

At Mayo Clinic, RFID Tracks Biopsies

The hospital is using passive HF tags to monitor the processing of tissue specimens, from patient to pathology lab.

By Beth Bacheldor

Jan. 9, 2007—The Mayo Clinic is adopting a radio frequency identification system that employs passive RFID tags to track patients' gastrointestinal tissue specimens, from their collection in one building to the pathology laboratory in another.

The clinic worked with 3M to implement the RFID track-and-trace technology in its Rochester, Minn., hospital. Mayo treats more than half a million people each year and also has facilities in Jacksonville, Fla., and Phoenix

Mayo's goal with the RFID implementation, which was tested for five months at several of the Rochester hospital's endoscopy suites, is to improve and enhance patient care and safety. "And by doing that," says Mike Hansberry, senior business development manager for 3M's track and trace solutions, "they also felt they'd achieve some operational efficiencies by automating some processes, and that through RFID, data integrity would be more complete."

For the pilot, which ended several months ago, Mayo and 3M affixed about 3,000 passive 13.56 MHz RFID tags that comply with the ISO 18000-3 standard to the bottom of specimen bottles. Each tag contained a unique ID number associated with patient information held in back-end information systems, including a surgical database and a lab information system.

The associated patient information included patient identifiers, biopsy details and the name of the doctor working on the case, according to Schuyler Sanderson, the Mayo physician overseeing the medical and laboratory portions of the RFID project. Sanderson worked closely on the project with Bruce Kline, licensing manager in Mayo's office of intellectual property, who is overseeing the business details.

"We had different software applications we had to interface with," says 3M's Hansberry.

Each time a tissue specimen was placed in a bottle, the RFID tag was read and associated with that patient and specimen in the surgical database. If more than one specimen was taken for the same patient, each was put into a separate, tagged bottle. The ID numbers and associated patient information populate an electronic patient record.

Mayo uses an automated pneumatic tubing system to move specimen bottles from one Rochester facility to another housing the pathology lab. Similar to devices used at some banks' drive-through tellers, the pneumatic tubing system propels cylindrical containers through a network of tubes, by means of compressed air or a vacuum.

During Mayo's RFID pilot, the specimen bottles' tags were interrogated as they entered the pneumatic tubing

system to time-stamp the process, and again when they arrived at their destination. The tags were also interrogated when the specimens arrived at the pathology lab.

The data in the electronic patient record was updated each time the system read a specimen bottle, and could be accessed from the lab information system. Pathologists could then see the chain of custody each specimen went through.

In addition, the RFID data and software systems helped ensure the thoroughness of patient care. If, for example, more than one tissue sample were taken from a patient, pathologists would know to expect more than one specimen bottle. "If the lab only receives two of three specimens taken," Hansberry says, "the lab would not be allowed to check in that patient case until the third bottle comes in." Once a specimen had been checked in, the tagged bottle was discarded.

RELATED_ARTICLES According to Sanderson and Kline, the pilot demonstrated increased operational efficiencies. "Nursing staff working in the endoscopy suites are able to track and verify specimen locations easily and effectively," Sanderson says. "The decrease in human effort leads to increased time for one-on-one patient care."

Throughout the first half of 2007, Mayo's Rochester hospital is implementing the RFID system across all its endoscopy surgical suites. As time goes by, Sanderson and Kline say, Mayo will continue to monitor the RFID implementation to ensure business value, and is investigating RFID opportunities at its other sites.

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