Oxford AHSN case study

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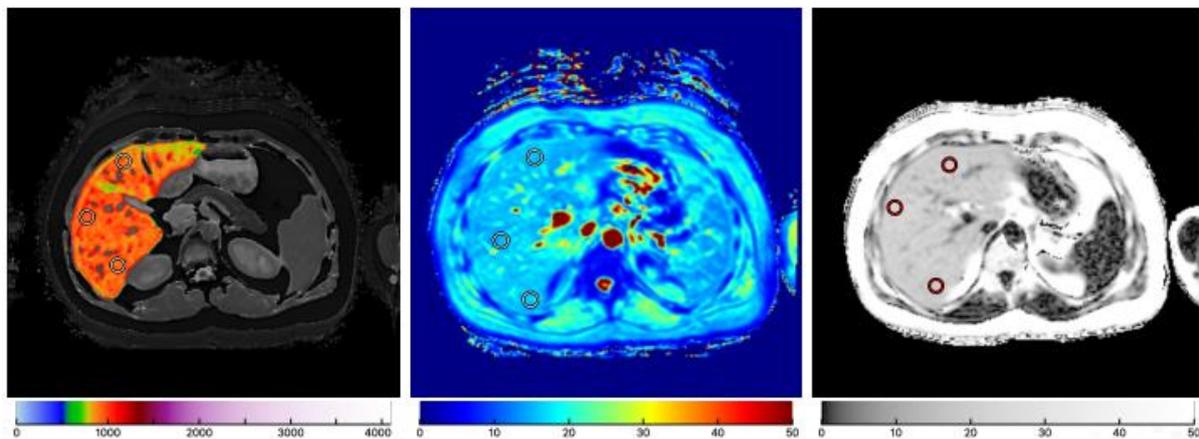**Programme / theme: Strategic and Industry Partnerships**

Title: Oxford AHSN and Perspectum Diagnostics enabled by Office for Life Sciences and Innovate UK funding to collect supporting evidence on the impact of LiverMultiScan in the NHS.

Overview Summary

The Oxford AHSN is working with Perspectum Diagnostics, a company focusing on the accurate, quantitative measurement of liver, gallbladder and pancreatic disease, enabling early detection, diagnosis and targeted treatment. Liver*MultiScan*® is a CE-marked diagnostic aid for liver disorders that uses MRI to characterise liver tissue by providing quantitative measures of liver fat, and correlates of iron, fibrosis and inflammation.

Perspectum Diagnostics wanted to understand the clinical utility and value that Liver*MultiScan* offers in the management of patients with autoimmune hepatitis by interviewing clinicians, radiologists and payers across the NHS in England and conducting an early economic evaluation.

Autoimmune hepatitis is a chronic, usually lifelong liver condition. It is estimated to affect between 10 and 17 people per 100,000 in Europe, approximately 10,000 people in the UK.[1]

The Oxford AHSN conducted a feasibility study using its Lean Assessment Process to assess the potential impact of the clinical pathway and the current diagnostic and treatment paradigms used to manage and monitor autoimmune hepatitis.

Current treatment guidelines for clinicians recommend the use of a liver biopsy, a highly invasive procedure, for evaluating liver pathology. Studies have shown around 5% of patients who undergo liver biopsies will require hospitalisation and costs the NHS around £545 per biopsy. Perspectum Diagnostics required funding to enable the collection and analysis of real-world clinical data to help evaluate the impact and cost effectiveness of LiverMultiScan for the management of autoimmune hepatitis patients in the NHS in England. Innovate UK were looking to support companies looking to

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[1] https://britishlivertrust.org.uk/information-and-support/living-with-a-liver-condition/liver-conditions/autoimmune-hepatitis/

develop the evidence base for innovative technologies that address NHS priorities, encouraging companies to work together with existing UK infrastructure such as the Academic Health Science Network.

How is the AHSN involved?

T Oxford AHSN and Perspectum Diagnostics worked together to apply for funding from the first round of the Office for Life Sciences and Innovate UK competition "SME support to evaluate innovative medical technologies", designed to support developers to evaluate their product in a real world clinical setting.

The Oxford AHSN performed a feasibility study using its Lean Assessment Process to construct the care pathway for autoimmune hepatitis, to identify and approach stakeholders for interview to understand the utility of using Liver*MultiScan* and to assess the clinical and economic value of using Liver*MultiScan* for the management of patients with autoimmune hepatitis.

The key objectives of this study were to help determine the level of support for the use of the Liver*MultiScan*, to understand the impact on the patient and finally the intention of the NHS to adopt.

Impacts and outcomes of the AHSN involvement to date

The partnership between the Oxford AHSN and Perspectum Diagnostics together obtained grant funding of £121,008. Perspectum Diagnostics used this grant funding to collect supporting evidence on both the clinical performance and economic impact of using Liver*MultiScan* for the management of patients with autoimmune hepatitis in the NHS in England.

Perspectum Diagnostics joined with the internationally-recognised experts in the field of autoimmune hepatitis in the department of Hepatology at King's College Hospital NHS Foundation Trust to address the utility of MRI to quanitfy liver fibrosis and inflammation in autoimmune hepatitis patients, aiming to improve patient care and reduce healthcare costs. The main aim of the study was to demonstrate how adding a Liver*MultiScan* into the standard care pathway for patients with autoimmune hepatitis may allow better treatment and accurate dosing of steroids thus preventing liver failure and associated NHS costs.

Perspectum Diagnostics had already performed a gap analysis with NICE (META tool) who advised that, in order to gain health technology adoption via NICE, Perspectum Diagnostics needed a strong value proposition to demonstrate cost effectiveness of Liver*MultiScan* in this patient population. To address the identified gaps, Perspectum Diagnostics worked closely with the Oxford AHSN to use to generate a health economic model for Liver*MultiScan* in the standard care pathway for autoimmune hepatitis, as well as to provide clinicians first-hand experience with the technology.

The Oxford AHSN feasibility study of Liver*MultiScan* evaluated its utility in the autoimmune hepatitis care pathway. Stakeholders that were interviewed appraised the use of Liver*MultiScan* for monitoring and managing patients with autoimmune hepatitis positively in terms of potential. The Oxford AHSN study has indicated that implementation of Liver*MultiScan* technology may lead to significant saving in the management of a subset of autoimmune hepatitis patients. These patients stay on medical treatment with routine monitoring, which includes biopsy for life or to progression. The base case

results for high/upper normal responders and low/normal responders indicates that implementation of Liver*MultiScan* technology may lead to significant saving in both routes. The cost analysis for high/upper normal responders (per 100 patient cohort) suggests there is a possible saving of £146,500 (where biopsy costs are £363,000 and MRI plus Liver*MultiScan* costs are £216,500) over the 5 years modelled. Analysis of the model for low/normal responders (based on a matching cohort of 100 patients) leads to estimated savings of £87,900.00 (biopsy £217,900 and MRI plus Liver*MultiScan* £129,900) over 5 years.

The future output of this study will be a health economic publication to be used to contribute to a submission for technology appraisal as part of the evidence required to gain health technology adoption.

Learning to date

The partnership between Oxford AHSN and Perspectum Diagnostics enabled collection of real-world data for measuring both clinical and economic impact to facilitate future adoption and spread. Ensuring multi-stakeholder buy-in from the outset is crucial to a successful evaluation. These stakeholders include nurses, consultants, payers, finance managers and clinical directors.

Supporting quotes

Innovator

Autoimmune hepatitis is a rare disease managed using a combination of corticosteroid and immunosuppressant therapy, both of which carry undesired side effects. The reduction in biopsy in this population has resulted in a need for alternative, objective, quantitative, and reproducible non-invasive means of assessing liver health. Liver*MultiScan* is a reliable and accurate way to characterise liver health and predict future disease relapse. By working with the Oxford AHSN, Liver*MultiScan* was shown to be a cost saving technology for monitoring of autoimmune hepatitis patients in secondary care in the NHS in England.

Elizabeth Shumbayawonda, Senior Clinical Scientist, Perspectum Diagnostics

AHSN

This study was crucial to understand and measure the clinical and economic impact to make an informed plan for adoption and spread. We have further work to complete with Perspectum Diagnostics and look forward to our partnership going forward.

Mamta Bajre, Lead Methodologist, Oxford AHSN

Plans and timescales for spread and adoption

Liver*MultiScan* is FDA 510(k) cleared in the U.S. and CE marked by notified body BSI 2797 in Europe to aid clinicians in the diagnosis of liver disorders and abnormalities. It can be used as part of the diagnostic pathway for patients. Liver*MultiScan* is delivered as a service and does not require any additional hardware installation and is standardised across manufacturers and field strengths. The product now has the evidence base for adoption and spread and further work will be carried out towards a technology appraisal submission.

Contact

Dr Mamta Bajre, Lead Methodologist

mamta.bajre@oxfordahsn.org