

A photograph of a modern hospital building with large glass windows and a red-tiled section. A construction crane is visible in the background. The sky is blue with some clouds. In the foreground, there are some trees and a brick wall.


**PHILIPS**

**Azurion**

Testimonial

Philips Azurion delivers  
**next-generation benefits**  
for Nottingham City Hospital





Nottingham University Hospitals NHS Trust is a regional center for specialty cardiac care. The Trent Cardiac Centre is based at City Hospital and provides a large outpatient service, and a successful primary Percutaneous Coronary Intervention (PCI) service.

#### **Challenge**

Delivering a high through-put of complex cases, at a low staff and patient dose.

#### **Solution**

Philips Azurion image-guided therapy platform

Andy Rogers  
Head of Radiation Physics, Nottingham University NHS Trust

As a tertiary referral centre, the team at Nottingham University Hospitals Trust provides a cardiac service to around 2.5 million people from Nottinghamshire and surrounding counties, delivering approximately 1,200 PCIs every year.

It is an incredibly busy department where most interventional procedures take place in just two interventional labs. When the team were offered the opportunity to trial the new-generation Philips Azurion image-guided therapy platform, they jumped at the chance.

Andy Rogers, Head of Radiation Physics, leads the team of scientists and technologists that support imaging and radiation safety across the Trust. He said: "Because we were first-of-a-kind there was a lot that could have gone wrong, but the support we got from the global team and from Philips UK&I was exemplary. The project management and attention that we've had has proved invaluable."

Mr Rogers described the issues facing the department as one typical of most NHS trusts. "The main challenges faced by the cardiology department at Nottingham are essentially workload and the need to keep the waiting list down with stretched resources," he said. "Azurion has addressed these challenges mainly through its ease-of-use, but there are also lots of scientific improvements that we can make."

When the Azurion project began, the team had recently upgraded to a Philips Allura with ClarityIQ, and were already very pleased with the improved image quality processing.

Mr Rogers explained: "Having this first-of-a-kind Azurion lab next door to a very modern but previous-generation lab provides us with a very good comparison if we want to conduct impact assessments. We can start changing practice, improving practice and measuring the impact of that change - which is something we often don't do very well in a clinical environment."

He described Azurion's ability to integrate advanced interventional tools, including third-party equipment, into the operating system as "a massive leap forwards."

He added: "If we have stable staffing and we're able to really drive all of the workflow benefits from this machine then we might be a bit quicker. It is not that we'd do 20 cases instead of five in a day, but each small improvement over the course of a year takes the pressure off, makes for a better working environment and eventually means more patients can be treated. There are lots of incremental improvements we can make that overall could add up to a big improvement."

One of the biggest attractions of Philips Azurion is the opportunity that the technology provides to manage radiation dose.

Mr Rogers explained: "We're hoping to manage doses to patients mainly because it has a bigger, more efficient detector and that means that we can use a low dose to start with. When we might have used more dose in the past to look at small regions and magnify the image, now because of the better image quality we might just be able to do an electronic zoom, as people would do on their cellphones. This means instead of magnifying the image in real terms, which has a dose penalty for the patients, we can just make it look bigger on the screen so they can see more detail."

### **Innovative training**

The team at Nottingham are full of praise for Philips' three-staged approach to Azurion training. Philips trains 'SuperUsers' who are responsible for cascade training to other colleagues. Due to the easy user interface, new users pick up the processes very quickly.

Mr Rogers added: "The training approach in this new project has been both innovative and effective. Coming back after a few weeks, and then again after a few months to test how well that training has been embedded in people - I think is a really good approach."

Cardiologist Dr Will Smith is already making the most of these cutting-edge features. He said: "We undertake some quite complex work and particularly with my interest in chronic total occlusions (CTOs), we were finding that the x-ray dose that the operator received was often quite high. We have had to take a number of measures over the years that I have practiced here, to try to mitigate that."

"One of the key reasons for upgrading the laboratories was to have a more modern system and to be able to manage the operator dose. Of course, that has an impact on patients as well, because many of them come back over the years for repeat visits. For patients that have one procedure after another, cumulative lifetime dose is also important."

Dr Smith has found that the new system is delivering high-quality diagnostic images with a low dose. He described a typical complex procedure: "In a 90-minute case with 30 minutes' screening time we only used half a gray of radiation to successfully treat a blocked right coronary artery. And that really means that effectively we do not have to worry about stopping a procedure because we have used too much radiation."

He continued: "We have a big renal unit here and for patients with kidney disease, minimising x-ray contrast is very important. The system allows the flexibility for a special protocol, so when I am working I will use fluoroscopy at a lower frame rate. I can make an acquisition at the full 15 frames per second, allowing us to achieve a high-quality before-and-after picture. The image quality is excellent and the really impressive thing is it manages to achieve that at a low dose."



Dr Will Smith  
Cardiologist, Nottingham University NHS Trust



Julia Ivanova  
Interventional cardiology, Nottingham University NHS Trust

As a nurse specialist for interventional cardiology, Julia Ivanova is responsible for developing clinical processes, new procedures and protocols. She has been impressed with the impact of a number of Azurion's innovations.

"The new system allows for a variety of imaging modalities to be integrated at the time of the patient case," she said. "The system provides access to MRI scans or CT scans that help with actual delivery, supporting the clinical team to carry out complex procedures and provide superior patient care."

"For radiographers, Azurion makes a huge difference, as the new procedure cards allow customised and pre-programmed protocols for different procedures. The system intuitively picks up the protocol, providing consistency of performance and supporting less experienced members of staff without compromising on the outcome."



She notes that the new tableside touchscreen has been a revelation to staff members who are familiar with using touchscreen technology in their everyday communications. “It’s possible to access a variety of features that navigate the whole system via the tableside touchscreen,” she explained. “So for example, even where there is no radiographer, it could be manipulated by the medical staff which makes the system more user-friendly.”

Ms Ivanova also believes that some dose-saving features could also make procedures more efficient. “CardioSwing allows you to pre-program the angles of the actual investigation and as the system rotates it takes all the pictures with one

injection of contrast,” she explained. “It reduces the procedure time, so definitely will have an impact on utilization of the lab. Not every procedure will be quick and straightforward but for diagnostic procedures, it will help to make a difference.”

Being consulted by Philips, networking and collaborating with other teams and having the ability to contribute new ideas to the development of Azurion, is something that the team have found professionally rewarding. “It has been an interesting project working with Philips,” added Ms Ivanova, “and we are proud to be one of the first centers to be experiencing the new technology.”

## A personalized view

The team has found the ability to adapt the view on the large FlexVision monitors to an individual’s way of working as both clinically efficient and practical. Dr Will Smith said: “The big screen is particularly nice when I’m doing coronary work. I like to have a roadmap next to the image I’m working with. It’s very nice that we can adjust those to be right next to each other, just for me. Other people like to have a small reference down in the corner out of the way.”

