*Inventory **Management***

Tracking Pacemakers and Defibrillators in the EP Lab with the RFID SmartCabinet Solution

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Hadassah Medical Center is a healthcare institute recognized internationally as a true leader, especially when it comes to implementing futuristic medicine, including Israel's first successful heart transplant.

Today the hospital has over 1,000 beds, 31 operating rooms, and nearly 100,000 patient admissions a year.

The center's EP lab performs electrophysiological studies of complex arrhythmias and ablations of abnormal pathways. After patients are seen in the clinic, they return for EP testing that determines the nature of the arrhythmia. The results have been very successful and, in most cases, a complete cure is achieved.

The unit also implants state-of-the-art pacemakers and defibrillators. The work methods with these two types of devices are very different — while there are only 3–4 types of pacemakers per vendor that the unit selects from per procedure, the defibrillators come in one kit equipped with over 100 different tools that is pre-ordered full of the equipment

needed. While we have a small stock of pacemakers from several vendors in the EP lab, the defibrillators are actually delivered by the vendor's representative — sometimes at only several hours' notice. The hospital notifies the rep of a procedure's data and time, and they come with the kit ready to provide full support in case some other tools are needed.

Each device is highly expensive. These state-of-the-art pacemakers and defibrillators can reach thousands of dollars per device. The hospital can approximate in advance the number of devices required per month — 20 pacemakers and 10 defibrillators each month. This figure means we purchase a stock of pacemakers several months in advance; however, we do not keep kits of defibrillators on hand. These are specifically ordered per procedure.

Hadassah Medical Center realized several day-to-day challenges in tracking pacemakers and defibrillators in the EP lab. As a technologically innovative hospital, we sought to find a solution for all concerned — the patient, personnel, medical vendor, and hospital management.

OUR FIRST CHALLENGE: AVAILABILITY OF MEDICAL DEVICES

The availability of these medical devices is vital for the success

of each procedure — we need the right device on hand at the right time, even if the right time means in the middle of a procedure.

Our unit does try to prepare and pre-order the devices, since most of the procedures are preplanned as we can estimate the average number of the procedures during a specific week. However, there are several scenarios that put the unit at risk:
1. In the middle of a procedure, it is decided that the patient needs a different type of pacemaker. What happens if it's not available to the physician right then and there?
2. A staff member forgets to notify the medical vendor about a procedure. Will we have to wait an extra several hours to perform the procedure?

These scenarios are unacceptable, and we sought to find a solution that could eliminate similar situations.

OUR SECOND CHALLENGE: EXPIRATIONS OF MEDICAL DEVICES

Nurses who are prepping the patients and the EP lab for procedures must also get the devices ready. Both the hospital and the vendor can be at risk by using expired items and thus putting the patient's life at risk. A part of this preparation includes checking the device's expiration dates, an important task that becomes more difficult during hectic procedures. Our goal was to find an automatic solution to make sure there were no expired items used in our EP lab.

OUR THIRD CHALLENGE: RECORDKEEPING

When handling billing, insurance, and medical records, it is

important to associate each medical device used with the patient it was used for. We need to know when a pacemaker or defibrillator was used, from which vendor, and the device's specific serial number. This record-keeping is done so that we can track the patient history for future treatment as well as know who to bill and for what.

Let's take a scenario in which we discover an infection or the vendor decides to recall a specific model — missing this information could cause a great problem. For precise recordkeeping, the more automated the system is, the better our ability to provide the best care. Typing the information into the system was not enough for us.

OUR FOURTH CHALLENGE: WORKING WITH MEDICAL VENDORS AND SHIFTING TO CONSIGNMENT

Each medical device in the EP lab is very expensive, specifically the defibrillators, costing anywhere from thousands to tens of thousands of dollars per kit. As with the rest of the world, our medical center is experiencing an increase in the need for these devices, with the population age increasing and heart conditions more frequent. If we were forced to purchase the defibrillators in advance, it would put a great deal of strain on our budget, not including the possibility of waste by holding inventory that may not be used under the vendor's expiration deadline.

To purchase these devices under consignment means the vendors, along with the hospital's purchasing department, must trust and expect that our recordkeeping will be 100% accurate. We need to continuously

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report exactly what was used, at what procedure, and by whom. Manual recordkeeping may not be enough, especially when it's completed by already overworked nurses. Paperwork can get lost, be incomplete, and open for errors. Therefore, our next challenge was how to keep accurate records.

THE SOLUTION

One of our medical device vendors informed us of a technological solution that could solve these challenges — the RFID SmartCabinet by LogiTag. The cabinet looks like any normal shelving solution, but is in fact an excellent tool to advance our working methods. It contains the various pacemakers and defibrillator kits we need, all tagged with RFID technology and locked behind glass doors. Our unit's personnel can only open the door to remove an item with their hospital ID; the system recognizes when an item is removed, which one, and by whom. Once the procedure is done, either the nurse or the medical vendor scans the device's

RFID tag to automatically report its usage. Any previously removed but unused items from the cabinet go back for safe storage.

The information is all stored on a cloud server. We know what medical devices are inside the EP lab, what needs to be delivered, what is about to expire, and what needs to be ordered. The reports are automatically emailed to the head nurse and to the medical vendor. This way we are in agreement and do not need to communicate via manual reporting techniques (faxes, writing on the board, filling out forms, etc.).

BENEFITS

- *Our nurses are enthusiastic about the SmartCabinet.* They don't worry about wasting time checking for expired pacemakers or defibrillators. In addition, since the SmartCabinet is located inside the unit, nurses are able to instantly view inventory through the glass doors and have more time to care for patients.

> **It is important for the Hadassah Medical Center and for our EP lab to stay at the cutting edge of technology. SmartCabinet is yet another solution that helped us achieve that.**

- *Availability.* We are stocked with accurate numbers for and types of pacemakers and defibrillators, for any procedure at any time, even without early notification.
- *Vendor/hospital relationships.* The accurate recordkeeping and safe storage of the items provide an ideal infrastructure for consignment. Expensive devices are stored safely. If anyone uses the devices, the system records it, so there is no confusion.
- *Expired items.* These are completely eliminated, as the reporting system provides advanced alerts as to which item is about to expire and should be used first.

- *Patient device records.* We have the ability to automatically record and track each procedure with the device used, and store and use the information at any time.

SUMMARY

It is important for the Hadassah Medical Center and for our EP lab to stay at the cutting edge of technology. SmartCabinet is yet another solution that helped us achieve that. We look to expand its use for further functions. ■

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