

White Paper: RFID's Role in Tracking Medical Assets



Introduction

RFID technology is used successfully around the world in thousands of applications. Long removed from its days as a high-priced science experiment, RFID is creating spectacular gains in business processes for enterprises large and small.

RFID has progressed from the R&D stage to the executive boardroom, enabling it to gain a strong foothold in sectors like retail, transportation, automotive and aerospace. The technology is seeing rapid acceptance in healthcare and medical, with new use cases emerging rapidly. RFID in healthcare received a shot in the arm last year when the Department of Veterans Affairs announced that it plans to deploy real-time location solutions (RTLS), including passive and active RFID, at 152 medical centers and at more than 1,000 other facilities.

The use of passive RFID tags provide companies with an affordable way to track most everything in the supply chain, from raw materials being transported overseas, to factory work-in-progress, to finished product in the warehouse. Finally, RFID provides companies with previously unavailable visibility into finished products as they arrive at their final destination, be it a retail store or healthcare facility.

Some of the most common applications for RFID include item level tagging in retail, asset management, inventory control, tracking work-in-progress, tolling, and supply chain management.

Success in retail can be applied to IMDs

Retailers have adopted RFID technology to cure inaccurate inventory accuracy that has plagued the retail industry for years. Similarly, healthcare providers and medical device manufacturers are turning to RFID for many of the same reasons. The technology can provide real-time inventory data for high-value materials like implantable medical devices (IMDs), unveiling previously unavailable inventory visibility for these products.

More than two billion RFID tags are expected to be consumed in the retail sector during 2013. The technology is proven to increase retail inventory visibility from an average of 65 percent upwards of 98 percent.

If the return on investment from RFID is high enough that retailers are willing to absorb the cost embedding a 10-cent RFID tag on a \$100 pair of blue jeans, imagine the payback from tagging items like implantable cardioverter defibrillators that can cost thousands of dollars for a single unit.

Given the costs involved, the RFID market for high-value IMD's is even more compelling than the retail market. Consider that implantable devices represent 60-80 percent of supply costs at a typical healthcare facility, despite accounting for only 10-15 percent of entire unit volume. Typically, an IMD can represent as much as 80 percent of the total cost of a medical procedure.

The demand for cardiac implants is expected to rise by 8.8 percent annually to a value of \$16.4 billion, serving 73 million people with heart conditions. Increases in orthopedic and spinal procedures mirror that trend. (1) And nearly 750,000 Americans have knee or hip replacement surgery each year. (2) Researchers from the University of Pittsburgh predict that several million medical implants could be tagged with RFID within two to three years.

An ailing medical device supply chain

The process for storing, procuring and tracking the usage of IMDs is extremely flawed. Approximately three-quarters of the recordkeeping for these crucial items is still conducted manually, (3) opening the door to inaccurate data collection, poor inventory accuracy and a flawed reconciliation process.

In addition, the manual system used to track IMDs results in significant labor costs and takes caregivers away from the patient while they search for inventory or conduct post-procedure paperwork. During a procedure in the operating room, a nurse will typically take written notes when an IMD is used, and complete the paperwork at the nursing station following the procedure. That is, if s/he doesn't get interrupted by another call during that recording process. If the nurse is interrupted, the information on the medical device might never be logged.

Many experts believe that inventory accuracy for medical supplies like IMDs is far worse than the lack of visibility that plagues retail. Without real-time and accurate inventory taking, huge losses from expired and obsolete products are commonplace. In most cases, expiration and obsolescence rates for IMD's range from 7 to 20 percent. Given that the U.S. IMD market is valued at \$40 billion, a 7 percent shrinkage rate equals about \$2.8 billion worth of lost product each year. When you add incorrect patient charges and disputed charges to the equation, that number can easily surpass \$5 billion.

For healthcare facilities working on margins as low as 1.5 percent, even a small loss of inventory can have drastic financial implications. In addition, poor visibility to both purchased and consigned products promotes distrust with suppliers and damages purchasing relationships.

In addition, healthcare insurance companies continue to limit the amount that healthcare providers can charge for certain procedures. As reimbursements decline, the ability to increase revenues is limited. As a result, healthcare providers are required to slash costs and work more efficiently. Successful healthcare providers and suppliers who leverage technology and supply chain visibility stand to gain a real competitive advantage.

RFID: The fix for what ails the IMD value chain

RFID technology is rapidly being considered as the best solution for many of the challenges that afflict high-value medical devices. RFID has already improved inventory visibility and is saving healthcare

providers and medical device manufacturers millions of dollars. And the technology has still only been fully deployed by a fraction of the medical community.

Inventory shrinkage and supply chain: By tagging IMD's like artificial joints, heart defibrillators, cardiac stents and surgical mesh, healthcare facilities have an accurate and real-time view into their inventory in the operating room and in the cath lab, and what products are available for procedures and which ones are closest to expiring. Furthermore, medical staffs have the confidence to go into a procedure knowing that the parts they need are readily available. Supply costs are the second largest operating expense for healthcare providers, and supply costs are growing faster than any other category. By deploying RFID, hospitals cut as much as 18 percent in labor costs associated with resupplying. (1)

Shrinkage reductions are well documented in other healthcare sectors that mirror hospital operations. Improved inventory visibility helped Promega to reduce shrinkage from 35 percent in every freezer to less than 1 percent. It stands to reason that hospitals can realize similar savings. Additionally, a research lab entirely eliminated shrinkage of expensive reagent kits, while a life sciences company used RFID to reduce expired product write-offs from \$30,000 per month to close to zero.

Compliance, patient safety and recall management: While strong gains in inventory management and subsequent improvement to financial ledgers are striking, those benefits pale in comparison to patient safety issues. In 2011, a panel from the Institute of Medicine recommended that the FDA should overhaul its device regulatory system because it fails to ensure patient safety before and after medical device products go on the market.

Whether there is eventual overhaul or not, embedding RFID tags on IMDs can enhance patient safety both before and after a procedure. In the event of a product recall, RFID-enabled IMDs would provide instant data about the identification of the device, where it was manufactured, the healthcare professionals who installed it and maintained it, and device and patient health. Tagging medical devices would reduce the possibility of a recalled item being installed in a patient after a recall has been issued.

Recalls are not uncommon in the medical device sector. In 2009, there were 31 device recalls, 14 of which were related to implantable devices. In 2010, nine implantable devices were recalled. Implant recalls are also much easier for the manufacturer to manage when the items can be tracked with RFID.

RFID-enabling IMDs allows patients to quickly discover if their implant was included. The aerospace industry is using high-memory RFID tags to write cradle-to-grave information onto aircraft parts. Similarly, RFID provides the ability to capture data that connects a patient with his medical team, the IMD used, notes about the actual procedure and the medical outcome.

In the future, doctors will likely use RFID and sensor technology to track diseases or infections that occur following an operation. According to RFID 24-7, sensors within an RFID chip can gauge the pressure on the implant, the chemical balance and temperature of the surrounding tissue, and the presence of harmful organisms. Knowing this information can allow healthcare providers to treat potential infections

before they become serious and require a second operation. Infection control and prevention is likely to be the first and largest ROI segment once RFID and sensors become commonly used in IMDs.

In addition to recall management, RFID can aid healthcare providers and manufacturers when it comes to complying with Sarbanes Oxley requirements that are increasing for implantable device products..

RFID benefits all parties – including device manufacturers

When retailers first embraced RFID technology, manufacturers often failed to comply with RFID mandates because of the lack of perceived benefit for them. That has slowly changed over time. There is no such debate, however, when it comes to medical devices. Several well-documented manufacturer benefits can be attributed to deploying RFID technology on IMD's.

For starters, RFID can speed up the payment process since a manufacturer knows immediately when a product is consumed. In a world where many items at hospitals are consumed on a consignment basis, fast and accurate reconciliation is a major benefit for manufacturers. One medical device manufacturer eliminated 15,000 hours of reconciliation time per year because of the increased visibility provided by RFID.

References

1. Tyson, Patricia, RN: Extract big savings from PPI medical device buying;; Materials Management in Healthcare, May 2010.
2. RFID 24-7
3. Hospitals & Health Networks Most Wired Survey, 2011

Terso Solutions, Inc.

Terso Solutions is a leading provider of automated inventory management solutions for tracking high-value medical and scientific products in healthcare and laboratory supply chains. With no hardware to purchase and no software to install, our integrated RFID solutions can help eliminate manual processes, improve regulatory compliance, and reduce stock-outs and expired products.