Computerized Prescribing Shows Promise

Medical errors could be reduced by more than 80% in some cases by computerized prescribing.

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WASHINGTON — Computerized prescribing could greatly reduce the number of medical errors, especially when it comes to adverse drug events, David Bates, M.D., said at a consensus conference sponsored by the American Association of Clinical Endocrinologists.

In his own health care research at Brigham and Women's Hospital in Boston, where he is chief of general medicine, Dr. Bates and colleagues looked at more than 10,000 medication orders and found 530 errors, an average of 1.4 per hospital admission. Included among those were 35 potential adverse drug events and five preventable adverse drug events.

These data suggest that "about 1 in 100 medication errors results in an [adverse drug event], and 7 in 100 have the potential to do so," said Dr. Bates, who also serves as medical director of clinical and quality analysis at Partners HealthCare, in Boston.

When do the errors occur? In another study, Dr. Bates and colleagues found that about half of prescribing errors (49%) occur at the ordering stage, followed by 26% at the administration stage, 14% at the dispensing stage, and 11% at the transcribing stage.

Although transcribing accounted for the smallest percentage of errors, it can still be a big problem. Dr. Bates showed a sample of a handwritten prescription for Avandia (rosiglitazone) that was mistakenly dispensed as Coumadin (warfarin). Such problems could be reduced or eliminated by the use of prescribing software, Dr. Bates said.

Ambulatory care settings are particularly ripe for prescribing errors, for several reasons, he said. "There is a long feedback loop, because often you don't hear from patients for a long time, and there are limited resources and redundancy," he said. In addition, "the average primary care encounter is 12 minutes, and the average time to the first interruption is 18 seconds. And 75% of patients leave with unanswered questions."

He cited a study by Tejal K. Gandhi, M.D., and colleagues showing that of 661 outpatients, 162 (25%) had adverse drug events, for a total of 181 events. Of those, 13% were serious and 11% were preventable (N. Engl. J. Med. 2003;348:1556-64).

Computerized prescribing can reduce errors in several ways, Dr. Bates said:

- ▶ Preventing errors from occurring in the first place.
- ▶ Catching them more quickly after they have occurred.
- ▶ Tracking the errors themselves.
- ▶ Providing feedback.

Dr. Bates called computerized prescribing the "single most powerful intervention for improving medication safety to date" and noted that errors could be reduced by more than 80% in some cases.

However, computerized prescribing will work only if the people using it follow all the rules, he continued. For example, at Brigham and Women's Hospital, researchers looked at more than 7,700 drug allergy alerts that were issued by the computer over a 3-month period in 2002 and found that the alerts were overridden 80% of the time. This may have been because only 6% of the alerts were triggered by an exact match between the drug ordered and a drug on the allergy list, Dr. Bates said.

In addition to drug allergies, a good computerized prescribing system should also alert physicians to drug-drug interactions, renal dosing issues, geriatric dosing issues, and dose ceilings, according to Dr. Bates.

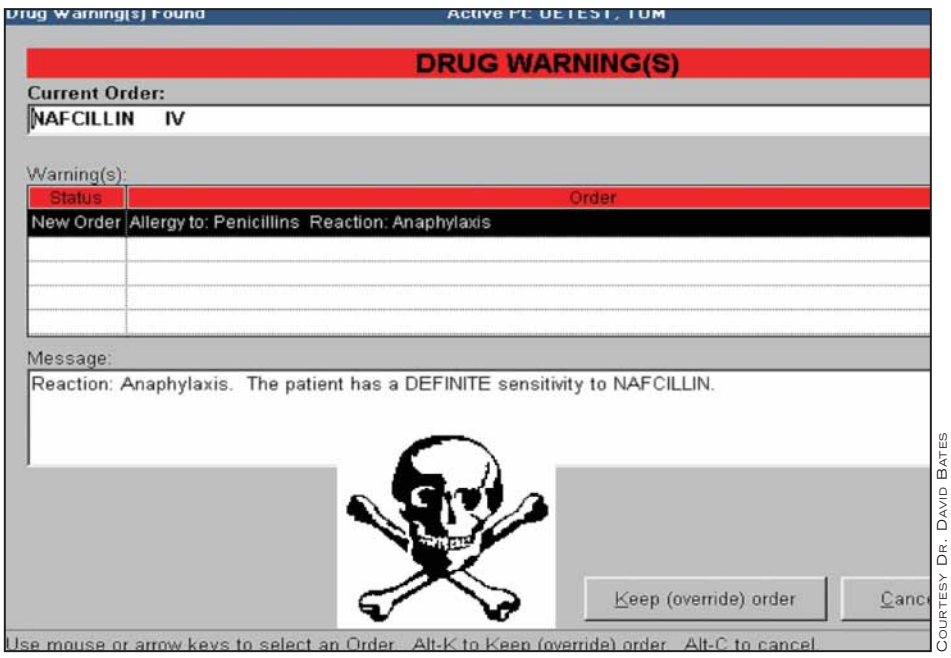
And it should have a way to alert physicians to potentially fatal interactions.

As to the future of computerized prescribing, Dr. Bates predicted a time when all physician drug orders would be sent electronically to the pharmacy, where the pharmacist would review them. Simple orders might be filled and dispensed from an ATM-like machine, he added.

In addition to all the safety issues, there is another reason physicians might want to consider electronic prescribing: More payers are starting to demand it, Dr. Bates said.

As an example, he cited the Leapfrog Group, an organization of 160 companies seeking to improve health care quality for their employees.

Leapfrog already uses computerized prescribing as a quality measure in the inpatient setting and is planning to include outpatient computerized prescribing in a new set of measures due out in 2006, Dr. Bates said. ■



COURTESY DR. DAVID BATES

Computerized systems should have a mechanism, such as the one above, to alert prescribers about potentially fatal allergies and drug-drug interactions.