

Bayer HealthCare Pharmaceuticals' Smart Cabinet Tracks Contrast Agents

The company has partnered with Mobile Aspects to provide an RFID system for tracking bottles of intravenous solution used for MRI and CAT scans.

By Claire Swedberg

May 13, 2008—[Bayer HealthCare Pharmaceuticals](#), a Wayne, N.J., provider of diagnostic imaging technology, has launched VistaTrak, an RFID-based system designed to help hospitals monitor the use of contrast media—an injectable solution utilized for radiological procedures.

With the VistaTrak system, hospitals can employ a smart cabinet to help technologists ensure that the proper dosage of contrast media is administered to the correct patient. The back-end system can record the use of its contrast media automatically and generate invoices for patients. It can then provide reports to inspectors who report their findings to the [Joint Commission on Accreditation of Healthcare Organizations](#) (JCAHO), an independent regulatory body that certifies more than 15,000 health-care organizations and programs in the United States and creates a set of rules, regulations and recommendations toward quality and safety practices in health care.

Bayer HealthCare Pharmaceuticals supplies two contrast products internationally, including Magnevist, an intravenous solution used to make blood vessels, organs and other non-bony tissues more visible for magnetic resonance imaging (MRI). The Bayer product accounts for about 60 percent of all MRI contrast agents sold worldwide, according to Scott Bertetti, the company's director of new product commercialization for diagnostic imaging. Bayer HealthCare Pharmaceuticals also sells Ultravist, an intravascular solution used for computerized axial tomography (CAT) procedures, of which it has a smaller share—about 5 percent of the market.

In recent years, the company has received feedback from its health-care provider customers indicating they require a better solution for tracking the use of contrast agents. The bottles are typically stored on shelves, with radiology staff members manually tracking, on paper, which dosage of fluid was used for which particular patient. That system is labor-intensive, however, and leaves room for error.

Hospitals without automated billing systems in place, Bertetti says, can typically see error rates of 10 to 15 percent when billing for products such as contrast media. What's more, Magnevist is often sold in bulk quantities—in 500-milliliter bottles, for instance—of which the typical patient receives 15 to 20 milliliters. Once a bottle is opened, its contents must be used within 24 hours or less, so if an opened container is overlooked, or opened late in the day, the remaining product (which costs about \$2 per milliliter) need to be discarded.

In 2003, the JCAHO created an additional incentive for improving the tracking of contrast media: It added contrast agents to its definition of medications. With that new classification came more rigid requirements for the management of storage and documentation, which must then be reported back to the JCAHO. Hospitals

that fail to comply with Joint Commission rules risk being denied payment from the Centers for Medicare & Medicaid Services (CMS) for patients who use Medicare and Medicaid. Tracking the product on paper, Bertetti says, "is labor-intensive and takes radiologists' time from what they are really there to do—treat the patient."

Bayer HealthCare Pharmaceuticals then developed the plans for an RFID-enabled cabinet with Mobile Aspects, a maker of smart shelves for tracking stints or other high-value medical devices in hospitals. At the end of 2006, says Bryan Christianson, Mobile Aspects' VP of marketing, the companies began piloting the resulting technology—VistaTrak—at Florida Hospital in Orlando, and at Harper University Hospital in Detroit.

Pilots took place for about six months, Christianson says, at which time researchers conducted a proof-of-concept test and gained an understanding of which features would be the most useful for hospital staff. Mobile Aspects has since refined the system, he says, and now expects to gain U.S. Food and Drug Administration (FDA) certification by July, after which VistaTrak will become commercially available.

Bayer HealthCare Pharmaceuticals plans to provide passive 13.56 MHz RFID chips embedded in the bottle labels at its Berlin manufacturing site. Label maker Nosco creates the labels with UPM Raflatac RFID chips that comply with the ISO 15693 standard, and encodes the contrast agent's National Drug Code (NDC) on the chip. When packaging the product, Bayer attaches the label to a bottle and also encodes a lot number and expiration date on the label's chip. The tagged products will be known as Ultravist RF and Magnevist RF, and will be provided to hospitals that specifically request the RFID chips. Other customers will continue to receive bottles without RFID-enabled labels.

Hospitals can store the bottles in cabinets provided by Mobile Aspects—available either as a 6-foot-tall freestanding unit, or as a 3-foot tall model that can be mounted on a wall or sit on a shelf. Both models measure 3 feet in width and depth, and each comes with an embedded RFID interrogator, shelves for the bottles and a locking door.

A technologist who wishes to administer contrast media for an MRI or CT procedure either allows the cabinet's RFID interrogator to read the RFID tag in their ID badge, or uses the cabinet's keypad to enter a personal identification number. The shelf includes a touch screen and an automatic door lock. If the system accepts the worker's ID number, the door unlocks and the screen displays a list of patients scheduled for procedures that day. The patient list is derived from the hospital's admission records, which the VistaTrak software system makes available on the reader screen.

When the technologist selects a patient, that person's medical records, as well as a dosage recommendation and any health issues (such as a report of poor kidney function that would not accommodate the procedure), is displayed on the screen. The employee then removes the bottle from the shelf, at which time the interrogator ceases to receive transmission of that RFID label and sends an alert to the back-end system, indicating the bottle has been removed.

The system not only tracks the media's movement for safety purposes, but also can track expiration dates and ensure that one bottle is used entirely before another is opened. For example, if a bottle is opened and then returned to the cabinet with product remaining inside, a subsequent technologist can receive an alert from the system's touch screen indicating the presence of an opened bottle already on the self. Hospitals frequently purchase 100-milliliter bottles to supply product for multiple procedures, but the procedures are so common that the amount of wastage in some hospitals is high.

RELATED_ARTICLES The greatest financial value hospitals can gain from the VistaTrak system, Christianson says, is in "ensuring that patients and their insurers are billed for the use of the contrast media

during their procedures."

"Our goal is to have as many [hospitals] as possible using this system," Bertetti states. "It gives them a better way to monitor their compliance and ensure safety." Pricing for the system, he says, has yet to be determined.

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