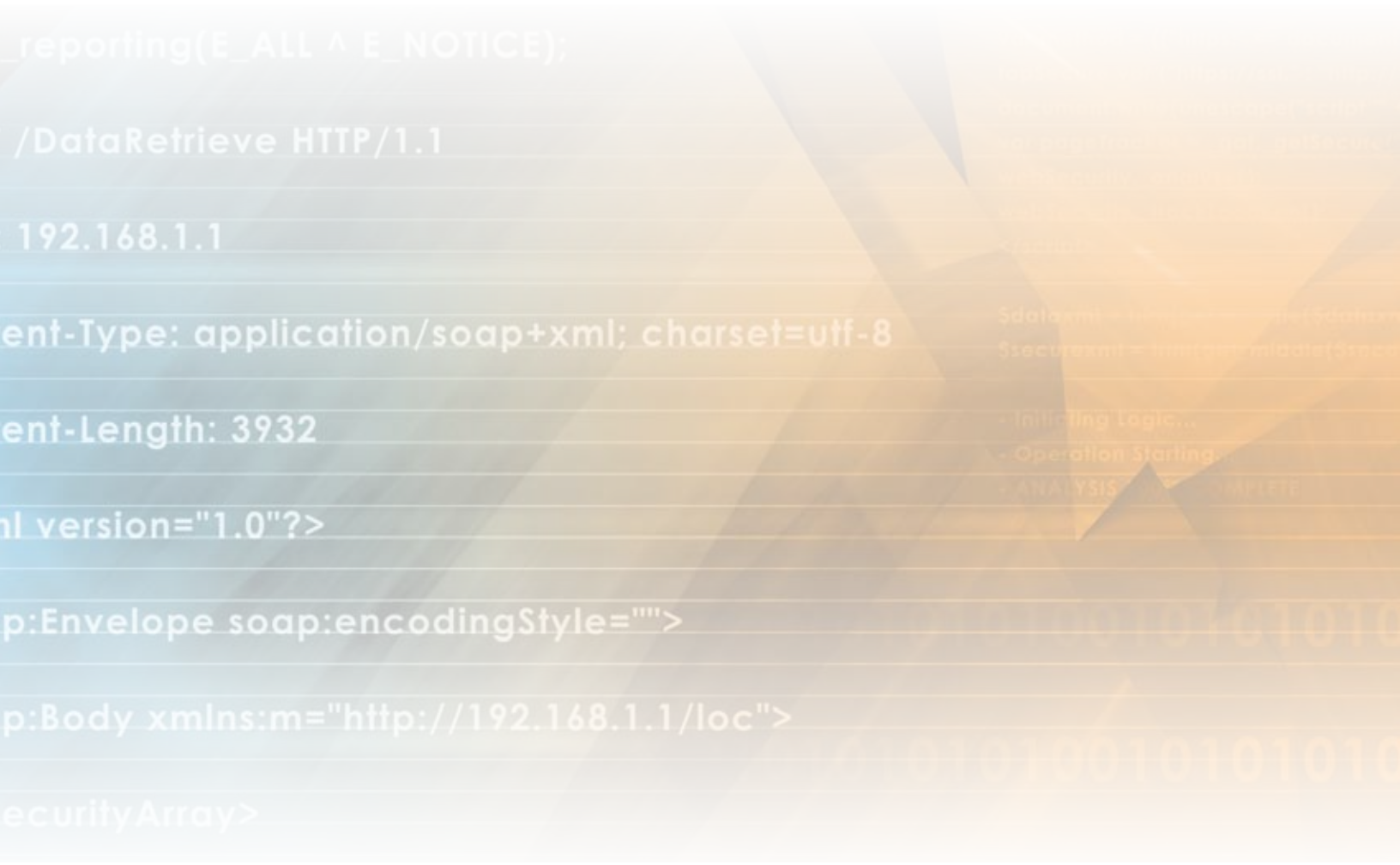
CLEARING THE WAY FOR EFFECTIVE DRUG DECISION SUPPORT

Overcoming Alert Fatigue and Related Obstacles



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The most commonly cited obstacle to effective use of drug decision support is "alert fatigue" related to notifications.

Despite the potential for drug decision support to improve patient safety and reduce healthcare costs, there are barriers to its effective use by clinicians. The problems encountered speak to the importance of ensuring the system offers a true solution that does not introduce unintended adverse consequences.

Information Flow and Alert Fatigue

The most commonly cited obstacle to effective use of drug decision support is "alert fatigue" related to notifications.

Intended to help clinicians, alerts are periodic pop-ups or notifications generated by the system to draw attention to issues such as contraindications and potential allergic responses. Since healthcare providers today must retain so much information, these electronic alerts aim to ease the burden of having to remember volumes of clinical data.

A problem arises, however, when alerts are excessive and irrelevant, and providers begin to ignore or override them.

Users of some drug decision support systems have reported being bombarded with unnecessary alerts that interrupt their workflow and clog productivity. In fact, physicians have complained of being warned as many as five times about every interaction reported and being alerted on one out of every five orders. In the midst of this "noise," clinicians get used to ignoring alerts, overriding them a reported 49-96 percent of the time. "I honestly haven't paid attention to a pop-up alert in years," says one Pennsylvania physician. "I just click right through them as quickly as possible and I think most doctors do the same thing."

This not only defeats the purpose of drug decision support, but can lead to missed alerts that could be critical to a patient's care.

Addressing these issues in a September 2009 article in the *Archives of Internal Medicine*, authors reported that clinicians in their study overrode 91 percent of drug interaction alerts. They also deemed the vast majority of alerts to be of limited use, with 17 percent having *no* discernible patient safety benefit. Significant efficiencies could be gained by reducing "overalerting," they concluded, stating that "clinicians need relief from alerts with little clinical value." [i]

In an attempt to manage alert fatigue, some users have taken extreme measures, with one healthcare organization manually resetting their alerts – a task that took two pharmacists a full year to complete.

The frustrations of alert fatigue have long-range implications for the effectiveness of an organization's entire clinical decision support system. In an arena already fraught with resistance to change and clinician umbrage at electronic advice, alert fatigue is a significant barrier to meaningful use of electronic health records.

Other Rocks in the Road

Clinicians are reluctant to adopt drug decision support tools when the technology is not user friendly. Users also commonly complain that drug decision support tools are not designed to fit within their workflow and do not allow for customization or incorporation of user preferences. Instead, systems provide information they don't need at the expense of what they do need, and actually *add* to clinicians' workload.

Along with alert fatigue, unfriendly interfaces and workflow interruption as impediments to usage, clinicians also have reported deficiencies in the information provided. These include false negative and false positive medication alerts, a lack of clarity in the intended use of drugs and ambiguous dosing guidelines. Users also expressed dissatisfaction in some systems' poor presentation and lack of detailed information, such as drug monographs and references. Fear of outdated content also remains a concern.

If unresolved, these issues can have profound impact throughout the healthcare organization, most significantly in patient safety. With potentially catastrophic ramifications, these problems can go beyond the patient to his or her family, with both economic and emotional implications.

The healthcare institution itself can suffer, as well, burdened by increased adverse drug events and decreased productivity, as well as legal challenges and financial considerations. In addition, lack of patient satisfaction can impact a healthcare provider's reputation, creating deselection.

These problems explain why experts are calling for "thoughtful engagement" of decision support by all stakeholders in the healthcare system, as well as monitoring and testing to fine-tune data access and delivery when necessary.

After all, as noted by the Leapfrog Group, drug decision support can reduce adverse drug events by up to 88 percent, preventing 3 million serious medication errors in the United States each year, saving billions of dollars and alleviating significant human suffering.

That's why healthcare providers must get it right – right from the start – with systems that maximize benefits and reduce hindrances.

Solutions

To mitigate pain points, healthcare institutions benefit from a drug decision support system that provides knowledge, intelligently filtered and presented at appropriate times, to improve patient safety, streamline workflow and reduce costs. This means that, among other considerations, they must select the solution most capable of managing alerts in a meaningful way, instilling confidence in information and ensuring its usage among clinicians.

Obviously, not all systems are alike, and the ability of drug decision support technology to improve care is, of course, dependent on the integrity,

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quality and presentation of the data. Healthcare providers today are looking for rapid access to accurate, appropriate and actionable answers.

Eliminating Alert Fatigue

Effective drug decision support protects against alert fatigue through fewer, more appropriate alerts. When evaluating the patient's drug regimen, the system should be able to block unnecessary drug warnings, so healthcare providers see only relevant medication safety issues. This allows clinicians to make fully informed decisions in less time, promoting better patient care while reducing errors and costs.

In suppressing false positive warnings, for instance, drug decision support systems should:

- **Consider the route of administration.** Example: erythromycin and ketoconazole. If both are delivered orally, an interaction will result. However, if delivered topically (i.e., in shampoo), ketoconazole will NOT result in interaction with erythromycin; therefore, the system should not trigger an alert.
- **Establish acceptable duplicate therapies** and use them to manage alerts by setting a maximum number of occurrences allowed in any therapeutic class. Example: For a hypertensive patient on Vasotec® who is also prescribed hydrochlorothiazide to lower blood pressure, there should be no duplicate therapy alert because the system accepts up to three cardiovascular drugs.
- **Factor in demographics** such as gender and birth date, so there are, for instance, no pregnancy alerts for men and children.
- **Enable a tiering system for alerts,** with multiple levels of severity (e.g., severe, major, moderate, minor) and documentation levels (e.g., established clinically, somewhat established, not established). Allow user preferences to control which alert levels are displayed. Tiered alerting by severity has been shown to increase compliance rates. A study published in the January/February 2009 issue of the *Journal of the American Medical Informatics Association* reported that clinicians accepted 100 percent of the most severe drug-drug interaction alerts at a tiered site and only 34 percent at a non-tiered site. [ii]
- **Screen for the entire drug regimen *or* for new drugs being prescribed only,** which can suppress alerts for drugs the patient has previously taken successfully – a factor that led to nearly half the overrides of allergy alerts in a study published in the February 15, 2009 *American Journal of Health-System Pharmacy*. [iii]

To protect against false negative alerts, the drug decision support system should:

- **Screen all ingredients** of multi-dose and multi-compound products, such as prenatal vitamins.

- **Screen against known allergens.** Example: Fluzone®, which should trigger an egg allergy warning, is flagged in less than half of systems.
- **Screen all active and inactive ingredients.** Example: combivent inhaler contains soy lecithin, an inactive ingredient, which should trigger a peanut allergy warning.
- **Allow *unlimited* drug/herb/lifestyle/food interaction alerts,** such as for alcohol, tobacco, grapefruit juice, caffeine, enteral feedings and milk-containing products.

"Just Right" Answers for All Healthcare Settings

Drug decision support content should be layered for ease of use, supplying a single statement, to an intermediate clinical observation and on up to the complete source, allowing clinicians to choose the right amount of information needed to inform their decision. All information should be grammatically correct and concisely written for the frontline healthcare professional.

Effective drug decision support contains content and functionality that can:

- **Enable "one-click" access to referential material** relevant to the current clinical situation (such as monograph-level detail on the drug's dosage, indications, contraindications and precautions).
- **Report drug-to-condition compatibility**, accomplished by screening a list of prescribed drugs against indicated conditions and reporting the resulting matches and exclusions/omissions. Clinicians can use this report to ensure all conditions are being treated appropriately, reducing excess costs and adverse outcomes caused by the patient receiving too many or too few medications.
- **Provide labeled (FDA approved) *and* unlabeled indications**; users should have the ability to filter out unlabeled uses if desired.
- **Supply usual daily dosage**, in addition to recommended minimum and maximum dosages, to direct clinicians to targeted data for reliable dosing.
- **Specify therapeutic intent** in addition to the drug's active ingredient, dosage form and strength. Therapeutic intent allows users to easily distinguish between identical pharmaceutical products that are used differently in the market. As an example, a buproprion 150 mg oral tablet may be prescribed as Wellbutrin® for depression *or* Zyban® for smoking cessation.
- **Support multiple therapeutic classes**, an approach that provides clinicians with a more comprehensive sampling of products and their intended uses. A multi-classification example is Depakote®, an anticonvulsant that also is used to treat mania and prevent migraine headaches.

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A Superior Approach to Drug Decision Support

Gold Standard Drug Database by Elsevier / Gold Standard is an integrated drug database and decision support engine that evaluates the patient's complete drug regimen for potential problems. When problems are identified, *Gold Standard Drug Database* presents accurate, concise, relevant notifications to help the clinician make informed drug therapy decisions. Created by clinicians for clinicians and populated with data from the world's most-trusted source of medical information products and services, *Gold Standard Drug Database* provides valuable augmentation to clinicians' skills and knowledge through superior data modeling and technology.

New technologies enhance *Gold Standard Drug Database* by making it faster and easier to integrate and update, allowing users to conserve their own technical resources. Designed to work with any system or application, *Gold Standard Drug Database* allows personalization as to functions or user preferences.

Drug product and clinical updates are entered into the system multiple times daily, making it the market's most current resource.

Customer service includes close collaboration with system vendors to assure that drug decision support enhances the customer's system and improves knowledge and workflow for all users. As all organizations are unique in their concerns and challenges, *Gold Standard Drug Database* also promotes collaboration with customers to ensure not only easy implementation but ongoing value.

For more information, visit goldstandard.com.

[i] Weingart, SN., MD, PhD, et al. "An Empirical Model to Estimate the Potential Impact of Medication Safety Alerts on Patient Safety, Health Care Utilization, and Cost in Ambulatory Care." Archives of Internal Medicine. (Sep 14, 2009): 1465-1472.

[ii] Paterno, MD, et al. "Tiering Drug-Drug Interaction Alerts by Severity Increases Compliance Rates." Journal of the American Medical Informatics Association, (January-February 2009): 44.

[iii] Hunteman, L, Pharm.D, et al. "Analysis of allergy alerts within a computerized prescriber-order-entry system." Journal of Health-System Pharmacy (Vol 66 Feb 15, 2009): 375

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