

## **RFID in Healthcare:** *Losing Cables, Making Waves:*

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### **Synopsis**

Two of the main influencing factors for both government and commercial healthcare facilities in adopting healthcare informatics are;

1. The endeavor of reducing medical errors resulting from failure of proper patient identification/verification;
2. Improvement in diagnosis reliability, treatment success, and maintaining cost efficiency.

Various research studies have highlighted that inaccurate patient data has become a major factor leading to serious medical mishaps. In addition, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) states that some of the most common medical errors are related to medication delivery. One can imagine the complications of unnecessary medical mishaps arising from such factors in addition to the extra hospital-related costs of treating these medical errors and the loss of productivity on a whole.

### **Radio Frequency Identification (RFID)**

Radio Frequency Identification (RFID) is a technology that allows the detection of data using high frequency (HF) and ultra-high frequency (UHF) radio-waves, and unlike barcodes, RFID does not require line-of-sight (it need not even be visible) and allows multiple reads of data instantly.

These characteristics of RFID make it the perfect data collection platform for industries that need identification, monitoring, and tracking of a product or information. Already proven as a valuable enabler in the logistics industry in managing efficient supply chains, the potential benefits will extend to critical healthcare issues such as patient safety and process (treatment) efficiency. Some of the advantages of utilizing RFID in healthcare include:

- Reduce/prevent error rate
- Increased efficiency/performance
- Reduce product recall cost (fake drugs)
- Minimized costs and time
- Improve patient care and safety
- Just-in-time (JIT) medical replenishment

### **RFID in Healthcare**

RFID in healthcare acts as a fantastic tool for wirelessly locating and identifying anything from wheelchairs to patients. For example, the bracelet that the patients wear for identification purposes when admitted to a healthcare facility can be RFID-enabled, linking the patient to Electronic Medical Records (EMR) to provide the patient's medical history and his/her treatment till date.

In addition, RFID can be applied in the following areas:

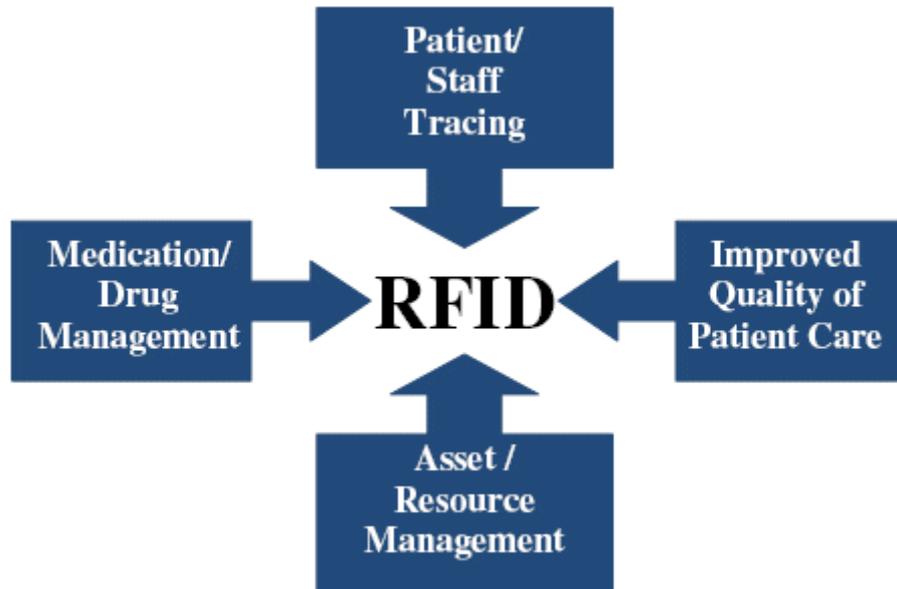


Figure 1: Some applications of RFID in Healthcare

Medication/Drug management	Patient/Staff Tracking
<p><b>Medication Management</b></p> <ul style="list-style-type: none"> <li>• Reduce the risk of drugs being misplaced</li> <li>• Ensure that the correct medication and dosage is given</li> <li>• Ensure that medicines have not expired</li> <li>• Stock check on the drug that needs replenishment</li> </ul> <p><b>Pharmaceutical Management</b></p> <ul style="list-style-type: none"> <li>• Tracking of pharmaceutical products (For example, recall of a particular batch the drugs)</li> <li>• Preventing counterfeit stock entering the supply chain (verifying the authenticity of drugs)</li> </ul>	<p><b>Contact Tracing</b></p> <ul style="list-style-type: none"> <li>• Trace the movements of health care workers, patients, and hospital visitors within the hospital during the pandemic outbreaks</li> </ul> <p><b>Newborn Babies</b></p> <ul style="list-style-type: none"> <li>• Enables not only correct identification, but it can immediately alert the hospital if an infant is removed from his or her designated area</li> </ul> <p><b>Patient's Location</b></p> <ul style="list-style-type: none"> <li>• Patients are often scheduled for multiple, consecutive procedures, knowledge of their location helps optimize the patient-care process and helps manage schedules in real-time</li> </ul> <p><b>Medical Staff's Location</b></p> <ul style="list-style-type: none"> <li>• Location of medical staff in emergencies, whereby a physician is summoned in cases where the staff themselves need help</li> </ul>

Improved Quality of Patient Care	Asset/Resource Management
<p><b>Critical Care/Emergency Cases</b></p> <ul style="list-style-type: none"> <li>• Ensure that the critical care items can be located immediately</li> <li>• This can save lives in emergencies</li> </ul> <p><b>Improved Patient Care</b></p> <ul style="list-style-type: none"> <li>• No need to disturb patients (For example, sleeping patients) to identify that it's the right patient during routine checks</li> </ul>	<p><b>Medical Equipment Tracking</b></p> <ul style="list-style-type: none"> <li>• Save nurse's time in searching for (mobile) medical equipment</li> <li>• Locate misplaced or 'missing' medical equipment</li> </ul> <p><b>Optimizing Usage of Medical Equipment</b></p> <ul style="list-style-type: none"> <li>• Poor utilization and slow device cycle times cause many high-value assets to go underutilized while hospitals continue to overspend on new and rental assets</li> </ul>

### Other Applications

The application of RFID in healthcare is not limited to the above categories, for example, it is also required in the blood transfusion process. Clinical errors can be reduced by verifying that the blood is given to the right patient using information held on the RFID-tagged bags. In addition, details of the blood bag can match the information held on an RFID-tagged bracelet worn by the patient.

### Conclusion

The adoption of RFID in the healthcare sector holds tremendous potential in transforming existing workflows that will bring both tangible and intangible benefits, especially in the better utilization of nurses' time, ultimately improving patient care.

By eliminating errors occurring in the identification of the patient as well as in medication dispensing, the rate of medical errors will be considerably reduced.

### Contact

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