1).
- provide women with a summary note outlining their condition in order that when attending their antenatal booking visit they can volunteer this information.

c) Specialists in obstetrics and cardiology will provide input to pre-pregnancy counselling for women with WHO cardiac disease class II or above.

Standard 1

1.1 All women of child bearing age who have heart disease, including those pursuing assisted conception, are offered pre-pregnancy counselling and contraceptive advice by an appropriately trained healthcare professional including those based in primary care.[6]

1.2 Pre-pregnancy counselling for women with heart disease includes:[6]

- consideration of medications that would not be appropriate for pregnancy.
- a plan made for any necessary medication withdrawal (+ / - reassessment of the patient following withdrawal of medication, for example ACE inhibitor) or substitution (e.g. warfarin).
- clear instructions for the woman as to the plan and timescale for such changes of medication.
- consideration of referral for genetic counselling.
- an assessment of the impact of the cardiac condition on the pregnancy and the impact of the pregnancy on the cardiac condition.

1.3 Women with heart disease are specifically assessed with respect to their modified World Health Organisation classification of maternal cardiovascular risk (WHO class) pre-pregnancy.[6]

a) For women with WHO class II heart disease pre-pregnancy counselling and assessment should be with a cardiologist OR obstetrician.

b) Women who are considered to have WHO class III or IV heart disease should be offered counselling with:

- a cardiologist with expertise in the care of cardiac obstetrics and
- an obstetrician with a specialist interest in cardiac obstetrics.

c) Women who are felt to be of uncertain risk category are discussed further with the appropriate specialist team to establish the appropriate pre-pregnancy advice.

Termination of pregnancy

Women are at higher risk of medical and obstetric complications from termination of pregnancy when they have established cardiovascular disease.

The risks associated with termination for patients with heart disease can be underestimated with resultant inappropriate choice of location or method for the procedure.

Standard 2

2.1 Women with heart disease considering termination of pregnancy are assessed for their WHO class.

2.2 For women in WHO class III or IV heart disease, the best method and location of the procedure is discussed with appropriate specialists in cardiology, obstetrics, anaesthetics and termination of pregnancy services.[6]

Impact of implementation of these standards

For patients: women with heart disease who are at greater risk from termination of pregnancy will be able to make an informed choice.

For service providers: clinicians will seek additional advice to support enhanced risk stratification and options appraisal for women with heart disease at potential risk from termination of pregnancy.

Pregnancy care

Women with heart disease who are pregnant should be able to make an informed choice on their ongoing care e.g. the decision to continue with pregnancy, alterations to medical therapy, social support.[8]

Standard 3

Pregnant women with WHO class III or IV heart disease are referred to a regional obstetric service with cardiologist support within 4 weeks of presentation to antenatal services.

Impact of implementation of these standards

For patients: women with WHO class III or IV heart disease would have access to additional appropriate investigation and genetic counselling.

For service providers: specialists will provide early assessment of the impact of pregnancy to generate an appropriate care package for both mother and baby.

Intrapartum care

Labour and delivery is a time of cardiovascular stress for pregnant women with heart disease, with the level of associated risk relating to the severity of the cardiac condition. Inadvertent harm to the mother can occur when a pregnant woman with significant heart disease presents to a location ill-prepared to support their delivery. Multidisciplinary planning throughout pregnancy will identify those women who would benefit from delivery in a tertiary centre.[6]

Impact of implementation of these standards

For patients: Patients with high risk cardiac disease will benefit from advanced planning regarding location of delivery. Patients with low risk cardiac disease can be reassured that local delivery is appropriate. Any change in risk stratification or symptoms will alert clinicians to the need to reconsider delivery location.

For service providers: There will be an established local team of obstetrician and cardiologist that is responsible for the care of pregnant women with cardiac disease. Clear pathways will be available for those cases that require regional and/or national service level multidisciplinary discussion.

Standard 4

4.1 There is a local expert / team in each health board who take a special interest and ownership in the care of women with cardiac disease.

4.2 Women with heart disease who are pregnant are seen by a cardiologist and obstetrician together for joint decision making and planning. If this is not possible, prompt phone or email contact is made.

4.3 There are clear referral criteria for advice from specialist centres.

4.4 A delivery plan, including post partum care, is available and accessible for all pregnant women with heart disease. This includes those with WHO class I heart disease.

4.5 For women with heart disease with predicted high risk pregnancy, the delivery location is provisionally determined by 28 weeks of gestation, with agreement from the MDT (which must include local and tertiary obstetricians, cardiologists and anaesthetists).

4.6 Triggers for consideration of a change in location of delivery include:

a. new cardiac symptoms
b. deterioration in WHO class
c. deterioration in New York Heart Association (NYHA) class
d. concern from a member of the MDT.

4.7 When a trigger occurs, additional specialist advice is taken from a regional centre or the relevant national service (Scottish Adult Congenital Cardiac Service / Scottish National Advanced Heart Failure Service / Scottish Pulmonary Vascular Unit).

Emergency and acute admissions

Early involvement of senior clinicians from the obstetric and cardiology multidisciplinary team is important, wherever a pregnant or post partum woman presents with suspected cardiac disease, but particularly if she presents to the Emergency Department.

A raised respiratory rate, chest pain, persistent tachycardia and orthopnoea are important signs and symptoms which should always be investigated. Key investigations must not be delayed because of the pregnancy. The emphasis should be on making a diagnosis, not simply excluding a diagnosis. Traditional referral mechanisms may be too slow in pregnancy.[1]

A normal ECG/and/or negative Troponin does not exclude the diagnosis of an acute cardiac syndrome.

One in five women who die from a cardiac cause die in an ambulance or Emergency Department.[1]

Standard 5

5.1 For women with heart disease who are pregnant, a pathway exists for the provision of care within office hours, and also out-with office hours.

5.2 Contact details for key persons are widely available for referring health professionals. Provisions are made for when that person/ team are on leave.

5.3 During acute admissions all women with cardiac disease in pregnancy are discussed with the admitting consultant within 4 hours and again prior to discharge.

5.4 All pregnant women with heart disease who are admitted are discussed with the on-call obstetric consultant. Joint ownership and communication is essential.

5.5 Paramedics and all Emergency Staff are aware of the appropriate modifications to resuscitation which are needed in a pregnant women including manual uterine displacement, early intubation with a cuffed tracheal tube and early recourse to perimortem caesarean section.[1]

Impact of implementation of these standards

For patients: Patients will benefit from early senior input and the expertise that that brings. Early investigations and a low threshold for performing these should lead to earlier diagnosis and treatment.

For service providers: Better coordinated working and training of the wider emergency care team will enhance communication and patient care.

Discharge, contraception and follow up

The end of the pregnancy is often the time when the woman focuses on the care of her newborn and not on her own well-being. Therefore, the opportunity to optimize her care pre-discharge should not be lost and this should ensure addressing her contraceptive needs. In addition, the majority of women with heart disease should have ongoing cardiac review, at least on one occasion to ensure that there is clear counseling for future pregnancy risk and planning of care.

Standard 6

6.1 A discharge summary is shared with primary care and the woman herself.

6.2 All women with heart disease (congenital and acquired) have a post-natal follow-up appointment, arranged with the cardiology and/or obstetric team.[8]

6.3 Appropriate contraceptive advice is discussed during pregnancy and re-confirmed prior to discharge post-partum in all women with heart disease. Contraceptive advice for women with heart disease takes account of individual risk factors[6] including:

- age,
- smoking,
- blood pressure and
- pro-thrombotic condition

Impact of implementation of these standards

For patients: Patients will gain reassurance that there is understanding of the impact of her pregnancy. They will have an awareness of the plans for follow-up, and an awareness of early signs of deterioration with a plan for how to access care. The woman will have access to plans for contraception, including plans for implementation.

For service providers: Ensures team utilize the opportunity for counseling prior to discharge and minimizes the risk of loss to follow-up by explaining plans in person.

References

1 MBRRACE-UK Saving Lives, Improving Mothers' Care Dec 2016 [www.npeu.ox.ac.uk/mbrrace-uk].

2 MBRRACE-UK Saving Lives, Improving Mothers Care' Dec 2014 [www.npeu.ox.ac.uk/mbrrace-uk].

3 Uebing A, Steer PJ, Yentis SM and Gatzoulis MA 2006. Pregnancy and congenital heart disease. British Medical Journal, 7538, p401.

4 Jastrow N, Meyer P, Khairy P, Mercier LA, Dore A, Marcotte F, Leduc L 2011 . Prediction of complications in pregnant women with cardiac diseases referred to a tertiary center. Int J Cardiol., 151, p209-13.

5 Wellings K, Jones KG, Mercer CH, Tanton C, Clifton S, Datta J, Copas AJ, Erens B, Gibson LJ, Macdowall W and Sonnenberg P 2013. The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). The Lancet, 382(9907), pp.1807-1816.

6 Regitz-Zagrosek V et al. 2011. ESC guidelines on the management of cardiovascular diseases during pregnancy. Eur Heart J, 32, p3147-3197.

7 RCOG Good Practice No.13 Cardiac Disease and Pregnancy June 2011.

8 Emmanuel Y and Thorne SA, 2015. Heart disease in pregnancy. Best Practice & Research Clinical Obstetrics and Gynaecology 29, p579-597.

Table 1 *modified from Regitz-Zagrosek V et al 2011[6]*

WHO classification Maternal Cardiac Risk	Conditions	Risk of Pregnancy by Medical Condition	Recommended level of counselling and action
I	Uncomplicated small or mild • pulmonary stenosis • patent ductus arteriosus • mitral valve prolapse Successfully repaired simple lesions (atrial or ventricular septa defect, patent ductus arteriosis, anomalous pulmonary venous drainage) Atrial or ventricular ectopic beats isolated	No detectable increased risk of maternal mortality and no/mild increase in morbidity	Primary Care
II (if well and uncomplicated)	Unoperated atrial or ventricular septal defect Repaired tetraloogy of fallot Most arrhythmias	Small increased risk of maternal mortality or moderate increase in morbidity	Cardiologist OR Obstetrician
II or III depending on individual	Mild Left ventricular impairment Hypertrophic cardiomyopathy Native or valvular heart disease not considered WHO I0r IV Marfan syndrome without aortic dilation Aorta <45mm in aortic disease associated with bicuspid aortic valve Repaired coarctaction	Needs to be determined	Discussion must take place with health professional with adequate experience or? Cardiologist with expertise in the care of women with cardiac obstetrics AND Obstetrician with a specialist interest in cardiac obstetrics
III	Mechanical valve Systemic right ventricle Fontan circulation Cyanotic heart disease (unrepaired) Other complex congenital heart disease Aortic dilatation 40-45mm in Marfan syndrome Aortic dilatation 45-50mm in aortic disease associated with bicuspid aortic valve	Significantly increased risk of maternal mortality or severe morbidity. Expert counselling required. If pregnancy decided upon, intensive specialist cardiac and obstetric monitoring needed throughout pregnancy, birth and the puerperium.	Cardiologist with expertise in the care of women with cardiac obstetrics AND Obstetrician with a specialist interest in cardiac obstetrics
IV	Pulmonary arterial hypertension of any cause Severe systemic ventricular dysfunction (LVEF <30%, NYHA III-IV) Previous peripartum cardiomyopathy with any residual impairment of left ventricular function Severe mitral stenosis Severe symptomatic aortic stenosis Marfan syndrome with aorta dilated >45mm Aortic dilatation > 50 mm in aortic disease associated with bicuspid aortic valve Native Severe coarctation	Extremely high risk of maternal mortality or severe morbidity. Pregnancy contraindicated. If pregnancy occurs termination should be discussed. If pregnancy continues care as per class III	Cardiologist with expertise in the care of women with cardiac obstetrics AND Obstetrician with a specialist interest in cardiac obstetrics

Produced by the Communications Team

ROYAL COLLEGE OF PHYSICIANS AND
SURGEONS OF GLASGOW
232-242 St Vincent Street
Glasgow G2 5RJ

T +44 (0)141 221 6072
rcpsg.ac.uk

12.16

Setting standards
Developing healthcare leaders
Delivering excellence

ROYAL COLLEGE OF
PHYSICIANS AND
SURGEONS OF GLASGOW