**Intelliguard's Waste Witness software and anesthesia station enable hospitals to capture an automatic record of when narcotics were used on a patient, by which health-care provider and, if a drug was discarded, who witnessed that event.**

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Jul 15, 2019—Hospitals and the anesthesiologists who work at them are charged with meeting tight regulations for the use and disposal of opioid medications provided to patients undergoing procedures in operating rooms. Every drug that is administered to a patient, or that is not fully used, must be documented, and any medicines not used must be disposed of with a witness's confirmation. The aim is to ensure that opioids do not end up in the wrong hands. Drugs are controlled through locked cabinets, either automated or not. Management of waste disposal, on the other hand, can be manually accomplished via paper and pen, with a witness indicating that a product was discarded.

IntelliGuard has released what it describes as an automated alternative using passive UHF (RAIN) RFID technology to detect which products are taken from or returned to an anesthesia cabinet, and to link each event with the provider who accessed that drug. The company's Waste Witness software is currently in use at several U.S. hospitals, according to Elise Claudepierre, IntelliGuard's VP of marketing.



IntelliGuard's Waste Witness software can be used with the company's anesthesia station.

IntelliGuard's anesthesia stations sit in an operating room, procedural area or other central location for medication management and access. In most cases, hospitals using the technology place such a station within every operating room. The station employs RFID to detect the presence of medications, while a Wi-Fi or cabled connection to a cloud-based server manages the collected data. One of the earliest adopters of the cabinet and the Waste Witness solution is Rady Children's Hospital, in San Diego, which uses the system to help mitigate the diversion of opioids, and to create an automated digital record that can be shared with regulatory bodies.

The opioid crisis has made the use and disposal of anesthesia medications a growing concern for hospitals, which must comply with standards such as those issued by the Joint Commission and the Centers for Medical and Medicaid Services. The concern is that health-care providers have access to narcotics, and that some may abuse that access. One way to guarantee the safe use of drugs at hospitals is to require that providers or pharmacies destroy unused narcotics.

Although medication use is tightly regulated, Claudepierre says, errors and omissions can sometimes still occur with manual paper-based filing and barcode scanning. If a medication's barcode isn't scanned by an anesthesiologist as it is removed from a cabinet, that product may simply end up missing from inventory, creating a problem for the hospital.

Rady Children's Hospital launched the system in December 2018 to prevent such incidents at its facility, and several other medical centers have since deployed the technology within their own ORs as well. "IntelliGuard Anesthesia tracks medications at 99.999 percent accuracy rate," Claudepierre says, "through an automated process."

Every medication is tagged with an RFID tag, typically by staff members at the hospital's pharmacy. The unique 96-bit ID number encoded on each tag is linked to the serial ID of the specific medication, along with such information as its expiration date and National Drug Code. IntelliGuard employs an RFID label from e-Agile, Claudepierre says, though she notes that the system is tag-agnostic.

Hospitals buy the cabinets outright and can use IntelliGuard's cloud-based software via a software-as-service (SaaS) model. As hospital personnel place medications within the cabinet, IntelliGuard's UHF reader and antenna array, built into the cabinet, capture the unique ID numbers and forward that information to the software, where it is linked to each medication's data. That information is then available on a dashboard to hospital management, pharmacists and anesthesiologists.

To access the cabinet, an anesthesiologist uses a touch screen key pad, a fingerprint reader and a contactless ID badge. "The provider logs in through a simple process," Claudepierre states. The hospital can assign access requirements for system users, depending on the security requirements and authorization protocols in place. If the software confirms that a specific user is authorized, the station's drawer will unlock. The worker can then open the cabinet drawer, remove the tagged medication and close the drawer.



Elise Claudepierre

Anesthesiologists typically remove multiple medications for a particular patient's procedure. Therefore, the cabinet captures the IDs of any drugs that are removed. An employee can return any unopened containers, at which time their tag IDs will be read once more, and each drug's status is thus updated in the software as being ready for use.

However, if a container has been opened but not completely administered, it needs to be discarded. The cabinet features a touch-screen function that allows that process. Before an individual can discard a medication, he or she requires a witness to provide a digital signature on the touch screen, thereby creating a record of what occurred. The user places the drug on the tray on top of the cabinet and selects the "Waste Witness" option on the touchscreen. The witness then uses his or her own ID badge or PIN to indicate that he or she has witnessed the disposal, and to officially sign the digital document of that event.

All of the station's data is forwarded to IntelliGuard's enterprise software, which identifies what has been removed and by which practitioner. The hospital can then view the cabinet's contents in real time via a dashboard, in order to confirm which products are available in each operating room, as well as when a given product needs to be restocked, or if an expiration date is imminent.

IntelliGuard manufactures the cabinets, including the RFID reader and antenna hardware, at the company's Carlsbad facility. Its customers most often apply off-the-shelf RFID tags to the medications as they receive them, then go through the encoding process. But in the future, Claudepierre says, the firm expects many products to arrive at the hospital already tagged, as pharmaceutical companies are either compelled to tag goods for customers or find value in the technology themselves for the purpose of supply chain management.

The cabinet can also be used for historical analytics. For instance, if a hospital wants to view trends, such as which medications are being used, as well as how often and when, it can analyze the data from the cabinet. "There are a couple of problems that we solve when it comes to inventory management" Claudepierre states, "but the primary benefits to the hospital or pharmacy are safety and security." IntelliGuard's station is now being validated for use with saline products, she adds, or for tracking other bags of liquids used in the health-care environment.