

FerriScan[®] R2-MRI and Cardiac T2* Dual Analysis Service

The liver and the heart in iron overload

Liver iron concentration (LIC) is a good measure of total body iron stores in thalassaemia¹ where high LIC is associated with cardiac iron overload². Once a threshold LIC is exceeded, iron can begin to accumulate in the heart and other organs³. Patients with elevated LIC are at greater risk of future cardiac complications and premature death^{4,5}.

FerriScan R2-MRI is an accurate method for monitoring LIC, delivering results unaffected by inflammation, fibrosis and cirrhosis^{6,8}.

Changes in LIC generally precede changes in heart iron loading^{2,3}, acting as an early warning of possible future cardiac complications. An immediate risk of iron-induced arrhythmia and cardiac failure can be assessed by MRI measurement of cardiac T2*⁷. Iron-induced damage to heart tissue can be halted and reversed if appropriate and timely chelation therapy is commenced.

Regular assessment of body iron overload through the FerriScan and cardiac T2* Dual Analysis Service enables better informed decisions on the management of patients at risk of iron-induced organ damage.

“We are using the dual analysis service provided by Resonance Health which provides a complete picture of iron loading in the liver and heart where required. Demand for FerriScan and the Dual Analysis Service is increasing as this has a valuable role in both primary and secondary iron-overload conditions.”

Professor Swee Lay Thein, Professor of Molecular Haematology and Consultant Haematologist at King’s College Hospital and King’s College London (KCL) School of Medicine, London, UK.

The FerriScan and Cardiac T2* Service Delivery Model

After the patient is scanned, FerriScan and Cardiac T2* image data is transmitted securely to the Resonance Health Service Centre for analysis.

Liver Iron Concentration and Cardiac T2* Reports are made available for download within a target turnaround of two business days.

Key FerriScan R2-MRI Features:

- ✓ FerriScan provides an accurate, non-invasive, MRI-based measurement of liver iron concentration (LIC)
- ✓ The gold standard for LIC measurement, FerriScan is widely used in clinical trials and routine patient management
- ✓ FerriScan requires only a ten-minute scan. No contrast agent or breath-hold is required
- ✓ FerriScan is charged per scan only and can be established on most 1.5T MRI scanners
- ✓ FerriScan offers high sensitivity and specificity over the range of LIC encountered in clinical practice
- ✓ FerriScan LIC results are unaffected by cirrhosis or fibrosis
- ✓ FerriScan and cardiac T2* have international regulatory clearance (USA, Europe & Australia)

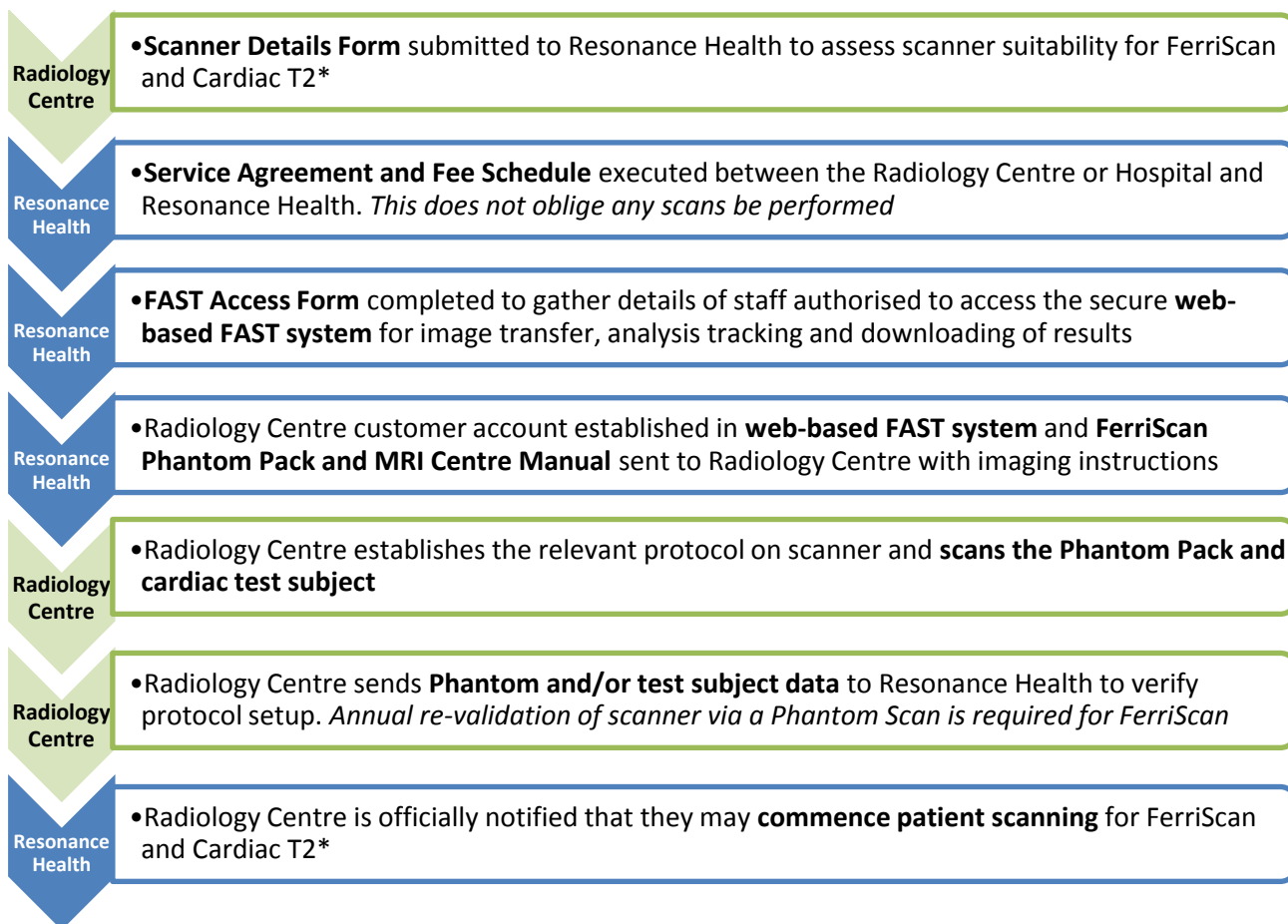
Key Cardiac T2* Features:

- ✓ Provides important information for assessing the risk of cardiac failure or arrhythmia
- ✓ Cardiac T2* is the most widely-accepted MRI-based method for assessing heart iron loading

Key Dual Analysis Service Features:

- ✓ Provides a more complete picture of body iron loading
- ✓ Standardised, centralised analysis process providing results in two working days
- ✓ ISO 13485 quality assurance

Establishing the Dual Analysis Service at an MRI Centre



Technical Requirements for FerriScan

FerriScan requires an approximately 10 minute scan using a single spin echo sequence.

Minimum MRI scanner requirements for the acquisition of suitable data for FerriScan measurement are:

- MRI scanner with a field strength of 1.5 Tesla.
FerriScan is currently implemented on a range of scanner manufactured by GE, Philips and Siemens. GE scanners must be operating on Scan Tools 14 or later to be FerriScan-compliant.
- Single spin echo sequence with a minimum TE of 6.0 ms
- A torso / chest / abdomen receiver coil
- The ability to transfer images to a networked computer with an internet connection

Scanning protocol details and a FerriScan Phantom Pack (scanner validation tool) are provided by Resonance Health.

References

1. Angelucci E, et al N Engl J Med. 2000; 343:327-41
2. Noetzli LJ, et al Blood. 2008; 112:2973-8
3. Jensen PD, et al Blood. 2003; 101:4632-9
4. Brittenham GM, et al N Eng J Med. 1994; 331:567-73
5. Telfer PT, et al Br J Haematol. 2000; 110:971-7
6. St Pierre TG, et al Blood. 2005; 105:855-61
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Technical Requirements for Cardiac T2*

Cardiac T2* requires a single breath hold scan using a multi gradient echo sequence.

Minimum MRI Centre requirements for the acquisition of suitable data for a Cardiac T2* measurement are:

- Radiology Centre personnel with experience in acquiring cardiac MR images.
- MRI scanner with a field strength of 1.5 Tesla and a cardiac MRI package that includes:
 - RF coil suitable for acquiring cardiac MR images
 - ECG facility
 - Single breath-hold, multi-echo T2* sequence with:
 - ✦ Total of 8 echo times
 - ✦ Minimum TE between 2 and 3 ms
 - ✦ Maximum TE between 16 and 23 ms
- The ability to transfer images to a networked computer with an internet connection