

Develop a Unit Dose Repackaging Strategy

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While the provision of medications in bar coded unit of use is a straightforward concept, continual change in unit-dose product availability can compel pharmacies to expend significant effort in securing these products in unit dose.

Additionally, fluctuating price points may inspire pharmacy to weigh the value of acquiring medications in unit of use versus the utilization of a different strategy, be it engaging the services of an outsourced repackaging vendor, in-house repackaging via high-volume or tabletop repackaging machines, manual repackaging, or a combination of these approaches.

To satisfy ASHP's recommendation that medications be made available to patients in ready-to-use, unit dose, or unit-of-use containers,¹ each organization must determine their own strategy to ensure that this occurs.

A Comprehensive Approach

Cape Cod Healthcare, a 280-bed community hospital in Hyannis, Massachusetts, serves a population of about 200,000 people, a number that increases exponentially with tourists during the summer months. The ED sees approximately 84,000 patients annually. To best serve this fluctuating population, the provision of all medications to patients in bar coded unit dose and meeting the ASHP recommendation is a primary goal at our institution.

Like many organizations, we aim to purchase as many products as possible prepackaged in bar coded units of use. This approach ensures that medications are prepared safely and correctly and frees up technician time for other tasks. However, because not all products are available in this format (and products that are can be subject to unanticipated shortages), we utilize a variety of technologies: a tabletop repackaging machine to unit dose and bar code bulk, solid, nonhazardous medications; repeater pumps for filling liquid cups and oral syringes (with labeling software); as well as a manual repackaging system.

In selecting an automated repackaging machine for our operations, we emphasized the following functionalities:

- Packaging accuracy via bar code scanning
- The capability to produce custom labels
- Medication information database with product images available for pharmacists to double check remotely
- Electronic document retention (to help facilitate compliance)
- Easy identification of any recalled products repackaged by the machine

In addition to automated repackaging equipment, the need for manual repackaging systems and associated skills are also critically important. For example, to prevent cross contamination at our facility, certain hazardous medications, liquids, penicillins, and sulfonamides are manually repackaged. All manually repackaged products are appropriately bar coded and labeled. A key benefit of our manual repackaging system is the flexibility it enables to quickly provide necessary medications to our patients. Indeed, in our ongoing era of drug shortages, and with COVID-19 placing additional burden on all clinicians, in-house repackaging, whether automated or manual, is an efficient way to provide continuous care to our patients.

Purchasing Considerations

When deciding whether to purchase medications in bar coded unit of use or repackaging bulk medications in-house, safety and cost are both integral considerations. The pharmacy should weigh the convenience of pre-packaged products with their attendant costs and availability challenges against the flexibility of in-house repackaging and its attendant supplies and labor requirements. Naturally, a combination of practices may be the best solution.

Due to the challenges presented by unit-dose drug shortages at Cape Cod Healthcare, one of the most critical determinations influencing our choice was medication availability. We found that the bulk medications we were using tended to be more readily

available than their bar coded, unit-of-use counterparts. The ability to repackage bulk medications in-house, while also utilizing bar-coding and medication tracking, is an advantage when addressing increasingly common drug shortages.

Workflow Integration

Our hospital was able to quickly and cleanly integrate the unit-dose medication repackaging process into our technicians' workflow. During normal medication acquisition times, repackaging has little, if any, impact on our day-to-day schedule. However, when drug shortages spike, the unit dose repackaging process requires a shift in resources to cover the necessary workload, as well as to ensure all safety and quality measures are in place.

Proper staff training is crucial to an effective, efficient in-house repackaging operation. At our hospital, we began by designating superusers who were fully educated on how the equipment and related software works, including troubleshooting. All other technicians involved in repackaging are then fully trained by the superusers on repackaging workflow. Training consists of both didactic and experiential components. The process, while straightforward, must adhere to a standard set by the pharmacy for quality assurance and information accuracy. After training is completed, technicians must demonstrate competency, which is then documented. In the event of an issue, education and competency should be reevaluated.

An initial challenge involved familiarizing pharmacists with the electronic sign-off feature for the repackaging machine. Pharmacists were used to completing a manual sign-off process; however, with the new repackaging software, pharmacists must manually review the product and then electronically sign-off using the software. After being educated on the correct method, pharmacists quickly became comfortable with the new method. If a pharmacist does not sign off in a timely manner, a technician will initiate contact to remind them to verify the unit dose products through the software.

Annual maintenance, including physically checking the wheels and cleaning the plates, is required for the unit dose packaging machine. At Cape Cod Health we perform this maintenance ourselves, but the vendor will send a representative out to our facility to complete the annual maintenance if requested. In addition, the vendor provides a customer service phone line to assist with

troubleshooting. These ongoing support efforts should accompany the implementation of any repackaging system.

Process Benefits

The repackaging machine's software and bar coding capabilities help ensure the safety and accuracy of the medications we provide to our patients. Establishing and maintaining an in-house repackaging process has allowed our pharmacy to be self-sufficient with greater control over the unit-dose medication provision processes. This strategy allows us to be confident that patients receive accurate, high quality medications in a timely manner.

As the market for medications continues to change and the number of medications available in bar coded unit dose continues to fluctuate, each organization must develop a unique strategy for their acquisitions. In today's hospital pharmacy environment, employing a combination of packaging strategies is often necessary. Purchasing medications in bar coded unit of use, utilizing in-house repackaging machines with bar code scanning, and implementing a manual repackaging system has been a successful combination for our facility. ■

Reference

1. American Society of Health System Pharmacists. ASHP Guidelines on Preventing Medication Errors in Hospitals. Accessed 4.7.20.



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Systems SCOOP

TABLETOP REPACKAGER	Medical Packaging Inc's Auto-Print Unit Dose Packaging System
REPEATER PUMP	Baxter Healthcare Corporation
MANUAL UNIT DOSE PACKAGING SYSTEM	Medi-Dose, Inc / EPS, Inc

 **Medical Packaging Inc.**
medpak.com