

Bangalore Heart Center Uses Passive RFID Cards to Track Outpatients

The EPC-based system, from Aventyn, has helped the facility increase patient throughput, reduce the use of paper forms, and better track equipment.

By Beth Bacheldor

May 29, 2007—The Bhagwan Mahaveer Jain (BMJ) Heart Center in Bangalore, India, is using passive UHF RFID tags to help maintain patient records, monitor patient flow and care, and track assets throughout the hospital's outpatient department.

Since the fall of 2006, the cardiac hospital, part of the Vivus Group, has been using the Clinical Information Processing Platform (CLIP), from Aventyn, a wireless technology company based in San Diego, Calif. Now tracks an average of 100 new patients a day, as well as returning patients, as they check into the facility's outpatient department.

"We were aware of some hospitals in the United States using [RFID] for asset tracking and were interested in how this could really benefit patient care," says Dr. Satish Chandra, BMJ's director of noninvasive cardiology.

The Web-based CLIP system includes software and EPC Gen 2 interrogators and tags, and Aventyn helps its customers plan for and implement the software and hardware. In May, Aventyn announced an updated version of its CLIP solution that supports Microsoft's BizTalk RFID platform for managing auto-ID devices.

When patients check into BMJ's outpatient department, they are given RFID-tagged patient cards. The unique ID numbers on the RFID tags are associated with each respective patient's electronic record in the CLIP Personal Health Manager. "Initially, the goal was to issue patient health cards at the outpatient department's registration front desk and track the patients as they went through cardiologist consultation and diagnosis so that the electronic health records were received automatically based on patient identification," Chandra says. "This eliminated the tedious manual effort of paper registration and use of paper forms for clinical records."

Aventyn uses RFID interrogators from ThingMagic and Alien Technology. The interrogators are positioned in the waiting room, consultation rooms and labs, and they document whenever a patient enters and leaves those areas. When a patient comes to a consultation room, for example, the RFID interrogator reads the patient's card and communicates that data, via CLIP middleware, to the CLIP Personal Health Manager software to find the patient's records, which doctor or nurse can then access on a PC.

The RFID interrogators can also document how long a patient stays in a particular area—such as the waiting room—so BMJ can track the patient's care and movement through the facility. The Personal Health Manager is also integrated with the hospital's billing system so patient care and workflow information can be used for accurate billing.

"We are monitoring patient flow and the health records movement in the OPD [outpatient department],"

Chandra says. "The data collected is the number of patients processed, time spent at various locations in the OPD waiting room, consultation, lab and eventually billing."

BMJ is also attaching EPC Gen 2 RFID tags to high-value items, such as stents, pacemakers, wheelchairs and gurneys, as well as certain mobile equipment, such as those used in diagnostics labs, and then using the CLIP AssetLIVE application to track the locations of those assets. AssetLIVE uses a mapping technology known as Scalable Vector Graphics (SVG), which is a [World Wide Web Consortium \(W3C\)](#) specification with XML-based grammar that defines instructions for rendering rich, interactive graphics as well as multimedia applications. "We use vector graphics to map out a grid on the screen," says Navin Govind, founder and CEO of Aventyn. "What we do is not very different from [real-time locating systems], although ours is somewhat static in nature." Instead of tracking tagged objects in real time, it documents their location by analyzing RFID data reads and then rendering their last known position in a graphic, as part of the AssetLIVE application.

Chandra says it is still too early to share hard data that illustrates how RFID is saving the hospital money and improving patient care and inventory and workflow processes, but the hospital has definitely benefited from the technology. "Increased patient throughput, reduced paper forms, and more visibility into our stores [supplies] show specific benefits," he says. And while BMJ policies preclude him from sharing more specifics, he claims the hospital plans to expand the use of CLIP to track and manage processes very specific to patient care in the inpatient and acute-care departments.

RELATED_ARTICLES And as the hospital increases its use of RFID to improve patient care and save money, Chandra has a wish list of sorts for the technology. He'd like to see smaller antennas, for example. "Hospital infrastructure is quite tight in terms of space for accommodating IT and new technology. The RFID antennas take up valuable space." If that's not possible, he'd like to see increased ranges of coverage. Currently, a CLIP system requires two readers and four antennas to cover a 3,000-square-foot area.

In addition, Chandra would like to see costs come down. "We hear a lot about cheap tags, but the tags for use in health care are quite expensive," he says. "When all is said and done, tags should be easily affordable if we are to use it widely." And any tags that BMJ uses to monitor patients in its inpatient department will have to be tamper proof and able to withstand the requirements of a sterile environment.

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