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What's the Frequency?

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As wireless technologies advance and paperless environments gain momentum, hospital executives are grappling with how to integrate wireless networks with their existing infrastructures.

Those hospitals in the lead are adding such elements as ceiling-mounted transmitters and mobile carts outfitted with laptops to give physicians and staff instant access to patient records. Such high-tech moves have the potential to increase staff efficiency, speed up care delivery, improve the quality of care and ultimately cut costs, experts say.

But before and after deciding to go wireless, many issues are on the table, such as interference, training, communication, and cost. And one of the first questions to address is whether to wire an existing building or build a new facility from the ground up.

Linda Reino, CIO of Universal Health Services Inc. in King of Prussia, Pa., has been involved in both building an entirely new wireless hospital as well as implementing wireless systems in seven existing facilities. There are benefits to both, she asserts, but says building a new facility to accommodate a wireless system is not necessarily easier than rewiring an older one. Case in point: In August 2002, UHS opened the George Washington University Hospital in Washington, D.C., a $96 million dollar wireless facility, where a good deal of fine tuning on radio frequency levels had to be done after the facility was built and the system was installed.

"The advantage of having a facility built from the ground up was knowing we were implementing wireless from day one," Reino says.

"But, it's almost easier to evaluate a building that's standing and to go do a radio frequency site survey than it is to predict it for a building that's being constructed."

Another technical challenge hospitals may face is interference. Introducing new wireless technology into a hospital environment can cause service outages for other equipment, experts say.

"Make sure that when you introduce a new wireless system that you aren't bringing in something that will interfere with other systems," says Mike Carper, director of technology architecture and operations of 707-bed Northwestern Memorial Hospital in Chicago. Although it can be expensive and complicated, Carper recommends looking into radio frequency or interference analyses to catch possible sources of conflict.

Northwestern is piloting a wireless network in four departments, including its ED. Part of what program will include installing computers in nearly every patient room. The wireless piece of the infrastructure alone is expected to cost just short of a million dollars, Carper says.

Richard L. Miller, president of Earl Swensson Associates, Inc., a Nashville, Tenn., architectural firm with many healthcare clients, agrees that interference issues are always a top problem. "There are some very legitimate concerns about disruption from other things influencing what kind of signal you're receiving, but that's made giant strides," he says.

But Miller and others say the user challenges can be far greater than the technical concerns. The key to a successful transition to a wireless system, he says, is involving staff in the system selection process and then providing proper training. "In so many cases you'll get a system, and if they're not trained thoroughly to use it, it's going to fail," he says.

Reino of UHS agrees. "That's where the rubber meets the road, because now we have to take a non-computer-oriented clinical individual, put a laptop on a cart in front of them and ask them to use that directly at the bedside in front of patients," she says. "[The staff] tend to feel it's intrusive."

One of the first steps when considering deploying a wireless network, Miller says, is to bring in a consultant with a track record in wireless integration. That person should then evaluate your facility's site studies, determine its physical limitations, interview the users to find out how the system will be used, and understand future customization needs.

The cost of a wireless network integration depends on a facility's size and how many access points are installed. Miller estimates costs for a 250-bed, 400,000-square-foot hospital to run somewhere in the $300,000 to $400,000 range for the infrastructure alone. A smaller hospital in the 75- to 100-bed, 180,000-square-foot range might run $180,000 to $200,000, he says.

"Wireless land in healthcare in some cases can be a field of dreams scenario-build it and they will

come," says Carper of Northwestern. "The real benefit probably won't be realized over the next year or two. It's the things that will happen in the years following that will bring really improved capabilities."

-Deborah Rascon

What do you think? Email a letter to the editor: Magazine.Editor@healthleadersmedia.com