

IQ•SPECT: Canadian Hospital Benefits from Twice the Speed, Half the Dose

Hôpital de la Cité-de-la-Santé in Laval, Québec, Canada, has successfully paired very high volume with productivity and efficiency in imaging cardiac patients. With a Siemens Symbia SPECT•CT camera, the staff performs, on average, 40 cardiac imaging studies per day.

By Kaitlyn Dmyterko

The facility staff was seeking innovative ways to increase patient throughput, expedite workflow and continue to improve results. The solution was Siemens IQ•SPECT, the technology behind the world's first 5-minute cardiac workup.

Long patient wait times due to lengthy scans plagued this 450-bed facility, which is a partner in the University of Montréal health network.

To improve this situation, the staff switched out two of their four imaging cameras for Siemens Symbia™ T and T2

cameras in September 2009, to help augment clinical decision-making and speed up image acquisition.

"It became important for us to have a high-quality SPECT•CT acquisition," says Guillaume Bouchard, MD, a nuclear medicine physician.

In 2011, the facility installed the upgradable hardware and software required to run IQ•SPECT, a solution that can expedite scanning by completing cardiac workups in five minutes, a quarter of the time they used to take.

The system needs only four minutes for a full-count SPECT scan, and 60 seconds more for CT-based attenuation correction. **SMARTZOOM** collimators focus on the heart, collecting up to four times more counts than conventional parallel hole collimators. The **SMARTZOOM** collimators magnify the heart, while still capturing counts from the entire body. Study-based setup is automatic, as are reconstruction, quantification and visualization of SPECT. Also useful for larger patients, IQ•SPECT improves patient comfort, throughput and workup.

Half the Time, More Patients

Before adding IQ•SPECT, imaging exams were performed simultaneously on two cameras due to a large patient volume.

"Even if we used the *cardio*•FLASH iterative reconstruction feature on the Symbia, which already reduces time of exam by 25 percent, we still couldn't scan all of our patients on a single camera," says Bouchard.

With the quickened speed of IQ•SPECT, now all cardiac imaging exams are carried out on the multipurpose SPECT•CT in only five minutes, which has opened camera time for other types of exams. "This freed four to five hours of camera time," says Marie-Josée Haeck, deputy head of the coordination of medical imaging and chief of endoscopy and nuclear medicine. "This allowed us to simplify our schedule and see more patients."

Now, the two cameras work in tandem—performing cardiac imaging and general nuclear medicine studies, such as bone scans, Gallium scans and white blood cell scans, among others. "Now, we have reduced our wait time and can perform more patient scans," Haeck notes.

In fact, she says shortened imaging exams have led to higher patient throughput per hour. Instead of three patients per hour, Hôpital de la Cité-de-la-Santé now sees four to five.

Additionally, IQ•SPECT has the ability to minimize radiation dose. "We are looking to decrease the dose from 25

"One day we performed 56 cardiac SPECT tests."

Technologist Jean-Paul Bernier,
Hôpital de la Cité-de-la-Santé,
Laval, Quebec, Canada



Hôpital de la Cité-de-la-Santé in Laval, Québec, Canada

Working in Tandem to Get the Best Results

Due to high camera volume, staff at Hôpital de la Cité-de-la-Santé needed to find a way to streamline the acquisition process. They accomplished this by adopting a new way for technologists to work in tandem to get patients in and out the door quickly and efficiently. Prior to IQ•SPECT, each of the technologists worked one camera, but now, because camera time has been decreased so significantly, the technologists are able to work in tandem—one performing acquisitions and one doing reconstructions. “This is teamwork,” says Bouchard. “Technologists are dedicated to one camera and have support from the other two technologists in the room.”

This has become a quick and valuable process. “One day we performed 56 cardiac SPECT tests,” says Bernier. With the shorter acquisition times of IQ•SPECT, it is more likely that the patient will be able to lie still during exams, and even if a retake is necessary, it is done right then and there in a moment of time, he says. IQ•SPECT is the imaging lab’s cardiac workhorse. Each day between 8 a.m. and 6 p.m., Hôpital de la Cité-de-la-Santé completes 40 cardiac imaging exams or more with the help of IQ•SPECT. To date, more than 4,500 patients have benefited from the use of IQ•SPECT at this facility.

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The statements by Siemens’ customers described herein are based on results that were achieved in the customer’s unique setting. Since there is no “typical” hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

millicuries to 15 millicuries of sestamibi in our facility,” Bouchard adds. “As far as acquisition goes, IQ•SPECT is four times faster than a conventional study,” says Technologist Jean-Paul Bernier, RT(R).

Getting Comfortable with IQ•SPECT

While the IQ•SPECT solution, which consists of SMARTZOOM collimators, cardio-centric acquisition and the IQ•SPECT reconstruction method, can help transform the inner workings of a facility’s imaging program, it will take some time to learn. But have no fear, success is within reach.

“IQ•SPECT installation lasted one week and did not halt or impact workflow too tremendously,” says Bouchard.

“A key element to maximizing performance is expert training on data acquisition with the SMARTZOOM collimator,” Haeck says. Technologists need to learn to center the heart into the SMARTZOOM collimator’s “sweet spot.” IQ•SPECT then uses the flexible Symbia gantry to center the scan orbit on the heart. Unlike conventional acquisitions, the detectors are held at a constant distance from the heart’s center to maxi-

mize sensitivity, garnering faster images. At Hôpital de la Cité-de-la-Santé, each technologist trained for two weeks with an IQ•SPECT super user. While image reconstruction is not very different from conventional SPECT, the technologists adopted a streamlined workflow to help each other both acquire and reconstruct images.

Training also is an essential element for interpreting physicians. “With IQ•SPECT, you will need to learn how to interpret the studies,” says Bouchard. “It’s somewhat different due to the image characteristics. You don’t have all the same variance and artifacts.” Now, reconstruction uses an advanced 3D iterative algorithm, including a detailed model of the SMARTZOOM collimator characteristics and the gantry motions, to reconstruct the best possible image.

“You will need to become comfortable with the studies and what you are interpreting,” Bouchard says. He adds that physicians should be sure to study both normal and abnormal scans and those from various body sizes and clinical presentations. “After a while, you will see these patterns repeat, and you will learn what is abnormal and what is normal.”