

BloodCenter of Wisconsin to Study RFID's Effect on Blood

The testing will be part of an ongoing initiative to develop RFID standards for labeling and tracking the blood supply chain, from donor to patient.

By Beth Bacheldor

Sept. 10, 2007—BloodCenter of Wisconsin, in cooperation with several business and technology partners, will begin testing this month to determine whether RFID has any harmful effects on blood products. The testing will be part of an ongoing initiative to develop RFID standards for labeling and tracking blood in the global supply chain, from donor to patient.

The initiative will seek to develop a standard for RFID tag size and data layout, which it will present next month to the International Society of Blood Transfusion (ISBT) for review. The ISBT is a scientific society that helps guide research, processes and standards for blood transfusion and transfusion medicine around the world.

More than a year ago, BloodCenter of Wisconsin initiated a study intended to assess whether RFID technology could be employed to augment the ISBT 128 bar-code-based system used worldwide, and to gain additional safety and operational efficiencies and effectiveness. Partners in the project included Carter BloodCare, Mississippi Blood Services, eSunTech, Mediware Information Systems, Oracle, Psion Teklogix, SysLogic, Tagsys and the University of Wisconsin—Madison's RFID Lab. This study indicated that potential gains from RFID could not only support increased safety, but result in an ROI as well. Based on this assessment, the team has begun to move forward with building a prototype application for blood banks.

Participants in the initiative recently met with members of the U.S. Food and Drug Administration (FDA) to discuss RFID's use in the blood supply chain. The FDA requested that the group study whether the technology's RF signals might affect blood. "The FDA asked us to conduct trials to ensure the blood products wouldn't be harmed or adversely affected," says Lynne Briggs, director of IS applications at the BloodCenter of Wisconsin. "Next week, we're kicking off our first trial with [the] Applied Research team here at the BloodCenter of Wisconsin. This first trial will be a limit test, which involves hitting the blood products with a high level of RF energy continuously, and then assessing how the blood is affected molecularly."

Briggs says the team is expected to conduct tests for approximately two weeks, after which it will take another two weeks to receive and assess the results. "Based upon other manufacturing processes used in blood, including irradiation, we believe we won't see any adverse impact," she says, "but we, along with the FDA, want to ensure this is the case."

In October, Briggs says, the group will present its recommendation regarding tag size and data layout to the ISBT's RFID Working Party. The group will recommend a 2-kilobit aluminum-antenna passive HF tag, compliant with the ISO 15693 standard, as the most appropriate tag for use in labeling blood products. "We chose aluminum rather than silver or copper," she states. "Our rationale is because when we are done with a

blood product, it gets incinerated, and aluminum is a little more environmentally friendly than copper or silver."

The group will propose similar elements for data layout, as defined in ISBT 128, the global standard for the identification, labeling and information-processing of human blood, tissue and organ products across international borders and disparate health-care systems. The group will further suggest that the tag contain a unique Donation Identification Number (DEN), currently used on bar codes as per ISBT 128. The DEN identifies when the blood was collected, and from which blood center. It also notes the product code (which classifies blood products as red cells, platelets, plasma and so forth), blood type, expiration date and other data elements, such as timestamps—for instance, when a blood product was taken out of refrigeration, and for how long.

Blood products are currently tracked through the supply chain using bar codes, and data and bar-code standards developed by the ISBT for blood labeling have been adopted worldwide. Bar coding requires line-of-sight scanning, however, and there is a limit as to how much information can be included on a bar-code label.

"The blood-bag face label and bar codes will remain the absolute standard and authoritative information from which the RFID tag is populated and verified" Briggs says. "But, by augmenting with RFID, you don't need line of sight to read the tags, so there's an opportunity for huge efficiency gains in picking, packing, shipping and container reconciliation. If you are trying to pack blood for shipping, with bar coding you have to pick every container up, scan the label and then pack it into the shipping container."

RELATED_ARTICLES Not only would the automated scanning of RFID tags reduce the time required to pack a blood shipment, it would also help track the shipment's movement more easily throughout the supply chain, from a supplier (such as BloodCenter of Wisconsin) to a patient's hospital bedside. "Anything you can do to make collection and traceability of data easier, and reduce errors," Briggs explains, "is a huge gain in our industry."

Meanwhile, the BloodCenter of Wisconsin and its partners are in the early stages of assessing how well RFID-tagged blood products work in hospitals. In June, the National Institutes of Health (NIH) awarded SysLogic a \$100,000 small-business grant to study RFID's use on blood supplies and their movement through the extended supply chain into the hospital, and to develop a prototype commercial RFID product.

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