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# RFID vs. Barcode Comparison for Procedural and Emergency Tray Replenishment

For most pharmacies, significant costs, regulatory pressures and patient care and safety challenges are often associated with medication inventory management and inconsistent medication management processes. Patient safety concerns arise with stock-outs, drug shortages, expired or recalled medications. The pharmacy is often understaffed, and the regulatory environment is daunting. The challenge is to meet these demands in an environment filled with manual processes, little visibility and few automation tools. RFID and barcode technology are often utilized to able the efficient and accurate exchange of procedural and emergency kits and trays in the inpatient pharmacy. The below table provides a comparison of RFID vs. barcode processing for kit and tray management.

| PROCESS | RFID | BARCODE |
|---|---|---|
| **Simultaneous Scanning** | ✔ Yes: RFID scans entire contents of tray simultaneously to determine what's missing | ✘ No: Requires manual inventory count to determine what's missing |
| **Ease of Use** | ✔ Yes: Does not require particular orientation or line of sight. (e.g., entire kits, trays, bags, boxes can be read without removing medications) | ✘ No: Requires specific orientation and line of site. Items must be individually scanned and properly oriented (line of site required) |
| **Read Rates** | ✔ Reads up to 150 items simultaneously within 15 seconds | ✘ May take several seconds to read an individual tag |
| **Electronic Pick List** | ✔ Yes: Machine verification of missing, expired and soon-to-expire meds | ✘ No: Manual count to determine what's missing |
| **Verification of PAR Accuracy** | ✔ Yes: Machine verification of entire tray each time it is exchanged | ✘ No: Does not confirm entire tray is accurate (e.g., are items remaining same as were last refilled by the pharmacy?) |
| **Expiry Verification** | ✔ Yes: Machine verification of all inventory and expiry data each time tray is exchanged | ✘ No verification of all inventory expiry data each time tray is exchanged. Last known expired med recorded |
| **Workflow Accountability** | ✔ Yes: Does not allow steps in the process to be missed; prompts and warnings facilitated | ✘ No: Enables users to circumvent key steps, thus negating error safeguards |
| **Ease of Pharmacist Approval** | ✔ Yes: Pharmacist double check via single RFID scan of entire tray. Also support Tech-Check-Tech workflows | ✘ No: Zero time savings for pharmacist – visual inspection and count required |
| **Labor Savings** | ✔ Yes: Saves average 20 minutes on large trays; 6 minutes on small trays | ✘ No: likely to create significant additional work for the pharmacy. Increases processing time for technician; no impact on pharmacist time |
| **Safe Tag Labeling** | ✔ Yes: Blank RFID tag affixed to medications; programming occurs only AFTER tag is applied | ✘ No: May introduce errors. Barcode label printed on remote printer, then affixed to correct medication. Risk for drug mix-up handling errors |
| **Pocket Accuracy** | ✘ Visual inspection required | ~ If used properly, may increase pocket accuracy; however, users can still bypass key steps, negating error safeguards |

*Summary on reverse...*

## SUMMARY

# When lives are at stake, the right tool for the job is paramount.

It is likely barcodes to improve medication administration safety will remain an important objective for most hospitals. It is predicted that this will lead to a co-existence of the barcode and RFID technologies, where they will play a complementary role to each other to achieve superior levels of efficiency and safety.

Due to the characteristic advantages of RFID technology, such as the ability to scan hundreds of products simultaneously, eliminating manual error-prone processes, and reducing the opportunity to bypass key steps in workflow procedures, RFID will be increasingly utilized in specific critical processes in the inpatient pharmacy. For procedural and emergency drugs and high cost specialty pharmaceuticals, RFID assures these time consuming, error-prone and easily circumvented tasks are done efficiently and safely. Manufacturer barcodes play a role even in RFID solutions, as they help automate programming of the specific drug data such as name, drug concentration, dose and package volume information. This barcode data is used to eliminate manual data entry in order to associate RFID tags to the drug to which it's affixed. Only RFID provides all the data necessary to enable error-free kit and tray management - to assure situations never arise that a critical procedural or emergency kit leaves your pharmacy with error

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