Optimizing the Use of Computer System Clinical Alerts

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PROBLEM: Many of today’s computerized pharmacy systems provide vendor-defined and user-defined alerts that remind or warn staff about potential drug-related problems during order entry. Research shows that adverse drug events are vastly reduced when such systems are used,1 and so the Institute for Safe Medication Practices (ISMP) often recommends computerized alerts as a way of reminding staff about potential problems. However, clinicians and managers have expressed concern that the sheer number of warnings that appear on the screen can be overwhelming and can slow down order entry.

In many cases, warnings that are clinically insignificant are as likely to appear as those that are vital. As a result, staff may inadvertently bypass even critical warnings, especially when the workload is high. This is easy to do with many systems.

In 1999, the ISMP conducted a survey on pharmacy computer systems. It was discovered that simply striking the “enter” key was often all that was required to get past the warnings. If the system forces a response to the warning, practitioners who feel pressured to speed up order entry can select the first reason listed on the screen for bypassing the alert instead of addressing the issue appropriately.

Even when practitioners are properly alerted to a potential allergic reaction or a harmful drug interaction, they may erroneously assume that prescribers are already aware of the problem and thus may neglect to alert them directly. For example, as part of a post-renal transplant medication regimen, a patient was taking azathioprine (Imuran®, Prometheus Laboratories) 150 mg daily. Approximately four years ago, the patient developed gout and his physician prescribed between 300 and 600 mg daily of allopurinol (Zyloprim®, Faro Pharmaceuticals). The patient continued to take this medication for the next four years. Two years after starting allopurinol, he began to complain of fatigue and was found to be anemic even though his renal status remained stable.

Over the next two years, the patient visited four physicians, trying to discover the cause of his anemia. Each physician was unable to diagnose the cause but told the patient to keep taking the same medications. Finally, one of the physicians recognized that the patient was experiencing a major drug interaction among azathioprine and allopurinol, the combination of which can produce severe bone marrow depression. Azathioprine is converted to mercaptopurine, which is then metabolized by xanthine oxidase to 6-thiouric acid. Allopurinol inhibits xanthine oxidase, which increases thiopurine levels and leads to toxicity. Today the patient remains anemic.

SAFE PRACTICE RECOMMENDATION: When practitioners become accustomed to seeing unimportant or clinically irrelevant warnings, they often ignore these “false alarms” or turn them off—at least mentally. Fortunately, the following strategies can be used to optimize the effectiveness of alerts and to minimize the possibility of overlooking the more significant ones:

- Use a tiered system for interactive warnings to allow staff to view and easily bypass less serious issues, if appropriate, but require staff to make a text entry to describe the response to more significant alerts. A regularly updated list of significant alerts that require direct prescriber notification can help guide the most appropriate response.
- Consider asking pharmacists who enter orders to note warnings that they believe to be clinically insignificant. Then evaluate the safety of altering the severity level of these less significant warnings to minimize the potential for overlooking more clinically significant warnings. Some organizations have adjusted their systems so that only drug interaction warnings of high severity appear. However, one information vendor’s drug interaction leveling system is based on the volume of clinically documented cases rather than on the potential for harm to the patient. Therefore, vendors should be contacted before such a change is made.
- Ensure that more significant alerts are as visible as possible. Some systems provide for flashing messages, large screen fonts in a contrasting color, or other means of distinguishing the alerts.
- Periodically review non-interactive pop-up messages, such as those suggested for avoiding drug name mix-ups. Delete any messages that are no longer applicable.
- Instead of using messages in the computer system, consider applying auxiliary labels to drug packages and storage bins to warn about unclear or confusing labeling and packaging.
- Consider printing warnings on drug labels and medication administration records (MARs) instead of building alerts into the order-entry process. For example, for a drug to be given intramuscularly, print “IM Use Only” warnings on drug labels and MARs for all drugs that can be administered safely by this route only.
- If the system is capable of providing reports about all warnings that have been overridden, assign a clinician or a manager to review the report daily to identify any problems. Consider focusing on one or two common but critically important warnings to monitor the effectiveness of the computer’s alert system and the response to the alert.

REFERENCE