

**Patient Safety**

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*Drug Delivery System  
helps increase safety  
and efficiency in the  
Pharmacy.*

By Arash T. Abestani, MHA, PharmD

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# Safety and Cost-Savings in the Pharmacy

Pharmacy directors juggle multiple pressures and responsibilities each day, from workplace efficiency to formulary pricing to the workload of our staff. But ultimately, each of these elements helps protect the health and safety of our patients.

The recently released Institute of Medicine report (IOM, 2007) on medication errors highlights our direct impact on preventing medication errors. The IOM estimates that one medication error occurs per patient per day in hospital care. Disturbingly, these errors often involve commonly used antibiotics such as ceftriaxone—the US Pharmacopeia named it among the top 25 drugs associated with medication errors overall (US Pharmacopeia, 2006), and among the top three drugs associated with medication errors in the emergency department (*Hospital & Health Networks*, 2006).

Multiple factors can contribute to these errors; the challenge is to eliminate as many factors as possible. Although I do not interact with patients directly, as pharmacy director at Potomac Hospital in Woodbridge, Virginia, I am responsible for both the medications they receive and the delivery system used to administer them.

Hospitalized patients routinely receive medications that are not properly activated and therefore administered only partially or not administered at all. Based on that insight, we recommended a simple, concrete first step: use a medication delivery system that helps increase compliance with JCAHO patient safety guidelines and reduce errors.

Most hospitals require pharmacy staff to inspect nursing units and automated drug dispensing machines at least once a month. Refrigerated or frozen solutions expire rather quickly and without frequent inspections, accidental use of expired drugs can occur; this possibility is reduced by using a sys-

tem that is easily stored, with a long shelf life and no need for refrigeration. In addition, the time required of pharmacy staff to make rounds is reduced. Such a system offers hidden cost-savings: if the physician decides to discontinue the prescription, the unused drug can be returned to the pharmacy inventory, resulting in cost savings and less waste.

Wasted drugs, as any pharmacist will tell you, is no small matter—their cost can add up quickly. Yet the designs of many drug delivery systems actually invite waste, with the drug having to be added into the carrier solution, or reconstituted. These same design flaws can also increase the risk of medication errors.

When nurses mix medications on the floor, they may infuse the carrier solution without the full dose of antibiotic properly integrated, and several concerns arise: patient safety is compromised, and product is wasted—that drug and bag cannot be reused. To help prevent those errors from happening, our system utilizes two chambers separated by a quick release seal, which is broken just before administration. The drug is stored in the chamber adjacent to the IV line, making it impossible to “forget” the antibiotic when administering, helping to prevent dosage errors.

In addition to eliminating waste and preventing inaccurate administration, the drug delivery system can actually reduce distribution time—an attribute crucial in the emergency department or intensive care units. With a drug delivery system that is ready-to-hang, preparation time is eliminated, and patients can receive critical antibiotics within JCAHO-specified time constraints, as in the example of community acquired pneumonia, which requires antibiotic administration within 4 hours to reduce length-of-stay and improve outcomes.

In the critical care units, a drug delivery system that eliminates the need for mixing on the floor helps nurses comply

## TECHNOLOGY OVERVIEW

Potomac Hospital uses the DUPLEX® Drug Delivery System from B. Braun Medical Inc.

with sterility requirements. Additionally, drug preparation time is significantly reduced with a system that can be stored at room temperature; there is no need to wait for the drug or carrier solution to thaw or warm. And for all patients, room-temperature drugs are far more comfortable than cold, thawed solutions being administered intravenously.

Throughout the hospital, from pharmacy to nursing units, staffs operate with the goal of patient safety. Medication administration errors not only put patients at risk, but can also cost the institution countless dollars in extended patient stays, wasted drugs, and even litigation. As responsible pharmacy directors, we must act to enhance the experience of patients and hospital personnel. Enlisting the help of a thoughtfully designed drug delivery system is a simple, concrete place to start. **IPSQH**

*Arash Dabestani is director of pharmacy services at Potomac Hospital in Woodbridge, Virginia. He may be contacted at [Arash.Dabestani@PotomacHospital.com](mailto:Arash.Dabestani@PotomacHospital.com).*

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