

EMERSE: The Electronic Medical Record Search Engine

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EMERSE (The Electronic Medical Record Search Engine) is an intuitive, powerful search engine for free-text documents in the electronic medical record. It offers multiple options for creating complex search queries yet has an interface that is easy enough to be used by those with minimal computer experience. EMERSE is ideal for retrospective chart reviews and data abstraction and may have potential for clinical care as well.

BACKGROUND

The deployment and adoption of electronic medical records in order to improve the quality and delivery of patient care has recently been receiving growing attention. Due to the complexity and time constraints associated with documenting a clinical encounter, the majority of patient information is still stored in free-text documents as opposed to discrete coded data elements. This has created a paradox for many institutions because, while the data are in electronic format, access to specific information of interest is not readily available through automated means.

Data mining techniques have sought to address components of this problem, but the methodology usually involves experts with advanced technical skills. Additionally, humans are still often needed to review a document to ensure accurate data abstraction. Search engines have become highly popular among regular computer users and their utility for identifying appropriate medical literature has been increasingly discussed¹. While some attempts have been made to apply the power of search engines to the electronic medical record², the widespread adoption of such technology has not yet been realized.

METHODS/DESIGN

The Electronic Medical Record Search Engine (EMERSE) was built in order to address the need for searching the medical record for research and data abstraction. EMERSE is secure, maintains an audit trail, and has been approved for use by our Health System Privacy and Compliance Office. EMERSE provides an easy-to-use, intuitive user interface for constructing complex search queries and scanning context-sensitive search results. Results are displayed in a manner consistent with the structure of the medical record, including separate categories for the problem summary list, patient notes, and pathology

and radiology reports. It offers powerful features, such as the ability to look for potential spelling errors in the documents as well as the ability to perform batch searches across multiple patients at once.

RESULTS

In the 6 months since EMERSE was first introduced, over 90 users have been registered and searches have been conducted on over 5800 unique patients in our health system. Feedback from EMERSE users has been overwhelmingly positive. The individual who has used the system the most, based on both number of logins and patients searched, has estimated that EMERSE provides for a roughly 3-fold increase in productivity.

CONCLUSIONS

EMERSE has been well-embraced in the limited group to which it has been introduced. Some individuals have expressed a desire to use the system but are refraining from doing so until a more systematic analysis of the efficacy and accuracy has been conducted. Future work will address these concerns.

EMERSE currently searches only those patients specified by a user, although the program could be adapted for searching across all patients in the health system. This could be useful for identifying patients who are affected by a drug recall; however, additional privacy issues would likely need to be addressed. Additionally, EMERSE has potential applicability in the direct patient care environment where clinicians are increasingly pressed for time, and a rapid method for reviewing a patient's history for notable events of interest would be welcome.

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