

A Preliminary Assessment of the Clinical Knowledge Management Capabilities of Commercially-available Electronic Health Records

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Abstract

We undertook a study to explore the availability of various clinical knowledge management features, functions, tools and techniques provided by nine commercially available electronic health record (EHR) vendors serving the U.S.A. marketplace. We developed and fielded a 17-question survey to make these assessments. The survey asked questions about 1) the vendor's electronic health record (EHR) product, 2) the clinical decision support-related system tools and capabilities that each vendor provide, and 3) clinical content. The majority of the systems were capable of performing almost all of the key knowledge management functions we identified. If these well-designed systems are coupled with the other key socio-technical concepts required for safe and effective EHR implementation and use, we expect that the transformation of the healthcare enterprise that so many have predicted, is just around the corner.

Keywords:

Clinical decision support systems, Knowledge management, Computerized medical records systems

Introduction

With the recent passage of the American Recovery and Reinvestment Act of 2009, which provides over \$40 billion in financial incentives to hospitals and physicians that implement state-of-the-art electronic health record (EHR) systems, the pressure on commercial EHR vendors to deliver high-quality, full-featured, and easy to use systems has increased significantly. Several recent studies have suggested that EHRs without advanced clinical decision support (CDS) features and functions may not provide the promised improvements in patient safety or quality of care [1]. We undertook this study to explore the availability of various clinical knowledge management features, functions, tools and techniques provided by a small set of commercially available EHR vendors serving the U.S.A. marketplace.

Methods

We selected nine EMR vendors from the 2008 list of Certification Commission on Health Information Technology (CCHIT) approved EMR vendors. After receiving

Institutional Review Board approval, we sent this survey via email to representatives (e.g., product managers or Chief Medical/Informatics Officers) of these nine vendors.

Results

All of the vendors have multiple modules capable of providing CDS interventions to clinicians. All but one of the vendors offer their products remotely as well as via on-site servers. Seven of the nine vendors allow their client to control the CDS configuration and updating process. All of the vendors support the use of a variety of controlled clinical terminologies and provide their customers with the ability to perform ad hoc queries. Three vendors support the HL-7 InfoButton standard, although three others have a similar functionality. Seven of the nine vendors provide their customers with a knowledge editor to create CDS interventions. Six of the nine vendors have the ability to report on the effectiveness of the CDS interventions they deliver. Four of the nine are able to utilize CDS content from other commercial vendors. All of the vendors provided their customers with a "starter set" of clinical content.

Discussion

The vendors in our sample represent a large cross-section of EHRs used in the United States and internationally. We believe that they are a generally representative sample of knowledge management capabilities of EHRs, with the possible exception that smaller and niche vendors are not well represented.

Conclusions

Based on a relatively small, sample of commercially-available electronic record systems, the clinical knowledge management capabilities of these systems surpassed our expectations. The majority of the systems were capable of performing almost all of the key knowledge management functions we identified. If these well-designed systems are coupled with the other key socio-technical concepts required for safe and effective EHR implementation and use, we expect that the transformation of the healthcare enterprise that so many have predicted, is just around the corner.

References

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