

CASE STUDY

MEDITECH Hospitals - Addressing Alert Fatigue

Hospital Sisters Health System

Hospital Sisters Health System Makes Clinical Decision Support Relevant for Physicians

Clinical decision support systems will improve care. It's a simple, straightforward theorem that appears iron-clad, fool-proof, and indisputable. Unfortunately, there are complications behind the curtain and the thesis doesn't always hold up.

Consider the following: Even though clinical decision support (CDS) solutions are designed to help clinicians react to potentially dangerous situations and stop patients from taking medications when drug interactions, drug allergies or dosing miscalculations could cause harm, excessive alerts often wear clinicians down. The unfortunate outcome: Clinicians simply ignore the alerts and clinical care sometimes goes awry. And, the simple theorem is disproved in quick order.

The fact that medication alert fatigue could turn the CDS program upside down at Hospital Sisters Health System (HSHS) quickly hit home when the Springfield, IL-based provider organization began to implement a computerized provider order entry (CPOE) system on MEDITECH's Client Server 5.66 platform in 2011. Right out of the gate, the hospital's clinicians started to become concerned.

"They were seeing too many alerts and that was preventing them from accepting the entire system," said Joshua Schmees, System Pharmacist of Informatics and Automation Services at HSHS.

Indeed, the barrage of alerts was impacting the clinicians' ability to take care of patients. In addition, doctors were becoming frustrated, as they were not seeing the value they expected to see from the CPOE's clinical decision support. So, to adequately get CPOE use to the level where it would have a positive impact on patient care and also meet Meaningful Use requirements, HSHS leaders first had to address the alert fatigue issue.

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"We knew right away that we needed to take some of the noise out of the clinical decision support system," Schmees said. "The ultimate goal is to make every interaction with the system meaningful for our clinicians. Of course, doing so probably is never going to happen. But we did set out to substantially bring down the number of alerts that are overridden in an attempt to provide our doctors, pharmacists and nurses with a system that truly supports care delivery, not one that acts as an unnecessary distraction."

More specifically, HSHS set out to increase alert specificity, avoid inappropriate alerts, avoid unclear information and improve usability.

A Colossal Challenge

A tall order to be sure, as reaching these goals takes considerable effort. The simple fact that the initiative would involve modifying clinical data in the information system meant that the hospital would need to carefully consider each and every change.

To kick off the alert fatigue reduction initiative, pharmacy department staff identified alert override patterns, with the hope that they could eventually zero in on potential changes that could help reduce alert fatigue.

Drug-drug interaction alerts bubbled to the top of the remediation list, as many of these alerts lack specificity, are missing necessary data and do not provide clear action steps. In addition, drug-drug interactions are often influenced by multiple variables and may warrant additional fine tuning. The pharmacists' investigation

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revealed that the hospital generated 243,803 drug-drug interaction alerts off of verified orders over a 12 month period. This resulted in 668 alerts being overridden each day – more like alert exhaustion, not merely fatigue.

Even though the pharmacists could identify the alerts that were causing the fatigue, they could not start whittling down the alerts without seeking input from other clinicians. As a result, they had to put processes in place that made it possible for a wide spectrum of staff members to weigh in on the status of each and every alert. And, eventually they would need to expand the scope of the initiative to include drug-allergy, drug-dosing, duplicate therapy and drug-disease interactions as well.

Empowering the Initiative

After modifying drug interaction alerts within the maximum flexibility provided within their MEDITECH system and having some initial success, HSHS decided to enhance their initiative.

The hospital team identified FDB AlertSpace®, a web-based solution that enables clinicians to collaboratively build on their own localized experience in fine-tuning medication alerts, as the right solution to take their efforts to the next level of specificity and customization. In performing due diligence, the HSHS team also learned that AlertSpace works successfully on all MEDITECH platforms and is in use by customers on various other health information systems, all of whom are working to address alert fatigue.

In addition, the team at HSHS felt that the ability of the AlertSpace solution to keep track of all their customizations, create an audit record and load the results of their modifications directly into the decision support system for immediate use in the workflow, was extremely beneficial to their ongoing alert customization efforts.

As the hospital began to implement this alert management tool, leaders realized that they could not alter alerts without first ensuring that any recommended changes would be warranted and appropriate. So, they decided that developing a comprehensive alert approval process was in order.

According to John Moore, Senior Pharmacy Analyst, “Based on my experience implementing hospital IT systems over the years, the first step must always be the development of a standardized process with clearly identified steps and responsibilities. Otherwise, it would have been impossible to begin to make any changes.”

The process that HSHS developed followed these nine steps:

- 1) An informatics pharmacist runs a SQL or NPR report against their data repository that includes all medication alerts triggered in the EHR/CPOE system for a specific time. These reports are then compiled into a spreadsheet.
- 2) The informatics pharmacist reviews the medication alerts spreadsheet and selects candidates for modification or inactivation. Priority is given to alerts that fire more than 250 times per quarter.
- 3) The informatics pharmacist sends an email to the members of the Medication Alerts Workgroup for approval, which includes the System Director of Pharmacy, System Director of Quality, Divisional Directors of Pharmacy, Pharmacy Managers, Clinical Pharmacists, and Pharmacy Informaticists.
- 4) The change request is submitted to the Medical Informatics Committee for final approval.
- 5) Education on alert changes is presented to the Pharmacy IT Workgroup.
- 6) The informatics pharmacist publishes changes in AlertSpace. Changes are included in the next data download from FDB.
- 7) The FDB data download is performed in the test information system by a pharmacy analyst.
- 8) Alert changes are confirmed and quality control checks are performed in the test environment.
- 9) Alert changes are moved to the live system in the next scheduled FDB data load.

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Proof Positive: A Worthwhile Effort

With this process in place, HSHS has turned off 23 drug-drug interaction alerts and modified one severity level. In addition, the hospital has leveraged the alert management technology to evaluate and modify drug-allergy and drug dosing alerts. In a future release, HSHS and other hospitals on the MEDITECH platform will be able to leverage AlertSpace to perform drug-disease and drug-duplicate therapy customizations.¹

Overall, the alert fatigue management initiative has quickly garnered the following results:

- Drug-drug interactions: Alerts have been reduced system-wide by 110,904 alerts per year. Twenty-three adjustments were made representing a 45.5% reduction in annual drug interaction alert volume. HSHS expects to eliminate an additional 60,000 drug-drug interactions per year when the next 100 interactions are reviewed and modified.
- Dose range checking: The hospital has turned off 134 dosage range check alerts (5.9%) and decreased monthly alerts by 550 (60%). Additionally, 23 dosage range corrections were fine-tuned.
- Drug Allergy: Eliminated one allergy cross sensitivity resulting in a 51% decrease of allergy alert fatigue volume.
- Associated lab data: Eliminated more than 48,929 associated alerts and kept another 111,357 alerts from firing on every medication order.
- Medication error prevention: Alerts are now 13.6% effective in preventing medications errors compared against studies that indicate as low as 4% effective rates (defined by user acceptance of alerts). In addition, it has resulted in the avoidance of more than 700 preventable errors monthly, with a projected cost savings of \$312,087.

Bottom Line

- HSHS was able to substantially decrease the number of drug interaction alerts firing in their CPOE system by making custom modifications using FDB AlertSpace, which works seamlessly with their MEDITECH Client Server 5.66 platform.
- A clearly defined process for making alert modifications was essential for success in this highly collaborative effort.
- HSHS’ alert fatigue results-to-date: achieved a 45.5% reduction in drug interaction alert volume; decreased monthly dosage range check alerts by 60%; alerts are now 13.6% effective in preventing medication errors (defined by user acceptance of alerts), which has resulted in avoiding more than 700 preventable errors monthly with a projected cost savings of \$312,087.

Perhaps most importantly, though, physicians at HSHS are now fully embracing the clinical decision support system as it is meeting its initial expectations. As a result, patient safety is improving as physicians are heeding the advice of the CDS solution, instead of pushing it to the side.

“The alerts are not firing as much anymore and that means we are freeing up the doctors to spend more time taking care of patients instead of interacting with the computer system,” said John Moore. “We also are not receiving nearly as many complaints about the alerts, so we are confident that the physicians are more fully embracing the clinical decision support system and it is being more fully used to improve care, just as it is intended to do,” Moore stated.

Footnote

¹ These optional drug domains are in development and will soon be made available in FDB AlertSpace through web services using the FDB Cloud Connector™.

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