Feature story

An evolution in clinical engineering
Keeping pace with today's technologically advanced industry

Keeping up with the operation of new medical devices, can be overwhelming for doctors, nurses and clinicians. As they learn to adapt to the latest technology, so the biomedical/engineering department must learn to adapt to support this equipment.

Dennis Minsent
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Change is the only constant
Minsent points out, "Advances in this industry have been very dramatic and rapid over the last four, five, even ten years. When I first came into this field we were trained on vacuum tube technology. As that evolved to transistors and integrated circuits we were able to trouble shoot problems, right down to the component level."

To get a device back up and running techs were required to roll up their sleeves to swap out faulty components. It was a very hands-on, economical way to support the technology. "As we have evolved into microprocessor based technology, the ability to do that has changed significantly," says Minsent. "Now everything is encapsulated on a single wafer chip and driven by advanced software. Our ability to do detailed troubleshooting down to the component level really has gone, and the clinical engineering professional's way of doing business has changed dramatically."

An innovative approach
A new model of efficiency, the departmental structure at OHSU is different than a typical healthcare institution. The biomedical/engineering department reports directly to the department of nursing. "I can tell you it works incredibly well," says Minsent.

"Our biggest base of customers on a day to day basis by far is nurses. They have a very thorough, clear understanding of the issues, which proves easier than explaining problems to an administrator."

His technicians' responsibilities reflect a new reality too. "Rather than having a long list of preventative maintenance (PM) tasks, we have eliminated the typical PM that might have been done before on a scheduled basis. Now our technicians are assigned to specific areas of the organization and they go out and perform a sweep through their area, talking to the nurses and patients to see if they are having problems or difficulties with any of the equipment they are currently using."

"We take that information and get the appropriate people engaged to take care of those specific issues. We are able to take care of things very quickly. This really makes the nurses' job much easier."

"Using this approach, I believe we're able to impact patient safety by addressing the little issues that people are working around and take care of them before they become bigger problems."

Considerations for support
Realizing peak clinical performance and ROI from today's complex medical systems requires staying abreast of the latest application software. Managing that concept across a broad organization like OHSU is a considerable challenge for Minsent. He offers his 350+ patient monitors as an example of what he faces. "We have systems that we've brought in over the years that were very, very far apart in software revisions. We have modules that should work on virtually any of our monitors but because of the various software revisions, the monitors haven't always worked because they were so far behind the current revision."

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sense and simplicity

"There was really no way for the nurses to know that the module wasn't going to work as they went from one venue to the other, until they plugged that module into the monitor. This was a huge concern, a huge safety risk for us and for our patients."

To provide some continuity, Minsent engaged Philips Healthcare to tailor a software maintenance agreement (SMA) designed to help keep his monitoring systems current. "I think Philips saw the problems we were encountering and with this understanding helped us evolve our SMA program much more quickly."

Philips was able to provide OHSU with a simplified process of planning and implementation of software upgrades and security enhancements across all monitoring systems.

That helped Minsent and his team act more proactively and more comprehensively with services tools that include:
• 24/7 technical and application support
• Software updates
• Installation and go-live support for upgrades
• Remote Access through Philips Remote Services
• Direct Connect to technical engineers

"We purchased upgrades to all of our servers and we purchased upgrades to every single bedside monitor and module that we have in the organization," says Minsent, "so that everything is running the most current version of Philips software available. Now, from a support perspective, we are not going from one unit to another to another and finding things that are significantly different."

Seeking approval
Buy-in from OHSU's upper management for the software maintenance agreement was bolstered by work taking place in the IT department. Particularly relevant was a project underway to move the entire organization to electronic records.

As Minsent recalls, "Our CEO was working with IT to rollout electronic medical records and he became aware of their efforts to keep all software updated. So he posed a very simple question to us, 'Why don't all our monitors operate on the same software revision from unit to unit?' Having our CEO recognize this helped the SMA gain approval. He was the one who really started us on the road to one consistent platform."

"We try to be very thoughtful, very strategic, and present things in a logical manner to our executives for their consideration as we look to upgrade technologies. They listen, they understand, they know that when they get something from us it's been completely thought through. It's not a half-baked idea. They have been very supportive of us and the direction we're taking within the organization."

Tangible benefits
Equipment that operates at full potential keeps clinicians from having to adjust to different capabilities unit to unit, enabling them to clearly focus on their patients. Equipment that runs the latest software is always prepared for the next generation, maximizing investment value.

"By keeping our monitors at the most current revision, we can significantly extend the life of that equipment from a capital procurement perspective," notes Minsent. "The monitors we bought seven and eight years ago are operating and functioning exactly as the monitors we bought this year. It makes our replacement plan stretch out over a much longer period of time."

"Everything is operating identically, whether it is nine years old or brand new."

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"Our Clinical Technology Services department continues to do everything it can to make the hospital experience better for the patient, for the staff, and for OHSU."

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