Online Patient-Provider Communication Tools: An Overview

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First Consulting Group provides consulting, technology, an outsourcing services for health care, pharmaceutical, and other life sciences organizations in North America and Europe. More information about FCG is available at: **www.fcg.com**.

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Executive Summary

Case studies on the use of secure and integrated online messaging tools, developments in the reimbursement arena, and newly published liability and privacy guidelines are leading more physician practices to consider communicating online with their patients.

For practices that lack other office-based clinical systems, the use of *stand-alone* patient communication tools can actually improve physician productivity and generate revenue without the complexity and cost of an electronic medical record (EMR). Many physician practices appreciate the ease of using unencrypted Internet-based email to communicate with patients, while others prefer the security of encrypted email tools. There are also a number of vendors that offer messaging services in stand-alone mode—many of which provide structured, secure, forms-based messages coupled with other enhanced features.

Practices that already use electronic medical record systems—or plan to install them soon—have several *integrated* options from which to choose for communicating with patients while streamlining office workflow. Several of the major EMR and practice management system (PMS) vendors offer Internet portals for communicating with patients—usually with an array of advanced features—and all of which are a seamless part of the clinical or administrative systems that practices use every day. In other cases, some of the stand-alone tools can be made more integrated with an EMR and PMS so that practices can communicate with patients without altering their workflow. Examples of both stand-alone and integrated options are reviewed in this report.

There are six additional issues that practices should consider when choosing and using online communication tools:

1. How complex an information technology infrastructure the practice wishes to implement and maintain;
2. To what degree the practice wishes to integrate online communication with other existing or planned office systems;
3. Whether the practice desires structured messages that classify its nature and restrict or guide its content;

4. How much in up-front and ongoing costs the practice is willing or able to pay;
5. To what degree the practice desires or requires that messages be secure; and
6. Whether the practice wishes to be reimbursed for communicating online with patients.

Understanding the available options, the key dimensions that distinguish them, and the lessons learned by those that have succeeded can help a physician practice select an effective approach for patient-provider communication.

I. Introduction

Many patients turn to the Internet to obtain health care information; a growing number are expressing interest in communicating online directly with their physicians about their specific clinical circumstances. Online communication tools offer patients more involvement in and control over their own care.

Physicians, on the other hand, have not adopted these tools as readily as patients would like. Regulatory and liability ramifications, lack of reimbursement, and potential increase in workload are cited by physicians as barriers to adoption.

This report provides an overview of online patient-provider communication tools and a summary of their use by physicians and patients. It discusses the main characteristics and utility of these electronic tools; the advantages and disadvantages of each; the various levels of complexity and integration available; the state of adoption of these tools by physicians; as well as some of the relevant vendors, their products, and services. Also presented in the report are case studies of provider organizations that are using these tools successfully. This report builds on the information provided in the California HealthCare Foundation iHealth report, *E-Encounters,* published in November 2001.

Crucial Issues to Consider When Choosing and Using Online Communication Tools

In this report, the term *online patient-provider communication* is used in the broadest sense, *addressing the electronic exchange of information between the patient and members of his or her physician practice.* The subject matter discussed or conveyed via online communications can vary. Communication can reflect content that is both administrative (such as patient appointment requests, demographic changes, registration, and billing issues) as well as clinical (such as interactions related to test results, prescription requests, health questionnaires, clinical questions, and online consultations, or e-visits, that take the place of face-to-face office encounters).

Physician practices interviewed for this report cited six issues considered crucial to the selection and use of online patient-provider communication tools.

1. ***Complexity of Infrastructure.*** The complexity of the technical infrastructure necessary to support online patient-provider communication tools can vary. In general, the simplest stand-alone products are relatively easy to install and maintain, requiring a PC, an Internet connection, and relatively little configuration and training to get started. Complex electronic medical records (EMRs) and practice management systems with integrated communication tools require more extensive hardware set-up, software configuration, and often need a sophisticated network of computers and workstations.

2. ***Degree of Integration.*** Electronic messaging tools can either stand alone or be an integrated component of an EMR or practice management system. Stand-alone products typically cost less and are easier to implement than their integrated counterparts. With an integrated product, patient demographics, medical records, and online messages can be stored in one place and readily accessed. For example, physicians and staff using online communication tools integrated with the practice's EMR system need only access one system to view messages from patients, respond with test results, and record the information exchange in the patient's medical record

3. ***Message Structure.*** The degree to which an online message's content is structured can vary significantly. Unstructured messaging is akin to emailing over the Internet. In the most unstructured approaches, a patient can ask any type of question regarding any topic and use an unlimited amount of text in the message. Unstructured messaging tools typically recognize all messages similarly, with no identification as to type or content (administrative or clinical).

   Structured, or forms-based, messaging tools, on the other hand, use specially designed templates that classify and, in some cases, guide and limit the information that patients provide to physicians. By directing patients to identify the nature of their question or concern and limiting how much they say about it, messages can be routed and addressed in a way that increases the workflow efficiency. For example, appointment requests can be directed to the booking secretary, and prescription refills can be sent to a triage nurse for review and then signed off by the physician.

4. ***Cost.*** Stand-alone online communication tools are generally less expensive and require less upfront capital than their integrated counterparts. The simplest tools that support two-way secure communication can cost providers up to $50 per month, plus a small transaction fee for each online clinical consultation. The most advanced EMR products with patient messaging capabilities can initially cost $10,000 per physician workstation (including software and installation costs) and can run as high as $29,000 or more per provider in the first year. Ongoing maintenance can cost 10 percent to 20 percent of the initial purchase price for each year thereafter.[1]

5. ***Security.*** In this era of heightened concern about patient privacy, mechanisms to ensure the security of personal health information are becoming more important and widely available. Email messages exchanged via the Internet are not protected routinely from unauthorized access and are not secure. By encrypting those messages, however, information being exchanged cannot be read easily if it is intercepted by an unauthorized party. The process of encrypting a message requires special software that scrambles the message and allows only approved readers to unscramble and read it. The mechanisms for approving or

authenticating the sender and recipient are not always convenient or foolproof, however. Authentication can take place either in person (the patient presents a photo ID to visually confirm his identity) or remotely (a new user provides information that is not widely known by others, such as a Social Security number or medical record number).

6. ***Potential for Reimbursement.*** Physicians have expressed significant concerns about the usefulness of online patient-provider communication in the absence of payment for such services. Therefore, the degree to which different online communication tools can facilitate reimbursement is an important consideration. The reimbursement mechanisms for online patient-provider communication fall into three categories:

   - **Reimbursement by payers on a per-visit basis** is much like payment of an office-based claim. No special technical capabilities are required of the messaging product (i.e., the physician practice submits a bill to a payer that reimburses the practice according to an agreed-upon fee schedule);
   - **Reimbursement by patients on a per-visit basis,** whereby payment is rendered by the patient on a per-email basis. The product must be able to securely accept and process online credit card payments (not unlike the mechanisms for completing an online retail purchase); and
   - **Reimbursement by patients on an annual basis,** whereby patients are billed an annual fee directly by the physician practice for the ability to send clinical email messages to the practice. In this case, the online communication tool has no role in reimbursement.

II. Definition of Tools

TWO TYPES OF ONLINE PATIENT-PROVIDER communication tools are in general use: *stand-alone* tools and *integrated* tools.

Stand-alone Communication Tools

Stand-alone communication tools are not integrated into the practice's other administrative and clinical information systems, such as the practice's electronic medical record (EMR) or practice management system. These stand-alone tools can range from unencrypted email to more sophisticated Web-hosted secure messaging tools that offer security and structured content.

Stand-alone approaches generally take advantage of vendor solutions that are "ready-made," and require little up-front technical or financial investment. While stand-alone tools are relatively easy to implement, physicians and their staff must access multiple systems to manage a patient's care, and patient information is not universally present in and shared among all systems.

The specific stand-alone approaches discussed in this section include:

- Unencrypted email;
- Encrypted email; and
- Secure messaging services via hosted Web site.

These tools differ widely in how they address the six issues discussed earlier. Each offers advantages for both patients and the physician practice, and each has associated drawbacks.

Unencrypted Email

The term *email* specifically refers to messages exchanged via the Internet using widely available consumer products such as America OnLine or Microsoft's MSN service, or institutional products such as Microsoft Exchange or IBM/Lotus Notes.

Stand-alone Communication: Unencrypted email

Complexity of Infrastructure: Simple infrastructure requiring PC and Internet connection.

Degree of Integration: Not typically integrated with other practice information systems.

Message Structure: Not structured.

Cost: Can range from $30-50 per month for a DSL Internet connection and $30-50 per user account per month for email access through an Internet service provider. Multi-user, site-based email licenses are more expensive.

Security: Information is not encrypted; identity of senders and recipients is not authenticated.

Potential for Reimbursement: No mechanism for reimbursement.

Representative Vendors:

- AOL
- Earthlink
- IBM (Lotus Notes)
- Microsoft (Exchange/Outlook and MSN)

Case Study Examples:

- Several large organizations interviewed for this report discourage but do not prevent staff from using unencrypted email to communicate with patients—as long as patients are informed of the risks.
- Greenfield Health System (Portland, OR; www.greenfieldhealth.com) and Gordon Moore's family practice (Rochester, NY; www.idealhealthnetwork.com) are both examples of small physician practices that use unencrypted email to communicate with patients.
- Newton-Wellesley Primary Care in Wellesley, MA (www.nwpcmd.com) uses its locally built Web site to support online communication with patients.

The distinct advantages of unencrypted email are its low cost, ease of use, and widespread availability. It requires no additional technology, assuming the physician practice and its patients already have email accounts. From the patient's perspective, it is easily integrated into the daily routine because the patient can use his or her primary email account to transmit and receive messages.

Unencrypted, Internet-based email has several disadvantages:

- It is not secure. Most organizations that permit their physicians to use unencrypted email to communicate with patients require them to inform patients of the risks in advance.
- The unstructured *format* of email messages can make it difficult for physicians to confirm a patient's identity. The unstructured *content* of email messages can make it difficult for physicians to read and respond to them quickly.
- The email inbox becomes one more place for the physician and her office staff to check for patient messages. (Office workflow impacts *can* be minimized if patient email messages are sent to a general practice email and routed to the appropriate respondent.)
- No easy mechanisms exist for assessing patient charges on a per-message basis, though at least one physician practice site interviewed for this report assesses an annual charge of $350 per patient, which covers the use of Internet-based email (as well as other premium practice services).

The use of unencrypted email is best suited for physician practices that are comfortable communicating via unstructured free text messages, that do not desire additional security protections, and that do not require reimbursement for each transaction.

Encrypted Email

Internet-based email can be encrypted, and made secure, with special software that overlays or supplements a physician practice's email system. By using certain rules and searching capabilities, the software can detect and automatically encrypt sensitive email messages sent by the practice to patients and others. Adding an encryption software package to a practice's email services can be less disruptive than replacing the email software altogether (particularly when compared with installing a comprehensive EMR system). The routing capabilities that many of these software packages provide can also be used to manage other complex workflow tasks at large multi-site organizations.

However, several disadvantages in using encrypted email exist:

- The process to verify or authenticate users can be complicated. Encryption products require mechanisms and processes—which can be complicated and less-than-perfect—to confirm that patient senders and recipients are who they say they are.
- Vendors offering these products typically design their own algorithms and rules for identifying sensitive information. Because these rules are not foolproof, they have to be tested and modified by the physician practice.
- These products are more appropriate for practices that wish to focus on electronic communications and workflow management capabilities rather than the clinical tools an EMR with secure online communication provides.

Stand-alone Communication: Encrypted email

Complexity of Infrastructure: Basic infrastructure requires PC and Internet connection and software for encrypting emails and authenticating users.

Degree of Integration: Not typically integrated with other practice information systems (though some secure email vendors are beginning to integrate their technology with the EMR and practice management vendors).

Message Structure: Not structured.

Cost: Can range from $30-50 per month for a DSL Internet connection; $30-50 per user account per month for email access through an Internet service provider (multi-user, site-based email licenses are more expensive); $10,000-$15,000 to purchase and install the secure email software for up to 50 emailboxes, and $4,000-$6,000 per year in ongoing maintenance fees.

Security: Information is encrypted during transmission; identity of senders and recipients is authenticated.

Potential for Reimbursement: No mechanism for reimbursement.

Representative Vendors:

- Authentica
- Hilgraeve
- Kryptiq
- Sigaba
- Tumbleweed Communications
- Zix

Case Study Examples:

- No practices utilizing this approach were interviewed for this report.

- Like unencrypted Internet-based email, the form and context of encrypted email is unstructured, difficult to integrate with a physician practice's workflow, does not easily incorporate patient-specific clinical content, and lacks a mechanism for reimbursement.

One secure email vendor—Zix—recently announced a campaign to promote email use in health care. The vendor has agreed to donate 80 computers and the associated email and messaging applications to not-for-profit and public health care facilities. The vendor also offers physicians and two of their office staff a two-year license at no cost as part of its HealthyEmail outreach program.

Secure Messaging Services via Hosted Web Site

Secure messaging allows patients and providers to communicate with one another using a private, secure Internet portal. The physician practice contracts with a vendor that hosts the messaging software on a secure Web site, usually for a fixed monthly fee. The vendor or the physician practice issues a unique user ID and password to staff members and patients. The process is outlined in Table 1.

Secure messaging tools can also support reimbursement. In some cases, the vendor charges the physician for every virtual office visit plus any transaction fees. The physician in turn can choose how much to bill the patient. Another

Table 1. Process for Sending Secure Messages via Hosted Web Site

Patients	Providers/Office Staff
Sending Messages ■ The patient selects the type of message to send to the physician practice (appointment request, prescription refill, or clinical question, etc.). ■ The secure messaging application displays a structured form, or template, into which the patient types a message; in some cases, the application prompts for specific information via pick-list menus and fill-in-the-blank boxes that record the name of the medication, the number of refills, and the location for pick-up. ■ The patient sends the message. **Retrieving Messages** ■ The secure messaging application sends an unencrypted email alert to the patient's Internet email account. ■ The patient logs on to the secure messaging application to retrieve the reply message from the physician practice.	**Retrieving Messages and Replying to Patients** ■ The physician or practice staff regularly log on to the application to retrieve incoming messages from patients. The application either classifies these messages by type to be routed and managed appropriately, or routes them directly to the appropriate staff member. ■ The practice staff or physician respond to the message by answering the patient's question or fulfilling the request (i.e., booking the appointment or refilling the prescription through usual mechanisms) and sending a reply to the patient.

Stand-alone Communication: Secure Messaging via Hosted Web site

Complexity of Infrastructure: Basic infrastructure requires a PC and Internet connection to access the secure messaging software.

Degree of Integration: Not typically integrated with other practice information systems (though some secure email vendors are beginning to integrate their technology with the EMR and practice management vendors).

Message Structure: Structured.

Cost: From $30-50 per month for a DSL Internet connection, a monthly fee of up to $50 to access the secure messaging software, and a small additional fee (typically $10 or less) for each online clinical consultation.

Security: Information is managed securely within the application; identity of senders and recipients is authenticated.

Potential for Reimbursement: Mechanisms for patient- and payer-based reimbursement (many but not all tools).

Representative Vendors:

- Medem
- Medfusion
- MyDocOnline
- RelayHealth
- Salu

Several of these vendors also offer capabilities for online clinical consultations. In addition, a number of Web sites administered by a single physician or small physician practice also purport to offer secure messaging and online consultation capabilities.

Case Study Examples:

- Dr. Karen Ilika, a solo OB-GYN physician (Kirkland, WA; www.mygyn.yourmd.com), uses Medem to communicate online with about 150 (15 percent) of her established patients.
- More than seventy physicians at the 20-site Medical Clinic of North Texas (Dallas, TX; www.mcnt.com) use MyDocOnline to communicate electronically with 2,500 of their patients.

vendor supports the submission of claims to insurance companies that have agreed to reimburse physicians for certain online consultations, rather than charging patients *or* physicians directly.

The most advanced secure messaging products offer additional, specialized capabilities, including:

- Direct online access to third-party health information content, news, and resources from within the secure messaging portal;
- Structured tools to support patients' completion of an online assessment of their clinical symptoms;
- Patient-focused disease management programs with online reminders: and
- Structured online clinical consultations whereby a patient known to the practice presents new clinical symptoms to his or her physician and the physician newly diagnoses and treats the patient via the online channel. (This practice is referred to as *online consultations, virtual office visits,* or *e-consultations.*) Although controversial and more complicated than follow-up online clinical questions by a patient after diagnosis, these online consultations have the potential to reduce face-to-face visits.

Several of these vendors are also expanding their capabilities into practice management and e-prescribing.

Secure messaging tools have several disadvantages:

- Integration into workflow can be more difficult than it is for either encrypted or unencrypted emailing. The physician practice must access multiple information technology tools to retrieve patient information (Internet-based email, the secure messaging application, and the electronic medical record), and must designate specific staff to regularly retrieve messages from the online Web site and route them to the appropriate recipients.
- Initial authentication of patient users can be a challenge for physician practices that must issue user accounts to each patient.
- Patients must retrieve physician practice emails via a Web site requiring a secure log-on process.

Secure messaging tools are best suited for physician practices that lack core clinical information systems but seek easy-to-install-and-use patient messaging tools that support structured communication and the opportunity for reimbursement.

Integrated Communication Tools

Integrated messaging capabilities often are built into comprehensive practice information systems, including EMR and practice management systems.

The most commonly used core information management systems in physicians' offices are electronic medical records (which support clinical information management) and practice management systems (which support financial and administrative processes). Advanced versions of these systems have optional online patient messaging tools that can be purchased by the physician practice and "turned on" by the vendor.

This section looks at two kinds of online communication tools that function with EMR and practice management systems: tools available through EMR and practice management system-based Internet portals, and tools manually integrated with an EMR or practice management system (PMS). With either kind of tool, physicians and staff have the advantage of using a single system to retrieve and respond to patient messages and to access patient records or manage bills. On the other hand, these integrated communication tools can be expensive to purchase, difficult to implement, and costly to maintain.

EMR and Practice Management System-based Internet Portals with Patient Communication Tools

Several advanced EMR and practice management system (PMS) products offer online patient communication tools as options. These options typically take the form of secure Web sites, custom-designed and configured for the practice, where patients can exchange text and forms-based messages with the physician practice. Physicians and their staff access these messages and other patient information from within the office-based EMR or practice management system. Patients can log on, send, and receive messages via the practice's Internet portal.

EMR and PMS-based Internet portals with patient communication tools have several advantages. The practice's workflow is more seamless compared with any previously described approaches because the physician and staff can access all messages via the same system that is used to access patient information. A patient's clinical information is readily available while the physician is reading the patient's message, and the patient's message and response can be easily stored in the patient's electronic medical record. Because physician, staff, and patient users have logged on to the application with assigned usernames and passwords, the communication taking place within the portal is secure.

These EMR- and PMS-based Internet patient portals usually offer patients additional capabilities, including:

- Online access to personal medical records (some systems even enable a patient to populate the personal medical record with health information from multiple sources);
- Pre-visit questionnaires, pre-op and post-op instructions, and health education;
- Disease management functionality, including online health risk assessments, and daily health and medication logs; and

Integrated Communication Tools: EMR and PMS-based Internet Portals with Patient Communication Tools

Complexity of Infrastructure: Required infrastructure includes a PC, an Internet connection, the EMR or practice management software (which may or may not require a local-area network in the office to connect multiple PC workstations), and the activation and monthly maintenance fees of the patient portal.

Degree of Integration: Offers seamless integration and functionality for both the physician practice and the patient.

Message Structure: Typically structured.

Cost: Can range from $10,000 up to $29,000 per physician workstation (including hardware, software, and installation costs) and a DSL Internet connection ($30-50 per month); "turning on" the patient portal is an additional cost that varies widely by vendor—in some cases assessed on a monthly subscription basis and in others on a per-access basis.

Security: Information is managed securely within the application; identity of senders and recipients is authenticated.

Potential for Reimbursement: No mechanisms to support reimbursement.

Representative Vendors:

Electronic Medical Records:

- Allscripts
- Alteer
- Cerner
- Epic
- NextGen

Practice Management Vendors:

- IDX

Other EMR-like Messaging/Portal Products:

- Axolotl (in conjunction with a partner such as Medem or Zix)
- HEALTH*vision*
- Medicity in partnership with MedSeek

Case Study Examples: A number of sites that use a secure Internet patient portal as part of an EMR, PMS, or other similar application were interviewed for this report:

- Beth Israel Deaconess Medical Center (www.bidmc.harvard.edu) using a custom-built application, PatientSite
- Eastern Maine Medical Center (www.emh.org) using Cerner's IQHealth product
- Geisinger Health System (www.geisinger.edu) using Epic's MyChart
- Henry Ford Health System (www.henryfordhealth.org) using MedSeek
- Memorial Hermann Health System (www.memorialhermann.org) using HEALTH*vision*
- Peace Health Medical Group (www.peacehealth.org) using IDX Patient Online
- Sutter Health's Palo Alto Medical Foundation (www.pamf.org) using Epic's MyChart

- Demographic updates, self-registration, benefit plan and account review, and online bill payment.

These messaging portals also have several disadvantages:

- High initial cost and ongoing expense;
- Lack of mechanisms for assessing patients' charges (though at least one practice management-focused product *does* have such capabilities and one EMR vendor is partnering with a secure messaging vendor to provide the service);
- Complex processes to authenticate patient users (i.e., verifying users and assigning usernames).

These systems are best suited for physician practices that want to expand the capabilities of an existing EMR or PMS platform, or practices seeking a robust EMR or PMS with a patient portal.

EMR and PMS with Manually-integrated Online Communication Tools

Several online communication vendors have just begun integrating the stand-alone tools described above with established EMR systems. Once integrated, these products together offer patient communication functionality with the potential for streamlined office workflow.

EMRs with Encrypted Email

Though most basic EMR and practice management products do not have the capability to communicate securely with patients, at least one EMR vendor has partnered with an encryption vendor to provide additional security for emails transmitted to and from its EMR product. In this approach, the physician sends and receives messages to patients via the inbox feature of the EMR product. Outgoing messages from the EMR are scanned by the integrated encryption vendor product and made secure if they contain identifiable patient information. As a result, the physician's workflow is improved because all patient messages appear in one place (the EMR inbox), information from the patient's medical record is readily available while reading the patient's message, and the message and the physician's response can be stored easily in the patient's electronic medical record. The patient can easily access secure messages via a personal Internet-based email account. Encryption of messages and authentication of patient users are managed similarly to secure email.

One disadvantage of using an EMR integrated with encrypted email is that messages are still relatively unstructured, making it difficult for physicians and their staff to read and respond to incoming messages quickly. Furthermore, the challenges that encryption products present for authenticating users are still an issue whether the product is used in conjunction with Internet-based email or an EMR. Finally, no easy mechanisms for assessing charges under this model are yet available.

Integrated Communication: EMRs with Encrypted Email

Complexity of Infrastructure: More complicated infrastructure requires a PC, an Internet connection, software for encrypting emails and authenticating users, EMR or practice management software (which may or may not require a local-area network in the office to connect multiple PC workstations), and the vendor wherewithal to successfully integrate these components.

Degree of Integration: Integrated with practice information systems, though not necessarily seamlessly.

Message Structure: Not structured.

Cost: $30-50 per month for a DSL Internet connection, $30-50 per user per month for email access through an Internet service provider, the cost of secure email software ($10,000-15,000 to purchase and install the secure email software for up to 50 emailboxes, $4,000-$6,000 per year in ongoing maintenance fees), and the cost of basic EMR or practice management software (which can cost up to $10,000 or more per physician for a basic system, including hardware, software and implementation costs).

Security: Information managed securely within the EMR application and encrypted during transmission; identity of senders and recipients authenticated.

Potential for Reimbursement: No mechanism to support reimbursement.

Representative Vendors:

- Kryptiq with GE's Logician EMR

Case Study Examples:

- GreenField Health System (Portland, OR; www.greenfieldhealth.com) is an example of a small physician practice that uses GE's Logician product and is working with Kryptiq to integrate its encryption software with Logician so that email can be sent securely to patients.

EMRs with Web-based Secure Messaging

Several vendors with Web-hosted secure messaging products are working with EMR vendors to integrate their functionality. In this approach, patients can send and receive messages through an Internet-based portal hosted by the secure messaging vendor and paid for by the provider, while providers and their staff can receive messages and respond via the EMR.

The approach has several advantages, including:

- Security (compared with use of unencrypted Internet-based email);
- Potential for improved workflow (compared with the use of the EMR *alongside* unencrypted email or secure messaging systems);
- Message structure (compared with text messages sent via encrypted or unencrypted email); and
- Ability to access charges for services (compared with EMRs with encrypted email).

Because this approach is so new, however, the ability to route different types of messages between the two products may not yet be fully developed.

Integrated Communication Tools: EMR with Web-based Secure Messaging

Complexity of Infrastructure: More complicated infrastructure requires PC, Internet connection, software for encrypting emails and authenticating users, as well as the vendor expertise to successfully integrate the secure messaging tool with the EMR.

Degree of Integration: Integrated with practice information systems, though not necessarily seamlessly.

Message Structure: Structured.

Cost: $30-50 per month for a DSL Internet connection, a monthly fee of up to $50 to access the secure messaging software, and a small additional fee (typically $10 or less) for each online clinical consultation, as well as the cost of the EMR or practice management software (which can cost up to $10,000 or more per physician for a basic system, including hardware, software, and implementation costs).

Security: Information is managed securely within each application and encrypted during transmission; identity of senders and recipients is authenticated.

Potential for Reimbursement: Mechanisms to support reimbursement.

Representative Vendors:

- Medfusion (patient history-taking module only) with A4, Allscripts, GE's Logician, Practice Partner and SOAPware
- MyDocOnline with GE's Logician

Case Study Examples:

- No practices using this approach were interviewed for this report.

III. Why Many Physicians Resist Online Patient Communication

THERE ARE THREE REASONS WHY MOST physicians have not adopted any of the online patient-provider communication systems described above:

- Doctors fear high volumes of patient emails will create more work;[2]
- Doctors worry they will not receive adequate reimbursement for the extra work;[3,4,5] and
- Liability, security, and patient privacy issues present additional substantial risk.[6,7]

However, the following findings may lead to decreased physician resistance to implementing online communication with patients.

1. Physicians fear high volumes of email will have an adverse impact on their productivity and office workflow.

Physicians and leaders at many of the sites interviewed for this report attested to the manageability of incoming patient messages—as long as effective mechanisms for triaging and routing messages are in place. Messages are rarely lengthy and usually can be answered in one or two sentences first thing in the morning or at the end of the day, as reported by one physician who receives 10 to 15 patient emails per day. Several physician practices said that for every 100 patients using online communication tools, only one or two clinical messages are generated per day.

There are a number of specific reasons why online communication may be easier than other traditional methods of communication.

Email messages from patients are legible. Unlike handwritten phone messages from staff, email messages clearly identify the patient and enable him to communicate in his own words without risk of a third party miscommunicating the information.

Online communication eliminates telephone tag. Replies can be generated at the convenience of the physician regardless of the patient's physical location. This asynchronous communication offers greater efficiency. "The workflow is a lot better," said a physician, "and I don't have to interrupt as many office visits to answer the phone."[8]

Online patient-provider communication tools decrease the practice's visit and telephone volume. In a pilot program with a secure online messaging vendor, ConnectiCare, the Connecticut-based payer, found that the tool increased productivity in a physician group's practice by reducing administrative tasks.[9,10] In a parallel study by Blue Shield of California using the same tool, participating physicians were able to give patients more attention during their visits by handling fewer issues in the office.[11] In study results released by the vendor used by both payers, a majority of physicians age 45 or younger and 80 percent of physicians who received a large number of telephone messages a day from patients believed that online consultations were easy to integrate into their daily routines.[12]

> *"Having to spend a third of a patient's day in a physician's office for a fifteen-minute visit is disrespectful. Visits are too expensive a form of care."*
>
> – Charles M. Kilo, M.D., a user of online patient-provider communication

A large integrated delivery system in the Midwest estimated that it could reallocate the work of more than 10 FTEs and save more than $250,000 if only 10 percent of its call volume of appointment requests and prescription refills could be redirected to online channels. "These [email messages] are questions that would've come in over the phone anyway," reported a case study site. One practice did anecdotally demonstrate time-savings for physicians using online communication. Another practice reported the elimination of about 50 percent of patients' follow-up visits with the use of online patient communication and telephone care. A study site's 1999 survey projected a similar effect: Responding physicians estimated that more than 20 percent of office visits would be eliminated if patients could communicate with them electronically and be monitored via the Internet.[13]

Reported Advantages of Online Patient-Provider Communication

- Asynchronous (no "telephone tag")
- Decreased telephone hold times
- Legible
- Automatic documentation of conversation
- No increase in physician workload or decrease in productivity
- Overall reduction in patient visits and telephone calls
- Reduced administrative tasks
- More time for patients during office visit

Patients want to communicate with their physicians. The physicians who *do* communicate with patients online typically do so, in part, because their patients request it,[14] and they handle a range of activities:

Table 2: Physician Use of Email with Patients

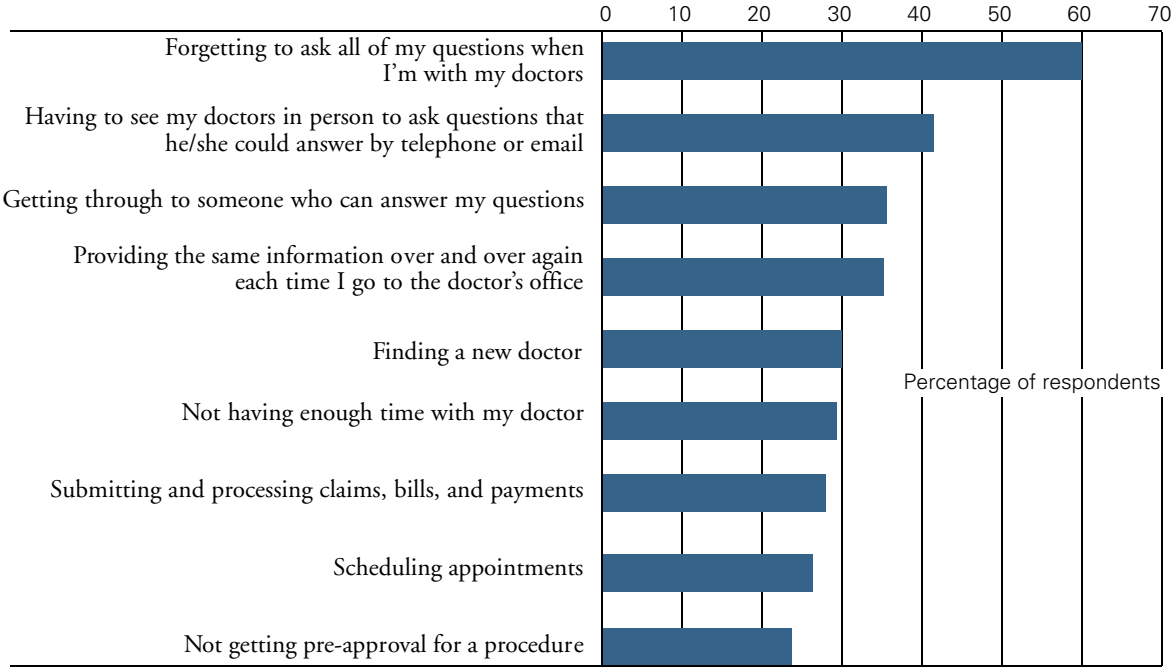
Activity	
Discuss symptoms/treatment	39%
Determine if office visit is needed	32%
Billing inquiries	31%
Test results	21%
Schedule appointments	17%
Routine prescription refills	13%

Source: Manhattan Research [15]

The following chart outlines several common patient challenges that can be addressed effectively by online patient-physician communication.

More than three-quarters of the surveyed patient users of an online messaging tool considered the system more convenient than calling their physicians by telephone.[16] Using online communication tools offers additional benefits to patients.

Figure 1: Most Frustrating Health Care Experiences for the Online Public



Source: "Study Reveals Big Potential For The Internet To Improve Doctor-Patient Relations," Harris Interactive, January 8, 2001.

For example, the spouse of a chronically ill patient at a large, rural academic medical center that implemented online messaging, prescription refill requests, test results, and patient access to medical records was able to get her husband's medical information online and provide a summary printout to share and discuss care with his treating providers. Said the e-health director at this organization: "This application clearly gives patients the opportunity to get more engaged in their care."

2. Adequate mechanisms for reimbursement of online patient-provider communication is lacking.

Almost three-quarters of surveyed physicians reported that financial reimbursement was crucial to their willingness to interact online with patients.[17] In the early pilots and implementation of online patient-provider communication, reimbursement originated from two sources:

- Payers interested in funding physicians' use of online communication tools because they believe that overall health plan costs can be reduced; or
- Patients who believe that the value of using these tools justifies paying for it themselves.

> *"Reimbursement hasn't gone up, and we can't afford to do this for free."*
>
> – The administrator of one large multi-site physician practice that charges patients for electronic communication

Reimbursement by payers. Most payer arrangements are not set up to reimburse physicians for communicating electronically with their patients. "Primary care practice now involves more telephone and email communication with patients," says Paul Ginsburg, Ph.D., president of the Center for Studying Health System Change, "[but] payers have resisted paying for these services."[18] The number of payers considering physician reimbursement for such activity is growing,

however, as they have realized the potential benefits. A researcher estimated that a major health plan supporting online patient-provider interaction could save up to $12 million in annual medical costs.[19] Blue Shield of California said that with the use of online patient-provider communication tools by members, it expected to save as much as $4 million each year in office visit claims.[20] As a result, a number of large payers, including an organization supporting an employer consortium, have been moving forward with plans to pilot or implement reimbursement specifically for online patient-provider communication. Several secure messaging vendors now support mechanisms for payer-based reimbursement. Table 3 summarizes six payer-based reimbursement initiatives under way.

"If our physicians view this as one more thing they have to do without getting paid, it just won't happen."

– The medical director of a large physician practice that is working to secure reimbursement for electronic communication with patients

Other payers reportedly considering reimbursement for online patient-provider communication include Cigna, Health Net (Connecticut) and Pacificare (California).[30]

Finally, the American College of Physicians has recently recommended that Medicare and other payers support reimbursement for "health-related communication, consultations, and other appropriate services via the Internet…"[31] Payment by insurers for online patient communication may soon be commonplace.

Table 3: Status of Payer Reimbursement Initiatives

Payer	Physician Payment Structure	Status
Aetna and UnitedHealth (via Silicon Valley Employers Forum)	$20 per e-visit	Piloted RelayHealth starting April 2001, with 100 physicians and 2,000 employees; status not provided by vendor
Blue Cross Blue Shield of Massachusetts	$20 per online visit plus patient copayment of $5, $10, or $15	Pilot program (500 physicians) launched summer 2003
Blue Shield of California	$20 per e-visit; patients paid up to $10 copayment	Initial 13-month pilot (250 physicians, 2,000 patients) completed in 2002; program to be expanded across HMO and PPO product lines
ConnectiCare	$25 per e-visit; patients paid $5	Initial one-year study (3,000 members) completed in 2002; program to expand to more network physicians by 2003
First Health	$25 per consultation for members enrolled in specific chronic disease management programs; no patient copayment	Low initial physician participation but insurer has no plans to discontinue service
Horizon Blue Cross Blue Shield of New Jersey	$23 per online doctor visit; patient copayment equivalent to office copayment	Initial pilot (12 physicians, 2,500 members) launched January 2003; expanding to 50-100 new physicians and up to 10,000 additional members

Sources: [21,22,23,24,25,26,27,28,29]

Reimbursement by patients. At least one industry researcher predicts that only a payer-based reimbursement model for online patient-provider communication will succeed.[32] However, some patients are willing to pay out-of-pocket for online communication with physicians, either on a per-email or monthly basis. This willingness to pay increases with patients' affluence. If required to pay a fixed amount, they would pay on average just over $10 per month. If required to pay each time they sent an email, they would pay from $5 to $7.[33,34]

A small number of physician practices have begun billing patients for previously "included" services (such as giving advice on the telephone, resolving insurance problems, or filling out forms), and for special services such as email consultations.[35] At least one secure messaging vendor offers a mechanism that enables physicians to charge patients for clinical email consultations (typically $20-$30 each). One case study site assesses patients a $60 annual user fee for use of clinical email services; another is investigating a similar arrangement. A third practice assesses patients a $350 annual fee for services not covered by most insurance products, including up to 15 email consultations per year.

Whether the payer- or patient-based reimbursement model becomes dominant is not yet clear. Not all physicians even agree that reimbursement is essential to their communicating online with patients. "It's not required at this point. We think that this should just be part of the services the practice offers," said one clinician.

3. Professional liability, security, and patient privacy rules and regulations associated with the use of online communication are of major concem to physicians.

In the past year, new professional liability, regulatory, and judicial guidelines have been issued addressing online consultations and physician use of email with patients.

Professional liability guidelines. Several professional organizations have released specific guidelines advising physicians as to the mechanisms they should implement when communicating via email or conducting online consultations with their patients. The following table lists a number of these sources:

Table 4: Professional Guidelines for Physician Use of Patient Email and Online Consultations

Organization and Source	Topic/Focus	Status
SCPIE (a health care liability insurer) www.scpie.com	"New Guidelines Minimize Risk in Doctor-Patient Online Communications"	Updated December 2002
eRisk Working Group for Healthcare www.medem.com	Group representing malpractice insurers, the American Medical Association, and 40 other national and regional medical societies released guidelines for online patient communications	Released November 2002
Federation of State Medical Boards www.fsmb.org	"Model Guidelines for the Appropriate Use of the Internet in Medical Practice"	Released April 2002

A summary of the most common recommendations for physician use of patient email and online consultations includes the following elements:

- Communicate via email only with those patients for whom a previous clinical relationship has been established;
- Explain up front about any applicable fees that the patient may be assessed;
- Issue guidelines to patients explaining that Internet-based email is not necessarily secure or private and that email should not be used for urgent situations ("informed consent"); and
- Ensure that all office staff are aware of the potentially personal nature of online communication and have taken appropriate precautions to protect patients' privacy.

More guidelines for use of email and online communication can be found in a number of sources:

- The American Medical Association: www.ama-assn.org/ama/pub/category/2386.html
- The American Medical Informatics Association (http://134.174.100.34/AMIA%20Email%20Guidelines.pdf)
- Daniel Sands, MD at Beth Israel Deaconess Medical Center and Harvard Medical School (www.e-pcc.org)
- E-Encounters (California HealthCare Foundation, November 2001): www.chcf.org/topics/view.cfm?itemID=12863
- The Internet Healthcare Coalition: www.ihealthcoalition.org/ethics/ehcode.html.

Regulatory guidelines. With the final Health Insurance Portability and Accountability Act (HIPAA) security rule published in February, 2003,[36] and the related HIPAA privacy regulations implemented in April,[37] health care organizations have clear guidance about how to share and safeguard patients' protected health information and how to inform patients of the organization's practices for using and disclosing patient information, including via email. Under the final HIPAA security rule, organizations are no longer definitively required to encrypt all protected health information that is transmitted electronically outside the organization. Instead, health care organizations *can* electronically communicate protected health information without encrypting it *if* the organization:

1) Assesses whether doing so is "reasonable and appropriate" when weighed against the likely benefits;
2) Documents why doing so is not reasonable and appropriate; and
3) Implements equivalent alternative measures.

Because encrypting email messages is not easily accomplished, organizations can determine for themselves whether the risks of not encrypting email messages will outweigh the associated technical and operational burdens. It is important to note that although some health care organizations still do not strictly forbid their physicians from using non-secure, Internet-based email to transmit patient information, more and more institutions are instituting policies to discourage the use of Internet-based email. In addition, they are informing patients of the risks in the course of implementing secure, encrypted means to communicate with patients.

Judicial guidelines. The United States court system has only just begun to address legal issues associated with patient-provider email and online consultations. In a case involving Walter Reed Army Medical Center in Washington, D.C., a judge in the U.S. District Court for the District of Columbia ruled that a staff physician was not liable for injury to a patient with whom she had consulted via email and telephone. The court ruled in December 2002 that the physician's remote consultation qualified as a second opinion in which she did not assume direct treatment responsibility.[38] However, the ruling infers that physicians who *do* maintain direct treatment relationships with patients through online consultations may be assuming clinical responsibility and potential liability should patient harm result. The controversial practice of online consultations between physicians and patients in the absence of a previously established caregiver relationship is discussed below.

Online Consultations For Pay Absent a Pre-existing Patient-Physician Relationship

A growing number of physicians are providing online clinical consultations to their own panel patients. Although online, or "virtual," consultations between a physician and a patient who do not have a pre-established relationship are considered controversial by several professional health care organizations and physicians, they have garnered increased attention recently and warrant a separate discussion.

Two models for online patient-provider communication absent a pre-existing patient-provider relationship are in use. In one model, large, nationally known academic medical centers offer online second opinions in conjunction with the patient's referring physician. Cleveland Clinic (Ohio) and Partners HealthCare (Massachusetts) are two examples of organizations that have experimented with models of online consultations for the purpose of second opinions. Johns Hopkins University Hospital has also begun to offer online second opinions, but only for international patients. The charges associated with these online second opinion services are reported to range as high as $500 or more.

In the second model, stand-alone physicians or groups of physicians offer remote consultations to patients who are not under their care and do so without the cooperation of the referring physician. Examples of this model include AskADoctor.com, MyDoc.com (sponsored by Roche Diagnostics), and NetLiveMD. A recent *Wall Street Journal* article reported that fees for these services ranged between $15 and $39.95 per question, or "visit," and up to $15 per month for a one-year subscription, including six online consultations. Physician response times varied from 13 minutes to 70 hours, and the quality and depth of the content varied as well.

Many professional organizations and medical societies (including the American Medical Association) and liability/risk management and malpractice organizations (including members of the eRisk Working Group for Healthcare) warn that physicians should not conduct online consultations with patients with whom they do not have an existing relationship, though their guidelines do not appear to set forth special considerations to address circumstances when the patient's referring physician is involved in the communication. Several of these organizations also remark that accepting fees for online consultations and diagnosing a patient's illness (rather than providing advice on a previously diagnosed problem) increase a physician's liability.

IV. Case Study Highlights of Physician Practices Using Online Patient-Provider Communication

A NUMBER OF PHYSICIAN LEADERS OF PROVIDER-based organizations employing online patient-provider communication tools were interviewed. Their experiences have been integrated into the body of this report. The following case studies represent lessons learned by three single-site practices, three medium-size, multi-site ambulatory physician practices, and six large integrated delivery networks.

Single-site Physician Practices

Because small, single-site physician practices retain limited capital, they are often constrained by cost when purchasing and installing information technology systems. Such systems purchases must be either inexpensive or able to demonstrate tangible value and a return-on-investment that justify their cost. As a result, many small physician practices seek IT solutions that cost less and are easy to install and use. Three such single-site physician practices were interviewed for this report.

Dr. Gordon Moore left a large health delivery organization in 2001 to deliver more patient-focused care as a half-time solo family physician. He uses an integrated EMR and practice management solution by Alteer to manage many clinical and financial aspects of his practice. Although his EMR offers a Web-based encrypted email solution, many of his patients prefer using regular unencrypted email accessed through his practice Web site or sent to him directly. His patients don't voice concerns over privacy or security, he said. "I talk about email access during the welcome-to-my-practice talk at patients' first visits, and they get my email address right from my business card." He estimates that less than 5 percent of his 500 panel patients send him emails. This use has translated into less than a handful of emails per week. It's generally not the case, however, that patients use email inappropriately. Said one of his patients: "Using Email with Dr. Moore is more convenient. It's often difficult for me to explain things to him in person. This way, I can write out my thoughts and concerns more clearly. The ability to be more direct with my physician is important to me." Another of his patients concurred. "I'm not as cautious as I am when I'm with him face-to-face," she said. "[Sending an email] is actually more personable for me."

Dr. Karen Ilika is the only physician in the Ob-Gyn practice she started in July 2000 after ending a 12-year association with a 400+ physician group practice. She makes use of secure messaging in her practice. While visiting the Web site of her professional organization, the American College of Obstetrics and Gynecology (ACOG), she discovered Medem, a physician support and communications vendor sponsored by many national and state medical societies, and asked for help in setting up her own practice Web site. Having been aware of the frustrations her patients experienced trying to get through to her —the call routing, the messages, and the failed attempts to track her down—she also signed up for Medem's secure messaging capabilities when they became available. Medem addressed the privacy and liability issues associated with non-secure messaging and also enabled her to charge patients for their use of the messaging service, with no charge for appointment requests, prescription refills, or review of simple test results, but full charge for online consultations. She allows only her established patients to sign up for the service, which provides a unique username and password within 24 hours. About 15 percent of her patients (150) have since signed up to use the service, more than half over age 40. "Many of them are latecomers to computer use," she observed, "but it's not uncommon for some of my Medicare patients to use the messaging tools, especially when they travel away for the winter."

After spending several years establishing a nationwide collaboration of ambulatory practices for the Institute for Healthcare Improvement, Dr. Chuck Kilo and four physician colleagues founded GreenField Health System in Portland, Oregon, two years ago to employ the innovative service-based improvements he had been touting and developing. "The physician-patient relationship is a critical part of care, but there are many ways to create and maintain relationships outside of the traditional face-to-face office visit," said Kilo. With technology as a cornerstone of the practice, Kilo and his colleagues focused on non-visit-based methods, such as online patient-provider communication, for delivering care. To make up for the reimbursement it would otherwise receive through face-to-face visits, the group charges each patient an annual fee of $350. More than 1,000 of the practice's patients use Internet-based email regularly to communicate with the physicians. Patients sign a release form. The practice is also working with Kryptiq Corporation (a secure messaging and workflow vendor) and GE Medical Systems (GreenField's EMR vendor) to integrate encryption tools with their EMR product.

Multi-site Ambulatory Practices

Multi-site physician practices typically have more capital available to invest in information technology than their single-site counterparts. Often, the challenges of managing large populations of patients with physicians covering multiple locations and the associated need to share patient information instantaneously require systems that support electronic messaging. The three multi-site physician practices interviewed for this report each used a different approach to address online patient-provider communication.

As a three-site practice of nine physicians affiliated with Partners HealthCare in Boston, Newton-Wellesley Primary Care has enjoyed access to an enterprise-wide EMR that is being rolled out across Partners-affiliated sites. When Newton-Wellesley set out to build its own Web site, it included patient-provider messaging capabilities. "Growth in patient volume, management of information, and communication were the primary factors in our implementing patient-provider communication," reported Dr. Bill Holgerson, Newton-Wellesley's president and founder. About half of the practice's 25,000 patients use email at least occasionally. Generated by the patient directly from the practice's Web site, messages are routed by the internal Microsoft Outlook application to the appropriate

staff person, according to the nature of the request ("appointments," "prescriptions," "email," and other options). As a result, Newton-Wellesley physicians spend less time making phone calls at the end of the day. Each physician gets an average of 10 to 15 emails daily, most of which entail specific questions that typically can be answered in two or three sentences.

Although the Medical Clinic of North Texas (MCNT) has been using an EMR (from NextGen) for three years, the group has moved systematically towards communicating online with patients, implementing an internal email system two years ago so that the organization's 430 staff could communicate better across its 20 sites. When physicians received a PC and an email address so each could start getting financial information, emailing with patients seemed like the next step. Karen Kennedy, the practice's administrator, said physicians were fearful of being overwhelmed by increases in work without additional compensation. "Reimbursement hasn't gone up so we can't afford to provide more services for free," said Kennedy. "Plus HIPAA meant that we couldn't comfortably use regular email with patients." MCNT's selection of MyDocOnline as its patient messaging gateway was largely driven by the product's ability to accommodate reimbursement for online visits. Kennedy piloted the application at the sites already using the EMR. "Initially, we hadn't done enough training and physicians didn't understand the value of the application," said Kennedy. Using both an EMR and a stand-alone messaging product meant that staff had to remember to check for emails in two places. Since then, Kennedy has focused on integrating the application into the practice's operations and has designated an "expert user" at each site to ensure a smooth operation. According to Kennedy, the additional reimbursement makes a difference in physician acceptance.

Paul Tang, the medical director of clinical informatics at Sutter Health's Palo Alto Medical Foundation, has been an IT advocate for many years. The Foundation's five clinic sites have been using the EpicCare EMR since 1999. With Epic as the organization's clinical platform, it was logical to extend the product's capabilities and roll out MyChart (the secure Internet patient portal that includes online patient-provider communication) to meet several patient-focused strategic organizational goals. With this model, Palo Alto can receive both administrative and clinical requests and questions from patients via MyChart. The practice's physicians have also developed their own clinical content that patients can access along with other clinical resources from HealthWise. All 150 of Palo Alto's primary care physicians use the application to respond to the patient messages generated by their 8,700 enrolled patients. Tang and his colleagues are strict in authenticating first-time patient users: Before they get their initial password for log-on, patients must sign a release form either in person or remotely (in the latter case, the signature is compared with the corresponding copy in the practice's registration files). Patients must pay an additional $60 per year for use of the email functionality, which doesn't appear to have curtailed patient interest. Some 92 percent of Palo Alto's physicians were satisfied and all said using the online messaging tools took up no more time than prior communication methods. The practice has also noted some substitution in modalities, with email used in place of visits and phone calls, although it is too early for them to quantify the difference formally.

Ambulatory Practices as Part of Enterprise Organizations

Most large integrated delivery networks (IDNs) either already have or are far along in considering clinical and other advanced IT solutions to support the ambulatory components of their enterprises. The six large IDNs profiled for this report are far along in leveraging IT to support their ambulatory physicians, including applications for online patient-provider communication.

Dr. Daniel Sands, clinical director of electronic patient records and communication at Boston's CareGroup HealthCare System, is probably the best-known pioneer in the online patient-provider communication arena. Though CareGroup has been developing and expanding its home-grown PatientSite application to support online secure messaging for patients and access to their own medical records since April 2000, Sands and his colleagues were using unencrypted Internet-based email with patients well before that. "We're gradually getting to the point where encrypted email will be easier to use," Sands predicted, "though we haven't yet shut down the direct email channels."

"Our patients love [PatientSite]. Patients haven't expressed concern about using encrypted email," he reports, and "they've just never had these kinds of online experiences before." Physician and patient use of the application have grown considerably since inception, with 150 primary care and specialty physicians (nearly all at CareGroup's in-town hospital campus) exchanging emails with more than 11,000 enrolled patients. The volume of messages generated through use of the system appears to be both consistent and manageable: CareGroup's experience has been that less than one clinical message is generated per day for every 100 patients using the system.

Like Palo Alto Medical Foundation, Geisinger Health System, a 65-site integrated delivery network in rural Pennsylvania, has been using Epic's EMR for a number of years. At first the organization used unencrypted Internet-based email to communicate with patients. With implementation of the MyChart patient portal product in June 2001, Geisinger has been able to migrate nearly all of its patients to this secure application. The patient messaging components of the system were rolled out to several hundred adult primary care physicians over six months, starting in June 2002 (pediatricians and specialists will be added soon). Some 3,500 patients are now enrolled in the application, with 500 new patient users added each month. Messages are routed through the system according to their type to the most appropriate staff person, with many of the clinical messages triaged by nurses, as with phone calls. Large volumes of email adversely impacting physician workloads have not materialized. Although Geisinger has done some promotion of the application with posters in every waiting room, word-of-mouth among patients has been a big driver. "This application clearly gives patients the opportunity to get more engaged in their care," said Joan Topper, director of eHealth and performance improvement at Geisinger.

Eastern Maine Healthcare in Bangor, Maine, has been using Cerner's IQHealth patient portal at the organization's seven hospitals and ambulatory practices since June 2001. Four of the organization's primary care practices and two of its specialty clinics use the application (out of a total of 600 owned and affiliated physicians in the network). In a market heavily focused on employer-provider relationships, many of the more than 2,000 patients who have signed up to use Eastern Maine's application have done so via their employers. The application offers a wide range of administrative and clinical communication capabilities, plus clinical health content and a patient personal health record, including a health planner and health risk assessment. Given that many of its physicians are affiliated with the organization and not "owned," among Eastern Maine's biggest challenge in introducing the application has been its lack of integration with

the EMR product that the physician practices use (GE's Logician). Physicians do enjoy benefits. One practice estimated that the savings it accrued from reduced mailing costs more than covered the cost of the license for the application. "And the real value for patients is in the connectivity they gain to their PCPs," said Michael Peterson, Eastern Maine's e-business director.

For the past 18 months, PeaceHealth in Eugene, Oregon, has also been piloting a patient portal (Patient Connect from IDX) that includes extensive patient registration capabilities, clinical messaging, patient care planning functionality that was built in house, and an e-visit component. So far, an 11-physician site is using the application with about 3,000 (15 percent) of its patients. Like the Medical Clinic of North Texas, PeaceHealth knew that its physicians would not take on the additional work of an online consultation without additional compensation. "If our physicians view this as one more thing that they have to do without getting paid, it just won't happen," said Tom Ewing, medical director at Peace Health Medical Group, the pilot practice site. Providence Health Plan, which manages PeaceHealth's self-funded employee health plan, agreed to reimburse physicians $20 for each online consultation with a member (members pay a $5 copayment). Non-PeaceHealth-employee patients must pay the $20 online consultation fee. Overall, satisfaction with the application is high, according to the patient focus groups and surveys that PeaceHealth has conducted.

Two large IDNs, Henry Ford Health System in Detroit and Memorial Hermann Healthcare System in Houston, have been working with their Internet development partners to build their patient portals in conjunction with large clinical information system development efforts. In the case of five-hospital Henry Ford, MedSeek built the patient portal because "our own internal IT resources are focused on developing our EMR and we wanted to stay focused on what we're good at," said Pamela Landis, internet director at Henry Ford. The online messaging pilot this past year did not demonstrate a decrease in call-center volume, but 95 percent of the emails they receive from 12,000 registered patients can be handled by office staff and do not require physician involvement. (Messages are comprised mostly of appointment requests, prescription refills, and test results. Henry Ford is considering but does not employ online consultations.) Surveyed patients overwhelmingly thought the system was effective: Two-thirds believed that it *would* reduce their need to call the physician's office.

Similarly, Memorial Hermann has been working with HEALTH*vision* to install that company's physician and patient portals. Memorial Hermann's original leadership vision was to offer added value to Memorial Hermann Health Network Providers, a 3,000-member physician association (IPA) by providing access to the clinical data stored in the HEALTH*vision* product. As an extension of that effort, office staff in the outpatient offices of more than 100 IPAs now communicate electronically via a parallel patient portal with more than 4,000 registered patients. The system allows patients' questions to be automatically routed to the appropriate provider, usually a nurse in their doctor's office. "Communication with patients, whether it's over the phone or via online secure messaging, is often a task that physicians delegate to their staff," said project manager Mark Stephenson. "However, from the patients' point of view, the application helps soften the 'gatekeeper' system that many offices erect around their physicians." Reports a patient user, "Using this application makes me feel much more connected to my physician." In addition, close follow-up with physician office users consistently shows that patients' online questions "would've come in over the telephones anyway." "There's been no measurable increase in physician workload," reports Scott Fenn, executive director of the IPA. In addition to administrative and clinical communications, the application offers health tracking capabilities for chronic diseases, plus headline news and other clinical content from HEALTH*vision* and WellMed.

Appendix A: Contributors

Many individuals from the provider, vendor, and patient community graciously contributed their time to share their experiences with online patient-provider communication. We appreciate and gratefully acknowledge their insight and contributions.

Steve Bence—director, Product Marketing, McKesson Information Solutions

Kathryn Bingman—VP and general manager, IQHealth, Cerner

Anthony Chipelo—director of Portal Development, MedSeek

Brad Eichorst, M.D.—VP Clinical Informatics, Epic Systems Corporation

Terry Evangelista—administrator; and Bill Holgerson, M.D.—president and founder; Newton-Wellesley Primary Care (Wellesley, MA)

Tom Ewing, M.D.—medical director; and Michael Sheehan—director, Web Services, PeaceHealth Medical Group (Eugene, OR)

Ed Fotsch, M.D.—CEO, Medem

Chris Funt—patient

Erin Gardiner—Public Relations manager, FirstHealth (Downer's Grove, IL)

Karen Ilika, M.D.—solo physician (Kirkland, WA)

John Joe, M.D.—director of Medical Informatics and professor of Family and Community Medicine, Baylor College of Medicine; assistant medical director for Information Services, Texas Children's Hospital (Houston, TX)

Bob Katter—Sr. VP Sales and Business Development; and Eric Zimmerman, Sr. VP Marketing, RelayHealth

Tim Kearns—director Web Applications, IDX Systems Corporation

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Charles M. Kilo, M.D., M.P.H.—CEO and president, GreenField Health System (Portland, OR)

Jim Klein—VP and research director, Gartner

Pamela D. Landis—internet director, Henry Ford Health System (Detroit, MI)

James Lassetter, M.D.—CEO and chairman; and Carol Owen—VP Product Management, Medicity

Luis Machuca—CEO, Kryptiq Corporation

Stephen Malik—founder and CEO, Medfusion

Sue Milam—director of Marketing; and Dennis Wilson—VP Business Development, MyDocOnline

Gordon Moore, M.D.—Ideal Health (Rochester, NY)

Michael Peterson—eBusiness director, Eastern Maine Healthcare (Bangor, ME)

Karen Renz—patient

Frank Rhie, M.D.—chief medical officer, Alteer

Daniel Sands, M.D.—assistant professor of Medicine, Harvard Medical School; and clinical director of Electronic Patient Records and Communication, CareGroup HealthCare System (Boston, MA)

Appendix A: Contributors cont.

Joseph Scherger, M.D., M.P.H.—founding dean of the Florida State University College of Medicine (Tallahassee, FL)

Jennifer Schuder—director of Marketing and Communications, ZixCorp

Ray Scott—CEO; and Nicole Spencer—marketing manager, Axolotl

Mark Stephenson—project manager, Memorial Hermann Healthcare System (Houston, TX)

Paul Tang, M.D.—medical director of Clinical Informatics, Palo Alto Medical Foundation (Palo Alto, CA)

Jonathan Teich, M.D., Ph.D.—Sr. VP and chief medical officer, HEALTH*vision*

Joan Topper—director eHealth and Performance Improvement, Geisinger Health System (Danville, PA)

Appendix B: Resources

A number of useful trade and journal articles and news stories about online patient-provider communication have been published since the prior California HealthCare Foundation report *E-Encounters* in November 2001.

1. P. Tabar. "Get the Message?" *Healthcare Informatics,* May 2003
2. E. Schatz. "It Hurts When We Do This: Reaching a Doctor by Email," *Wall Street Journal,* April 15, 2003
3. F.L.Kritz. "uncertainty@dr-mail.com," *Washington Post,* April 1, 2003
4. J.Foreman. "Doctors Resist Email System for Patients," *Boston Globe,* February 25, 2003
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6. F. Baldwin. "The Doctor Is In," *Healthcare Informatics,* October 2002
7. "MD-Patient Online Communications: Finding Money in Clinical Encounters," *Jupiter Media Metrix,* June 12, 2002
8. K. Hafner. "Why Doctors Don't Email," *New York Times,* June 6, 2002
9. C. Moyer et al. "Bridging the Electronic Divide: Patient and Provider Perspectives on Email Communication in Primary Care," *American Journal of Managed Care*, May 2002
10. B.Bowman. "Beyond the Telephone: Electronic Tools for Patient-Provider Communications," *Group Practice Journal,* January 2002

Appendix C: Vendor Information

Although the following vendor list is not comprehensive, it is meant to include the majority of vendors that offer solutions widely adopted in the health care market. The following information is current as of September 2003.

Physician Practice Web site ***(including clinical content vendors)***	
ADAM—www.adam.com	Web site services and health information for patient education
Axolotl—www.axolotl.co	Web site building and hosting services
Beansprout Networks—www.beansprout.net	Web site services and patient education
Health Ink & Vitality—www.healthink.com	Web site services and wellness information
HealthGate—www.healthgate.com	Content repository of healthcare information for patients
HEALTHvision—www.healthvision.com	Web site services and health information for patients
Healthwise—www.healthwise.com	Health information, patient decision tools
HealthyMe.md—www.HealthyMe.md	Health information for patients
InteliHealth—www.intelihealth.com	Health information for patients, tools/risk assessments
Krames—www.krames.com	Patient safety, health and wellness education, Web site services
LaurusHealth—www.laurushealth.com	One-stop source for health information for patients
Medem—www.medem.com	Web site services and patient education
Medfusion—www.medfusion.net	Web site self-administration and patient education
MedScape—www.medscape.com	Clinical information for health professionals
MedSeek—www.medseek.com	Web site/portal development tools
Park City Solutions—www.parkcitysolutions.com	Web site services, web-based portal with personal health information for patients
Salu—www.salu.com	Web site services, patient education
WebMD—www.WebMD.com	Health information for patients and tools for managing health

Appendix C: Vendor Information cont.

Unencrypted Email	
AOL—www.aol.com	Internet connection services with tools (e.g., email and messaging)
Earthlink—www.earthlink.com	Internet connection services with tools like email
Hotmail—www.hotmail.com	Web-based email service
IBM/Lotus—www.lotus.com/notes	Messaging and collaboration platform
Microsoft—www.microsoft.com	Tools for management of digital communications (e.g., email)
Yahoo—www.yahoo.com	Web-based email service

Encrypted Email	
Authentica—www.authentica.com	Content security software
Hilgraeve—www.hilgraeve.com	Secure communication via the Internet
Kryptiq Corporation—www.kryptiq.com	HIPAA compliant, secure email communication
Sigaba—www.sigaba.net	Secure and authenticated email
Tumbleweed Communications—www.tumbleweed.com	HIPAA compliant, encrypted and authenticated communication
Zix/HealthyEmail—www.zixcorp.com	HIPAA compliant, secure email communication; recently purchased an e-prescribing application

Secure Messaging via Hosted Web site	
Medfusion—www.medfusion.net	Virtual office visits, administrative and clinical functions
Medem—www.medem.com	Paid online consultations, link through payers' Web sites
MyDocOnline—www.mydoconline.com	Online visit, administrative, clinical, health information; also offering clinical and administrative practice management tools
RelayHealth—www.relayhealth.com	Online visits reimbursed by payers, clinical, administrative; also offering e-prescribing
Salu—www.salu.com	Secure messaging, administrative, clinical functions

Appendix C: Vendor Information cont.

EMR/PMS or Similar Application With Secure Internet Patient Portal	
Allscripts—www.allscripts.com	Point-of-care decision support
Alteer—www.alteer.com	Integrated practice management and EMR
Axolotl—www.axolotl.com	Medical record management, workflow and communication
Cerner—www.cerner.com	Integrated practice management and EMR
Epic—www.epicsystems.com	Integrated practice management and EMR
HEALTH*vision*—www.healthvision.com	Web-based clinical automation and workflow
IDX—www.idx.com	Administrative and financial solutions for group practices
Medicity—www.medicity.com	Web-based clinical solutions and physician portals
NextGen—www.nextgen.com	Integrated practice management and EMR

Appendix C: Vendor Information cont.

Physician Practice Web sites Support Online Patient Communication

Physician practices wishing to introduce two-way online communication with patients may start by creating an informational Web site for the practice so that prospective and current patients can easily access information about the practice as well as general information about various health issues. Although the Web site need not be interactive (supporting two-way dialogue between the patient and the practice), nor offer patient-specific clinical advice (interactively analyzing the patient's complaints and clinical situation), the information it provides might still prove worthwhile to a new or established patient. A physician practice Web site might include information about the practice such as driving directions, hours of operation, and physician profiles, and provide links to clinical references for patients wishing to conduct their own online health queries (often via third-party sources).

A physician practice Web site has several basic advantages. Patients can gain access to organized information about the physician practice with links to valuable clinical information for managing their own health. A Web site can also improve a practice's image in the marketplace, attracting online patients who typically are healthier than most current patients. Once patients begin using a basic physician practice Web site, the practice can then introduce more advanced functionality, such as online patient-provider communication. Third-party vendors can help a practice set up and maintain its practice Web site, helping to ensure that its content is kept up-to-date.

Representative Vendors:

Web site Development & Support Axolotl

- Beansprout
- Health Ink & Vitality
- HEALTH*vision*
- HealthyMe.md
- Medem
- Medfusion
- MedSeek
- Park City Solutions
- Local web consultants

Clinical Content Providers

- ADAM
- HealthGate
- HealthyMe.md
- HealthWise
- InteliHealth
- Krames
- Laurus Health
- Medem
- Salu
- WebMD

Case Study Examples:

- Newton-Wellesley Primary Care (Wellesley, MA; www.nwpcmd.com) used a local web developer to build its practice Web site; its Web site also supports two-way communication with patients.
- Henry Ford Health System (Detroit, MI; www.henryfordhealth.org) utilized MedSeek to develop its patient portal Web site, with clinical content provided by ADAM and the organization's own internal sources; its Web site also supports two-way communication with patients.
- Greenfield Health System (Portland, OR; www.greenfieldhealth.com) retained one of its own patients to help build the practice's Web site.
- Memorial Herman Health System (Houston, TX; www.memorialhermann.org) used HEALTH*vision* to build the organization's Web site; it also purchased other online and messaging tools from the vendor.

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