

What's New in the Patient Safety World

June 2020

EMR and Medication Safety: Better But Not Yet There

We've always liked the Leapfrog CPOE EHR evaluation tool. It's one of the few objective measures of patient safety performance of various healthcare IT systems. See our prior columns, listed below, on this tool.

The most recent analysis ([Classen 2020](#)) of results from the Leapfrog CPOE EHR evaluation tool shows some improvement over time but highlights the persistence of vulnerabilities and the wide variability of hospital CPOE EHR systems to identify medication errors and prevent adverse drug events (ADE's).

The tool uses simulations of scenarios drawn from incidents of preventable ADE's that occurred in real patients who experienced injuries or death. It tests both basic and more advanced clinical decision support (CDS) in the CPOE EHR system. Examples of basic CDS would include drug-allergy, drug-route, drug-drug, drug-dose for single doses, and therapeutic duplication contraindications. Examples of more advanced CDS would include drug-laboratory, drug-dose for daily doses, drug-age, drug-diagnosis, and corollary orders contraindications.

The test patients are downloaded into the CPOE EHR system and then a clinician enters medication orders on those patients. The primary outcome measure is whether the hospital CPOE EHR system correctly generates an alert, warning, or soft or hard stop after entering a test order that could have caused an ADE.

The authors looked at results from over 2300 hospitals. The overall mean total score increased from 53.9% in 2009 to 65.6% in 2018. The mean hospital score for the "basic" CDS category increased from 69.8% in 2009 to 85.6% in 2018. The mean hospital score for the "advanced" CDS category increased from 29.6% in 2009 to 46.1% in 2018.

Hospital EHR's did better on some categories than others. For example, they did best on the drug-allergy category in each year, increasing from 92.9% in 2009 to 98.4% in 2018.

The lowest performing category throughout the study was drug-diagnosis contraindications, where the mean score was only 20.4% in 2009 and 33.2% in 2018.

Regarding EHR vendors, there were 30 vendors across hospitals, and the authors found fairly considerable variation across vendors.

The authors conclude “these systems have only modestly increased their safety performance during a 10-year period, leaving critical deficiencies in these systems to detect and prevent critical safety issues.”

The editorial accompanying the Classen paper ([Ratwani 2020](#)) suggests that The Joint Commission could adopt the Leapfrog CPOE EHR simulation tool as part of their hospital accreditation program. In addition, the Office of the National Coordinator for Health Information Technology (ONC), which oversees EHR technology, should include safety certification criteria as part of their voluntary certification program. But he notes that certification alone is not enough, because EHR’s are often configured, customized, and maintained by each health care facility in different ways. He also suggests creation of a safety reporting system, like those that exist for medications and medical devices, for EHR’s.

If your hospital is not already participating in the Leapfrog CPOE EHR simulation tool program, you should be. It can help you identify critical vulnerabilities in your medication safety efforts and show you areas of opportunity for improvement.

See some of our previous columns dealing with the Leapfrog CPOE EHR evaluation tool:

July 27, 2010 “[EMR’s Still Have a Long Way to Go](#)”

June 2012 “[Leapfrog CPOE Simulation: Improvement But Still Shortfalls](#)”

April 23, 2013 “[Plethora of Medication Safety Studies](#)”

March 2015 “[CPOE Fails to Catch Prescribing Errors](#)”

May 3, 2016 “[Clinical Decision Support Malfunction](#)”

November 22, 2016 “[Leapfrog, Picklists, and Healthcare IT Vulnerabilities](#)”

References:

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