Realizing the benefits of truly integrated Innova IVUS technology

Providence Heart Institute
Columbia, South Carolina
Profile: Providence Heart Institute

Providence Heart Institute opened in 1974 to offer advanced cardiovascular care to the residents of Columbia, South Carolina, and surrounding areas. Often referred to as “South Carolina’s Heart Hospital,” Providence Heart Institute’s staff has performed more heart procedures in the state of South Carolina than any other medical team. Skilled cardiothoracic surgeons perform nearly 1,000 open-heart surgeries each year. In 2005, the center completed 7,000 cardiac catheterizations.

As a premier cardiac care facility, Providence Heart Institute embraces innovation brought forth by new medical devices. The facility has six catheterization labs, four surgical suites and a leading-edge electrophysiology lab.

Advanced integrated IVUS technology

As a regional leader in cardiovascular care, Providence Heart Institute is no stranger to providing the most advanced cardiac care by offering the latest in new technology. The Heart Institute was one of the first centers to introduce minimally-invasive direct coronary artery bypass (MIDCAB), “off-pump” or “beating heart” surgery and drug-eluting stents. Following these “firsts” is the utilization of Innova® IVUS, GE Healthcare’s custom integration of the Volcano s5i IVUS imaging system with the best-in-class Innova all-digital X-ray cath lab imaging system.

“We use IVUS frequently on any given day in our clinical practice: the benefits are quite clear. It provides information that we simply can’t get from other technologies, such as lesion and vessel morphology, and the ability to view angiographically ambiguous disease,” said Patrick Hall, M.D., Interventional Cardiologist at Providence Heart Institute.

Yet, stand-alone systems are cumbersome and not always readily available when needed, particularly if the patient is in the midst of an acute coronary syndrome.

For many interventional labs, space and time are at a premium. Busy labs require technology that does not impede traffic or workflow as well as the ability to electronically capture patient data. Innova IVUS not only solves these issues but also brings the latest IVUS technology right to the fingertips of the interventionalist through the Innova Central bedside touch screen. Data exchange between the Volcano IVUS system and Innova allows for automatic patient data transfer from Innova to the IVUS unit and advanced archiving that links IVUS cases to cath cases.

Reducing procedure time while improving patient care

Today at Providence Heart Institute, the easy-to-use Innova IVUS is enhancing patient care while reducing procedure time. As the industry’s only truly integrated IVUS solution, Innova IVUS optimizes clinical workflow by offering IVUS controls on the Innova Central bedside touch screen.

“By virtue of the Innova IVUS being always on and always available, I can use it on any patient at a moment’s notice,” said Michael Foster, M.D., Interventional Cardiologist. “When you have a catheterized patient on the table, you need your diagnostic and therapeutic tools ready. Many times it’s just not an option to ask the staff to roll in the stand alone IVUS, turn it on and wait for it to boot up.”

Volcano’s s5i product uses a new PC-based platform that reduces the size, weight and noise of the older generation IVUS consoles. This allows the unit to be located in the control room or in other areas outside of the daily traffic pattern of the cath lab. Clinicians have the ability to control the IVUS system through a variety of control devices located at the patient bedside, at the point of care, or both, as well as the flexibility to view IVUS images on the existing monitor bank, a separate dedicated IVUS monitor, and/or on a monitor in the control room.

Simplicity and ease-of-use also exist on the back-end. Data exchange between the IVUS system and Innova allows for automatic patient data transfer from Innova for IVUS cases and advanced archiving that links IVUS cases to cath cases. Also, when archived on Centricity® PACS, the IVUS will automatically be stored as a sub-study of the angio. This provides a more logical archiving method and makes retrieving an IVUS study much easier and faster.
Upon completing system installation, the GE clinical team worked closely with the staff at Providence Heart Institute to perform a timed trial comparing total procedure time with the Innova IVUS integrated system versus the stand-alone system. Results from the study highlight the speed and ease-of-use of the integrated solution, further validating the clinical and workflow benefits realized during integrated Innova IVUS procedures.

The study measured various parameters during interventional coronary IVUS cases performed by Drs. Hall and Foster. Total IVUS procedure time was recorded for fifty cases performed on both the integrated and non-integrated systems (accounting for user variability and complexity of each case) utilize IVUS technology on both types of systems.
Overall IVUS procedure time reduced by 40% with integrated Innova IVUS

Results from the study showed that the utilization of the integrated Innova IVUS system reduced total IVUS procedure time by up to 40 percent and reduced the number of steps in performing a typical IVUS procedure from nine to two.

Not only does Innova IVUS reduce preparation time, but both Drs. Foster and Hall also spent less time performing the IVUS procedure with Volcano’s advanced user-friendly technology. Average time saved between the stand-alone system and the integrated GE/Volcano system was 2 minutes and 30 seconds, of an average total procedure time of 6 minutes.

“The time savings is truly significant, particularly when a patient is on the table undergoing an invasive procedure such as stent placement,” said Dr. Foster. “The precise anatomic detail obtainable by IVUS allows for greatly improved stent sizing and deployment compared to angiographic guidance. I believe this translates to improved patient outcomes in my clinical practice. Volcano’s unique features like automatic border detection and plaque composition analysis provide more clinically relevant data than was previously available with IVUS,” he added.

More clinical information translates to more accurate patient care decisions

Thanks to Innova IVUS, Providence Heart Institute is equipping interventionalists with detailed tissue characterization and precise data analysis during the procedure, further increasing the quality of care.

With the level of detail that IVUS technology provides, it has the potential to reduce repeat interventions that are the result of incomplete data or inaccurate device placement. Plus, by reducing the total amount of procedure time, facilities like Providence Heart Institute may be able to increase patient volume without adjusting other factors like scheduling and hours of operation.

“Because Innova IVUS is so quick and easy, we will use it whenever and wherever needed to further quality of care for our patients,” said Dr. Hall.
Patrick Anthony Xavier Hall, M.D., F.A.C.C., is a cardiologist and cardiovascular interventionalist for the South Carolina Heart Center. Prior to that, he practiced at the Pittsburgh Heart & Vascular Center, the Arizona Heart Institute and served as Director of Research at Centro Cuore Columbus in Milan, Italy.

Dr. Hall received his Doctorate of Medicine from the University of Virginia School of Medicine and completed his internal medicine residency at the University of California Irvine and Long Beach VA Medical Center. After serving as a cardiology research associates at Long Beach VA, he accepted a cardiology fellowship with the University of California, Irvine Medical Center, where he served as a clinical instructor as a third year cardiology fellow. Subsequently, he completed a fellowship and advanced fellowship in cardiac and peripheral interventions at the Milwaukee Heart & Vascular Clinic.

Dr. Hall is a fellow of the American College of Cardiology and a member of the American Heart Association, South Carolina Medical Association, Columbia Medical Society and Phi Kappa Phi Honor Society.

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Patrick Hall, M.D.
Interventional Cardiologist at Providence Heart Institute

Michael Cameron Foster, M.D., F.A.C.C., is a cardiologist with the South Carolina Heart Center and Cardiovascular Associates, P.A. Prior to that, he practiced with Carolina Cardiology P.A. with an emphasis on invasive and interventional techniques.

Dr. Foster received his Doctorate of Medicine from Indiana University School of Medicine and completed his internship at Boston University Affiliated Hospitals. His residency was conducted at Indiana University Medical Center, followed by an internal medicine residency at Boston University Medical Center, University Hospital and a fellowship in cardiology at Tufts University School of Medicine and Boston Veterans Administration Medical Center.

Dr. Foster is a fellow of the American College of Cardiology, a member and past president of the American Heart Association and member of the American Medical Association, Columbia Medical Society and the South Carolina Medical Association.

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Michael Foster, M.D.
Interventional Cardiologist
Healthcare Re-imagined

GE is dedicated to helping you transform healthcare delivery by driving critical breakthroughs in biology and technology. Our expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, and biopharmaceutical manufacturing technologies is enabling healthcare professionals around the world to discover new ways to predict, diagnose and treat disease earlier. We call this model of care “Early Health.” The goal: to help clinicians detect disease earlier, access more information and intervene earlier with more targeted treatments, so they can help their patients live their lives to the fullest. Re-think, Re-discover, Re-invent, Re-imagine.

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