Applying human factors design principles to medication alerts can improve prescribing outcomes

We hypothesized that incorporating human factors principles into alerts would improve usability, reduce workload for prescribers, and reduce prescribing errors.” Russ et al (2014).


Abstract:

OBJECTIVE: To apply human factors engineering principles to improve alert interface design. We hypothesized that incorporating human factors principles into alerts would improve usability, reduce workload for prescribers, and reduce prescribing errors.

MATERIALS AND METHODS: We performed a scenario-based simulation study using a
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counterbalanced, crossover design with 20 Veterans Affairs prescribers to compare original versus redesigned alerts. We redesigned drug-allergy, drug-drug interaction, and drug-disease alerts based upon human factors principles. We assessed usability (learnability of redesign, efficiency, satisfaction, and usability errors), perceived workload, and prescribing errors.

RESULTS: Although prescribers received no training on the design changes, prescribers were able to resolve redesigned alerts more efficiently (median (IQR): 56 (47) s) compared to the original alerts (85 (71) s; p=0.015). In addition, prescribers rated redesigned alerts significantly higher than original alerts across several dimensions of satisfaction. Redesigned alerts led to a modest but significant reduction in workload (p=0.042) and significantly reduced the number of prescribing errors per prescriber (median (range): 2 (1-5) compared to original alerts: 4 (1-7); p=0.024).

DISCUSSION: Aspects of the redesigned alerts that likely contributed to better prescribing include design modifications that reduced usability-related errors, providing clinical data closer to the point of decision, and displaying alert text in a tabular format. Displaying alert text in a tabular format may help prescribers extract information quickly and thereby increase responsiveness to alerts.

CONCLUSIONS: This simulation study provides evidence that applying human factors design principles to medication alerts can improve usability and prescribing outcomes.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).