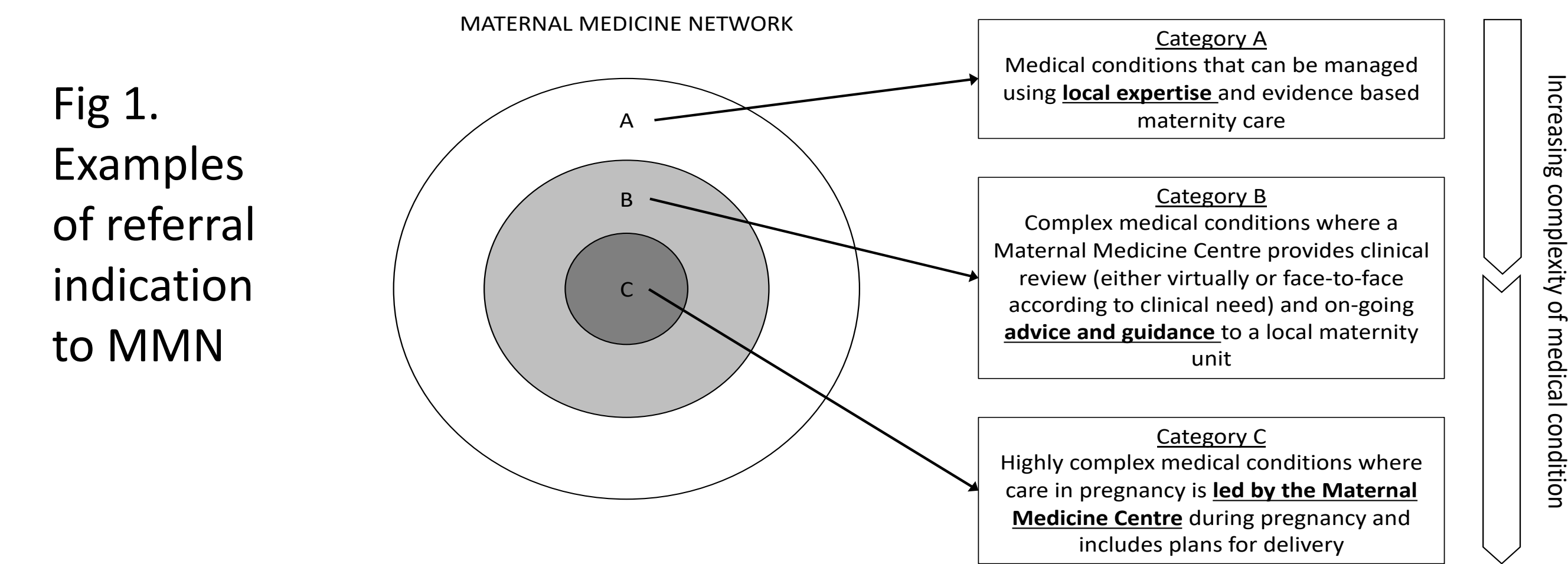


MATERNAL MEDICINE NETWORKS

Maternal Medicine Networks (MMNs) developed across the UK to improve outcomes for pregnant women/birthing people with complex medical conditions.

The physiological adaptations of pregnancy in such populations require guided care by consultants with specific pregnancy expertise in a multidisciplinary teams established ensuring prompt assessment of patients who fit into the following categories (Fig. 1)



The 2022 MMBRACE report showed a decreased in the overall rate of maternal cardiovascular deaths for the first time in 15 years. This was a welcomed changed from the previous reports where cardiovascular disease contributed to 23% of maternal deaths.

CASE

29 year old primigravida with known Marfan's Syndrome (MFS), a de novo mutation, underwent pre-implantation genetics and this In Vitro Fertilisation (IVF) pregnancy was with an embryo who had not inherited MFS.

History

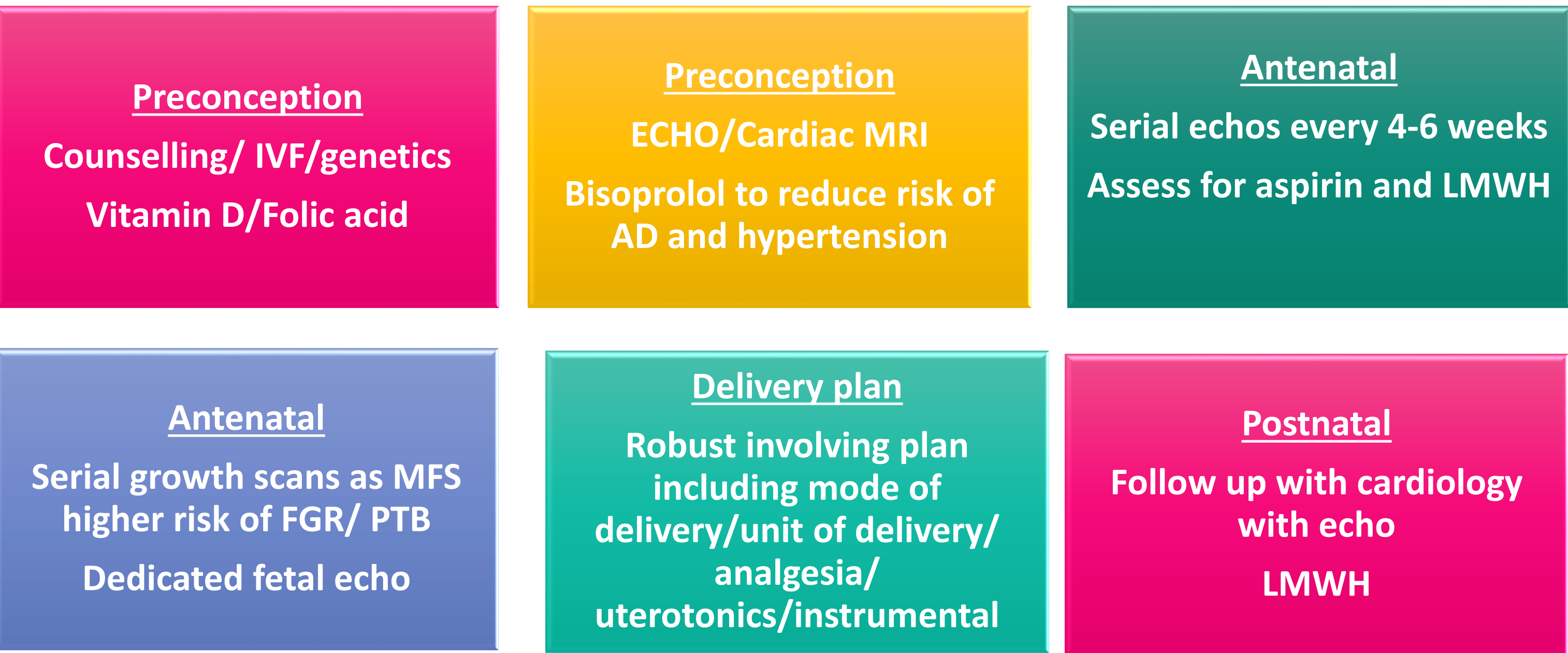
- Aortic root replacement 19 years old with tissue graft, avoiding warfarin and its associated teratogenic affects
- Sinus of Valsalva aneurysm, previous closure of secundum atrial septal defect at age 16 with spontaneous pneumothoraces closed with Video-Assisted Thoracoscopic Surgery (VATS)
- Cardiac MRI prior to conception, showing stable aortic dimensions, good biventricular function with established mild mitral valve and mild aortic regurgitation.

MARFAN'S SYNDROME

- MFS an autosomal dominant hereditary connective tissue disorder which affects approximately 1 in 5000 of the population.
- It is a dominant trait in 70% of families, with the remainder 30% de novo mutations. It is caused by a mutation in the fibrillin-1 gene on chromosome 15q21.
- 1% of pregnancies in patients with MFS have fatal complications as unable to adapt to the cardiac physiological changes in pregnancy.
- The leading cause of maternal mortality in patients with Marfan's is aortic dissection (AD).
- The risk of AD is 3.9 per 10,000 pregnancies, with the background risk of 6 per 100,000 of the population.
- While rare, if AD happens in pregnancy, it causes 30% maternal mortality and 50% fetal mortality.
- In healthy pregnancy, the aortic diameter increases significantly, with a marked increase in heart rate, stroke volume, cardiac output and blood volume.
- 80% of patients with MFS will have cardiovascular involvement including aortic dilatation or incompetence and mitral or tricuspid valve prolapse with or without regurgitation.

MFS MANAGEMENT BY MMN

The following steps high light the focus of this patients care-



OUTCOME

- The patient remained stable throughout pregnancy and was deemed safe for a vaginal delivery as her aortic root remained less than 45mm
- There was consideration of a vaginal birth with a shorter second stage of labour, reduced volume oxytocin and elective instrumental delivery if needed.
- This is as during labour, a patients cardiac output increases by 15% and can increase in second stage by 50%.
- She was reviewed weekly from 32 weeks where she developed fulminant preeclampsia with sudden peripheral oedema and dropping platelets.
- Decision for delivery at a cardiac centre by caesarean section was made.
- She recovered well post delivery and remained on anti-hypertensives for 12 weeks postnatally.

References:
 1. Knight, M. et al. Saving Lives, Improving Mothers' Care: Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2018-20- 2022 Oxford, National Perinatal Epidemiology Unit, and University of Oxford.
 2. Goland S, Elkayam U. Pregnancy and Marfan syndrome. Annals Cardiothoracic Surgery. 2017 Nov;6(6):642-653. 3. Lansman, S at al. Aortic surgery in pregnancy, AATs Aortic Symposium supplement, The Journal of Thoracic and Cardiovascular Surgery 2017;153:S44-8.

MULTIDISCIPLINARY TEAM

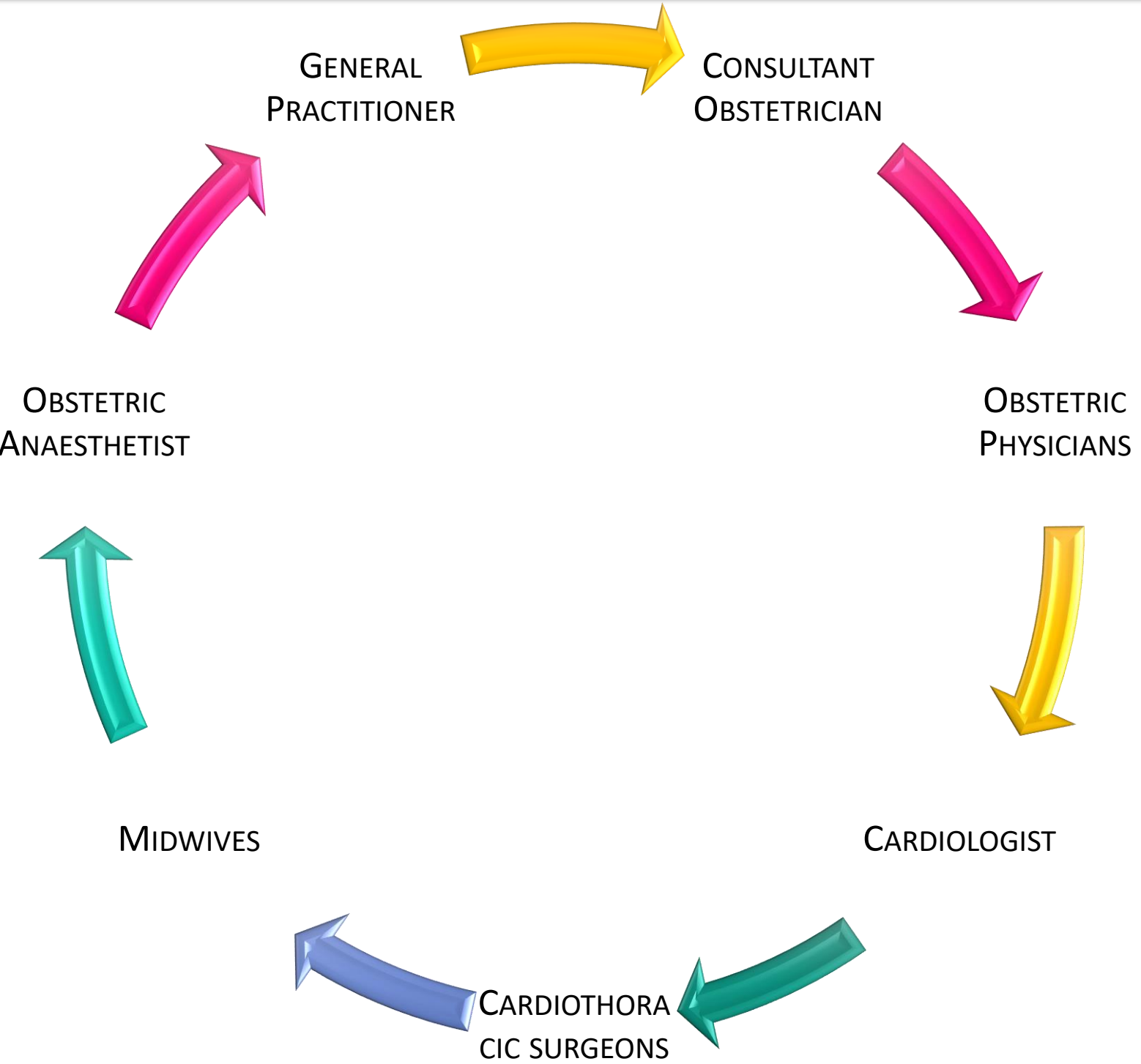


Fig 2 Healthcare professionals involved in this patients care