



# Computerized Drug-Interaction Alerts: Is Anybody Paying Attention?

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The performance of some computerized drug-interaction screening programs has been found to be lacking in sensitivity and specificity.<sup>1</sup> There are numerous reasons why these programs fail to meet the needs of pharmacists, including the following:

- They may miss interactions
- They may use classification systems that are based on rules of questionable relevance
- They may rely on literature reports without informed review or evaluation
- They may assume that all drugs in a class will interact in a similar manner

Perhaps the most frustrating problem with these screening programs is their inclusion of numerous interactions that are of dubious clinical significance or relevance. As a result, the pharmacist must override an excessive number of drug-interaction alerts before he or she can continue processing the prescription order. The pharmacist thus becomes desensitized to drug-interaction alerts, and there is a real possibility that a drug interaction will slip through undetected and cause patient harm and legal unpleasantness.

Several recent studies have focused attention on the problem of computerized drug-interaction alerts and how practitioners perceive them. In a study of >30 million prescription claims reviewed by a pharmacy benefit management company, the computer screen-

ing system identified ~250,000 potential interactions.<sup>2</sup> By applying filters to select interactions that would more likely represent a risk to the patient, this number was reduced to ~65,500 cases. Pharmacists reviewed each of these cases and determined that ~12,800 were clinically relevant, based on predetermined criteria. Although one could debate the criteria used to define the clinically relevant drug interactions, it is important to note that the pharmacist review reduced the number of clinically relevant alerts generated by the computer by >94%.

The number of drug-interaction alerts generated by a screening program may prove to be bothersome for pharmacists, but what happens when physicians are exposed to the same process of drug-interaction screening during physician order entry? A group of general practitioners in the United Kingdom conducted a survey of responses to computer-generated drug-interaction alerts.<sup>3</sup> Twenty-two percent of the physicians admitted to overriding the alerts without obtaining more information on the potential interaction. When asked why they ignored the alerts, 98% of the physicians said that they believed the drug interaction was not serious, and 87% thought that it was not relevant to their patient. Drug therapy was changed in 13% of the patients, based on the drug-interaction alerts.

Another study involved

internists in primary care practice using a physician order-entry system with a drug-interaction screening program. The physicians overrode almost 95% of the drug-interaction alerts, including 89% of the level 1 (severe) and 96% of the level 2 (moderate) interactions.<sup>4</sup> About 25% of the times when an alert was generated by the computer, the physician exited the order screen and then attempted to reorder the drug that had previously produced the alert. Reasons given for overriding the alerts included the following:

- The patient was no longer taking the interacting medication
- The interaction was not clinically significant
- The patient was stable on the combination
- The benefit of the treatment outweighed the risk of the interaction

What should be done to improve computer-based drug-interaction screening? Are we expecting too much of these





programs? It has been said that predicting clinically significant drug interactions "is not rocket science." No, it is not rocket science, but it is much more difficult. As we all have experienced, most patients exposed to potential drug interactions do not develop an adverse outcome. The goal, however, should be that

no patient is ever injured by a drug interaction. Although few data are available on the clinical outcomes of potential drug interactions, one study of 538 geriatric patients exposed to potentially interacting drugs found that 130 patients experienced side effects thought to be a direct result of the interaction.<sup>5</sup>

The risk that a drug interaction will produce an adverse outcome is modified by a variety of factors, including the dose of the drugs, their route of administration, the therapeutic index, the degree of first-pass metabolism, the patient's concomitant diseases and intrinsic enzyme activity, and, perhaps most importantly, the recognition by the prescriber that an interaction is possible. Anyone who expects a computer interaction-screening program to take these and other factors into account before providing an alert is going to remain disappointed for the foreseeable future.

Computer-based drug-interaction screening programs could be improved. Until a program is available with the features pharmacists want, here are a few suggestions:

- Use the computer as a drug-interaction screening tool
- Rely on other sources of drug-interaction information to supplement the program, particularly when details regarding the interaction or management options are inadequate or missing
- Use your training as a pharmacist to evaluate potential interactions on a patient-specific basis
- When indicated, provide the prescriber with noninteracting alternatives and other management advice

As demonstrated by the study by Peng and associates,<sup>2</sup> a pharmacist's input can drastically alter the computer's output. **7**

*For a list of references, send a stamped, self-addressed envelope to: References Department, Attn. D. Ryan, Pharmacy Times, 241 Forsgate Drive, Jamesburg, NJ 08831; or send an e-mail request to: [dryan@mwc.com](mailto:dryan@mwc.com).*