

How can NHS diagnostic imaging adopt AI more quickly?

More patients than ever are waiting for diagnostic imaging, meaning AI is urgently needed. Dr Rhidian Bramley, consultant radiologist at The Christie NHS Foundation Trust, and diagnostics, digital & innovation clinical lead for the Greater Manchester Cancer Alliance, explains how his region has the means to implement AI at-scale and at-pace.

Computer scientist Geoffrey Hinton famously provoked debate in the NHS back in 2016 with his suggestion that it was time to stop training radiologists.

The godfather of AI, as he is known, suggested “deep learning” would “do better” than human diagnosticians, in little as five years.

Fast forward to 2024, and this prophecy remains unfulfilled. In practice we still have limited uptake of AI within diagnostic imaging, and no adoption of autonomous diagnostic AI.

The need for AI is however urgent, not as a replacement for radiologists as Hinton predicted, but as means to augment and support a workforce under pressure.

Record numbers of patients are now waiting for diagnostic investigations. Back in 2008, approximately 400,000 patients in England were waiting for scans and diagnostic tests. Now, in 2024, that number has risen to more than [1.6 million](#).

Larger waiting lists are having an impact not only on patient experience, but on patient outcomes. For lung cancer, the NHS faces some of the worst outcomes in Europe, exacerbated by delays in diagnosis, and when patients present at a later stage.

Research has suggested that even two weeks taken off a diagnostic pathway can help to give patients as much as an extra six months of life.

So, given the need for AI that might help to create efficiencies and enhance how diagnosticians detect illness, what has been holding up adoption?

New money for AI, but how fast is it being put to use?

There is no shortage of suppliers ready to sell AI algorithms to the NHS, with the aim of helping healthcare professionals to prioritise their efforts, identify abnormalities earlier and enhance accuracy.

A survey carried out by the Royal College of Radiologists has shown some of the biggest perceived barriers to putting these algorithms into practice, has been a lack of evidence that AI works, compliance with information governance rules, integration with IT, staff capacity to engage in trials, and funding.

Yet some of the obstacles can and are being overcome.

Funding will always be a challenge in the NHS. But the need to invest in AI to help address what has become a clinical imperative is widely understood.

In June 2023, for example, a new £21 million Artificial Intelligence Diagnostics Fund was announced by the previous government, with the aim of supporting faster diagnosis and treatment for patients.

Successful bids for this fund were announced in the autumn. And in the summer of 2024, Greater Manchester became the first recipient to deploy AI funded by this initiative, ready to assess clinical effectiveness, just two to three weeks after contract signing. The algorithm is designed to help healthcare professionals in the reading of chest x-rays and the early identification of lung cancer.

With underpinning technical assurances completed in a handful of weeks, rather than one to two years, teams in Greater Manchester reached the stage of clinical evaluation of AI much faster than many other recipients of the fund.

How has that been accomplished? That's a question that many are asking as they seek to deploy AI more quickly.

A platform to enable innovation adoption

The answer stems back to a vision for a single main imaging system across the whole of Greater Manchester's acute trusts.

In 2020 our imaging network completed the procurement of a new enterprise imaging solution: a single Greater Manchester wide PACS. Built into the competition for that system was a question to would-be suppliers: How, in a rapidly evolving field of AI and innovation, could we ensure our ability to evaluate new algorithms, and simplify deployment?

What came out from the discussions was the need for a platform that allowed AI to be deployed, whilst minimising the integration and implementation requirements for each of the trusts across the network. We needed middleware that does the integration and provides the analytics to support evaluation: and that is what we now have.

Those familiar with NHS procurement history, will know that Sectra won the regional tender. With Sectra as our imaging technology partner, we chose to leverage that relationship and use Sectra Amplifier Services, which is helping us to access AI-as-a-Service. The amplifier includes a marketplace with a portfolio of AI applications, and a unified platform for hosting them.

This has removed many technical hurdles. We select applications from the marketplace, and Sectra handles their deployment on a secure platform and integration with our existing diagnostic workspace. This enables our clinicians to access AI results directly within a familiar interface, when we are ready for them to use it.

At the time of deploying the PACS, we completed our data protection impact and DTAC assessments for AI deployments up front. None of the data is shared with the AI companies – it is processed in the secure environment provided by Sectra.

This means we already have a data protection assessment in place, explaining how data is processed, for every diagnostic imaging AI deployment going forward. And trusts do not need to do any technical enablement, because it is all based in the cloud.

As we add more AI applications in the future, they will all be hosted on this same platform, making it easy to scale.

Modelling the clinical benefits

We were able to rapidly move to the clinical evaluation of the AI, running in shadow mode to determine how to implement safely into clinical practice.

This was to demonstrate how well the AI, from Annalise.ai, can detect cancer within our population, and identify false positives and true positives, before it was used in patient care. Such an approach was important to model clinically what will best help patients. And already, several sites are now live in clinical practice.

Rapidity of reaching this stage in deployment, means we can start to realise the benefits sooner. A platform has been a key technical enabler for the region in achieving this, and will undoubtedly be strategically valuable in many other regions making best of use of AI for their own populations.