Welcome to our end of year customer newsletter – it's a jam-packed edition with plenty of news to share!
We wish all of our customers a very happy holiday season.
Please feel free to contact chadt@resonancehealth.com with any feedback.

Customer in Focus: Toronto General Hospital – the University Health Network

Toronto General Hospital (TGH), is a major teaching hospital in downtown Toronto, Ontario, Canada and one of 11 FerriScan Centres of Excellence in Canada. TGH has been a Resonance Health customer since 2006 and is the largest organ transplant centre in Canada, with the world's first single and double lung transplants performed at TGH in 1983 and 1986. The emergency department now treats 28,065 persons each year and TGH conducts a dynamic research program through the Toronto General Research Institute.

The Red Blood Cell Clinic here is made up of world-class health care professionals under the leadership of Dr Richard Ward, a key opinion leader in the field.

In Canada, Resonance Health has been working closely with the Ministry of Health and as a result both FerriScan and Cardiac T2* have pre-approval funding for use in all Canadian provinces. For further information, including prefilled forms and various supporting documents, please visit our new 'Reimbursement' page located here to access the resources.

Virginia Cartwright, Resonance Health's Account Manager had this to say about our Canadian FerriScan sites:

"There has been an increased number of Sickle Cell and Thalassaemia patients in Canada due to migration pressures and this has resulted in a high demand for access to accurate iron monitoring at our FerriScan centres across Canada. With pre-approval now available across all provinces, we are seeing significant increases in uptake with activity up 15% from last year."

Validation study on MRI based measurements of liver fat shows HepaFat-Scan is the most accurate

Dr Miriam Vos, an assistant professor of paediatrics at Emory University School of Medicine, and physician on staff at Children's Healthcare of Atlanta, presented a paper on the performance of HepaFat-Scan® in children at the annual American Association for the Study of Liver Diseases (AASLD) meeting in Washington DC, October.

Dr Vos presented a poster that showed HepaFat-Scan® was a precise and accurate measure of hepatic steatosis making it suitable for monitoring changes in liver fat within the context of clinical trials and for general clinical care. A manuscript describing these findings for dissemination to a wider audience is currently in development with submission anticipated by early 2018.

The abstract, entitled 'Accuracy and Repeatability of Magnetic Resonance Imaging Based Volumetric Liver Fat Fraction Compared to Liver Histology and Magnetic Resonance Spectroscopy as Reference Standards', is currently available for public viewing on the AASLD LiverLearning website located here.

HepaFat-Scan® received FDA clearance in 2013.

Spotlight - Diamond-Blackfan Anemia

Diamond Blackfan Anaemia (DBA) is a rare bone marrow failure disorder, usually diagnosed before 12 months of age. DBA patients fail to produce red blood cells properly and may need treatment ranging from monthly blood transfusions to regular steroid treatment, and in some cases bone marrow transplant.

Classical DBA affects about seven per million of live births, however there are other mutated genes with less distinct phenotypes also described in adults and children. There is a significant amount of research being undertaken and progress being made in this field.

Eve is one of about 125 patients in the UK with Diamond-Blackfan-Anaemia and receives transfusions every 4 weeks. Eve has regular FerriScans to monitor the iron load in her liver at St Marys Hospital London.

The 2nd EuroDBA: Building Global Bridges meeting in Germany saw over 115 clinicians, researchers and family support members come together from over 27 countries during October to share experience and knowledge towards finding a cure.

Regularly transfused DBA patients require accurate quantitative iron monitoring, previously performed by liver biopsy. Advances in non-invasive diagnostic tools and MRI measurement science such as FerriScan have been welcomed by the DBA clinical and patient community to improve health outcomes.

For more information on DBA and the recent conference please visit The Diamond Blackfan Anaemia Charity here.

Conference Round Up

Resonance Health's team enjoyed participating in five international conferences this quarter across Europe and the USA with Prof St Pierre an invited speaker on measurement science using MRI at three of these key events.

In September, the **International Training Workshop on Rare Hematological diseases** was held in Palermo, Sicily, Directed by Prof Aurelio Maggio which saw key opinion leaders from across the world convene with younger physicians and researchers from developing countries to promote expertise in the field of hematological rare diseases. Prof Tim St Pierre provided presentations to workshop delegates on the pitfalls of using MRI in measurement science. He also engaged many haematologists and radiologists from developing countries who were interested in being involved in Resonance Health's Artificial Intelligence project for developing nations ('FerriSmart').

At the **American Association for the Study of Liver Disease (AASLD)**, in October, significant new data was presented validating our HepaFat-Scan in Washington. This landmark study which was undertaken by Dr Miriam Vos and her team at Emory University and the Children's Healthcare of Atlanta Hospital, showed that HepaFat-Scan is a powerful clinical tool that can accurately quantify the volumetric liver fat fraction with excellent precision and repeatability.

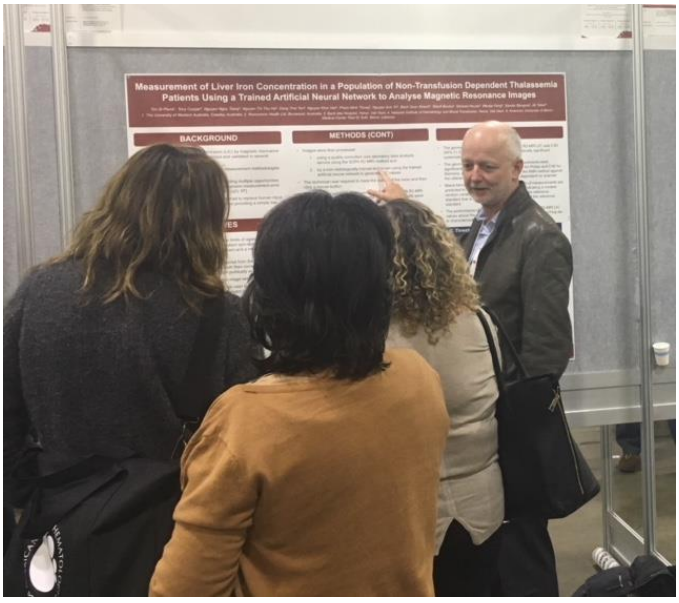
The 14th International Conference on Thalassaemia and Haemoglobinopathies in November held in Thessaloniki, Greece saw a special focus by the Thalassaemia International Federation on improving safe and reliable MRI measurements in developing nations. Prof St Pierre was invited as a key presenter to

this dedicated meeting. The meeting aimed to bring together key parties and address recent concerns raised by the Dragon Study conducted in Vietnam. The Dragon Study data had shown new evidence that widely used non-standardised MRI methods to measure Liver Iron Concentration in centres, can be prone to serious errors.

The results of a wider MRI survey conducted by Prof St Pierre and team were presented at this meeting, which demonstrated that many other countries were also exposed to these risks highlighted in the Dragon Study. A steering group was formed at the end of the meeting to work towards an action plan.

The UK Haemoglobinopathy Forum's Academic Meeting held in Birmingham in November also saw Prof St Pierre provide an MRI technology update to a full house of delegates from across the country. His talk included an update on the use of FerriScan combined with HepaFat-Scan in the case of unexplained Hyperferritinemia, and the application of the newly CE-marked Bone Marrow R2 tool in the transplant setting.

The 59th ASH Annual Meeting and Exposition, held at Atlanta on the 8th to 12th of December, was a final highlight with our team navigating unexpected snow in Atlanta to attend this important conference which attracts thousands of delegates each year.



Professor Tim St Pierre discussing Resonance Health's new AI technology to ASH delegates.

Marketing Director, Melanie Baxter, & Prof St Pierre met with pharmaceutical partners to progress exciting projects in new therapies for hemoglobinopathies while Prof St Pierre also presented an abstract seen here on the performance of Resonance Health's new Artificial Intelligence tool. The tool has sparked much excitement as a new iron measurement solution for use in developing nations.

FerriScan was also in the spotlight again in Atlanta with a new abstract from the LICNET group in Italy showing the unreliability of Serum Ferritin as a measure of LIC in haemoglobinopathies. The abstract can be seen here.

Solving the Mystery of Unexplained Hyperferritinemia – UCLH Study Completes Recruitment

Unexplained Hyperferritinemia is a conundrum faced by Haematologists when a patient presents with persistent elevated serum ferritin levels for which obvious causes have been ruled out.

A Study led by Prof John Porter, Dr Deepak Suri, and his team at University College of London Hospital set out to explore whether a dual scan of FerriScan and HepaFat-Scan could assist in diagnosis, as elevated liver iron, elevated liver fat, or both may be responsible.

Early data from that study was presented by Prof Porter at the International Society of Haematology in 2016. Prof Porter delivered a talk entitled 'How I Treat Unexplained Hyperferritinemia' in which he described the development of a new clinical algorithm that uses both FerriScan and HepaFat-Scan to manage patients with Hyperferritinemia. More recently, Prof St Pierre previewed unpublished data from that study at the recent UK Forum held in Birmingham this year.

Over 60 patients have now been scanned, with recruitment completed and data being analysed and prepared for publication. We look forward to shining a light on this long-standing clinical puzzle in the very near future! For more information on how your centre can provide HepaFat-Scan alongside FerriScan, please contact Alison Laws at alisonl@resonancehealth.com.

2018 Heralds a New Era in Gene-Editing Therapy for Haemoglobinopathies

California-based Sangamo Therapeutics and global biopharmaceutical company, BioVerativ Inc, are developing a new gene-editing cell therapy for beta-thalassemia and Sickle Cell Disease with a Phase 1/2 trial set to start enrolling across several sites in the USA in early 2018.

ST-400 is an autologous cell therapy that involves gene editing of a patient's own hematopoietic stem cells using zinc finger nuclease technology. The aim is to provide a one-time treatment for people with transfusion-dependent beta-thalassemia by increasing production of fetal hemoglobin, which can more effectively carry oxygen, potentially eliminating the need for chronic blood transfusions.

Edward Conner, MD, chief medical officer at Sangamo said: "We believe the precision, efficiency and specificity of zinc finger nuclease gene editing technology will differentiate ST-400 among other genomic therapies in development for beta-thalassemia."

Resonance Health is delighted to be providing a range of specialised core lab imaging services for the Phase 1/2 study and look forward to developments in this exciting new area of gene editing technology.

To find out more about Sangamo Therapeutics and the study please visit their website for more information.

Happy Holidays!

Just a reminder that our Service Centre will remain open during business hours throughout the holiday season – our service delivery and customer support team will be on hand to help throughout the holidays. Resonance Health will only be **closed** on the following public holidays:

- Monday 25th December 2017
- Tuesday 26th December 2017
- Monday 1st January 2018

We would like to wish all of our valued colleagues and customers a very happy and healthy holiday season and look forward to continuing our collaborations in 2018.

Coming Next Issue...

- AI Update
- R&D Update
- Literature Update
- 2018 Conference Schedule