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Clinical application of iCMR for physiological measurement

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This presentation will focus on the potential physiological applications of hybrid MR/X-ray interventional technology (Figure 1). In the first half of the presentation, three clinical areas will be described – 1) Assessment of pulmonary hypertension; 2) Assessment of cardiac function, great vessel flow and pressures during treatment with devices; and 3) Assessment of physiology prior to treatment in paediatric congenital heart disease.

Figure 1 – 360° ‘fish-eye’ view of the combined bi-plane catheter lab and MR scanner. The MR scanner (right) is viewed through the open sliding doors



The second half of the presentation will describe how the complex MR and pressure data, obtained in the MR/X-ray hybrid lab, can be used to validate models built from more simply MR (and or CT) data sets (Figure 2). Such models may ultimately allow complex parameters such as pressure/ volume loops to be defined, without the need for invasive pressure measurements.

Figure 2 – Combined MR and CT fusion image showing the heart (pale blue), pulmonary valve stent (orange), coronary arteries (red) and aortic valve prosthesis (pink).

