

IQ•SPECT Boosts Throughput and Improves Accuracy of Cardiac Imaging at Halifax Health

When planning a new ten-story, 944-bed inpatient facility in Daytona Beach, Florida, USA, Halifax Health Medical Center included Siemens Symbia T2 SPECT•CTs among the state-of-the-art radiology equipment to install. That decision is now paying big dividends. Outfitted with IQ•SPECT—Siemens technology for improving throughput and lowering dose for myocardial perfusion SPECT—the new scanners have exceeded staff expectations with the high accuracy of scans and shorter wait times for patients.

By Suzanne Stone

High demand and outdated equipment led to a two-week backlog for nuclear cardiac scans at Halifax Health, according to Andrea Huffman, Nuclear Medicine Coordinator. Slow scan time limited them to no more than eight cardiac scans a day. "Now we do up to 15," she said. The use of Symbia™ T2 SPECT•CT scanners with IQ•SPECT has cut the time for a cardiac scan from 20 minutes to just five—four minutes to gather and process the counts for a cardiac study and one minute to perform CT-based attenuation correction and calcium scoring. "Our five-minute cardiac scans are better than the ones that used to take 20 minutes," says Thomas Yuschok, MD, a nuclear medicine physician. IQ•SPECT's SMARTZOOM collimators and a cardio-centric orbit maximize counts from the heart. The versatility of the two Symbia T2 systems installed at Halifax Health allows the nuclear medicine department to adapt to the changing needs from the inpatients and the emergency room they serve. "Being an

important facility, most of our scans are not scheduled, so we never know what tests will be needed on a given day," says Yuschok.

The facility uses the Symbia T2 scanners for cardiac scans, as well as bone, tumor, lymph node and other types of scans. "On an average day, about 60 percent of our scans are cardiac," says Huffman.

Attenuation Correction Provides High Accuracy, Specificity

Hospital administrators chose Siemens SPECT•CT primarily for its exceptional ability to correct for attenuation during cardiac studies and other nuclear medicine studies, such as parathyroid localization and oncology studies of the prostate, according to Yuschok. Although attenuation correction for SPECT has been available for more than a decade, this feature was subpar on many of the other systems Halifax considered. Before Symbia T2 arrived with IQ•SPECT, cardiologists often complained about false positives due to attenuation artifacts that were

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misinterpreted as a lack of blood flow to segments of the heart wall. Many were actually caused by breast and diaphragmatic attenuation, according to Yuschok. IQ•SPECT's advanced reconstruction algorithm corrects not only for attenuation, but also for scatter and patient motion. "The attenuation correction feature is particularly helpful for heart scans," says Yuschok. "It allows us to compensate for varying patient body size. It also helps correct for attenuation caused by the dia-

phragm, breasts and pectoral muscles.” The staff helps ensure quality by reviewing images from each scan with and without attenuation correction, he says. If the images of the diaphragm from the CT nuclear acquisitions are not aligned, the images corrected for attenuation may be misleading. Accurate attenuation correction on Symbia T2 helps evaluate cases of false positives, he says.

Improved Speed, Quality and Patient Comfort

Symbia T2 is also fast. Speed means better image quality due to less patient motion. It also translates into increased throughput and improved patient comfort, a benefit that patients previously scanned on the old equipment at Halifax have commented upon.

Underlying this increase in speed are Siemens **SMARTZOOM** collimators that gather the maximum number of counts from the heart. Flexible gantry motions keep the collimators with their 48,000 holes focused on the heart throughout a cardio-centric orbit. This is achieved by individualizing the protocol to the patient. Prior to the scan, the location of the heart is identified on a patient positioning monitor. IQ•SPECT calculates and executes an orbit that optimizes the counts coming from the heart. This contrasts with a conventional acquisition, which positions the detectors as close to the patient as possible, an approach that some patients find uncomfortable. Following a cardio-centric orbit, Symbia T2 detectors remain a constant distance from the center of the heart.

“We are able to schedule more claustrophobic patients, because the cardiocentric rotation means the camera isn’t as close to the patient. However, the scan time is the best thing,” says Huffman. “It has given us better image quality, of course, because there is less motion. The turnaround time is so much greater with IQ•SPECT.”

IQ•SPECT’s superb image quality is attained through an advanced reconstruction algorithm that takes into account the geometry of the **SMARTZOOM** collimators, reduces noise and corrects for effects



Halifax Health campus,
Daytona Beach, Florida, USA

from attenuation, scatter and patient motion. “The quality of the scans means there is less need for rescanning,” says Huffman.

Adding to the speedy performance of Symbia T2 are high-definition detectors and an ultrafast multislice CT, as well as Siemens Automated Quality Control (AQC), an Automated Collimator Changer (ACC) and an intuitive automated user interface.

Up and Running Quickly with Siemens Training and Support

Huffman describes the transition to the new scanners as “very smooth.” Siemens training staff met with her and the chief technologist two weeks before the new scanners began operating to work out an optimized workflow. “When we went live, Siemens application specialists worked side-by-side with us—and Siemens staff remained on-site for two weeks after start-up,” she said.

“They actually provided follow-up training, so after we used the systems for about eight weeks, they sent an application specialist in to work with us for a week to make sure we didn’t have any problems and to see if anything needed to be adjusted from the initial setup.

There was plenty of follow-up with them, and they are available anytime we need help, but our technologists caught on well, and they like the systems,” says Huffman.

Yuschok says physicians needed no additional training to interpret images produced with the new systems. “We have 22 radiologists, and they were all comfortable with the image display right away,” says Yuschok.

Successful Integration with Existing PAC System

Halifax Health has been using a free-standing PACS since 2004. “One of the must-haves for a new imaging system was that we had to be able to integrate the SPECT•CT images with our PACS,” says Yuschok. “Our vision was to use the PACS for everything in our department and that vision has been realized.” Symbia studies are interpreted on a conventional PACS workstation. Referring physicians can access radiology reports and nuclear medicine images from their offices using the PACS.

Huffman notes that when representatives from other hospitals visit Halifax to see Symbia T2 in action, they are impressed with the ability to read its images on the PACS. “This demonstrates how well Siemens coordinated with us on workflows and protocols,” she adds. Both Yuschok and Huffman are pleased with the Symbia T2 scanners and Siemens support.

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