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eVisit: A Pilot Study of a New Kind of Healthcare Delivery

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Abstract

Patient online eVisits are gaining momentum due to increasing consumer demand for improved access to clinical services, availability of new technologies to deploy such services and development of reimbursement initiatives by major payers. The eVisit service provides patients with an online consultation through a series of structured, secure message exchanges with a physician, providing an alternative for onsite office visits and non-reimbursed phone-based care. In this study, we evaluate a pilot deployment of eVisits in a primary care clinic providing online consultation service for 7 simple health conditions at its three locations. We examine usage data over 3 months and survey and interview results for trends in adoption, demographic and temporal patterns of usage, clinician and patient expectations and experiences, and challenges to sustainability of the service. Based on our analysis, we conclude that the eVisit pilot was a success. Patients valued the new service being offered as demonstrated by a rapid increase in usage. The quality of service was good with fast turnaround times and few exchanges to resolve a request. These positive outcomes combined with a reimbursement model are promising indications of sustainability but several challenges remain.

Keywords:

Patient portal, Online consult, Adoption trends, Usage analysis.

Introduction

With secure internet transactions providing standard offerings in many industries and progressing to over 50% of online users in industries like financial services, the healthcare delivery sector is seeking to leverage deployment of the electronic medical record (EMR) to provide improved customer service and market differentiators to consumers by supporting appropriate levels of care in a secure, online environment [1, 2]. Patient health portals are becoming a critical part of a healthcare organization's service delivery strategy [3]. While the EMR facilitates access to patient health information for providers and caregivers to make informed decisions at the point of care, health portals empower patients to access their clinical information and interact with their healthcare team. It allows patients to take a more active role in their own health by providing secure and convenient electronic access to their own health information [4].

Patient portals provide value to the healthcare organization by streamlining workflow, empowering the patient, and creating new communication pathways [5]. Through patient portals, users have the ability to self-service and research their own health information and health issues. By providing them with access, they can review and validate portions of their medical record. Interactions with the office also become more user-friendly and efficient. Requests for prescription refills, appointments, medical advice such as appropriate medication use, and other related information can be received electronically, automatically routed to the correct resource, and managed in a timely fashion that integrates into workflow with minimal disruption to the patient or staff [6]. Properly leveraged, patient portals can also be a valuable tool for an organization to inform patients of services and resources. Health reminders can be automatically and safely sent to patients reminding them of upcoming appointments, the need to schedule for an appointment like an annual physical or flu shot, or inform them of a new service available from the organization [7].

Perhaps one of the most valuable capabilities of patient portals is the ability to provide services to treat patients for non-urgent health conditions [6, 7]. This offering provides patients with the ability to complete and submit basic information for designated non-urgent episodic illnesses and receive an online evaluation from their physician, providing convenient, timely, and comprehensive access to care. Furthermore, this approach can evolve into a service that assists patients in managing chronic health conditions. By providing the tools to enter data such as blood glucose levels, weight, and blood pressure, and resources needed to monitor and control their health conditions over time, patients have an improved ability to actively participate in their health care and achieve more favorable health outcomes. Despite these perceived benefits, adoption rates have been uneven across patient groups [8].

In this study, we examine adoption and use by analyzing data from a pilot eVisit project implemented by a major academic medical center to provide online consultation service to patients in the ambulatory care setting. The eVisit service provides patients with online consultation through a series of secure message exchanges with a physician, providing an alternative for onsite office visits and non-reimbursed phone-based care. These are distinct from email consultations because they use a structured template-driven questionnaire to capture relevant

information about the patient's acute condition. We study eVisits in a primary care clinic, covering 7 simple health conditions at its three locations. We examine actual usage data over 3 months as well as survey and interview results for trends in adoption, demographic and temporal patterns of usage, clinician and patient expectations and experiences, and challenges to sustainability of the service.

Study Setting

The e-Visit service was piloted in one primary care outpatient practice associated with a major medical center as part of its strategic plan to computerize all ambulatory services with the ambulatory electronic medical record (EMR) for clinicians and an extensive patient portal for patients. Only patients of the health system can access the portal which has been in use for four years and currently has over 8,000 patients. The portal is integrated with the ambulatory electronic health record, which allows the health care team to interact with patients through their current applications and workflow. The application utilizes the underlying technical infrastructure and solutions offered by Epic Corporation (EpicCare EMR http://www.epicsystems.com/software-clinical.php and MyChart Patient Portal http://www.epicsystems.com/software-ehealth.php). There are several options that offer a variety of services to patients.

The clinical component of the portal provides patients with the abilities to view lab results and diagnostic studies, solicit medical advice from their healthcare team (such as questions regarding a specific medication), request prescription refills, receive health maintenance reminders, request or schedule medical appointments, and more. The business component of the portal offers automated scheduling, registration and billing services that are standardized across the enterprise and integrated with the EMR. This integration allows the health system to offer patients self-service solutions for appointment scheduling, pre-registration to update select information like address and payer information and correspondence with the business office.

On August 19, 2008, the medical center released an additional function for the clinical component, called eVisits. The eVisits service provides patients with an online consultation through a series of secure message exchanges with a physician. The primary objective of this new online service is to provide an alternative for onsite office visits and reimbursable phone-based care. This eVisit system currently provides service for 7 conditions: cough, red-eye, vaginitis, diarrhea, sore throat, urinary tract infection, and back pain as well as a generic category of "other." A standardized template creates structured documentation of the consultation, is easy to use and integrated with practice workflow. It also captures information that is stored in the EMR.

This new offering was tested in Fall 2008 at a single community primary care practice encompassing three office locations. The physicians and staff at the offices encouraged patients to sign up for the patient portal and use eVisits for the treatment of specified episodic illnesses. Thus use of the service was purely voluntary. As of December 5, 2008, 126 patients had used the service and 11 physicians were participating. During the pilot phase, the eVisit service was offered at no cost to the patient.

The key stakeholders in this project are the physicians, the patients, and the insurers. The patients need to be convinced that the eVisit system can provide them with good quality of service while offering the additional convenience of accessing a physician's medical advice online. The physicians need incentives to participate in the system, primarily through reimbursement for their services, as well as providing better care. Insurers need a clear understanding of how this service is going to be implemented, and the policy and guidelines, so that it can be covered under current health plans. The success of eVisits is dependent on the buy-in from the stakeholders mentioned above.

The eVisit Process

The process is initiated by a patient who logs into the patient portal to submit an eVisit for a non-urgent health condition. The patient is introduced to information regarding eVisits, including overview, warnings, and frequently asked questions, linked to "Submit an eVisit" option as well as a video demo of an eVisit for patient education. The patient must accept the terms and conditions of eVisit comprising emergency disclaimers and privacy policy before accessing the main forms to list symptoms associated with any of the 7 conditions covered by the eVisit service (Figure 1). An 'Other' category is available to allow specification of conditions that are not included in the 7 well defined areas (Figure 2). The patient may select pharmacy for any prescriptions needed for the visit or add their own, and review health issues, medications, and allergies.

Figure 1- Screen Shot of eVisit Request Form

In the case of the 7 specific conditions, a questionnaire with branching specific to a chosen condition and related symptom is completed and free text added for symptoms not on the list. Once the eVisit is submitted, the message goes to a support staff pool, a successful message submission acknowledgement is received and the patient is notified of subsequent steps. These include forwarding the eVisit to a physician who is on call to provide a timely response during regular business hours. The physician reviews the eVisit, makes diagnosis, and replies to

the patient about how to proceed. Once the patient receives the information, and it is deemed to have addressed the health condition, a satisfaction survey is completed. If the patient has additional concerns, a few request-response exchanges take place before the physician closes the encounter and notifies the support staff. This completes the eVisit.

Figure 2- eVisit Questionnaire for 'Other' Category

Data Collection

Data for analyzing usage and trends came from several sources. These included portal activation data for eligible members of the medical center as well as the clinic participating in the pilot study, de-identified patient demographics and eVisit transaction data, patient and physician satisfaction surveys, clinician interviews, phone encounter records, and payer information. Transaction data related to eVisits submitted between August 20, 2008 and December 5, 2008 included a unique message identifier, associated eVisit, patient and physician identifiers, date, time and subject of the message (one of the 8 conditions), and whether the message was from/to the patient. Patient demographics included age, gender, ethnicity, marital and employment status. Total patient population of the study clinic and the subset who had activated portal access were also available. Overall, 152 eVisits were submitted by 126 unique patients, with 18 patients submitting requests more than once,16 patient and 11 physician satisfaction surveys were completed, and 417 total messages were exchanged between patients and physicians.

Analysis of Usage

The data described above was analyzed to examine the following patterns of usage and trends. The demographic characteristics of residents in the 3 locations of the primary care practice were quite similar. During the eVisit pilot period, the number of new portal patients increased from August to October and decreased from October to November. However, new eVisit patients kept growing from August to November. In August, only 4% of the new portal patients used eVisits. From September to November, the percentage increased to 14%, 18%, and 25%, respectively, indicating that patients were adopting the eVisits service.

Who is using it?

The clinic has a population of more than 23,000 patients, of which about 1,600 have activated portal accounts, 375 submitted medical advice requests, 152 submitted eVisits and about 1,300 received phone-based care during the pilot study period. Across all these groups, age was normally distributed. A cross-sectional study of the demographic profiles of patients drawn from these populations indicates that more than 50% of eVisit patients are between ages 36 and 55. Analyzing gender distribution among these different groups shows that in all five groups, the female population is substantially more than the male population, with women using eVisits, in particular, three times more than men.

When are they using it?

75% of the messages sent by patients initiating an eVisit were during the hours of 9am and 6pm. At the same time, 94% of physicians responded between 6am and 3pm, so physicians tended to start early in the day to catch up on messages that may have been sent the previous day by patients. Messages were evenly distributed across weekdays with very little activity on weekends. Most of the eVisit messages were responded to within the same day, however, messages sent between 3pm and 6pm were likely to be responded to on the following day. On average, patients waited about 6 hours to receive a response at any given time. During physician office hours (9am-3pm), the waiting period reduced to an average of about 3 hours, indicating a reasonably responsive turnaround time by the health system. In particular, a significant majority, 65% of all patients, received a response from a physician within the hour.

How are they using it?

A request-response pair of message exchanges between a patient and physician in an eVisit is termed a 'volley'. Volleys are an important measure of the workload associated with online consultations. As the number of messages exchanged with patients to resolve a specific health issue increases, physicians may perceive an office visit to be more fruitful. Volleys help in examining these trade-offs. Our analysis indicates that eVisits require, on average, 1.22 volleys to achieve closure on a request. Out of the 152 eVisits logged in this study, 82% were completed by physicians within 2 responses, indicating that most eVisits are fairly straightforward, and do not require patients and physicians to go back and forth several times.

Frequency of eVisits usage had some interesting aspects as well. Out of 126 unique patients, 14% submitted an eVisit request more than once. Among the conditions for which the eVisits were submitted, over 50% of patients submitted requests for the "Other" category and 25% for Sinus/Cold symptoms. Within the "Other" category, there were no significant patterns in patient conditions; however, skin related disorders, such as breast rash and skin lesions, did appear a few times more than others.

Patient Satisfaction

Patient satisfaction with the eVisit service was analyzed using surveys that were submitted by 28 patients after using an eVisit.

In general, patients were highly receptive to the service. Patients found the service to be easy to use and were satisfied with the quality of care received. 95% of patients said they valued online access to the physicians and intended to continue using eVisits again, as well as recommend it to others. The typical concerns patients voiced when informed about eVisits were around privacy and confidentiality and co-pay. Senior citizens found the concept confusing while the younger and computer savvy patients were excited about the new service.

Clinician Perceptions

11 physicians participating in the eVisits pilot deployment completed surveys after using eVisit at least once. There were 4 female physicians between the ages of 36 to 54 and 7 male physicians between the ages of 41 to 57 in the sample. Physicians were concerned about the ease of use of the interface, finding it somewhat non-intuitive and inflexible to address a diagnosis at any point during the consultation. eVisit was clearly not a preferred mode to treat patients with acute conditions. However, interviews with the physicians highlighted the value of eHealth as an important component of modern medicine with the potential to improve healthcare, increase income for organizations and be convenient for patients. Reimbursement was an important incentive for adoption and use of eVisits. Physicians considered younger and more tech-savvy patients to be the target audience for this service. Due to concerns about patients underreporting their conditions or requesting inappropriate advice online, 50% felt that face to face was a better way to diagnose. Interviews were also conducted with 3 office staff and 3 nurses involved with the service at the 3 locations of the primary care practice. Office staff alerted and educated patients about the eVisit service. They perceived that the number of phone calls had reduced since the eVisit pilot began, but this has yet to be determined quantitatively.

Analysis of Phone Encounters

One of the objectives of the eVisit pilot deployment was to estimate the potential for shifting non-reimbursable phone-based care to reimbursable online consultations. Phone encounter records over a period of 2 years were analyzed to examine the significance of this potential. From June 2006 to June 2008, there were 40,489 phone calls from patients to the three office locations of the practice. As shown in Table 1, about 10% of the calls were related to the 7 eVisit conditions. The majority of the phone calls were related to other conditions such as checking test results or requesting medication refills (portal functionality is also available to meet these requirements). Furthermore, about 18% of all calls were by portal users who were eligible to access the eVisit service. Phone encounters by these users during the eVisit pilot period, shown in Table 2, indicated the same distribution of phone calls, with about 10% of the phone calls being potential eVisits.

Table 1- Analysis of All Phone Encounters June 2006 - June 2008

	# of Phone Calls/month	**Percentage**
eVisit potential (7 conditions)	172	10%
Other Conditions	1400	83%
Inappropriate	116	7%
Total	1688	100%

Table 2- Analysis of Phone Encounters with Portal Users August 2008 – November 2008

	# of Phone Calls/month	Percentage
eVisit potential (7 conditions)	25	10%
Other Conditions	212	85%
Inappropriate	13	5%
Total	250	100%

Discussion and Conclusions

The success criteria for the pilot deployment were identified to be (1) positive perceptions regarding eVisit service including both workflow and technology experience on the part of eVisit patient and provider users; (2) increasing frequency of use in practices which marketed eVisit services; (3) documented opportunities related to translating phone encounters into reimbursable services; and, (4) accurate and thorough data and operational documentation for reimbursement analysis. On the first and second measures, while patients expressed satisfaction and value through increased use of the service over the pilot phase that was well beyond expectations, providers had some concerns about functionality and value of the service. Based on our analysis of phone-based encounters, there is some evidence that the potential exists for getting value from converting these users to eVisits. However, the total returns are clearly tied to reimbursement policies that would be eventually adopted. On the fourth measure, the implementation of the eVisit process for specific health conditions with branching logic that automatically captures date and time stamped critical documentation and treatment details and associated participant

information ensures the capability of the service to capture all the necessary data for reimbursement analysis. Thus, based on these measures, our preliminary analysis indicates that the pilot was a reasonable success.

Three distinct areas posed challenges associated with expansion of the service: 1) reimbursement model, 2) patient adoption strategies, and 3) provider adoption strategies. The medical center has implemented a reimbursement model from April 1, 2009, which is being evaluated currently. Patient education and outreach efforts combined with improved usability and innovative marketing campaigns, optimizing the triage process for providers by filtering out the inappropriate eVisit requests, demonstrating workload benefits from secure messaging, and analyzing the clinical computing workload and workflows through better interface design are additional characteristics that need to be studied.

In summary, patients appeared to see value in the new service being offered and this was demonstrated by the rapid increase in usage. The quality of service was good, with fast turnaround time and low number of messages exchanged before resolving an issue. eVisits may also prove to be of considerable valuable in post operative management and chronic care management settings, another focus of our ongoing evaluation. By further developing the portal strategy, the medical center can provide greater service to patients and improved value and competitive advantage for the organization.

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