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Customer profile

Bethesda Heart Center and the Philips Zenition experience

The Mobile C-arm bridge to fixed lab solution

Who/Where
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Bethesda Hospital East
Boynton Beach, FL, USA

Challenge
Acquire a suitable mobile C-arm unit to support a busy clinical schedule, extend the services line and improve procedural efficiency

Equipment
Philips Zenition 70 mobile C-am with Flat Detector technology and Unity workflow

"Our heart hospital is a hospital within a hospital," says Jane Kiah, Assistant Vice President of Bethesda Heart Hospital, "It is a dedicated cardiovascular facility for the service line. We offer cardiac and vascular specialty care including interventional structural heart and cardio thoracic services. We perform cardiac catheterizations, structural heart repair, open heart surgeries, thoracic surgeries and electrophysiology (EP) procedures."

The small but busy hospital often saw back to back cases extending into the evening hours. Booked procedure rooms meant that physicians and available staff, ready to begin a new case, had to wait. Efficiency suffered.

Bethesda Heart has two CV ORs, two cath labs and one EP lab, yet scheduling challenges were a reality. "If the EP lab was busy doing an ablation procedure and we had a physician who wanted to put in a pacemaker, they would have to wait for the room to open up," says Kiah. "We wanted to provide them the ability to work simultaneously."

Kiah and her staff turned to Philips to help remedy the situation. Bethesda Heart purchased the very latest in mobile C-arm technology, the Philips Zenition 70.

Covering all the bases

Opened in February 2008, Bethesda Heart Hospital (part of Bethesda Health, Inc.) is a 39-bed heart hospital with 16 private cardiac intensive care and stepdown beds, 23 private cardiovascular telemetry patient rooms and a dedicated, separate entrance to provide comprehensive cardiovascular services all under one roof. It is connected to the larger 401 bed Bethesda Hospital East building.

Serving the Palm Beach County market of approximately 1.5M people, Bethesda Health is part of Baptist Health South Florida, the largest healthcare organization in the region with ten hospitals and nearly 50 outpatient and urgent care facilities.

Bethesda Heart's reputation as a site of clinical excellence is well earned and their patient/procedure volume is strong. However, Assistant VP Jane Kiah saw the need for a mobile X-ray system to help achieve several goals. "We needed a system that we could quickly move into place to assist with our existing workload and to help when one of our fixed systems experienced unexpected downtime. We also wanted to be able to extend our services to offer additional procedures such as lead extractions."

Filling the need

Bethesda Heart did have access to an older mobile unit borrowed from the surgery department, but it was very large and difficult to maneuver. The system was rarely used and when it was, it was for simple procedures such as checking pacemaker placement. According

to cardiovascular technologist Wayne Foster, a member of the EP team, “The docs wouldn’t use the old C-arm because they didn’t trust the resolution, didn’t trust the imaging. It made their job much harder. And because it was from the surgery department, we would have to call the staff to come up and operate it.”

Bethesda Heart needed a better solution for their imaging needs. Working with Philips, the team wanted a versatile system to increase capacity, while they were in the midst of purchasing a new cath lab. The acquisition of a Philips Zenition 70 mobile C-arm created a bridge for imaging until the new lab could be installed.

The Zenition 70 (with 26 x 26 cm flat detector) now brings the heart team a whole new perspective. This state-of-the-art technology delivers the latest in image quality, speed, ease-of-use, and maneuverability. The premium feature set is designed for the most demanding cases:

- **Fourth generation flat detector** provides exceptional image clarity and flexibility for performing a wide variety of procedures
- **80-second boot up time** means fast availability for emergency cases
- Easy to use **ClearGuide workflow** with color coded locks, numeric positioning guides, and simple touch position memory settings to bring intuitive control and handling, improve communication, and save time during positioning
- **Cardiac and vascular extensions** with motion-stopping pulses of up to 30 pulses per second as well as subtraction and roadmap guidance. The trace mode allows for maximum vessel opacification in iodine and CO_2 modes
- The **outlining tool** allows drawing an outline on an image on the touchscreen to mark a bifurcation or side branches on live fluoroscopy images
- **Advanced image processing algorithms** help visualize complex structures and Zenition’s array of radiation management tools assist with dose control
- A **standard Windows® platform** is ready to embrace new clinical applications and service and support technologies as they evolve

The Zenition is designed to increase operating room performance with exceptional user-friendly controls, efficient time-saving tools, and a platform geared for high uptime.

Helping to improve workflow

Prior to acquisition of the Zenition system, the workload in the electrophysiology department kept physicians and support staff working long days. “We would often have to push cases out to another day,” says Foster, “which actually made the patient ‘length of stay’ at the hospital longer.”

Jane Kiah knew that with a quality mobile C-arm and an open operating room, they would be able to improve efficiency. “Having the Zenition mobile C-arm now means we can gather a team together and accommodate additional procedures in open spaces like the CV OR. This really has improved our throughput.” Foster concurs, “The system has shortened our days. If we have a heavy load in the EP room as far as ablations and studies, it’s allowed us to take on cases of implants, stem changes or lead extractions that formerly needed to be performed in the EP room but now can be done on the Zenition. It’s helped us cut down on staffing hours by utilizing staff that’s not busy during the day. Our overall productivity is much better.”
“The doctors are very happy with the flexibility and utility of the Zenition system,” says Kiah.

"They find it perfect as a primary machine for planned procedures, and to help in the event of any fixed system downtime."

Exceptional ease of use

The tablet interface for the Zenition is simple and intuitive. The UI enables drag, swipe, and other functions, much like any tablet or smart phone, allowing for easier selection of imaging protocols. It offers easy access to post-processing of acquired images and patient demographics as well as patient administration and data export. "The visual icons on the tablet touchscreen are very self-explanatory as far as what they do," says Foster. "They're very intuitive – similar to what we're used to using on our smart devices."

Work outside the EP environment is not unusual. The Zenition system is often employed by other physicians at Bethesda who find it easy to move into place and operate. "I use this machine for abdominal aortic stent graft repair and transcatheter aortic valve replacement (TAVR)," says Dr. George K. Daniel, interventional cardiologist and endovascular specialist. "The unit is an improvement over C-arms I've used in the past in both image quality and maneuverability. I can say that while positioning is typically a problem with C-arms, I haven't had any issue with the Zenition. We are able to get it into all the positions and angles necessary for our procedures."

DoseWise features that create remarkable image quality and dose reduction

On the Zenition C-arm, the 26 x 26 cm flat detector's active matrix captures small details of regions of interest. Then premium imaging technologies correct for patient or accidental table motion automatically and in real-time on live images. They reduce noise and artifacts on moving structures and objects, and enhance images and sharpen edges to produce images of superb quality. "Short of a fixed system with more bells and whistles, the image quality on the Zenition is pretty incredible," says Foster. "I know the physicians feel the same otherwise they wouldn't call us to work with it." Dr. Daniel agrees, "The image quality of the Zenition is really good. It's certainly close to a fixed system, which is a significant improvement over C-arms of the past."

> "Whoever designed the Zenition clearly took input from actual users."
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> Wayne Foster,
> Cardiovascular Technologist

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>
> George K. Daniel, MD, Interventional Cardiologist and Endovascular Specialist

Philips DoseWise fluoro modes range from Low X-ray dose to High Level, enabling dose savings when desired or enhanced image quality when necessary. “Selecting the proper dose for our fluoro procedure is just a tap of the button and you have some options,” says Foster. “You just choose the option that’s most applicable and the system operates at the lowest possible dose.” This one tap applies the required image quality parameters without delivering overly high X-ray dose, based on the ALARA principle. Clinicians can then visualize complex structures and dense anatomy with exceptional clarity and good dose control through advanced image processing algorithms.

Wayne Foster employs another dose saving technique for EP. He uses the integrated laser in the flat detector housing to project toward the patient. The laser demonstrates where the central X-ray beam will exit the patient, so he can position the C-arm without using radiation. This dose mitigating feature supports first-time-right imaging and reduces retakes. Foster explains, “When I get in the room before the physician, I set up the system, then put the laser on so I can see exactly where the X-ray will shoot onto the patient. Then I can pull the arm back, just out of the way and now all I have to do is move the arm in and out as requested and I can put it quickly into the right place every time.”

Ease of adoption

Upon delivery of the Zenition 70 mobile C-arm, a Philips support team arrived to provide Bethesda staff with appropriate training. Wayne Foster recalls that he was a bit fearful heading into the session because he wasn’t used to using portables and he was certain it was going to be complicated. The reality was quite different. As he describes it, “The support team that came to teach us were amazing. They didn’t try to impress us, they simply showed us how easy it is to use. That took a lot of anxiety out of learning something new.”

“One of the biggest surprises to me was how easily it was adopted by our staff,” says Kiah. “Typically people don’t like working with mobile machines, they find them limiting. That hasn’t been the case with the Zenition. I am amazed at how impressed the docs are with it and how readily they accepted working with it.” Foster concurs, “They were skeptical at first, but then pleasantly surprised and now it’s to the point where they ask, ‘is the OR open?’. We have them doing biventricular LV leads placement in the CV OR and that’s amazing.”

Striving to provide the best care

The Zenition 70 mobile C-arm integrates high image quality with workflow enhancements and proven ease of use to address some of healthcare's most challenging situations in a variety of clinical procedures and settings. For Bethesda Heart Hospital it offers an improved patient experience and increased staff satisfaction.

Although the system is part of her technology portfolio, Jane Kiah is aware of its value to others within Bethesda Hospital East. "The ability to maneuver it into small rooms and tight spaces means it can be useful to many departments – surgical services, interventional radiology, pain management, etc. As a backup system or primary system it can be used in any of those environments."

Wayne Foster touts its parallel workflow benefits. "It has allowed us to have that dual schedule now where we can do our EP studies all day long and still do implants at the same time rather than everything following sequentially. That's huge."

Kiah summarizes her thoughts, "In all sincerity the Zenition is perhaps one of the most valuable capital assets I have purchased in my long career. It's made a huge difference in so many ways from efficiency to clinical quality to physician satisfaction. It's hard to say that a piece of equipment has done all that, but it really has brought a lot of positives to our department."

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*Results are specific to the institution where they were obtained and may not reflect the results achievable at other institutions

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