# Cardiac Conditions in Obstetric Care

## Referral Protocol for Patients with Known Cardiovascular Diagnoses

Notify **Cardio-OB Care Coordinator** for patients in ALL cardiovascular risk categories

**Contact:** _____

| | WHO I | | WHO II | | WHO II-III or III | | WHO IV | |
|---|---|---|---|---|---|---|---|---|
| | **Cardiology** | **MFM** | **Cardiology** | **MFM** | **Cardiology** | **MFM** | **Cardiology** | **MFM** |
| | 1-2 visits | ----- | Every trimester | Once | Every 8 weeks | Transfer, by 32 weeks or as soon as possible if identified after 32 weeks to allow for delivery planning | Every month | Transfer, immediately to determine safety of continuation of pregnancy |
| **Cardio-OB Team** | ----- | | Review once | | Review monthly | | Review monthly | |
| **Delivery location** | Local hospital | | Local hospital, per resources and agreement of provider teams (OB, cardiology, and anesthesiology) | | Tertiary care, with availability of MFM, cardiology, cardiothoracic surgery, advanced cardiac imaging, pediatric cardiology, and NICU | | Tertiary care, with availability of MFM, cardiology, cardiothoracic surgery, advanced cardiac imaging, pediatric cardiology, and NICU | |

**Cardio-OB Team** should include the Cardio-OB Care Coordinator and representatives from cardiology, MFM, obstetrics, anesthesiology, nursing, and pharmacy. Additional team members may include social work, case managers, primary care providers, CT, surgery, neonatology, etc.

## Modified World Health Organization (WHO) Classification of Maternal Cardiovascular Risk[1]

| WHO I | WHO II | WHO II-III | WHO III | WHO IV |
|---|---|---|---|---|
| • Small or mild:<br>  ○ Pulmonary stenosis<br>  ○ Patent ductus arteriosus<br>  ○ Mitral valve prolapse<br>• Successfully repaired simple lesions (atrial or ventricular septal defect, patent ductus arteriosus, anomalous pulmonary venous drainage)<br>• Atrial or ventricular ectopic beats, isolated | • Unoperated atrial or ventricular septal defect<br>• Repaired tetralogy of Fallot<br>• Most arrhythmias (supraventricular arrhythmias)<br>• Turner syndrome without aortic dilatation | • Mild left ventricular impairment (EF >45%)<br>• Hypertrophic cardiomyopathy<br>• Native or tissue valve disease not considered WHO I or IV (mild mitral stenosis, moderate aortic stenosis)<br>• Marfan or other HTAD syndrome without aortic dilatation<br>• Aorta <45 mm in bicuspid aortic valve pathology<br>• Repaired coarctation<br>• Atrioventricular septal defect | • Moderate left ventricular impairment (EF 30–45%)<br>• Previous peripartum cardiomyopathy without residual left ventricular impairment<br>• Mechanical valve<br>• Systemic right ventricle with good or mildly decreased ventricular function<br>• Fontan circulation, if otherwise well and cardiac condition uncomplicated<br>• Unrepaired cyanotic heart disease<br>• Other complex heart disease<br>• Moderate mitral stenosis<br>• Severe asymptomatic aortic stenosis<br>• Moderate aortic dilatation (40–45 mm in Marfan syndrome or other HTAD; 45–50 mm in bicuspid aortic valve, Turner syndrome ASI 20–25 mm/m, tetralogy of Fallot <50 mm)<br>• Ventricular tachycardia | • Pulmonary arterial hypertension<br>• Severe systemic ventricular dysfunction (EF <30%)<br>• Previous peripartum cardiomyopathy with residual left ventricular impairment<br>• Severe mitral stenosis<br>• Severe symptomatic aortic stenosis<br>• Systemic right ventricle with moderate or severely decreased ventricular function<br>• Severe aortic dilatation (>45 mm in Marfan syndrome or other HTAD, >50 mm in bicuspid aortic valve, Turner syndrome ASI >25 mm/m, tetralogy of Fallot >50 mm)<br>• Vascular Ehlers–Danlos<br>• Severe (re)coarctation<br>• Fontan with any complication |

[1] Regitz-Zagrosek V, Blomstrom Lundqvist C, Borghi C, et al. ESC Guidelines on the management of cardiovascular diseases during pregnancy: the Task Force on the Management of Cardiovascular Diseases during Pregnancy of the European Society of Cardiology (ESC). *Eur Heart J*. 2011;32(24):3147-3197. doi:10.1093/EURHEARTJ/EHR218