

**The surgical services department shared by the two hospitals will use ultra-wideband to track assets and staff in real time.**

By Beth Bacheldor

Jan. 16, 2007—[Long Beach Memorial Hospital](#) and [Miller Children's Hospital](#) of Long Beach, Calif., are implementing an ultra-wideband (UWB) RFID system to track assets and improve operations in their shared surgical services department. Both hospitals are both part of [Memorial Health Services](#).

The RFID tracking system includes software from [Patient Care Technology Systems](#) (PCTS) and active RFID tags and interrogators provided by [Parco Wireless](#), says John Stewart, executive director of information services for the two hospitals. At press time, neither PCTS nor Parco executives could confirm that Parco's tags and interrogators will be used in the implementation, because contracts are still being worked out. Scott Cohen, Parco's founder and CEO, says he has been told his firm is the vendor of choice, though he declines to comment further at this time.

Parco's tags operate at the 6.5 GHz band and utilize UWB technology, whereby devices emit a series of extremely short pulses (billionths of a second or shorter) across a frequency segment wider than that used by conventional RFID tags. Because Parco tags use multiple frequencies simultaneously to transmit their signals, they can transmit a greater volume of data more quickly, the company claims. In mid-2004, the vendor sold its first commercial UWB-based RTLS installation to the [Washington Hospital Center](#) (see [Hospital Gets Ultra-Wideband RFID](#)). And in September, it announced it had obtained contracts to deploy its system at more than 75 long-term-care facilities (see [NYC-Area Nursing Homes to Get UWB RFID Systems](#)).

At Long Beach Memorial and Miller Children's hospitals, the combination of PCTS tracking software and Parco UWB-based RFID tags and interrogators will be deployed to improve workflow in the operating rooms, Stewart explains. By monitoring the status and whereabouts of critical medical equipment used in the operating rooms, doctors and nurses can ensure that equipment and rooms are ready for surgical procedures. The types of equipment to be tagged include anesthesia machines, cautery machines, harmonic scalpels, orthopedic operation tools, lasers used for eye and cardiac procedures, microscopes, monitors, video units for laparoscopic surgery, warmers for solutions, slush machines to make ice for cardiac procedures and other devices.

"Lack of information on the location of a piece of equipment can require staff to waste time searching for the asset, possibly causing delays to the surgery schedule," says Stephen Armstrong, VP of marketing at PCTS. "This can then cause departments to order redundant equipment because they cannot find existing assets. With asset tracking, equipment utilization improves, maintenance can be performed more easily and staff productivity is enhanced."

The health-care organization is deploying fixed-position RFID interrogators throughout its surgery department, post-anesthesia care unit (PACU) and pre-op and post-op areas. The interrogators will

periodically read the tags, each containing a unique ID number, and calculate the radius between the tag and reader. To compute the tag's location, Parco's software utilizes the radius information from at least three readers. The location is then sent via middleware to a database accessible by PCTS' Amelior ORTracker software. This allows hospital staff to check on the equipment status and location. For example, nurses can pull up a customized map of the surgical services department and drill down into individual OR suites to see whether equipment has been moved to that suite in preparation for a scheduled surgery.

The hospitals expect to begin using the RFID system to track surgical assets by the second quarter of this year. A few months later, Armstrong says, they will begin utilizing it to track personnel carrying Parco tags.

Since 2002, Long Beach Memorial and Miller Children's hospitals have used PCTS tracking software in their shared emergency department, enabling caregivers to monitor how long each patient visit lasts, as well as the length of time patients receive care and other metrics. At the time of initial deployment, says Armstrong, the hospitals' emergency department was tripling in size from 18 beds to 53 in response to increasing patient volume.

That system combines PCTS' software and infrared/RFID locating hardware made by [Versus Technology](#). Patients' clothing is tagged with Versus infrared-RFID badges to monitor and track their movements and care progression throughout their visit. Staff members also wear badges so the software can record their interactions with patients. For example, when a nurse and patient in each other's proximity meet a defined threshold of time together, a "patient seen by nurse" metric is automatically recorded in the software, explains Armstrong. "This eliminates data entry, provides complete and accurate patient flow information, and communicates care status in real-time," he says.

The patient-tracking system has helped improve workflow in the emergency department, Stewart says. According to Armstrong, emergency department personnel have used the system to focus on reducing wait times. For instance, the department learned that patients were waiting an average of 80 minutes to see a triage nurse. It then reassessed triage procedures and added staff when busy. Today, he says, the average wait time to see a triage nurse is 9 minutes.

To transmit their unique ID numbers, the badges generally use infrared technology, which requires an unobstructed line of sight between the badge and the interrogator; if no clear line of sight is available, the badges can transmit active RFID signals. For the new asset-tracking deployment, however, the hospitals decided to pursue RFID only.

Based on the outcome of the RFID-based automated tracking in the surgical services department, Stewart says, Long Beach Memorial and Miller Children's hospitals hope to expand the system throughout the rest of their facilities.