

# How RFID Technology on Sterile Injectables Can Help Transform Patient Safety



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Two decades ago, the pharmaceutical industry started exploring radio-frequency identification (RFID) as a way to track and manage medications. The idea was powerful, but the timing wasn't right. Tags didn't perform well on tiny vials or liquid-filled packaging, and hospitals didn't yet have the infrastructure to support the technology.

Fast forward to today, and the story has changed. RFID has matured. Hospitals are adopting it rapidly.<sup>1</sup> And at Pfizer, we're proud to introduce SmartDose™—our line of sterile injectables with RFID-enabled labels built in at the point of manufacture.



But SmartDose™ isn't just about efficiency. It's also about safety.

## From Efficiency to Safety: Why RFID Matters Now

Pharmacies everywhere are stretched thin. Technician shortages, growing demands, and endless manual tasks all add pressure to already busy teams. RFID-tagged medications can help ease the load—automating inventory counts, saving time, and creating much-needed breathing room.

While RFID technology is often recognized for its ability to streamline workflows, its potential to support patient safety may be even more significant. SmartDose™ can help contribute to safer medication administration by enabling faster identification and removal of expired or near-expiry inventory, reducing the risk of inadvertent use. In the rare event of a recall, RFID may also streamline the process of pinpointing affected products, allowing for quick action to protect patients.

SmartDose™ incorporates these safeguards during manufacturing, with each product pre-labeled and pre-associated. This eliminates the need for hospitals to manually apply tags, reducing variability, minimizing opportunities for error, and ensuring accuracy before the product ever reaches a hospital. Another important feature of SmartDose™ is its use of low-memory RFID tags. These compact, efficient tags are designed to fit even the smallest vial sizes, integrate smoothly into production workflows, and provide real-time traceability—helping patients and providers benefit without added complexity or unnecessary costs.



Image courtesy of Bluesight

## What is RFID?

RFID, or radio-frequency identification, uses radio waves to capture and transmit data from a small tag attached to a product. Unlike barcodes, RFID does not require direct line-of-sight scanning and can read multiple items at once to capture details such as NDC, serial number, lot number, and expiration date.

In a hospital or pharmacy setting, this means inventory can be tracked in real time without manual counts. More importantly, RFID creates a digital trail for each medication—and with the right infrastructure, it can indicate its location, movement history, and whether it's ready for safe administration.

## The Future of Patient Safety

Looking ahead, RFID-tagged medications are expected to evolve beyond inventory management into tools that could directly support clinical safety. Over the next several years, this technology could help alert staff at the bedside if the wrong medication is present, strengthen oversight of drug diversion, and even integrate with patient monitoring systems to offer real-time decision support.

Hospitals may increasingly use RFID in tandem with bedside barcode medication administration (BCMA), embedding an added layer of protection within clinical workflows. When fully integrated into hospital systems, RFID has the potential to serve as a clinical enabler—helping ensure the right medication reaches the right patient at the right time.

That is the vision SmartDose™ aims to support: one where technology and patient safety increasingly work together.



Image courtesy of Bluesight

## Our Commitment



Actor portrayals



Learn more at [www.pfizerhospitalus.com/rfid](http://www.pfizerhospitalus.com/rfid)

While operational efficiencies remain important, patient safety continues to be our guiding priority, and SmartDose™ reflects Pfizer's ongoing efforts to embed that priority into every product we deliver.

With SmartDose™, Pfizer Hospital is making a long-term investment in the future of sterile injectable medications. By combining innovation, scale, and a strong focus on patient safety, we're helping to shape how sterile injectables reach the market—and how safeguards that prioritize patient safety can be built into every step of the process.

<sup>1</sup> ASHP Foundation. Advancing medication safety through technology innovations: focus on radio frequency identification technology. 2022. Accessed September 16, 2025. [https://www.ashpfoundation.org/-/media/REF/pdf-folder/5\\_ASHF-Foundation-RFID-Report\\_Web.pdf](https://www.ashpfoundation.org/-/media/REF/pdf-folder/5_ASHF-Foundation-RFID-Report_Web.pdf)