# AHRQ National Web Conference on Assessing Safety Risks Associated with EHRs

## Questions and Answers

**August 29, 2016**

### QUESTION:

Can the Leapfrog tool be used for primary care or other ambulatory care settings?

### ANSWER:

David Classen:

When we originally developed this tool, we crafted pediatric inpatient and outpatient versions, as well as adult inpatient and outpatient versions. We have funding from AHRQ to update only the adult inpatient version. If we had more funding, we could update the pediatric inpatient and outpatient and the adult outpatient versions too. We are actively looking for funding to bring them back because we have the prior content and the team, and it would be fairly easy for us to do so. Plus, a lot of pediatric hospitals and ambulatory clinics have reached out to us and said, "We'd really like to have access to a tool like that."

### QUESTION:

When providers catch themselves and retract an order, do they seem to learn from the experience over time? Do their rates change?

### ANSWER:

Jason Adelman:

We didn't look at particular providers and their rates over time, but we looked at the organizations over time. Without any interventions, the error rate was pretty steady over time. I suspect these errors are more about the systems than they are about the providers, so we need to make our systems safe and resilient to wrong-patient errors.

### QUESTION:

How do people respond to an alert? And who is monitoring those responses?

### ANSWERS:

David Classen:

We have data showing that alert fatigue is a big issue; we've been tracking that since 2008. We have a component of the test called the "nuisance category." We're going to rename it the "alert fatigue category" and emphasize measuring scenarios where we think there should be no alerting whatsoever.

The way people respond to alerts is absolutely critical. People tend to blow by them and ignore them unless they are really significant. Plus, in the old days, if a physician ordered Coumadin, 5 milligrams, three times a day, people would pay attention to it and react to it. But now that these systems have been in place for a while, the sociotechnical framework has changed. The pharmacist and nurse are less and less likely to do detailed independent checking of the danger of that kind of drug dose; they often assume that the system has checked it.

That becomes a problem if the alert gets turned off. Many people believe that if a doctor overrides an alert, that override should be displayed to both the pharmacist and the nurse so that they can understand that there may have been a problem here, rather than just remove the alert from the view of the pharmacist or nurse.

What we're trying to do in the test is to give people credit for other things besides alerts. For instance, we'll give them credit for making it impossible to order Tylenol intravenously, or to order Tylenol beyond a certain dose range.

### Jason Adelman:

In my experience as a Patient Safety Officer and a health IT safety researcher, it's hard to study the effectiveness of alerts because there are so many variables at play. It's as much an art as it is a science.

In some cases, alert fatigue can cause alerts to become ineffective. In other cases, alerts can be very effective. It depends on the context in which the alerts are being used. For instance, when a system is configured to have alerts for every drug interaction, alerts may not work very well. But when the less significant interactions are shut off, alerts can be more effective. It also depends on what the alert is for. A wrong-patient error alert may grab people's attention more than a drug/drug interaction alert. In my presentation, I showed two alerts: One was a small, gray-on-gray alert; the other was a larger, colorful, more dynamic alert.

### David Classen:

I think Jason's approach would fit nicely into studying this reaction to alerts approach. As the IOM Report on Health IT and Patient Safety says, we're still not doing nearly enough with our electronic systems to measure and improve safety.

## QUESTION:

Should the intervention to prevent an error vary depending on the potential severity of the harm?

## ANSWERS:

### Jason Adelman:

This goes to the alert fatigue question. Perhaps we should have an alert only if a certain kind of medication that is potentially lethal is ordered, such as Methadone for an elderly patient. Maybe we can hold off on some of the less important alerts, such as for complete blood counts (CBCs), to make the really important alerts more effective. We're trying to figure this out now.

### David Classen:

I think we could use these systems to be smart alerters. We could not alert on ordering another CBC, but alert on a drug that could actually kill a fetus or a patient. I think we could go a lot further in that direction in terms of categorizing the list of harms from these interventions.

We do a form of that in the test currently. We have a number of fatal orders in the test. We don't tell you which ones they are unless you fail them, and then we show them to you. It's amazing and a bit scary to me that a number of places still allow fatal orders to run through the system in our test.

## QUESTION:

If a doctor doesn't see an alert but a pharmacist does, what is the pharmacist supposed to do? Should there be differences in what alerts different audiences see?

## ANSWERS:

Jason Adelman:

Tools like the retract-and-reorder measure can help us study these questions. But as of now, it's hard to know.

Doctors placing orders should validate which patient they're placing orders for. They're the ones who know what they're trying to do. Once they place an order, a pharmacist will review the order to make sure it makes sense for the patient. In the Methadone case, the pharmacist could have picked up that a large Methadone order does not make sense for an elderly woman. It's hard to know when alerts should go to the doctor, to the pharmacist, or to both. It's important to consider alert fatigue for both the doctor and the pharmacist.

David Classen:

We've learned from the Leapfrog tool that transparency is really important. And showing alerts to all the parts of the medication use process, from the doctor to the pharmacist to the nurse, is really important. So hiding alerts from the nurse that the doctor ignored or overwrote is not a good idea. But how you ration out critical alerts to critical people has yet to be determined. And Jason has got a great research platform to do just that.

## QUESTION:

How do you envision these tools being used as part of creating new processes and even training?

## ANSWERS:

David Classen:

You could use these as ongoing monitoring systems—live surveillance systems—that are continually looking at these systems, seeing how they're functioning, and providing a more real-time assessment of the performance of these tools. Airlines do a version of this, and so do credit card companies. They have online surveillance, and they're always actively looking for problems. And when they identify a problem, it usually gets put into a learn system loop as well as an intervention loop.

For instance, a surveillance system could continually look for order-retract errors. If you saw these errors pop up in a hospital unit, you would know you have a problem that you have to deal with. Or you could have a real-time dashboard of alerts that you're continually pinging to make sure they're functioning.

Jason Adelman:

I sometimes wish the vendors would use the Leapfrog test at configuration, before the system goes live. For instance, they could test the system to make sure lethal orders can't go through.

Perhaps some things shouldn't even be configurable. For instance, we shouldn't let a without-a-doubt lethal dose of narcotics go through.

## QUESTION:

When will the new version of the Leapfrog assessment tool be available?

## ANSWER:

David Classen:

It will be available in Leapfrog Survey next year.

# Additional Q&A

**Presentation 1:** David Classen – *Using a CPOE/EHR Evaluation Tool to Evaluate Your Clinical System*

### QUESTION:
Once the evaluation tool has been completed by an organization, will scores be publically posted?

### ANSWER:
Leapfrog publishes an overall score on its website.

### QUESTION:
Is the organization required to be a member of Leapfrog to utilize the evaluation tool?

### ANSWER:
Yes. The organization needs to take the Leapfrog survey to take the test.

### QUESTION:
Does a hospital have to complete the entire Leapfrog survey in order to have access to this specific tool?

### ANSWER:
Yes.

### QUESTION:
Is there a cost associated with the Leapfrog CPOE Evaluation tool?

### ANSWER:
No.

### QUESTION:
Is this Leapfrog tool being used anywhere outside the U.S.? If so, where is it being used?

### ANSWER:
It has been used in several other countries, including the UK and South Korea.

### QUESTION:
Can this tool be used to ask questions about laboratory errors?

### ANSWER:
No.

### QUESTION:
Are there any plans to test human factors in screen designs to eliminate errors?

### ANSWER:

No.

### QUESTION:

There seems to be a lot of overlap between your work and what peer reviews use as trigger tools when looking for trends with provider clinical issues. Do you agree? Would the Leapfrog tool be helpful for peer reviewers?

### ANSWER:

Yes. These types of tools might be used for peer review activities.

### QUESTION:

Has there been any research on the achieved EMRAM stage of a hospital and its results in the Leapfrog CPOE Evaluation Tool? (See slides 26 and 27 of Dr. Classen's slides.)

### ANSWER:

This is the subject of current research.

### QUESTION:

Orders are a subset of clinical tasks. Did you measure the usability of data-entry burden and navigational effort for clinical context in error prevention?

### ANSWER:

No.

## **Presentation 2:** Jason Adelman – *Wrong Patient Errors*

### QUESTION:

How does a patient protect themselves from identity theft of EHR, which can result in wrong-medication errors?

### ANSWER:

Hospitals are moving toward palm vein readers and other biometric identification systems, which, if utilized throughout the continuum of care, should greatly reduce wrong-patient errors. Until all healthcare systems have this technology in place, patients can take the extra step of making sure all their information is correct when they register.

### QUESTION:

Do providers make less wrong-patient errors once they have done it and caught themselves?

### ANSWER:

We didn't specifically look at that question. It's worth investigating in future research.

## QUESTION:

Was a pre-post satisfaction survey of any type conducted to evaluate the impact of the alerts on the clinicians' satisfaction with the changes noted?

## ANSWER:

No.

## QUESTION:

Have you looked into ways to detect if an interruption or distraction has occurred (e.g., after clicking on a different patient or after a certain time has elapsed), to see the affect of distraction on "oops" errors?

## ANSWER:

That's an excellent question. That's another great topic for future research.

## QUESTION:

Has anyone looked at verbal alerts, flashing alerts (especially dangerous), or alternating type alerts?

## ANSWER:

Not that I'm aware of.

## QUESTION:

You mentioned errors related to time spent addressing a pop-up. What kinds of errors have you seen, and is there a threshold delay when those errors start happening?

## ANSWER:

It's a concern that was raised in an editorial accompanying the study I was referring to in *Annals of Emergency Medicine*. https://www.ncbi.nlm.nih.gov/pubmed/25724623

## QUESTION:

Can the RAR method be done retrospectively, or does it need to be performed prospectively if implemented? Is the query for the RAR something that can be replicated easily in commercial EHRs?

## ANSWER:

Yes. The measure can be used for retrospective studies, and it can be readily replicated in other EHRs and institutions.

## QUESTION:

How many D/C orders were due to pharmacists' interventions? (See slide 58.)

## ANSWER:

To my knowledge, the discontinued orders were self-caught by providers. Even though the measure was specified to identify orders that were retracted 10 minutes after placing them, then reordered on another patient within the next 10 minutes, the average time to retract was only 1 minute and 18 seconds. So these were likely caught by the providers themselves.

## QUESTION:

What public policy changes do you envision to address these types of usability/safety issues?

## ANSWER:

Fundamentally, these are systems issues. There should be incentives for EHR vendors to build protections into their systems and for institutions to adopt existing functionality to prevent errors, such as patient photographs and biometric identification methods.