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SCHOOL OF INDUSTRIAL ENGINEERING

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Impacts of Information Quality on the Use and Effectiveness of Computerized Clinical Reminders

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ABSTRACT

A computerized clinical reminder (CCR) system is a type of decision support system triggered by a set of Boolean rules and a knowledge base to remind healthcare providers of a recommended action. CCR system has received increasing attention as a tool to improve evidence-based practice and quality of care. However, CCR has not been adhered to as routinely as desirable.

In order to identify the factors affecting the effective use of CCR, we analyzed a cross-sectional survey of 261 VA CCR users with a regression tree algorithm. The result from a 10-fold cross validation technique showed that factors such as "easy to use" and "helpful in delivering care" were important in predicting the use of CCR. Secondly, we conducted a pilot study and surveyed 10 expert physicians to investigate the relationship between estimated CCR resolution time and adherence rate. The negative linear correlation (R-square= 0.876, 0.997, and 0.670 for pessimistic, expected, and optimistic times respectively) found in this study suggested providers were more likely to resolve the reminders which were perceived easier to resolve.

This study aimed to improve the information quality of VA's CCR system to facilitate decision making. A web-based CCR system was prototyped based on an information quality model. The CCR prototype incorporated a knowledge-based risk factor repository, a role-based filter, a prioritization mechanism, and a documentation interface powered by content organization heuristics. The performance of the original and modified designs was tested by 16 physicians in a controlled lab in the Indianapolis VAMC. The subjects individually simulated a scenario-based patient encounter through an interactive simulator programmed by HTML, ASP, and JavaScript. These subjects then addressed and resolved clinical reminders in a two-stage experiment. A semi-structured interview and survey was conducted to elicit subjects' CCR prioritization heuristics and satisfaction.

This study laid out the methodology to improve CCR information quality by aligning information flow with clinicians' mental model in decision making. The results concluded the modified CCR features were perceived useful and better. This information quality framework not only expedited decision making, but significantly impacted the way clinicians prioritized CCR by eighty percent.

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10:30 AM, WTHR 362

FINAL EXAM
Thursday, Oct. 30, 2008
9:00 AM, GRIS 273