



Systematic Review:

Secure Messaging between Providers and Patients, and Patients' Access to Their Own Medical Record

Evidence on Health Outcomes, Satisfaction, Efficiency and Attitudes

EXECUTIVE SUMMARY

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PREFACE

Quality Enhancement Research Initiative's (QUERI) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout VA.

QUERI provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of QUERI Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at nicole.floyd@va.gov.

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EXECUTIVE SUMMARY

BACKGROUND

As the Veterans Health Administration (VHA) expands the capabilities of its personal health record system, My HealthVet (MHV), and places greater emphasis on encouraging its use, it is interested in understanding how best to prioritize different functionalities and which of them will provide the greatest benefits to Veterans. This systematic review was designed to evaluate the literature surrounding secure messaging systems and electronic applications that give patients access to their own medical records, specifically investigating the evidence that these systems improve health outcomes, patient satisfaction, healthcare utilization and efficiency, and adherence. Additionally, the review examined studies that evaluated attitudes, particularly regarding patients having online access to their own medical information. The review distinguished between electronic systems that were “tethered” or tied to existing healthcare institution systems similar to how MHV is tethered to VHA’s EHR, versus those that were “stand-alone.”

The key questions were:

Key Question #1. What is the association between secure messaging and health outcomes, patient satisfaction, adherence, efficiency or utilization, or automated email?

Key Question #2. What is the association between patient access to their own medical record and health outcomes, patient satisfaction, adherence, efficiency or utilization, and attitudes about access?

METHODS

We searched PubMed for relevant literature from 01/01/1999 through 12/03/2010, using standard search terms such as electronic health record, patient, messaging, and computerized reminder. We limited the search to peer-reviewed articles published in the English language. Two reviewers assessed for relevance the full text articles identified from the title screening of the literature searches. Each article was reviewed using a standard screener form. Initial inclusion criteria were: 1) discussion of relevant functionalities, namely messaging programs, patient access to their own medical record, patient self-reported data, or online reminders; 2) study design of descriptive qualitative, descriptive quantitative, hypothesis testing, or systematic review.

DATA SYNTHESIS

We constructed evidence tables showing the study characteristics and results for all included studies, organized by key question, intervention, or clinical condition, as appropriate. We critically analyzed studies to compare their characteristics, methods, and findings. We compiled a summary of findings for each key question or clinical topic, and drew conclusions based on qualitative synthesis of the findings.

We assessed the overall quality of evidence for outcomes using a method developed by the GRADE Working Group.

PEER REVIEW

A draft version of this report was reviewed by six technical experts and/or clinical leaders. Reviewer comments were addressed and our responses were incorporated in the final report.

RESULTS

We reviewed 4607 titles and abstracts from the electronic search, and an additional 64 from content experts for a total of 4671 references. A title screen excluded 4274 as unrelated to our topic, with 397 remaining for further review. After applying our screener form to the full-text articles, 218 references were excluded. Of these, there were 84 that were not relevant to consumer health information technology, another 57 did not address any of the four specified functionalities, and 80 had study designs warranting exclusion (non-systematic review, commentary or news, or other ambiguous designs). We sorted these articles based on functionality, study design, and outcomes. Inclusion based on functionality retained articles relating to two of the functionalities, patient access to medical records (N=121) and secure messaging (N=153), with articles relating to online reminders (N=14) and patient self-reported data (N=74) no longer of interest. These categories were not mutually exclusive, however, so an article about secure messaging that also related to online reminders would be included, for example. Of the 13 articles identified by peer reviewers, eight met the criteria for inclusion, and were added to the appropriate categories below.

Within the included functionalities, further inclusion restrictions based on study design and outcomes were applied. Within the secure messaging functionality (N=154), the 26 articles with a hypothesis testing study design that related to health outcomes (N=9), patient satisfaction (N=7), adherence (N=2), or efficiency or utilization (N=18) were included. The other 128 articles relating to secure messaging were excluded either because their study design was descriptive or a systematic review (N=42), or they did not address one of the desired outcomes (N=86). For patient access to medical records (N=131), descriptive quantitative studies relating to tethered medical records addressing health outcomes, patient satisfaction, and adherence (N=6); efficiency or utilization (N=9); patient characteristics (N=4); or attitudes (N=12) were included, in addition to 5 articles which addressed non-tethered record, for a total of 31 articles. Additionally, four descriptive qualitative articles addressing barriers or facilitators to patient access to medical records were also included. The other 93 articles relating to patient access to medical records were excluded either because their study design was descriptive qualitative, and did not address barriers or facilitators to use, or systematic review (N=12), or they did not address one of the desired outcomes (N=81).

Key Question #1. What is the association between secure messaging and health outcomes, patient satisfaction, adherence, efficiency or utilization, or automated email?

The hypothesis testing studies that include secure messaging support the following conclusions:

- There is moderate strength evidence that secure messaging (especially as part of a web-based management system) can improve glucose outcomes in patients with diabetes. (GRADE = moderate)

- There is low strength evidence that adding a web-based pharmacist to secure messaging improves blood pressure outcomes in patients with hypertension. (GRADE = low)
- There is low strength evidence that secure messaging with a web-based management system improves ulcerative colitis symptoms. (GRADE = low)
- There is low strength evidence that secure messaging improves adherence to colorectal cancer screenings or heart failure management. (GRADE = low)
- There is moderate strength evidence that secure messaging increases patient satisfaction. (GRADE = moderate)
- There is low strength evidence that secure messaging influences either positively or negatively efficiency or utilization. (GRADE = low)

Key Question #2. What is the association between patient access to their own medical record and health outcomes, patient satisfaction, adherence, efficiency or utilization, and attitudes about access?

The evidence reviewed regarding patient access to their own medical records, when this is tethered to an electronic health record, supports the following conclusions:

- There is low strength evidence that patients' access to their own medical record improves health outcomes for chronic diseases such as diabetes, hypertension, or heart failure (GRADE = low).
- There is low strength of evidence that patient access to their own records, combined with the ability to submit an electronic care plan can improve medication decisions at a subsequent visit for patients with diabetes (GRADE = low).
- There is insufficient evidence to reach conclusions regarding the potential effect of patients' access to their own medical record on efficiency (GRADE = insufficient).
- There is low strength evidence that patients' access to their own medical record influences utilization (GRADE = low).
- There is insufficient evidence to reach conclusions regarding the potential effect on patients' access to their own medical record on patient attitudes.
- There is moderate strength evidence that use of patient portals is lower among certain racial or ethnic groups, in particular African Americans (GRADE = moderate).
- There is moderate strength of evidence that use of patient portals is lower in persons with lower literacy or education level (GRADE = moderate).

CONCLUSIONS

Data are sparse, but support that the use of secure messaging can improve glucose outcomes in patients with diabetes and increase patient satisfaction. Data from other studies suggest that secure messaging as part of a web-based management program is more effective than secure messaging alone. This finding supports the conclusions from other studies of health information technology that HIT is a tool, and if implemented by itself may have modest or even no measurable effect, but HIT can enable the implementation of more comprehensive programs (e.g., the web-based management system, in this case) that have meaningful effects on quality of care.

DISCUSSION

The literature surrounding secure messaging and patient access to their own records is evolving as the systems themselves become more complex. In some respects, evaluating the individual components of patient portals may no longer be relevant since most of the functionalities are not conceptualized as independent features, but rather as part of an overall package that is intended to facilitate information exchange with patients as well as patient communication with providers and healthcare institutions. Our review identifies a few core elements consistently described in most of the published evaluations that comprise the basic patient portal: secure messaging, access to test results, access to progress notes or visit summaries, and educational materials or disease management tools.

The evaluation of the impact of these portals is further complicated when one considers that they are also being designed to align with a larger patient management system that includes case management, remote health care delivery and non-face to face care. Attributing outcomes to any one component becomes more and more difficult as these layers are added one to the other; yet it appears that utilizing patient portals as part of a broader effort to improve care, particularly one that involves case management, may in fact yield beneficial results.

These patient portals are also being created as part of a movement to make patients more active participants in their care, as opposed to passive receivers of information. Early consumer health systems provided educational materials to patients. Robust patient portals offer patients the ability to drive and direct their care. Yet our review has identified some potential key barriers to achieving more uniform access to these systems. Successful and widespread implementation will require attention to these disparities in use as well as tailored approaches to engage certain populations that are not readily embracing personal health record systems.