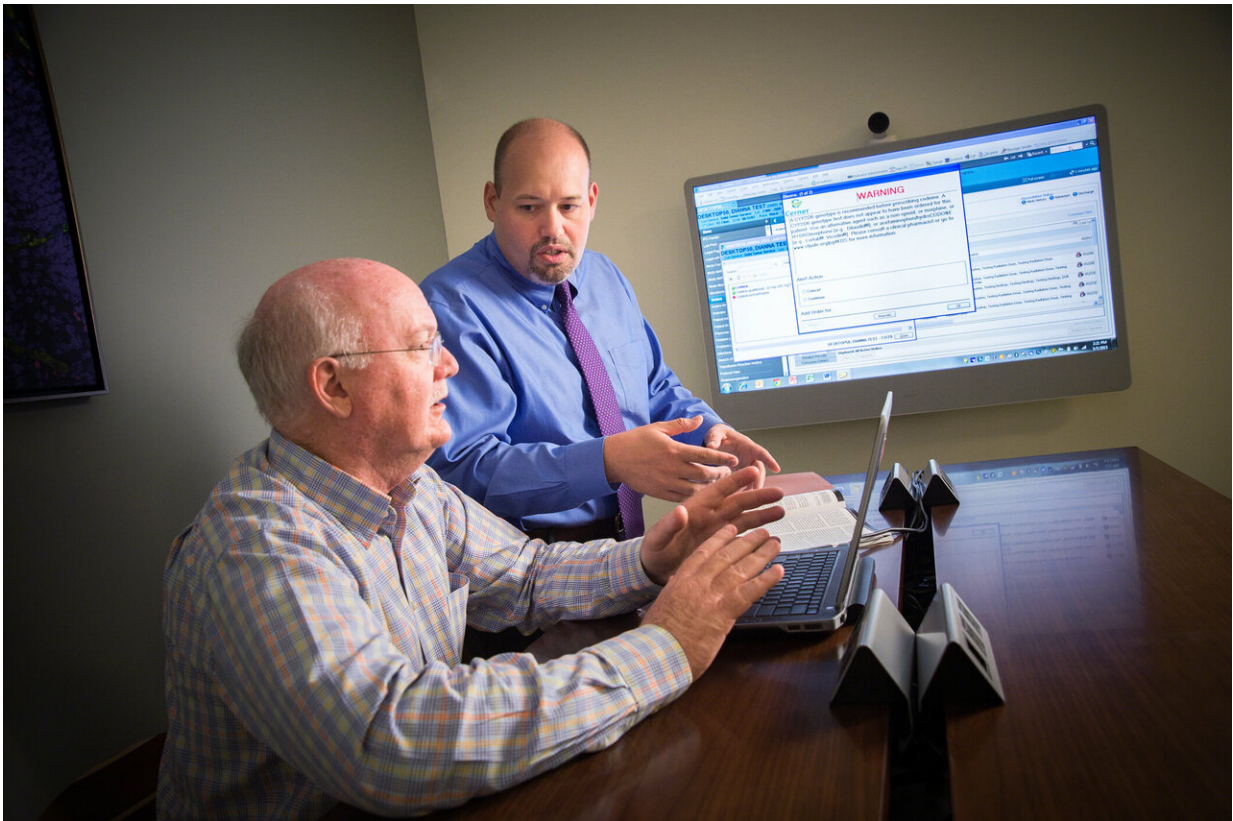


Customized drug interaction alerts address alert fatigue, protect patients

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Manuscript authors Donald Baker and James Hoffman, Pharm.D., are members of an extended team that works to reduce alert fatigue in electronic health record interactions. Credit: St. Jude Children's Research Hospital

For anyone who regularly uses a computer, the experience of clicking through multipage user agreements is a shared frustration. Being

bombarded with too much information can lead to people ignoring vital material.

Clinicians who use [electronic health records](#) can experience similar problems with drug interaction alerts. Now, investigators at St. Jude Children's Research Hospital have developed a method for customizing and reducing these alerts. The study, which appears as an advance online publication today in the journal *Pediatrics*, enhances the user experience with electronic health records while improving [patient safety](#).

One of the benefits of electronic health records is that the systems are configured to alert clinicians when medications are prescribed that may not work well together. However, the systems are only beneficial when alerts identify relevant problems and when caregivers pay close attention.

"In some instances, clinicians are getting a constant stream of alerts that aren't appropriate for their patient, leading them to disregard the alerts," said senior author James Hoffman, Pharm.D., St. Jude chief [patient safety](#) officer. "This type of alert fatigue can lead to patient safety concerns."

Alerts are provided by the company that created and supports the electronic health record system. The alerts are updated on a rolling basis using the latest scientific literature but are intended for general use. There are many alerts for situations that are not applicable to pediatrics, to the context in which medications are administered or to the specific formulation of certain drugs.

A multidimensional approach to evaluating alerts

For this study, the St. Jude team gathered input on the electronic health record's drug interaction alerts from three sources: a validated survey

instrument, an advisory group of St. Jude clinicians, and data within the electronic health record that captured which alerts were most often ignored or overridden. The researchers also grouped drugs into categories to identify broader problems throughout the system.

This was the first study to combine these different ways of evaluating alerts and put them into practice. Overall, the investigators made 26 changes that affected 47 percent of alerts. Alert overrides decreased by 40 percent.

Changes included removing unnecessary alerts and adding context to existing alerts to make them more useful.

One of the major issues the researchers identified involved alerts related to [potassium](#) and drugs that can increase potassium levels. Levels that are too high can pose medical problems; however, potassium levels were already regularly monitored.

"About 20 percent of all the alerts generated in three years were for potential increases in potassium," said first author Calvin Daniels, Pharm.D., Ph.D., of the St. Jude Department of Pharmaceutical Sciences. "What our caregivers really needed was an alert that would tell them if the regular potassium monitoring identified levels that were too high."

To fix this problem, the researchers turned off the vendor-supplied potassium alert and created a new, enhanced alert that is provided to clinicians only if previous potassium levels are elevated.

"These changes made the system smarter and the alerts more targeted toward true safety issues," Hoffman said.

Fostering and sharing a culture of patient safety

Although electronic health records are in widespread use, systems vary among institutions. This research presents a customizable approach that different organizations can implement to evaluate their systems.

"Localization of our experiences to each individual setting is key," Hoffman said. "We've provided a framework from which others can pick and choose the right aspects to implement at their institution."

Making changes to the electronic [health](#) record to improve safety relies on a partnership among St. Jude Information Services, the patient safety team, physicians, pharmacists, nurse practitioners and physician assistants from across St. Jude. This process continues at St. Jude as the multidisciplinary advisory group regularly meets to evaluate alerts.

More information: Calvin C. Daniels et al, Optimizing Drug-Drug Interaction Alerts Using a Multidimensional Approach, *Pediatrics* (2019). [DOI: 10.1542/peds.2017-4111](https://doi.org/10.1542/peds.2017-4111)

Provided by St. Jude Children's Research Hospital

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