

An Efficient Implementation of a Regional Radiology Reporting Hub.



The Cheshire & Merseyside Reporting Hub is the latest stage in the evolution of an integrated radiology systems management strategy that began with the implementation of a Carestream Clinical Collaboration Platform in 2013. In 2015, the consortium embarked on a project to move from a hospital-based 24/7 Registrar On Call model to a regional model based on Carestream's Vue Reporting and Enterprise Viewer modules.

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2 sites form the reporting hub



7 trusts now have access to the reporting hub



+2,320,000 regional population



+2,6M studies per year

The aim was to improve the quality of its round-the clock radiology service through shared imaging and reporting, and the provision of a more streamlined workload for trainee residents. The hub is based at Broadgreen Hospital with a second site at Aintree, where national trauma requirements require the physical presence of a Radiologist to provide instant opinion for trauma studies. Seven of the consortium's 13 Trusts now have access to the hub.

"Cheshire & Merseyside is a particularly unusual area medically, because there are many different hospitals – general and specialist – and the patient journey is complicated," explains Dr Peter Rowlands, Consultant Radiologist at Royal Liverpool & Broadgreen University Hospitals NHS Trust. "Prior to the new system, we had a very difficult radiology environment to work in. The main driver behind this project was to ensure that all images were online at all sites, so that the patient can be imaged at one site and treated at others without interruption, and without having to transfer images around the region.

There were a number of key pain points to address: patients often arrived at clinic without images being available, leaving the oncologist or surgeon unable to make any kind of decision; images had to be continually imported between hospitals; a patient might have required another scan, simply because the original was not available, exposing them to unnecessary further radiation and delays in treatment.

Addressing the pain.

For radiologists, challenges centred on the need to report studies that often required a comparison between current and previous scans. If those images were not available, there could be delays in making comparisons, or even reports made in the absence of previous images – a situation that, Dr Rowlands says, is unsatisfactory both medically and for the patient outcome.



Dr Peter Rowlands, Consultant Radiologist at Royal Liverpool & Broadgreen University Hospitals NHS Trust

The lack of cross-site image sharing and reporting was compounded by other factors: uneven workloads ranged from unsustainable levels of demand in busier departments to under-employed trainees in quieter sites; trainee rotas were non-compliant with the European Working Time Directive; training time was eroded due to compensatory leave; and a lack of peer support meant junior trainees were often working in isolation.

"24/7 reporting for the region was always taking place but was done by different radiologists in different places, working in different ways – and it was a very inefficient system," he says. By seizing the opportunity to consolidate its image sharing and collaborative reporting on a single hub, Cheshire & Merseyside has not only been able to enhance the delivery of integrated radiology services across the region, but it has also introduced significant workload efficiencies for trainees.

Centralized vision.

"The model that we chose was multiple local radiology archives, plus a single virtual datacenter – and the Carestream architecture was extremely suitable for that," says Dr Rowlands. "People have their own solution in their own institution – so they retain control of their own data, and have all of their own images on their site. But via the virtual datacenter, they can report and see images from all sites as if it was a single physical system."

"That's the biggest strength of this model: there is no manual intervention, it's entirely seamless. Carestream is a very wide-ranging and flexible solution, so there isn't a need generally for many third-party tools. Most radiologists work entirely within it for the majority of their reporting and multi-discipline teamwork."

System customisation was critical to the success of the project. Two sites don't share the same Radiology System (RIS) as the rest of the consortium, but still have to be incorporated for day-to-day work and the On Call service.

Minimal downtime and good support from Carestream have been important elements in building a model that has to deliver round the clock.

"With Carestream, we were able to create a reporting solution that would allow RIS and non-RIS sites to work in exactly the same way, and receive the same benefits of On Call and 24/7 reporting," says Dr Rowlands. "We developed a solution that allowed those two sites to be incorporated in the same workflow. Carestream's approach to enterprise imaging is extremely helpful at removing all of the barriers that were seen between our organisations. The main compliment I could pay is that people just get on with it – the only 'barriers' now are simple log-ins, which are made as easy as possible for the trainees."

High system availability is essential for the provision of 24/7 reporting, and Dr Rowlands says that minimal downtime and good support from Carestream have been important elements in building a model that has to deliver round the clock. "Essentially, trainees in the hub are able to work seamlessly across all the



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organisations at all times of the day, including evenings and weekends, providing reports,” he adds. “It’s absolutely vital to have 24/7 availability and support from your Enterprise Imaging and IT suppliers. Patients come into the hospital 24/7, require studies 24/7, and it’s imperative for us to provide the ability to review and report those studies 24/7.

“We recognise that there will be outages and we have plans and workarounds for that, but it’s very important that we have a partner we can call on when there are problems because the intensity of out-of-hours work now is extremely high. The activity continues 24 hours a day – and we have to ensure high levels of system availability – even at 3AM, because there will always be patients around at 3AM.”

Measure of success.

The hub is delivering valuable benefits for everyone using it. Trainees have a predictable, controllable work cycle – and peer support because they are now working in a team rather than isolated, with only a remotely located consultant to support them.

“We now have a rota that allows a mix of senior and junior trainees for any particular night, so they can ask each other about scans and discuss why a study should be done,” says Dr Rowlands. “The senior trainee can have more time to be consulted, answer the question and help out – and a more senior colleague doesn’t have to be woken in the middle of the night!

Compliance with the European Working Time Directive – another big driver for implementation – has also been achieved, ensuring that trainees can be employed, given appropriate rotas and compensatory leave.

With four or five people on call, it is easier to cover absences and deal with the peaks and troughs of demand, allowing trainees and consultants to focus on other tasks – teaching, reading and research – during relatively slow times.

“The hub has allowed us to introduce a very good system of peer review,” says Dr Rowlands. “All cases are reviewed by a senior radiologist within a timeframe – usually a few hours – so there is peer feedback to all of the trainees about all of their work. We’ve also established a discrepancy learning meeting, which has helped us to look at issues of difficult diagnosis and extremely good diagnosis,

which has been a popular part of the system experience for trainees.

More streamlined rotas have also enhanced cost savings, over and above the reduced cost of ownership of the regional Enterprise Imaging system itself. Previously, there was always a need for people to fill gaps in order to make sure that rotas were compliant. Today, expensive locums are no longer required because the rota allows for support within the system.

“The impact of the Carestream solution on radiology services has been two-fold,” says Dr Rowlands. “One is the creation of the On Call service, which allows for the seamless provision of out-of-hours trainee-based services. But the bigger picture is the day-to-day work, where patients can be scanned on one site, reviewed at another and seen at a third without any need to move images around.

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“In other parts of the country, there’s a huge logistical load of moving patients’ images between sites in response to the patient flows – and we just don’t have that in Merseyside. A small part of our work comes from outside, where we still have to import images, but in 90% of our work they are available instantly online – and this is hugely advantageous. It’s also worth saying that we haven’t turned to outsourcing for out-of-hours On Call services in this region, although the majority of On Call around the country is outsourced. ”

While the introduction of the reporting hub has been a great success, Dr Rowlands expects its use to evolve steadily – particularly in response to the increasing demands for imaging being placed on radiology.

“We’ve already seen a significant – probably 50% - increase in workload during the hub’s first three years, so we have to be responsive to that,” he says. “We have to organize the correct numbers of people to provide a responsive service. What we are doing here has been viewed with great interest by the radiology community across the country, where other regions have similar problems with out-of-hours provision to the ones we’ve addressed here.”

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