



Reducing Medication Errors

By: Randolph Fillmore

The American medical community was dismayed in November 1999 when the Institute of Medicine of the National Academy of Sciences (IOM) released its study, "To Err is Human: Building a Safer Health System." The IOM report concluded that at least 44,000-and perhaps as many as 98,000-deaths occur in the United States every year because of medical errors, and that more than 7,000 of those errors are due to medication mistakes in inpatient settings. The IOM report-which noted that in 1977, 650 registered drugs were in use in the United States, whereas by 1999, there were 17,000-pointed out that medication errors were occurring nationwide because of mistakes in drug ordering, filling, and dispensing. Misinterpretation of handwritten orders played a major role in these mistakes, said the IOM. The IOM report, however, went on to praise the efforts of the Veterans Affairs Medical System, where Computerized Physician Order Entry, bar coding medications, a robotic medication distribution system, and electronic patient medical records, were just coming into use.

Since 2001, computerized prescription ordering and bar-coded drug dispensing have been a part of a fully integrated, computerized patient record system at all Veterans Affairs Medical Centers (VAMCs), including the Baltimore VAMC. The potential for medication errors has been vastly reduced, while speed and efficiency have increased.

"With computerization, the likelihood of misinterpreting a prescription due to poor handwriting is essentially eliminated," says Stuart Haines, PharmD, a professor in the School of Pharmacy and clinical pharmacy specialist at the VA Maryland Health Care System. "The computerized record system allows the prescriber to input drug orders directly into the system. The computer also reminds the prescriber to order important blood tests before starting drug therapy, and thereby lowers the risk of prescribing a medication that might be harmful to a patient."

For Haines, who treats patients with diabetes who take multiple medications, computerization means providers can make better decisions, because the system automatically checks for drug interactions and sends reminders about health maintenance needs.

According to Louis Cobuzzi, RPh, chief of pharmacy services at the Baltimore VAMC, patient record computerization and bar coding medications have been a major step in eliminating medication errors that, before computerization, were under-recognized and underreported.

"Putting bar codes on medications and matching bar codes on the patients who will receive them is driving the safety issue," says Cobuzzi. "This system will be the foundation for everything we do in the future."

"The VA pharmacy's electronic system of bar code check-and-re-check is pretty simple, but very effective," says Fred Soetje, RPh, assistant chief of pharmacy services at the VA. "After a physician's medication order is entered into the system, the pharmacist reviews the

patient's medication profile and brings up the pending order on the pharmacy computer screen."

Cobuzzi says that there are checks and double checks even before the order goes to the patient, as a full image of the prescribed medication appears on the pharmacist's computer screen at the point of order filling. Only when everything checks out does the automatic dispensing system fill the prescription, and send it off to the pharmacist for another check.

"The inpatient tablet-dispensing system is bar code-capable. Each unit-dose medication carries a bar code on its individual packaging," says Soetje.

First-year School of Pharmacy student Joe LaRochelle, who worked as a hospital pharmacy tech before starting his PharmD program, just finished a rotation through the VA pharmacy and is impressed with the system.

"Each patient is given a bar code that they wear on their wrist. After the doctor enters the prescription and a pharmacist gives the final approval, the medication is delivered to the floor," says LaRochelle. "Only after scanning the patient's bar code and medication bar code can it be dispensed."

Dispensing errors-whether those of dose amount, time of medication, wrong medication, or wrong patient-are greatly reduced because the computerized system checks everything, including the potential for dangerous drug interactions. Cobuzzi says that although this system of bar coding patients and their drugs-and having doctors enter orders directly into the computer system-is working well and has greatly reduced the potential for error, the system is far from the comprehensive model that the pharmacy profession envisions.

"The medication prescribing and administration software is being improved, and drug manufacturers are beginning to put bar codes on their products," Cobuzzi adds. "This is just the beginning."

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