

Quantitative Stress CMR Perfusion Imaging

A Case Study of Scanner Capability in Coronary Disease Diagnosis

D. Peake, C. Wilson, Mohammed Ramshad, Dr Kris Knott (2026)

Implementation of quantitative perfusion imaging delivered by Compleo Health in partnership with St Georges NHS trust

BACKGROUND

A quantitative stress perfusion MRI scan is an advanced cardiac imaging technique used to measure how well blood flows through the heart muscle under stress conditions. Instead of visually assessing images like in the traditional (qualitative) you're provided with exact numbers (e.g., MBF, myocardial perfusion reserve)



Compleo Health's MRI unit photographed on site at St George Hospital

METHOD

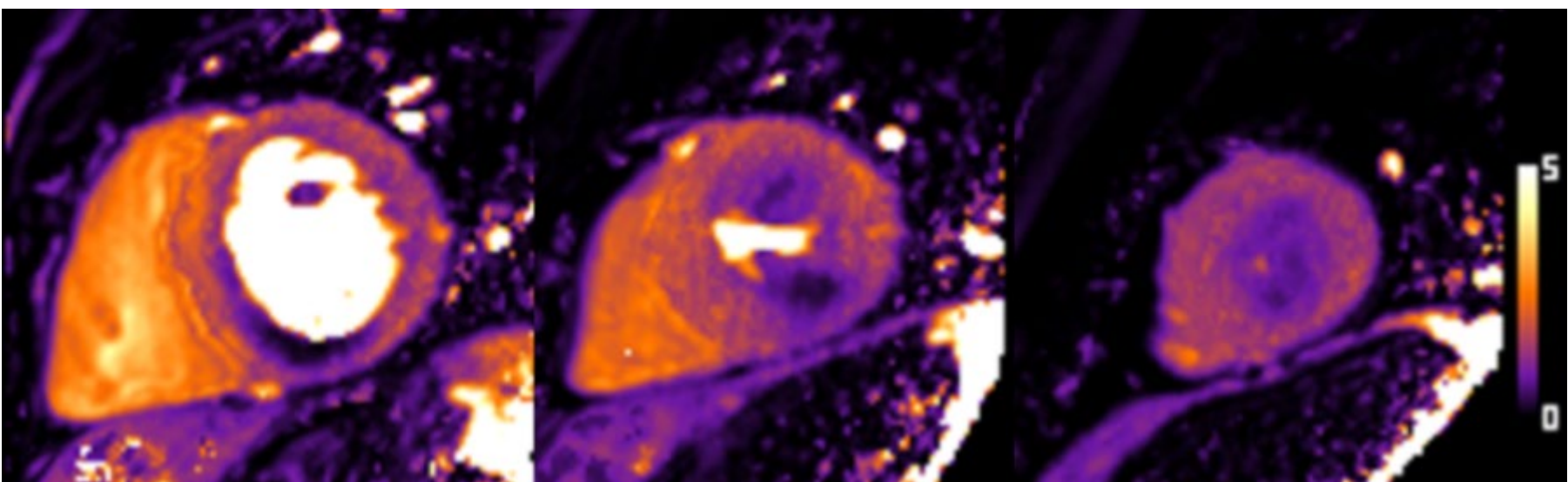
Review of implementation of the Quantitative perfusion imaging delivered by Compleo Health and the impact on diagnosis of patients.

RESULTS

Uploading sequences not produced by the OEM can be challenging, requires collaboration and requires you to access the administrator/service portal on the scanner to do some basic programming.

Initial attempts to upload the Peter Kellman (NIH,US) qPerf sequence onto the scanner failed. This sequence required a high-end gradient system not common on mobile scanners. An alternative sequence was sourced by the cardiac team, the Amedeo Chiribiri (KCL, London) sequence developed in collaboration with Siemens was successfully uploaded and ran on lower end gradient system on unit.

CLINICAL EXAMPLE



Perfusion defect in the RCA and LAD territories

INTRODUCTION

Stress cardiac magnetic resonance (CMR) with quantitative myocardial perfusion imaging provides a comprehensive, non-invasive assessment of myocardial ischaemia. Absolute measurement of myocardial blood flow (MBF) and myocardial perfusion reserve (MPR) improves diagnostic confidence compared with visual perfusion assessment alone. This is particularly valuable in multivessel coronary artery disease and in suspected coronary microvascular dysfunction. The cardiology team within St Georges trust indicated a desire to start performing quantitative stress CMR at the trust within the service delivered by Compleo.

WORKFLOW



CLINICAL IMPACT

Dr Kris Knott Consultant cardiologist at St George Hospital Trust gave the below assessment on the clinical impact at St George Hospital

“High resolution perfusion sequence
Increase confidence in interpretation of complex cases
Used in the assessment of microvascular dysfunction
World leading technology” – Dr K.Knott

CONCLUSION

Quantitative stress perfusion cardiac MRI improves precision by measuring absolute blood flow and detecting conditions like microvascular disease, It's often seen as most useful in complex or unclear cases. Its use in routine cases is still being debated in some circles because the benefits do not always translate into meaningful changes in clinical management for routine cases. Although increasing confidence in interpretation can be hard to quantify, it's highly valued by clinicians, as it can support more informed decision-making even when it does not directly alter management