Contrasting Electronic Health Records from Two Different Hospital Systems: Radiologists' Perspective

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DESCRIPTION OF THE PROBLEM

The use of the electronic health record (EHR) is now a matter of national policy. One of the final steps of the CMS initiative is to "achieve meaningful use," which mandates the use of EHRs to improve quality, safety, and efficiency in patient care [1]. Although the broad clinical benefits of EHR use have been well documented [2], there remain relatively few data specific to the specialty of radiology.

Our attending and resident radiologists come from two different private practice groups and an academic institution. All practice within two large health care systems, each using a similar commercially available EHR. However, there are significant differences between the versions used by these separate hospital systems, most notably with regard to their integration with PACS software.

Although anecdotal preferences in EHR were recognized within members of these groups, there were no data to support efforts for standardization and direct future upgrades across the varied EHR systems.

WHAT WAS DONE

As part of a quality improvement initiative, we developed an anonymous Qualtrics survey (http://www.qualtrics.com) to assess the different hospital systems' EHRs and their impact on our practice of radiology.

Both our hospital systems used versions of the Hyperspace EpicCare EHR (Epic, Verona, Wisconsin). The first hospital system used a GE/Centricity-based PACS (GE Healthcare, Little Chalfont, United Kingdom) that included software modules that automatically logged into the EHR and opened the chart of the patient whose examination was being viewed. The second hospital system used an Agfa/Impax based PACS (Agfa, Mortsel, Belgium) that did not include software modules enabling EHR integration. This system required manual login and patient lookup and would automatically time out if the EHR was not continuously used.

Survey questions reviewed the frequency of and factors affecting EHR use, as well as perception of EHR utility. A Likert-type scale ("strongly disagree," "disagree," "neutral," "agree," and "strongly agree") was used to grade answers. Open comments were solicited on the strengths and weakness of the two EHRs, as well as recommendations for improving the utility of the EHR. Responses were sorted and trended by hospital system.

Analyzed data were presented to practice and local hospital leadership in an effort to direct future improvements in our EHR systems.

OUTCOMES

A total of 49 responses were received (a 61% response rate).

Frequency of Use

The overwhelming majority of radiologists (average, 92%) accessed their respective institutions' EHRs at least daily. Among the daily users, there was a nearly inverse trend in frequency of access by worksite. Users in the PACS-integrated health system were more likely to access the EHR both in absolute terms and by percentile of examinations interpreted (Figs. 1 and 2).

When asked about reasons for using the EHR, more than 96% of respondents agreed or strongly agreed that an unclear study indication would raise the likelihood that they would access the EHR. This stood out well above "high mortality condition" (76% positive agreement) and "equivocal findings" (73% positive agreement) as reasons to access the EHR (Fig. 3).

Reasons for Use

The statements that received the most positive responses were "EHR data improves the quality of my reports" and "EHR data improves

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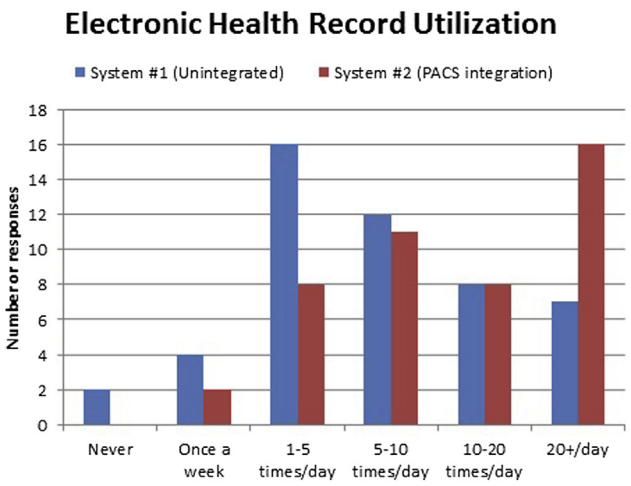

Fig 1. EHR access frequency.

patient safety" (both 94% total positive agreement). "Improvement in care coordination" received the least positive responses, with only 68% agreeing or strongly agreeing that the EHR was valuable in this respect. Data taken from the EHR changed report impressions for 78% of respondents (Fig. 4).

Strengths, Weaknesses, and Suggested Improvements

Among three possible changes to promote increased EHR use, "better PACS integration" received the most combined "agree" and "strongly agree" responses (Fig. 5).

The reported strengths of the unintegrated EHR included providing useful clinical information (15 of 22 comments), with some commenters specifically indicating that it offered more clinical information than the integrated system (5 of 22 comments). Another strength mentioned was the ease of ordering procedures (2 of 22 comments). The most frequently mentioned weaknesses of the unintegrated EHR were the lack of direct PACS integration (20 of 51 comments) and that the EHR closed too quickly (12 of 51 comments). Slow logon was the third most cited weakness (5 of 51 comments).

The strengths of the integrated EHR included its PACS integration and automatic logon features (27 of 32 comments). The "Snapshot" page (a summary of recent clinical data) was mentioned as another advantage (3 of 32 comments).

Reported weaknesses of the integrated system were mixed. Some of the most often cited weaknesses were difficulty navigating the EHR and lack of availability of pertinent information (each 6 of 42 comments).

When respondents were asked about how to improve the unintegrated EHR, the primary response was linking with PACS (23 of 41 comments). Other improvements included longer logout times and easier navigation of notes (each receiving four comments).

Comments on improvements for the integrated system were much more mixed. The most common areas cited for improvement were in finding pertinent information (7 of 22 comments) and correcting a lack of patient data (5 of 22).

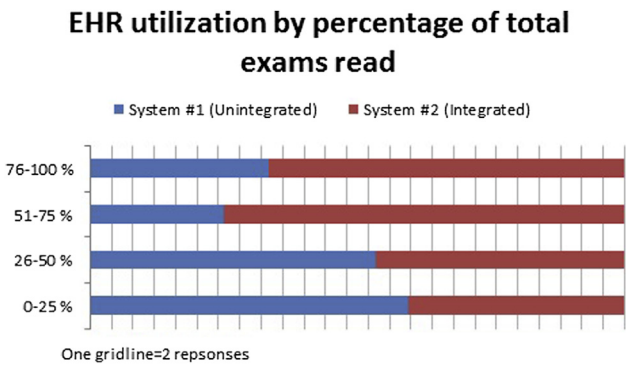

Fig 2. EHR use by percentile of examinations.

DISCUSSION

The increased use of EHRs has been associated with positive health care outcomes that support the goals of meaningful use criteria [2,3]. Access to the EHR can influence radiologists' decision making, and a lack of EHR data could in fact negatively influence patient outcomes [4]. Given the increasing quantity of radiologic examinations performed, rapid access to relevant patient data will only become more important for image interpretation.

A majority of our local radiologists access the EHR daily, primarily to explore patient histories and clarify the clinical indications of examinations. Working in a PACS-integrated system had a strong association with increased EHR access, which was felt to improve patient safety and generate better quality reports.

Our radiologists valued the PACS-integrated but clinically weaker system

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