Reprinted from *Canadian Healthcare Technology*, May 2005 issue

CANADIAN Healthcare Technology

www.canhealth.com

Boston's CareGroup hospitals pioneer the web-based patient portal

Canadian hospitals interested in building their own patient portal would benefit from examining the PatientSite Project, created by the Boston-based CareGroup Healthcare System, a Harvard-associated, five hospital system of 12,000 employees, 2 million patients, and 1,700 medical staff. Its flagship is the Beth Israel Deaconess Medical Center.

PatientSite (www.patientsite.org) is a sophisticated web portal for patients and physicians that's been up and running since April 2000. Its features include requesting appointments, obtaining prescription renewals, and requesting care referrals.

The PatientSite project began in 1999, when I.T. and general medicine staff first discussed the concept of "patient relationship management" – the idea that patients should be able to view their medical records on line and communicate electronically with their physicians.

In early 2000, PatientSite was piloted with a small number of highly motivated, early adopter physicians and patients. By August 2000, over 1,000 patients were enrolled, along with 43 physicians in 10 practices.

Currently, over 30,000 patients, 200 primary care clinicians and 300 staff use Patientsite every month, commented Dr. John Halamka, CIO of Harvard Medical School and Beth Israel Deaconess Medical Center.

The project achieved this degree of adoption by ensuring PatientSite is compatible with all browsers, is easy to use and is highly customizable. For example, physicians work with their patients to enable specific features, such as how messages are routed to nurse practitioners, prescription clerks and appointment clerks.

For security, PatientSite uses a Secure Sockets Layer with 128-bit encryption. Users access it by logging in with a username and password. All accesses are audited and all audit trails are available for review by patients.

One of the features of PatientSite is secure messaging. Users (patients, staff, and providers) have a mailbox on PatientSite that enables them to send messages to other users on PatientSite. No clinical information ever leaves the secure website: when a message arrives, recipients are alerted via an unencrypted e-mail message sent through regular e-mail.

Recipients can then click on the PatientSite URL, their web browser will open, and they can then log in to read their message.

The functions of the PatientSite mailbox are in many ways similar to that of an ordinary e-mail program. Each message has a subject and a body. Messages can be composed, read, sent, and forwarded to others.

Other features differ from e-mail. Each message has a classification, such as "clinical," "referral," "prescription." Because messages have a classification, they can be automatically routed to those who can best handle them (e.g., prescription requests to the prescription staff).

PatientSite allows physicians to dictate routing of these various message types. By default, clinical messages would be handled directly by the physician.

In addition to secure messaging, PatientSite allows patients to perform convenience transactions online. This includes requesting appointments, obtaining prescrip-

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tion renewals, requesting managed care referrals and viewing their bills.

Patients wishing to have a non-urgent appointment may (if their physician has permitted it) view the physicians schedule and fill out a web-based form specifying when they would like the appointment.

The appointment request is sent and reviewed by whomever the physician has designated as being responsible for managing these requests. The patient is contacted either through secure messaging or by telephone to complete the booking.

PatientSite similarly allows patients to request prescription renewals using online forms. In this case, the patient specifies not only details about the prescription, but also delivery instructions for the prescription. Prescription information is automatically completed when the patient uses the refill button next to a medication on their medication list screen.

The prescription can be left for the patient to pick up, or the patient can specify that the prescription should be called in or mailed to a specific pharmacy. Each patient's favorite pharmacy is the default, but other pharmacy information may be entered, and a pharmacy lookup is provided as a reference.

In addition, when patients need specialty referrals, online referral forms enable them to request the referral from their primary care physician.

Every patient's "home page" on PatientSite contains customizable health education links. These may be "prescribed" or suggested to a patient by a physician through a message (often to support a response to the patient) or they may be selected directly by the patient.

Discrete links may be added, but patients can also select predefined collections of links, clustered by category. These collections are managed by the patient education committee.

Patients may also view drug information monographs about each of their drugs by clicking on the drug of interest that appears on their medication list. In this way they can better understand their medications, how to take them, and what adverse effects can result.

All patients registered on PatientSite have links to their patient records that are established at the time of registration. Once this is done, it is possible for patients to view their records online.

Patients may see most aspects of their record online, including medication lists, problem lists, allergies, and all test results (except for initial HIV test results). If the patient's physician does not use computerized patient records or does not have tests performed through one of CareGroup's affiliated medical centers, then these elements will not be viewable.

Clinicians can view all messages sent through PatientSite through a "Messages" section of the clinical information system. All PatientSite messages are archived as long as the rest of CareGroup's clinical information.

Patients can maintain a health record on PatientSite. They can input their own medications, problems, allergies, and notes. They can also track and graph data over time, for example, blood glucose measurements, weights, blood pressure, symptom scores, and any other quantitative information. Finally, they can upload files, including images, documents, and spreadsheets.

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Since the implementation of PatientSite in April 2000, CareGroup has monitored its use both by patients and providers. It only counted as active users patients who logged on and signed the usage agreement after they were enrolled.

The median age of PatientSite users is 43, with 4 percent over the age of 70. Fifty-seven percent are female.

One of the things that concerns physicians about electronic communication is that they will be flooded with e-mail. The PatientSite data do not support this. Looking at the volume of clinical messages, the number of messages handled by physicians is quite modest, on the order of 20 to 40 messages per month per 100 patients. If we imagine a busy practitioner who has 1,500 patients using PatientSite, the maximum number of messages he can expect to handle from patients each day would be 15.

Even as it has been well received by many patients and physicians, PatientSite has raised controversial issues that are worthy of future discussion:

- Should certain types of data be restricted?
- Is it necessary for physicians to review results before patients can view them?
- How should information from the medical record be presented to patients to enhance their understanding of their health without needlessly alarming them?
- PatientSite has three major stakeholder groups, patients, physicians, and practices. How can we best balance the needs and concerns of each group to guide development?
- What should happen to patient-entered information in the personal health record?
- Should physicians be able to view the patient's personal health record? Should they be required to do so?
- In a teaching environment, how should preceptors oversee their trainees' use of electronic messaging with patients?
- Should physicians be reimbursed for using PatientSite? If so, who should pay? How much should they be reimbursed?

Online health consumers are increasingly prevalent, and are therefore important to healthcare providers. Organizations must fulfill their needs for communication, information, convenience, and access to their health records.

PatientSite, a Website developed and implemented at CareGroup Healthcare System, is an excellent way to meet these needs. It has been vigorously adopted by both patients and providers, and yet the demand on physician time is modest. The system has introduced controversial and interesting issues that CareGroup continues to work through. PatientSite is also a useful platform for future projects, such as patient-computer interviewing, disease management, healthcare quality, and patient safety.