



# 1<sup>ST</sup> FETAL WORKSHOP IN HAZLEWOOD



*A summary of the first face to face fetal CMR workshop written by Dr. Malenka M. Bissell*

In July 2023, the Northh Medical team joined us at our 1st fetal workshop in York at Hazlewood castle, a quintessentially English affair with a themed pride and prejudice dinner. While the participants mingled to find out who the author lady Whistlewind was (the author didn't even suspect it himself), much discussion also focussed on the challenges in fetal CMR, and there are plenty.

Some are a specific wish list for Northh Medical, and overall, most requests were quite realistic (and some are already in progress). A larger transducer, ideally flexible with

a large enough area to cover a moving fetus (in early gestation) was the most frequent request, closely followed by having a wireless option. Though we all agreed, our ultimate wish is to have the transducer built into the coil itself (but that would require us to agree what the ideal fetal coil is, which is a separate discussion entirely). Other wishes are already around the corner such as having unlimited injected triggers, identifying which triggers are true and which are artificial triggers, real time monitoring and exporting of the data. A higher depth sensor is important to those countries with growing obesity rates.

We all agreed that additional motion correction is often still necessary even with the DUS device, and having packaged sequences and post-processing tools would

make application in purely clinical centres much easier (and Northh Medical have listened and are already working on simplifying the black blood motion correction pipeline).

Apart from the most obvious challenge – the moving fetus – clinicians face a number of other challenges when moving fetal CMR to the clinical arena. “So, why would

I refer the fetus for a fetal CMR scan at 32-36 weeks when the diagnosis and decision on whether to continue the pregnancy was already made weeks ago?” is the most commonly asked question, and the answer is not straight forward. Fetal CMR is not a primary diagnostic tool but an adjunct to fetal echocardiography. In late gestation when views are more limited especially in maternal obesity, fetal CMR can provide additional information especially in those congenital heart diseases

that can show progression throughout the pregnancy. This includes borderline left ventricles, Coarctation of the aorta and the assessment for restricted septum in transposition of the great arteries. The room was divided whether fetal CMR's strengths lie in the intra-cardiac or extra-cardiac structures, but all agreed that it was superior to fetal ultrasound when assessing lung volumes and pathologies such as nutmeg lung pattern in hypoplastic left heart syndrome.

Though, is the lung still within the remit of the fetal CMR scan or does this fall within the expertise of the fetal radiologist? This highlights the next big challenge: buy in from a number of crucial stakeholders. In most centres fetal CMRs are read by either a fetal cardiologist with fetal CMR experience or a paediatric cardiologist with CMR expertise. Therefore, dual reporting with a fetal



**Figure 5:** The participants of the 1st fetal cardiac MRI workshop in York at Hazlewood Castle.

radiologist who assesses all other organs which more or less deliberately get imaged during fetal CMR scanning (especially when doing fetal volumetric assessments), is paramount. This is also the go to person with incidental findings. In addition to radiology, fetal cardiology or fetomaternal medicine as the referring team also need to be on board (and refer the patients). Building confidence in a new diagnostic tool takes time, and one of the earliest tangible benefits for the referring team is often the additional images available for parental counselling around delivery planning. And so – hopefully – over time a clinical demand establishes.

**This is met with additional challenges:**

- Finding time on the MRI scanner when – at least initially – reimbursement is not available and upfront costs for equipment are

high. Some centres overcome this with research grants and/or charitable funding.

- Training staff – initial throughput will be slow, so having a small, dedicated team is advisable, but ultimately this team needs to grow to a size that can support the continuous running of a clinical service (and absorb annual leave and other absences).
- Necessary validation and CE /FDA clearance for sequences and post-processing can provide additional unique challenges.

**So how did other centres successfully manage the step into clinical practice?**

Patience and persistence are key. Detailed feedback to the referrer helps to involve stakeholders. Furthermore, a two-way conversation is key: “What is it that the referrer is really interested in?” is the most important

question. Not all colleagues will be early adopters, often only one or two key “champions” within the team will become these early adopters and help drive the clinical implementation.

And getting good at fetal scanning takes time. Many centres have started by adding a few fetal cardiac sequences to their fetal brain MRIs. Other centres trained and optimised sequences with healthy volunteer participants. Fetal lung imaging is an easier way to get started, as non-gated sequences can be used. Analysis pipelines should ideally be automated and the analysis software user-friendly.



And once all of this is set up and running smoothly, the last top tip is making sure there is a centralised coordinated booking service in place so that fetal echo and CMR can be booked on the same day.



**You might wonder: Is it really worth all this effort?**

And the answer is yes, because once you found the perfect soundtrack to calm the dancing fetus, you will have unboxed the power of postnatal CMR in fetal life and add a little more certainty to one of the most important questions in late gestation fetal cardiology: “Will this baby be in trouble in the delivery room?”.

**UNITED STATES UNIQUE CPT CODE FOR FETAL CARDIAC MRI**

As fetal CMR becomes more widely used and accessible, the billing structure will need to keep pace. In the US, this would involve creation of a unique CPT code for fetal CMR. This code would recognize fetal CMR as a distinct procedure which utilizes unique acquisition methods (DUS gating) and unique expertise (fetal cardiology). US Groups wishing to assist with this effort can contact Dr Schuchardt at [ESchuchardt@health.ucsd.edu](mailto:ESchuchardt@health.ucsd.edu)

