Coping with rising demand: How radiologists are fighting back with tech

Even before the coronavirus pandemic, radiologists have been facing year on year rising demand. University Hospitals North Midlands NHS Trust is one trust that has been using technology to respond. The trust has been transforming pathways and providing its professionals with rapid access to crucial diagnostic images, since going live with an advanced picture archiving and communication system from Sectra. Staff detail how this is improving their working lives and how they are innovating with the technology to improve the patient experience.

From ambulance or landing pad to scanner in minutes

Located just off the busy M6 motorway and treating patients who can be airlifted from as far away as North Wales, the Royal Stoke University Hospital deals with high volumes of patients every day.

The hospital, part of University Hospitals North Midlands NHS Trust, or UHNM, was recognised for having the best survival rates of any major trauma centre in the country in a 2017 independent report. Today, the role of the imaging department is key to continuing to get patients appropriate care quickly.

Within minutes of landing on the tarmac or leaving the ambulance, trauma patients can find themselves under a scanner that can capture detailed diagnostic images from head to toe in just seconds.

And as soon as a scan is complete, the trust's radiologists and reporting radiographers are on the case, using a sophisticated picture archiving and communication system – or PACS – to interrogate the images and to inform a detailed diagnostic report that is fed to hospital clinicians in as little as 20 minutes, allowing appropriate clinical decisions to be made quickly.

Dr Suchi Gaba, a consultant musculoskeletal radiologist, says: "It's a major trauma centre here. That is one of the reasons we are so busy. A great many patients who come to the hospital will have some radiological procedure, whether that's an x-ray, MRI, or ultrasound, for example. Radiology is at the heart of the hospital and it makes a huge difference if you have good systems and good IT set up."

The diagnostic backbone

It's not just trauma patients that keep diagnostic professionals busy. In usual circumstances, the UHNM imaging department sees more than 9,500 patients – capturing and reporting on a wide range of medical imaging from simple x-rays to more complex CT and MRI scans.

"This makes us one of the busiest NHS imaging departments in England in terms of patient throughput and the volume of cutting-edge machines," says Dr Marius Grima, consultant paediatric radiologist and clinical information officer for the children's, women's & diagnostics division. "But in terms of radiologists, our number is small compared to other places."

The PACS, implemented by medical imaging provider Sectra in 2017, has been key in enabling radiologists to cope with a 10% year on year rise in demand.

"The PACS is the backbone of our department and we have been using it in innovative and extensive ways to help our patients." says Dr Grima.

Notifying cancer patients more quickly

One of those innovative approaches has been to transform how quickly patients are notified if they do or do not have bowel cancer, by drawing on functionality in the PACS and transforming pathways.

Dr Ingrid Britton, consultant gastrointestinal radiologist, says: "We can now identify patients with colorectal cancer whilst they are still on the scanner. Previously the radiographer would perform the scan, and then place imaging in a queue to be reported by a radiologist, before the report would be sent onto a multi-disciplinary team.

"Now, when radiographers see something during the scan, they alert the imaging team immediately, and using a simultaneous viewing feature in our PACS, radiologists can immediately look at the imaging from their own location and report as the image is generated, before notifying the referring clinician the same day when a patient is positive."

Patients are also being notified more quickly and discharged sooner when they don't have bowel cancer. Traditionally if a CTC scan, or virtual colonoscopy, doesn't show signs of cancer, imaging joins a queue to be reported, before going through an administrative process that can take three to four weeks. A pilot programme at the trust has seen this reduced to 16 days, simply by the radiologist sending a letter from the multi-disciplinary team (MDT) to the patient when the radiologist can see from the image that the patient doesn't have cancer – something not traditionally done.

Dr Britton explains the trust's approach has resonated with the national Getting It Right First Time programme. And she believes it's the fact that the technology "just works" that has given her and colleagues the capacity to stop worrying about IT and to focus on transforming the patient experience.

"If a patient knows straight away, they have faith in the service," she says. "Getting this right from the beginning gives the patient confidence. This wouldn't work with a system where the technology doesn't load quickly enough."

A big difference in breast care

Breast radiologists are equally as impressed. "The PACS has made an obviously huge difference in breast," says Dr Seema Salehi-Bird, a consultant radiologist in imaging and breast care. "We can more easily look at every aspect of a mammogram systematically," she adds. "Imaging is now just there. We can more easily annotate areas for colleagues to look at. And we no longer need to work across three specialist systems. All of this has made our work far more streamlined. We can more effectively present information to surgeons, allowing them to make important decisions, and in MDT meetings we can bring up relevant images at the click of a button."

Improving data integrity and strategic innovation

Innovation with the PACS continues to pick up pace. Martin Dale, the trust's PACS manager, says that, since working with Sectra, the increased stability and functionality of the PACS has seen a significant reduction in firefighting that has freed up more time within his team to focus on strategic work. This includes moving more diagnostic specialities into the PACS, bringing in artificial intelligence and a more flexible approach to responding to clinical needs and service improvement strategies.

The team are now much better equipped to deal with routine problems like data errors and have even been able to commence a project in resolving legacy errors not easily visible in previous solutions. Since bringing in the Sectra, the team have been able to significantly enhance the data integrity of the system; eliminating duplication and reducing misfiled studies, with a big focus on a rapid response to errors and education of users (whilst cases are still fresh in their minds).

"We are adding more power to the solution," he says. "We want to bring in tools that add value, where the radiologists no longer waste time with things like measurements, which are just done by the system.

"Radiologists come back from conferences with ideas about how we can move forward – and we can accommodate them. We used to have to say 'no', now we can say 'yes' which is not only better for the service, but has really improved what we take away from the role personally."

Real partnership
Dr Grima says this willingness to do things extends to the trust's relationship with the technology provider. "Sometimes a CT scan might supersede an x-ray," he says. "We wanted something in the PACS that identifies when this happens, so that our reporters can report on what is actually going to add value to the patient's care and save a lot of time."

Within weeks of describing the idea to Sectra, the company started working on a solution. "Talking directly with the technical person helps," adds Dr Grima. "If we identify an area that can be developed, they take it on board."

Improving working lives and the next generation of radiologists
Implementing the PACS has improved working lives in many ways. Radiologists now have the ability to work from home, and they are connected across multiple sites through a single PACS.

Whether an image is captured at the hospital in Stoke, in the community, or at UHNM's County Hospital in Stafford, it can be quickly accessed and interrogated by professionals regardless of their location.

Chat functionality, which operates in a similar way to consumer instant messaging, is also allowing staff to access second opinions from colleagues who could be located miles away, very quickly.

Radiologists are also saving time in preparation for MDT meetings, adding in reports and images to lists within a few clicks.

Julia Astbury, a reporting radiographer who has seen a progression from working with film, through to a range of different PACS, says: "It's easier to use than other systems. It's easy to negotiate and access a history of images, and connects me to colleagues across different sites."

The future generation of radiologists is also realising benefits. Dr Shaun Neal, a trainee radiologist, says: "If it wasn't for the speed the of the system, we wouldn't be able to keep up with demand. The chat function on Sectra is also fantastic. If you have any questions you can send a link to the image you are looking at to a consultant who can check it. This works really well for junior trainees."

And staff are using the system to equip future radiologists through teaching. Dr Zafar Hashim, a consultant neuro-radiologist at the trust, says: "I've used several PACS and Sectra allows me to create teaching files and anonymise images very easily. We use Sectra workstations for our courses and I can build teaching files when I'm sitting at home. We no longer need to download images and place them on a separate computer for teaching. It's now so easy."

It's not about the IT
Ingenuity demonstrated by healthcare professionals at University Hospitals of North Midlands is what technology in the NHS should be about. It's not about IT. It's about how people can use it to deliver better patient care, and a better patient experience.