As the RFID revolution marches on in industries such as manufacturing and retail, most hospitals are still sitting on the sidelines, waiting for the technology to develop and for prices to perhaps inch downward. Industry representatives estimate that only about 200 hospitals are using this radio wave-based technology, chiefly for tracking equipment or patients. Most of the early users have limited their RFID (radio frequency identification) applications to emergency departments, operating rooms or small pilot programs on one floor.

“There’s a lot of toe-dipping going on,” says Gregg Malkary, managing director of Spyglass Consulting, Menlo Park, Calif. In interviews Spyglass conducted last year, health care organizations indicated that “current-generation RFID solutions are not ready for large-scale, enterprisewide deployments,” he says.

But consultants and their hospital clients, presented in case studies later in this article, report that as a tracking technology, at least, RFID is reaching maturity. They say it is easy-to-use, staff members seem to be universally grateful for this time-saving technology and it produces real savings. The list of RFID vendors is getting lengthy and there are signs that hospitals are more interested in these systems. Some vendors report an increase in facilitywide installations. And a recent survey conducted by BearingPoint, Mclean, Va., and the National Alliance for Health Information Technology, Chicago, showed that almost three-quarters of health care organizations expect to invest in this new field in the next two years. RFID uses signals from specific radio frequencies. In addition, other systems based on Wi-Fi signals, infrared and ultrasound provide tracking technology that closely resembles RFID.

The way traditional RFID works is simple. A small tag on a device or person emits a radio wave that is detected by a network of receivers around the hospital. Software crunches the positioning data and puts the locations on a map or table or into a hospital information system.

The No. 1 barrier to acquiring this new technology, experts say, is price. Quotes from various vendors indicate that it costs $200,000 to $600,000 or more to install a facilitywide RFID tracking system in a medium-sized hospital.

But vendors are quick to say that the new efficiencies RFID systems produce can pay for the investment in one to two years, and many hospital clients agree.
This is because RFID-based tracking eliminates staff time spent searching for equipment, and inventories can be slashed because equipment does not get lost. Similarly, RFID-based patient tracking can speed up patient flow in high-volume areas such as the ED and OR, increasing income and eliminating the need for costly capital expansions.

Many of the early users are sprawling institutions where keeping track of equipment and patients is a real challenge. But plenty of smaller hospitals in the 250- to 400-room range also are acquiring RFID.

There are ways to bring down the cost. For example, a big chunk of RFID’s cost is installing a network of receivers. Many hospitals try to reduce this cost by piggybacking a tracking system onto an existing Wi-Fi network, but Malkary and others caution that this requires installing extra Wi-Fi receivers, reducing potential savings, and the signal may not be as precise as true RFID.

Some hospitals have avoided building an expensive infrastructure altogether by using handheld RFID trackers, but that means staff still has to walk around with these devices, chasing equipment. And the hospital still has to pay from $50 to $100 each for active RFID tags. Passive RFID tags, on the other hand, cost 50 cents or less and can be as small as a grain of rice, but because they can be read only within a foot or two of the tag, they have entirely different uses. For example, RF Surgical Systems, Bellevue, Wash., puts passive tags in surgical sponges that emit a signal to help prevent them from being left in patients.

Some RFID systems are still in development. For example, passive tags may eventually replace bar coding on supply shipments to the hospital, says George Magee, program manager for an RFID project at Defense Medical Logistics Standard Support (DMLSS), Falls Church, Va., a medical technology program in the U.S. Department of Defense.

Packages with passive tags could be put on a conveyor belt and read by a scanner, but not quite yet, he says. DMLSS tests showed a 67 percent reading accuracy of the tags, but a new generation of passive tags is expected to have an almost perfect accuracy rate, Magee says.

Lawson Software, St. Paul, Minn., maker of barcoding technologies for tracking surgical instruments in trays, noted in a recent release that replacing bar codes with passive RFID tags would make the process more efficient. However, Lawson has not announced any plans for such a product.

Meanwhile, hospitals are moving ahead with more dependable uses of RFID.

**COVER STORY**

**MATERIALS MANAGEMENT IN HEALTH CARE**

LEIGH PAGE IS A FREELANCE WRITER BASED IN CHICAGO.

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Michael Hayes, director of logistics, the Medical Center of Plano, Texas, uses RFID-tracking software not only to improve inventory processes, but also to help health care workers find equipment when they need it.
 Since a hospitalwide tracking system was implemented at 285-bed Medical Center of Plano, Texas, 1,200 pieces of mobile equipment have been tagged and the goal is 3,000 pieces.

“Every week we find something new to tag,” says Michael Hayes, director of logistics at the hospital, which is part of HCA, Nashville. Infusion pumps, mobile EKGs, pacemakers, and even computers on wheels have been tagged.

He reports that other HCA hospitals are interested in installing the system, and staff at his hospital are pleased. “There is a cultural change going on,” Hayes says. “People are becoming more confident that equipment will be there for them.”

Hayes started his search for a system in 2003. He looked at nine vendors with a variety of technologies, even passive RFID tags rigged for detection when coming through doorways. He says it took 30 months to choose a vendor, partly due to unfamiliarity with a rapidly changing industry. Agility Healthcare Solutions, Glen Allen, Va., was chosen because it “focused on health care and had a robust, comprehensive product,” Hayes says.

In an RFID industry that is still fragmented among many vendors offering different parts of the package—tags, networks, software and support—Agility can line up all the other vendors and present a complete package, says Dan Neuwirth, an Agility spokesman.

The biggest mistake hospitals make when selecting RFID, Neuwirth says, is not pinning down exactly how they want to use it. Typically, hospitals “implement huge RFPs and want to know everything under the sun, but they don’t link it to a specific use.”

Neuwirth says hospitals also need to understand that switching to RFID has an effect on workflow. With RFID-based patient tracking, for example, staff switch from writing patient locations on whiteboards to viewing the information on an LCD display screen. And when they have finished using an IV pump, rather than leaving it out in the hall, they must put it into a “dirty” room so that the system can identify it as such, he says.

Hayes estimates it will take 15 months for his hospital to make a return on the investment, mainly through reductions in inventory. For example, he says a contract he recently signed for sequential compression devices assumes a 14 percent reduction in inventory.—L.P.