

Impact of a Web-based Diagnosis Reminder System on Errors of Diagnosis

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Abstract

A large number of medical errors can be attributed to errors in diagnosis. A diagnosis reminder system such as Isabel may lessen the risk of diagnostic error by providing a checklist of possible diagnoses. For this project, resident physicians used Isabel to work through a set of six simulated patient cases. The system had a positive effect on the mean diagnostic quality score and the number of clinically important diagnoses included in the differential.

Introduction

Errors related to diagnosis account for 26-78% of identified medical errors [1]. The most common cause of diagnostic error is failure to consider reasonable alternatives after an initial diagnosis has been reached (premature closure) [2]. A diagnosis reminder system can provide a checklist of possible diagnoses, complementing the initial differential diagnosis and lessening the risk of premature diagnostic closure. Isabel is a Web-based pediatric diagnosis reminder system. Using unstructured language, clinicians enter a list of clinical features and Isabel provides a list of relevant diagnoses. The objective of this project was to determine whether the Isabel diagnosis reminder system reduces diagnostic omissions.

Methods

Resident physicians were presented with a set of six simulated cases of differing difficulty. For each case, participants developed a list of likely diagnoses and a management plan before and after using the Isabel system. A panel of three expert pediatric clinicians scored the quality of responses. Primary outcome measures were a change in the number of clinically important diagnoses included in the differential diagnosis, and changes in a previously validated diagnostic quality score (DQS) and management quality score (MQS).

Results

16 pediatric, 7 family medicine, and 2 emergency medicine residents participated in the study. All 25 residents completed all six cases. In 15 of the 150 cases completed (10%), Isabel caused the user to include a major diagnosis they had not considered and should have. The mean diagnostic quality score (DQS) increased significantly after residents consulted the Isabel system (0.028 + 0.008, 95% CI 0.020 - 0.036, $p < 0.001$). We were unable to detect a difference in the management quality score (MQS). When they were surveyed, 60% of users agreed or strongly agreed that the Isabel system provided useful information and nearly 100% reported the system was easy or very easy to use.

Conclusions

By providing a checklist of likely diagnoses, a web-based diagnosis reminder system reduced diagnostic omissions by residents for a set of simulated cases. Incorporating this type of system into clinical practice may decrease the number of medical errors.

References

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