

# Evaluation of Usage and Usability of Clinical Decision Support to Guide Nurses to Add a Pressure Ulcer Risk Plan of Care

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## Introduction/Background

Prevention of pressure ulcers while patients are hospitalized supports a National Database of Nursing Quality Indicator benchmark<sup>1</sup>. Development of pressure ulcers poses risks to the health and recovery of patients and adds additional costs to an inpatient hospital stay. The aim of Clinical Decision Support (CDS) alerts is to aid clinicians in providing safe, evidence-based care and these tools can be used to promote care planning and prevention activities in the hospital setting. However, we have limited knowledge regarding how CDS used within the electronic health record (EHR) can assist nurses in creating appropriate plans of care for patients, particularly based on validated risk scores. The aim of this study was to evaluate the way nurses interact and comply with CDS recommendations after software user interface (UI) changes were implemented, specifically examining a CDS alert that guides nurses to add to a pressure ulcer risk plan of care when there is a documented pressure ulcer risk.

## Methods

This study took place on inpatient units at Brigham and Women's Hospital (BWH) and Brigham and Women's Faulkner Hospital (BWFH). We performed a mixed methods study evaluating: 1) usage and 2) usability of the CDS alert for nursing across Partners entities. We performed a usage analysis of BWH and BWFH data for 11 weeks post-UI change. A pre-post comparison was then completed by leveraging results of prior data analyses work that evaluated usage and compliance rates for 22 weeks prior to UI changes<sup>2</sup>. Importantly, the alert had been modified since the last comparison because of a defect discovered, resulting in an overall higher alert fire rate. The usability evaluation was conducted by focus groups with inpatient nurses at BWH. Questions focused on nurse understanding of the pressure ulcer risk CDS alert, and perceptions of its ease of use, usefulness, and integration with workflow. Finally, an electronic survey using the Health Information Technology Usability Evaluation Scale (Health-ITUES)<sup>3</sup> was emailed to inpatient nurses at all Partners Health System entities live on the EHR to confirm nurses' perspectives of the usability of the CDS alert across a large sample of nurses.

## Results

Usage analysis showed the CDS alert fired 18,882 times with the nurse interacting with the alert 1084 (5.7%) of those fires. Of the 1084 interactions, the nurse complied with the recommended actions 188 times (17.3%), with an override rate of 82.7%. Compared with the analysis conducted prior to the UI changes the CDS alert fired 780% more frequently, the nurse interaction rate increased by 11.7% and the compliance rate decreased by 45%. The usability results are pending.

## Discussion/Conclusion

The increase in overall fire rate was expected due to the CDS criteria adjustment; however we are unable to determine if the increase in user interaction and the decrease in user compliance were due to the change in UI or a change in the alert firing criteria. Pending usability results may provide valuable information to help better understand how nurses interact with the CDS and guide future CDS enhancements.

## References

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