
Alexandra Robertson1, Pamela Neri1, Elisabeth Burdick1, Sarah P Slight1, G, David D Bates2,3,1, Shobha Phansalkar1,2
1Division of General Internal Medicine, Brigham and Women’s Hospital, Boston, MA, USA; 2Partners HealthCare Systems, Inc. Wellesley, MA, USA; 3School of Medicine, Pharmacy and Health, Durham University, UK; 4Harvard Medical School, Boston, MA; 5Wolters Kluwer Health, Indianapolis, IN

Background
Clinical Decision Support (CDS) has the potential to improve medication safety. Increasing adoption of integrated systems, refining the delivery and content of existing CDS, and improving user-centered design are key to meeting core measures for Meaningful Use.

Poor user acceptance of alerts, poor alert design, and lack of contextual specificity are cited as causes for negative perceptions about the utility of CDS, alert fatigue, and override rates estimated to be as high as 49-96%.

Our objective was to evaluate the relationships between user perceptions of Drug-Drug Interaction (DDI) and Drug-Allergy Interaction (DAI) alert volume, content, and user acceptance to determine whether or not perception of alert volume could be linked to perceptions of the utility of CDS.

Methods
- Used validated survey developed by Zheng, et. al.,1 to evaluate the impacts of physician perceptions of DDI and DAI alerts on user behavior.
- Assessed a multi-national sample of EMRs, with users of both home-grown (4) and commercially available (2) products across 7 healthcare institutions.
- Performed descriptive statistics on survey responses to establish correlations between perception of alert frequency, alert relevancy, and alert override.
- Ran means in three groups based on the number of alerts reported per week: 1-10 alerts per week (group 1), 11-50 (group 2), and greater than 50 (group 3).

Results

Provider Perceptions of Drug-Drug Interaction Alerts

Provider Perceptions of Drug-Allergy Interaction Alerts

Discussion
Of 1,423 physicians invited, 342 consented to participate for an overall response rate of 24%.
For both DAI and DDI alerts across all 3 groups, we found that as the number of perceived alerts increases, the percentage of providers who report reading, finding these alerts relevant, or changing prescribing behaviors based on the information provided decreases, while the number of alerts overridden increases.

Overall, participants estimated receiving a greater number of DDI than DAI alerts per week, but were more likely to override DAI than DDI alerts, with reported override rates of 83.22% and 78.5%, respectively.

Conclusions
This is the first study to establish an empirical correlation between physicians’ perceptions of alerts to alert acceptance. Physicians who believe they receive a high number of alerts are less likely to read them, find them clinically relevant, allow them to affect their prescribing behavior, and more likely to override them.

Future research should focus on how providers’ perceptions of alert volume can be improved. Decreasing the volume of interruptive alerts may foster a more positive attitude towards CDS alerting in EMRs amongst physicians.

References

This study was funded by grant # U19HS021094 from the Agency for Healthcare Research and Quality (AHRQ).