

Thalassaemia and Iron Overload Fact Sheet

Iron overload occurs when total body iron is increased over time, either as a result of blood transfusions or increased absorption of iron through the gastrointestinal tract. Both of these occur in thalassaemia, with blood transfusion therapy being the major cause of iron overload in thalassaemia major and increased iron absorption being more significant in thalassaemia intermedia.

Excess iron deposits initially in the liver, but once a threshold level is reached, iron loading will occur in other tissues such as the heart. Iron related heart complications are the leading cause of death in thalassaemia. Monitoring liver iron concentration therefore provides early warning of possible cardiac complications.

Monitoring Iron Overload

Liver Iron Concentration (LIC) provides the best measure of total body iron stores, informing clinician decisions on initiation and adjustment of chelation therapy.

Effective control of total body iron stores has been shown to significantly reduce the risk of cardiac disease and death in patients with thalassaemia major. (Brittenham 1994)

Serum ferritin may be a useful indicator of trends in patient iron loading over time. However, measurements can be impacted by inflammation, fibrosis and other conditions making the prediction of iron loading from serum ferritin unreliable. (Olivieri 1995)

FerriScan[®]

FerriScan patented analysis is applied to R2-MRI acquired images of the liver, creating a map of LIC and providing a mean LIC value calculated from a cross-section of liver tissue.

The use of FerriScan for monitoring LIC in thalassaemia patients has now been included in a number of international patient management guidelines.

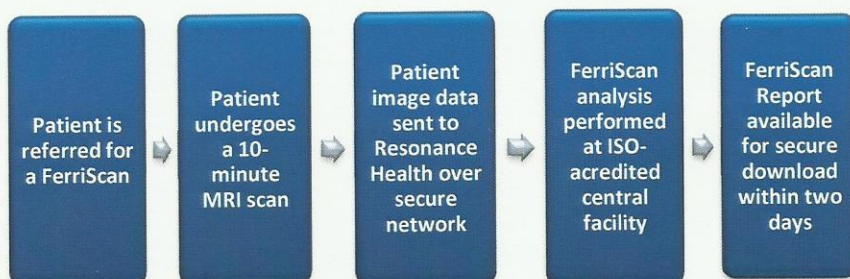
Cooley's Anemia Foundation (USA) recommends FerriScan for the measurement of liver iron concentration in patients with thalassaemia.

Use of R2-MRI techniques is also endorsed by the Thalassaemia International Federation and the UK Thalassaemia Society.

Key FerriScan features:

- FerriScan provides an accurate, MRI-based measurement of liver iron concentration
- The FerriScan service can be easily established on most 1.5 Tesla scanners
- There is no requirement for customers to purchase new software or hardware
- FerriScan takes 10 minutes to complete, is non-invasive and requires no contrast agents.
- No establishment fees – costs are incurred per scan only
- FerriScan has higher sensitivity and specificity for measuring LIC than any other MRI-based method
- FerriScan results are unaffected by inflammation, fibrosis or cirrhosis
- FerriScan has international regulatory approvals (USA, Canada, Europe, Australasia)
- The assurance of ISO 9001 certification of analysis procedures
- The FerriScan centralised analysis facility provides security of data and 48-hour results turnaround
- Results are reliable and reproducible over time and between MRI centres and models of scanner

The FerriScan Process



Brittenham G *et al* Hepatic Iron Stores and Plasma Ferritin Concentration in Patients With Sickle Cell Anemia and Thalassaemia Major *American Journal of Hematology* 42:81-85 (1993)
Olivieri NF *et al* Iron chelation therapy with oral Deferiprone in patients with thalassaemia major *The New England Journal of Medicine* 918-922 (1995)

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