



Strategies to Reduce Your Repackaging Requirements

WITH 34% OF PREVENTABLE ADVERSE DRUG EVENTS (ADEs) OCCURRING at the point of care, a well-designed bar coded medication administration (BCMA) system can serve as a necessary safety net¹. In addition to addressing the five rights of medication administration (right patient, right drug, right dose, right route, and right time) literature indicates that BCMA systems have reduced medication errors by 65 to 86%.² Incorporating documentation and charge capture simultaneously with BCMA provides further benefit.

With so much upside, it would be reasonable to see BCMA systems on many hospitals' technology implementation "short-lists". Data from *Pharmacy Purchasing & Products'* 2007 State of Pharmacy Automation survey indicates that 21.1% of hospitals are currently utilizing BCMA systems, and 83.3% of those not currently scanning medications at the bedside plan to implement BCMA within the foreseeable future.³ Based on estimates that a single in-house adverse drug event can result in extra costs of approximately \$8,750, an effectively implemented BCMA program can result in significant cost avoidance for hospitals.⁴

Given the benefits of BCMA, it is reasonable to ask why more hospitals have not yet implemented this technology.

While there are multiple reasons, there is probably none that impacts pharmacy personnel more directly than the historic lack of medications packaged at the dose level with manufacturer-applied bar codes. And even though pharmacists report an improvement in the availability of bar coded unit dose medications, a gap remains for those seeking to achieve a completely bar coded inventory. Ultimately, reducing the number of doses your pharmacy repackages into bar coded unit dose can lead to cost and labor savings for your facility. What then are the strategies you can implement to economically and practically reduce your repackaging requirements?

Purchasing Practices

Historically, many unit dose medications available from manufacturers were subject to significant up-charges when compared with their bulk product counterparts. However, through the utilization of computer systems that are typically supplied by the wholesaler, pharmacy buyers have the ability to search for medications packaged at the unit dose level and compare their costs with those of bulk products. Determining a "good" unit dose buy depends, in part, on:

- the cost difference between the bulk and unit dose products
- the amount of variance the pharmacy manager is willing to accept
- the urgency of assigning pharmacists and technicians to activities other than repackaging medications

It is essential for the pharmacy manager to know his or her internal repackaging costs and compare them with the third-party vendor's charges.

You can partner with your wholesaler and GPO to identify cost-effective, bar coded unit dose products. By actively participating and engaging with the wholesaler and GPO, you can identify value-added services, such as technology, automation, and other pharmacy management tools available from them.



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However, being able to identify unit dose products is only one piece of the puzzle. In addition, it is helpful to have data on whether those products come in bar code readable packages. To date, few, if any, computer systems supply that level of detail. Fortunately, most unit dose packages possess bar codes, and you can identify manufacturers (such as Sky Packaging, American Health Packaging, and UDL) that historically have been good sources of bar coded unit dose products.

However, not all medications are commercially available with manufacturer-applied bar codes at the unit dose level, and not all manufacturer-applied bar codes are readable by all BCMA systems. Such medications need to be repackaged in the pharmacy, requiring the purchase of products, such as tabletop and high-volume unit dose packaging machines and/or bar code printers.

In the event that reducing internal repackaging is your priority, consider outsourcing these activities to a third-party repackager. There are several factors that should be considered in the analysis of this option, including – but not limited to – cost, turnaround-time, length of contract, the outsourcer's quality metrics and return policy, and the beyond-use dating provided.

The Impact of BCMA Software

When it comes to the ability to interpret manufacturer-applied bar codes, not all BCMA systems are created equal. The selection of your BCMA software product can have a profound impact on the percentage of commercially available bar codes that can be effectively scanned at the bedside. Software products differ in their ability to store data on generically equivalent products. Programs that have the ability to store bar code data on multiple generically equivalent products are preferred. Because of medication shortages, it is imperative that a system has the ability to interpret and store data with respect to the bar codes of multi-source medication products. For example, it is reasonable to expect that your pharmacy inventory and/or unit-based automated dispensing cabi-

nets contain furosemide tablets from more than one distributor. Therefore, it is important that your system is able to interpret bar codes on each distributor's product. The most effective way to ensure that a system has this capability is to test it with equivalent products from various distributors within your own pharmacy's inventory. You can also ask this question of colleagues using the same systems.

Scanning Technology

The type of scanner your facility utilizes will also impact the number of doses that require repackaging. Linear scanners, which read one-dimensional, Code 39 and 128 symbologies, have been the most commonly used scanners in health care. Recently, as two-dimensional bar codes have become more popular on medication packaging, bar code readers with the ability to scan not only Codes 39 and 128, but also the newer GS1 DataBar (formerly known as reduced space symbology or RSS) and Data Matrix bar codes, have become a smarter buy for hospitals. With increasing interest in having bar codes that contain expiration dates and lot numbers, it is expected that two-dimensional scanners will be in more demand in the near future. The use of a programmable scanner can also increase the number of products whose manufacturer-applied bar codes are readable by the BCMA software product.

Strategies to Reduce Repackaging

In developing a strategy to reduce the number of doses that require repackaging, several areas need to be examined, the first of which is your inventory. At the out-

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Unit Dose Packaging

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set of our BCMA implementation project, the Health Alliance of Greater Cincinnati reviewed the inventory of one of its hospitals. Initially, it was determined that approximately 72% of its products (excluding large-volume fluids, piggybacks, and frozen syringes) were commercially available with readable, manufacturer-applied bar codes at the unit dose level. By utilizing a programmable scanner, this percentage increased to 76%. While a 4% increase may not be impressive at first glance, the resulting number of doses that will no longer require repackaging at your institution may be significant. For example, in 2007, the Health Alliance of Greater Cincinnati dispensed approximately 14.8 million doses, not including the IV product types previously mentioned. By switching to programmable scanners, the number of doses requiring repackaging was reduced by approximately 590,000 across the system.

A reduction in repackaging can reduce costs in several ways. First, these doses will not require internal packaging equipment and materials or repackaging by an outsourcer. Additionally, the amount of time that technicians and pharmacists spend repackaging and checking the final product will be reduced. This, in turn, will potentially allow reallocation of personnel to more direct patient care activities.

Historically, we were required to repackage all products not commercially available with bar codes at the dose level, including oral liquids. In addition, the availability of oral solids in bar coded unit dose can and does change without much notification. For this reason, a careful review of each product's availability should be done each time an order is placed with your wholesaler. Each Health Alliance hospital pharmacy repackages oral solids using a tabletop Euclid Cadet packager, and a technician is responsible for repackaging, with pharmacist

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Unit Dose Packaging Equipment and Supplies

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Accu-Chart Plus Healthcare Systems, Inc.	166
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Bar Coded Unit Dose Pharmaceuticals

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184	American Health Packaging
185	Bedford Laboratories
186	Covidien/Mallinckrodt Pharmaceuticals
187	McKesson's Sky Unit Dose Packaging
189	Nephron Pharmaceuticals Corp.
191	Paddock Laboratories
192	Precision Dose, Inc.
193	Roxane Laboratories, Inc.
196	UDL Laboratories

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Most recently the pharmacy manager for informatics at Baptist Hospital of Miami, Harvey S. Fields, RPh, now serves as a consultant with Pharmacy Informatics, LLC, based just outside of Fort Lauderdale, Florida. Fields has also served as the pharmacy supervisor for Maimonides Medical Center in Brooklyn, New York. He earned a BA in biology from New York University and a BS in pharmacy from Columbia University College of Pharmacy. Fields can be reached at harveyf.llc@att.com.



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Unit Dose Packaging

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verification of the final product. A two-month analysis indicated one of the sites, a 276-bed long-term acute care/skilled care facility, repackaged approximately 2,500 doses per week. However, we have since contracted with a repackaging outsourcer, and expect that number to decrease significantly. A detailed cost analysis, which includes pharmacist and technician time, packaging materials and equipment, and third-party vendor charges, will be the primary factor in determining which products will be outsourced versus repackaged in-house.

Conclusion

The availability of bar coded inventory is the bedrock of any BCMA program. Therefore, it behooves any facility making the move to bedside scanning to carefully examine their practices for purchasing and packaging medications in bar coded unit dose. Doing so can ensure the success of your BCMA program and lead to dramatically improved patient safety within your organization. ■



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References

1. Bates, DW, Cullen DJ, Laird N, et al. Incidence of adverse drug events and potential adverse drug events. *JAMA*. 1995;274(1):29-34.
2. Neuenschwander M, Cohen MR, Vaida AJ, et al. Practical guide to bar coding for patient medication safety. *Am J Health-Syst Pharm*. 2003;60:768-779.
3. State of Pharmacy Automation. Bar Coded Medication Administration. *Pharm Purch Prod*. 2007;4(8):45.
4. Aspden P, Wolcott JA, Bootman, JL, et al., Preventing Medication Errors. 2007, Washington, DC. National Academies Press.

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