



Amphia Hospital,
Molengracht campus,
Breda, The Netherlands

IQ•SPECT Streamlines Cardiac Imaging at Amphia Hospital

The nuclear medicine department at Amphia Hospital in Breda, The Netherlands, scans as many as 40 patients daily. In 2012, the hospital underwent major equipment changes. By introducing IQ•SPECT into their department, they more than made up for this change with a more dynamic workflow and happier patients.

By Shalmali Pal

The molecular imaging department at Amphia Hospital has taken the adage of “less is more” to heart. Last year, the team at the Molengracht campus, one of the hospital’s multiple locations, wanted to replace a pair of SPECT cameras, but lacked the physical space to bring in two new SPECT•CTs. Instead, they removed an aging system and upgraded their existing Symbia™ T6 with IQ•SPECT technology, which reduces the acquisition time for myocardial perfusion SPECT, while maintaining or improving image quality. To further enhance their productivity, Amphia

Hospital also installed Symbia.net and syngo®.via software. Now, the Dutch hospital is acquiring molecular images in less time, experiencing less patient movement and, consequently, fewer rescans, and imposing less patient discomfort during studies—all while increasing patient throughput. “We were surprised at the reduction in acquisition time from the industry standard of 18 minutes [per patient] to 9 with IQ•SPECT—to the great relief of patients,” says Jan Akkermans, department manager. “[Complaints and movement from] patients during acquisition

were common before IQ•SPECT, causing us sometimes to stop before completing the acquisition.” IQ•SPECT added a collimator that increases the number of counts without compromising image resolution. Its software plots a cardio-centric orbit for the detectors, positioning the heart in the most sensitive part of the collimator. Proprietary algorithms reconstruct the molecular imaging data in three dimensions, while correcting for attenuation and scatter.

Cutting Cardiac Imaging Time, Boosting Workflow

Since the upgrade in July 2012, the department has doubled the number of myocardial perfusion scans, performing up to 15 per morning. Key to their increased productivity has been efficient scheduling. Cardiac patients are scanned from 9 a.m. to 12:30 p.m., four days a week. In the pre-IQ•SPECT days, stress studies were done in the morning, while the afternoon was dedicated to rest studies.

"With IQ•SPECT, we are mixing stress and rest to achieve a constant flow of patients on the camera during the hours dedicated to cardiac imaging," Akkermans says.

The team has also worked out the staffing needed to manage patient flow and optimize procedure time. Two technologists are allotted 15 minutes to get each patient on and off the Symbia T6 system. The department also uses two dressing rooms to keep the flow of patients coming. This helps the team accommodate the variety of patients, including those who are overweight or obese.

"Our patients range in weight from 60 kg [132 lbs] to over 140 kg [308 lbs]," says nuclear medicine physician Jim Baas, MD. "Our current set-up allows us to accommodate all these patients with minimal disruption."

As for the scan-time itself, technologist Corne Snoijs says the nine-minute scan is as streamlined as they want to go. "We could shorten the SPECT part down to four or five minutes, but then we run the risk of missing one or two heartbeats," Snoijs says. "So in order to avoid excessive rescanning, we extend the scan time a few extra minutes."

After 12:30 p.m., the scanner is open for what Akkermans called "unexpected SPECT•CT" studies. These include screening exams and tumor staging studies.

"This means minimal collimator change to accommodate these other [non-cardiac] scans," Snoijs says.

Baas says the department wants to expand its imaging reach by setting up a

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formal program to talk with referring physicians about the clinical value of the cardiac scans at Amphia Hospital, and how they can leverage the benefits of IQ•SPECT even more effectively.

Meeting Challenges

The increased throughput possible with IQ•SPECT has required the department to adjust its everyday routine. Applications specialists from Siemens visited Amphia Hospital to help the team streamline its workflow. For instance, prior to the upgrade, processing for one patient's images was done in the roughly 20-minute period that the next patient was in the scanner. The quicker scans achieved using IQ•SPECT and the ability to mix stress and rest studies has shortened the time available to process images.

The improved image quality possible with IQ•SPECT also has put a premium on registering the attenuation correction map correctly. Early in the use of the upgraded Symbia T6, the Siemens' support staff recommended that the Dutch team make a two-day observational visit to another hospital using IQ•SPECT.

Technologist training was a boon conferred by visiting a hospital experienced with IQ•SPECT. "It's there that you can learn tips and tricks, what to look for," Snoijs points out.

One such trick was the introduction of a 15-minute free period halfway through the day to absorb delays that may occur in the early morning scans.

Additionally, the two technologists who took part in the off-site visits were responsible for on-the-job training of their colleagues. "I think it's an important point that we already had Symbia T6, so everyone was familiar with the machine," Baas says. "We updated with

IQ•SPECT so our learning curve was different than for a department that has to learn SPECT•CT and IQ•SPECT together. Even so, the Siemens Symbia T6 is an intuitive and easy-to-use scanner. I think that made a big difference."

Looking Forward

Continuing to hone their skills with IQ•SPECT is high on the agenda for the Amphia team. At the moment, the staff use a very low mean dose of 500 MBq (dependent on patient height and weight), just as they are pushing the limits of low dose and productivity.

"We are working at the lowest possible dose that we can," Akkermans says, "and we allow just 15 minutes per patient."

If there are still gains to be made, they will come from a better understanding of the advantages of cardiac imaging with IQ•SPECT. This is an ongoing process, Akkermans says. In the meantime, the team hopes to broaden the use of IQ•SPECT through its non-traditional application.

"I am curious to know if, in the near future, it will be possible to use IQ•SPECT to investigate small organs such as the thyroid*," Baas says. "We can benefit from a technical improvement that would allow us to image these small organs. We are experimenting with this now. It's a work in progress, but we think it will be very beneficial."

* IQ•SPECT imaging is intended for cardiac imaging only. IQ•SPECT thyroid imaging is based on research only and is not commercially available.