CONTRARY TO POPULAR BELIEF, YOUR HOSPITAL DOES NOT HAVE TO BE part of a large health system to reap the benefits of a centralized unit dose packaging center. In fact, even by bringing the packaging responsibilities of two or three hospitals under one roof, a health system can realize a number of benefits.

First, rather than invest in packaging equipment for each of its hospitals, an organization can purchase a single high-volume packager to service all of them, ultimately reducing the fixed costs associated with packaging machines, as well as achieving some savings on packaging supplies. Your health system also stands to reduce the number of FTEs needed to operate multiple high-quality packaging operations, and can reallocate its human resources to other pharmacy functions.

In addition, by centralizing your packaging operations, you can decrease the costs associated with wasted medications and improve your health system’s ease with drug inventory management. For example, instead of packaging small batches of slower-moving line items in each of your hospitals, you can perform larger runs of these items at the centralized packaging center, achieving workflow efficiency and improved inventory management. By taking multiple facilities’ usage into consideration, you may also be able to more effectively plan your scheduled packaging activities.

Furthermore, the employees working in your centralized packaging center will be dedicated to one task only – the safe and effective unit dose packaging of medications – and will be subject to fewer interruptions than staff pharmacists and technicians in a typical pharmacy environment. Focused on performing one duty to the highest degree of quality, these specialists will likely be more accurate, consistent, and attentive to quality assurance measures. Because they package medications every day, they will know to check the label format and NDC numbers of each packaging run, for instance, whereas a technician substituting for an absent coworker on the fly may not.

Assessing Your Equipment and Space Needs
To determine the type and amount of packaging equipment required, you first need to define the scope of your packaging. Will you package only oral solids, or will you also package oral liquids? Will those liquids be dispensed in syringes or cups? Will you use an over-wrapping machine to bar code ampoules, vials, and syringes? Do you plan on packaging controlled substances? Once you define the scope of your operation, you will have a better idea of the equipment needed to get the job done.

Next, compare your equipment needs with the space you have allotted to your centralized packaging center. Packaging centers can be established in an existing pharmacy, but pharmacies typically have small footprints and space is often at a premium. If you choose to outfit a new space as your packaging center, check your state board of pharmacy’s regulations; you may need to register the packaging center. Regardless of the location designated for the packaging center, be sure the equipment you plan to purchase will fit in the space allotted. Also keep in mind that some packaging machines, such as certain over-baggers, run on air compressors and may require changes to the packaging center’s physical plant. Beyond the equipment itself, plan for the space needed to store your drug inventory and packaging supplies. Also plan for the desk and counter space you will need to facilitate a safe and efficient workflow. Medications should be received, packaged, and checked in a space that allows for proper segregation. Storage cabinets may also be needed for paper records.

Transportation and Security
Transportation issues are a key consideration in establishing a centralized packaging center. How will you move products back and forth between the packaging center and your affiliated hospitals? How will you secure the products from point A to point B? It is essential to establish sound policies and procedures for the transporta-
tion of medications from one facility to another, including instructions for the packag-
ing and shipping of products and the actions to be taken in the event of lost/dam-
aged products or shipping discrepancies.

The size and scope of your operation will likely dictate which method of trans-
portation is most practical for your organization. Many large health systems have
courier services in place, and you may be able to take advantage of this service to
move products from one location to another, without incurring additional costs.
If your delivery volume warrants it, you can contract with a delivery service, or, if
deliveries are needed on an infrequent basis, such as once a month, you can send a
technician.

To secure your medications during transport, consider using sealed, locked totes
accompanied by a package manifest. The manifest, similar to those provided by your
wholesaler, should list all of the items present in the tote before it was sealed at the
packaging center. The receiving pharmacy can then use that manifest to ensure the
tote’s contents match its order and the packaging center’s records.

**Staffing Considerations**

Because every facility is unique, there is no “magic number” of staff members needed
to effectively run a packaging center. However, several methods can aid you in mak-
ing a best estimate for the number of FTEs needed. First, the more automated your
packaging process, the fewer FTEs you will need. For example, using an automated
syringe filler, you need fewer FTEs than you would if you employ a labor-intensive,
manual process for filling syringes. Also, if you will package controlled substances,
take into account the additional time and efforts necessary to secure them during
packaging and transportation. Furthermore, the ease with which you can document
order information in your pharmacy information management system will also
impact your staffing needs.

In our experience running a centralized packaging center, HCA found that
our end-to-end process for each dose, excluding controlled substances,
required about six seconds of employee time. By extrapolating that figure to
our end-to-end process for each dose, excluding controlled substances,
impact your staffing needs.

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**Reconciling the Formulary**

One of the key aspects of establishing a centralized packaging center is the reconcil-
ation of the participating hospitals’ formularies. Standardizing the medications pre-
scribed across the health system will ultimately simplify your packaging operations
and inventory management responsibilities. Most hospitals will not take major issue
with the multivitamin or antacid on formulary, so those are good places to start stan-
dardizing. For instance, if just one manufacturer’s multivitamin is used across the
hospitals, only one large lot of multivitamins, instead of multiple lots of various vita-
mins, needs to be packaged. This standardization can lead to significant labor sav-
ings, and can also improve the accuracy of your packaging.

It is also helpful to standardize the manufacturer from which you will purchase
certain generics. For instance, by selecting one manufacturer’s aspirin, the bar code
on your aspirin packages will be standardized, and, furthermore, volume discounts
can be negotiated with the manufacturer. Members of the formulary committees
and pharmacy buyers from each hospital can help your packaging center managers
make product selections that fit the needs of each facility.

**Hospital Information Systems**

Once your formulary is synchronized, ensure the bar codes generated by the central-
ized packaging center are compatible with each hospital’s pharmacy information
system and bar coded medication administration (BCMA) platform. After all, when
nurses scan medications at the bedside, the system must recognize them. Bar code
verification can be a labor-intensive process, but the uniformity achieved will ensure
that medications scan the same way in each of your hospitals. Your facilities’ bar
code readers should be calibrated to scan each necessary bar code format. Also,
ensure that the bar codes’ data ties to the correct drugs in each hospital’s informa-
tion systems. Depending on the BCMA platform, automated dispensing machines
(ADMs), and pharmacy information systems used, the process of matching bar
codes to drug files may be very easy or it may require multiple steps. Either way, a

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A fully outlined process should require validation and sign-off at each terminal point. For example, document who matched the drug bar code with the drug database entry. If the ADM database requires drugs to be matched, documentation of those activities should be kept as well. Ideally, a pharmacist will perform this task.

In all likelihood, it will fall to the centralized packaging center personnel to manage any product bar code or NDC number changes as they occur. Although detailed and time-intensive tasks, these processes should be owned by the centralized packaging center to ensure the highest levels of consistency and quality control.

**Order Fulfillment**

There are two main ways to handle drug ordering for your centralized packaging center. First, each hospital can purchase medications directly and forward those that require repackaging to the packaging center. The packaging center then routes the completed order back to the hospital. This fairly straightforward process presents few accounting challenges, because it is only necessary for the packaging center to invoice for per-dose packaging expenses. Your per-dose cost should take all equipment, supplies, and labor necessary for packaging into account. However, with this method, your hospitals need to anticipate the lead-time necessary to receive the drug inventory from their wholesaler, transport it to and from the packaging center, and perform the packaging itself—approximately two business days. With this method, you may also miss opportunities to negotiate higher volume discounts from wholesalers.

A speedier approach is for the facility to order a certain number of packaged doses directly from the centralized packaging center, which keeps a stock of packaged doses on hand. The packaging center fills the order and invoices the hospital for both the drug and packaging costs. Unless it stocks a significant amount of prepackaged stock, your packaging center will end up frequently performing just-in-time packaging. To fulfill orders more expediently, prepackage fast-moving items, as they are less likely to expire before use when compared to slower-moving specialty items, which are more practical.
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Back-Up Systems
In the event of system downtime at the centralized packaging center, it is helpful to have a backup system in place. For instance, you can invest in a bar code printer, bar code software, and a manual packaging system to use should your automated equipment unexpectedly fail. It is also a good idea to keep seven to 10 days’ worth of packaged stock available in order to maintain service to your health system’s demands.
facilities during system downtime. Each hospital should also have a policy and procedure for unexpected packaging downtime, and train the staff members who will be responsible for packaging in those instances.

**Conclusion**
A centralized packaging center presents the opportunity for decreased equipment and labor costs, increased workflow efficiency, and improved consistency and quality of your health system’s bar coded unit dose medications. Through thoughtful planning and the establishment of sound policies and procedures, health systems — both large and small — can use a centralized packaging center to streamline their operations and, ultimately, improve patient safety via bar coded medication administration.

Noel C. Hodges, RPh, MBA, has served as the director of pharmacy services for HCA Central Atlantic Supply Chain Services since 2005. Prior to assuming his current post, he was the executive director of pharmacy for CJW Medical Center in Richmond, Virginia. He received his BS in pharmacy from Purdue University and his MBA from Strayer University.

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