

GlaxoSmithKline Tests RFID on HIV Drug

In a pilot project involving the HIV medication Trizivir, the company is testing its ability to commission and later read RFID tags, which could be used to verify the drug's authenticity.

By Mary Catherine O'Connor

Mar. 24, 2006—According to [GlaxoSmithKline](#) (GSK), the [National Association of Boards of Pharmacy](#) (NABP) lists Trizivir, an HIV medicine, as one of the 32 drugs most susceptible to counterfeiting and diversion. That's why the drugmaker is now placing high-frequency passive tags on all bottles of the drug manufactured for U.S. distribution at its plant in Zebulon, N.C., near Raleigh. The tagging is part of a pilot project aimed at determining whether RFID tags can be attached to bottles of the drug at the GSK packaging facility and later read by GSK at its Raleigh distribution center. The tags could also be used to authenticate the products and fight counterfeiting and diversion.

In 2004, the [U.S. Food and Drug Administration](#) (FDA) recommended the use of RFID for product authentication as a means of eliminating counterfeit drugs, which pose health risks to anyone taking them. The FDA has asked the pharmaceutical industry to develop standards and pilot processes for using the technology. [Purdue Pharma](#) is working with distributor [H.D. Smith](#) to test RFID in authenticating and tracking bottles of Purdue's OxyContin painkiller (see [Purdue Pharma to Run Pedigree Pilot](#)). [Pfizer](#) is also testing RFID to authenticate and track shipments of Viagra in the U.S., while distributor [McKesson](#) is also using the tagged Viagra in its own RFID technology pilot (see [Pfizer Using RFID to Fight Fake Viagra](#) and [McKesson Starts RFID Pilot for Viagra](#)).

GSK spokesperson Mary Ann Rhyne says her company's primary goal in the pilot is to authenticate the Trizivir product, sales of which were \$302 million in 2005. RFID can also be used to improve efficiencies and visibility into supply chain processes, but the company doesn't believe it likely will find such benefits in the Trizivir pilot. "There aren't many efficiencies [that will result from tracking] one stock-keeping unit," says Rob Coyle, director of warehouse and distribution services in GSK's IT department. "And since we're tagging only one product, we're treating it as an exception," he says, noting that the pilot will add some time and labor to GSK processes. As a result of this pilot, he says, GSK will gain a better understanding of RFID technology, how well and consistently tags attached to bottles and cases of its product can be read, and what business process changes might be required to integrate the technology on a permanent basis.

Coyle explains that GSK conducted in-house testing to determine the best types of tags to use in the pilot. "We did some early testing when we were getting ready to tag consumer goods for retail mandates," says Coyle, "and then we did some additional testing for the pilot, using three different form factors." The tests showed that high-frequency (13.56 MHz) tags outperformed ultra-high frequency tags when read at the item level. For cases of products, however, UHF tags performed best.

GSK designed its pilot with the help of [IBM](#), which provided the RFID middleware the drugmaker is using to collect and filter the RFID tag data and associate it with batch and order information as the units of tagged Trizivir move from the packaging line to a GSK distribution center in Raleigh.

GSK is applying labels embedded with the ISO 15693-compliant RFID inlays to the bottles of Trizivir as they move down the packaging line. Pre-encoded on the inlay is an Electronic Product Code (EPC) containing the product manufacturer ID and a random serialized number. "Nowhere on the EPC does it say that the product is Trizivir," says Coyle. "We're doing this to address consumer privacy, and because standards as to how product data should be encoded on pharmaceuticals are still being developed."

Once the label is placed on the bottle, an RFID interrogator mounted on the label applicator verifies that the inlay is functioning and can be read. The tagged bottles are placed in a 48-bottle case, labeled with an ultrahigh frequency RFID inlay. The sealed case is then sent through a tunnel mounted on a conveyor system. Interrogators inside the tunnel read the unit-level tags, as well as the case tag, and feed the data into the IBM middleware, which marries each bottle ID number with that of the case tag. The software also associates the batch data, such as lot number and expiration date, with each EPC.

The cases are then palletized and shipped to GSK's distribution center, where the tags are read, as are the bar codes on the cases and pallet, in accordance to GSK's existing warehouse management system. Once received into the DC inventory, the pallets of Trizivir are broken down and again run through a tunnel so the case and item tags can be read. The cases are then put into inventory at the DC.

After GSK pulls products to fill orders, a conveyor system directs the cases to shipping stations based on destination. GSK has added a tunnel reader over this conveyor system that reads the tags embedded in the bottles and cases of Trizivir. If GSK ever opts to tag its other products, it will read those tags, as well. As the readers capture the tag data, the IBM middleware collects it and associates it with the order information. The products are then palletized and shipped to wholesalers.

Paul Chang, IBM's associate partner of business consulting services, says the IBM middleware can integrate GSK's RFID system with those of its customer, if GSK chooses to do such integration projects in the future.

Coyle says the Trizivir pilot will run for six months, and that GSK has had discussions with its wholesale partners. Some of them, he notes, have shown interest in participating in the pilot by deploying an RFID infrastructure to capture the RFID tag data from the items and cases. This step would be required to test RFID's ability to authenticate the drug beyond GSK's internal supply chain. The drugmaker is prepared to provide the EPC, batch and order data collected during the pilot to any of its wholesale partners that participate in the pilot. The wholesalers would use the data to establish an electronic chain of custody, or e-pedigree, to verify that the drugs received are authentic. While the FDA has not mandated the use of an electronic pedigree to track and authenticate drugs, individual states have passed legislation requiring it—though not necessarily through the use of RFID.

At the end of the six-month trial, GSK will decide whether or not to continue the pilot. The firm will base its decision on the results of the pilot, on any standards development that might take place during the next six months, and on the status of any other pilots its wholesalers might launch in order to piggy-back on the GSK tagging pilot.

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