

# Internet Seen Transforming Research, Communications

In a landmark study on the future of family medicine, the American Academy of Family Physicians (AAFP) called for a “new model” of practice, to include a radical redesign of the medical office environment, with advanced information technology and a shift in thinking so that the patient is at the center of clinical decision-making.

Writing in the March/April 2004 edition of the *Annals of Family Medicine*, researchers for the Leawood, Kan.-based academy

**The AAFP's vision** of a “new model” of practice includes a radical redesign of the medical office environment, with advanced information technology, such as asynchronous communication for nonurgent issues (e.g., voice mail and e-mail) and Web portals through which patients can schedule appointments and access educational materials.

described their vision of a properly transformed primary-care practice: “Practices will use an open scheduling model for patient visits (i.e., the patient usually will be able to make an appointment for the same day, regardless of the type of problem or visit required), while offering flexible and expanded office hours. The practice will provide a convenient mechanism for asynchronous communication

for nonurgent issues (e.g., voice mail and e-mail), as well as telephone communication with a person—not an answering machine or voice mail—24 hours a day, 7 days a week for urgent matters.

“Interactions will not be limited to traditional, individual, face-to-face encounters between the patient and the family physician. Where feasible and as systems evolve, New Model practices will develop a Web portal and will use secure e-mail to provide additional, convenient options for communication between patients and practice staff. Patients will be able to make appointments on-

line through the practice Website and will be able to access on-line patient education materials appropriate to their health status.”

Heady stuff, perhaps, markedly different from the way medicine has been practiced for more than a century, but the enabling technology is already here—and in wide use. It’s called the Internet.

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A few months earlier, Manhattan Research reported that 70 percent of U.S. practicing physicians “actively use the Internet” to find information about pharmaceuticals, more than double the share in a 2001 survey.

“You have to realize that the Internet is the most efficient way to gather any information,” says Dr. Jonathan Levis, medical director of Sentillion, a healthcare software company in Andover, Mass. Dr. Levis also practices internal medicine at a community health center in West Warwick, R.I.

On days that he sees patients, the first thing Dr. Levis does when he gets to the office is sit down at the computer and go through some of his favorite Websites, looking for news, medical journal articles and educational material that might be of use to his patients. “I know on any given day I’m going to see at least one patient with low-back pain and need to print out exercises for them,” Dr. Levis says.

From a customized home page on his computer and an organized list of “favorites” bookmarked in his Web browser, Dr. Levis looks up clinical guidelines through services such as Thomson Micromedex and Elsevier’s MD Consult. He likens it to keeping a copy of Harrison’s Principles of Internal Medicine on his desk, as he did a decade ago.

“One of the most important tools, I think, is for a physician to find a vendor of clinical guidelines that they trust, just the way

we used to buy either Harrison's or William's or Cecil's Textbook of Medicine," he explains.

"There are computerized textbooks and they usually incorporate journal articles and they have drug databases and lots of different tools. That's the starting point that a physician needs to use," says Dr. Leviss.

Dr. Greg Hinson of Nantucket, Mass., regularly consults UpToDate and MerckMedicus, even while he is with a patient. "These types of resources have replaced the old library," he says.

"It's great how, in a sense, your charting mechanism carries the Internet in with it." And Dr. Hinson carries the Internet with him on a tablet PC with a wireless Internet connection. "I can flip over and access anything on the Internet I want to, which really has some place in caring for patients because of the amount of data that's out there," he says.

"The [charting] software itself has a patient education module that works almost like a browser within the software so you can access external links that you have put in," Dr. Hinson says.

Dr. Hinson made sure that his electronic health record (EHR) had programmed into it an electronic prescription form appropriate to specific diagnoses so that prescribing would become a seamless part of producing encounter notes.

Dr. Hinson tends to keep a Web browser window open in the background when he is with patients so that he can show them information right on the computer screen or look up something together and print out the relevant pages. "I have a list of browser favorites for patient education. If I want to give someone a back-pain sheet, I just pop over to the browser, call it up, print. That's definitely replaced the old filing cabinet up front with patient education information," he says.

Of course, the sheer volume of information on the Internet can be a double-edged sword.

"There are certainly two common problems I think we come across when we are looking for data," Dr. Leviss says. "One is, there's too much of it. And the other is, you don't know if the data you are looking at is quality data. If you Google 'low-back pain,' you could get a million hits, but what you really want is a stretching routine for your 45-year-old female patient who has a chronic muscle problem."

## Setting Up Information Sources

This is where a little organization and a few paid subscriptions can come in handy.

Dr. Leviss starts each workday by signing onto multiple information sources he subscribes to, including coding references and patient-targeted Websites. “I set that up at the beginning of my day,” Dr. Leviss says. As he goes back and forth seeing patients, he doesn’t have to log back in to the system or search for the same information over and over.

This is not as difficult as it sounds. As a matter of best practices, hospitals often put links to clinical and consumer health information and news on their home pages. “A practice could do this also because every Internet connection has a home page. If you subscribe to your local cable service, you get a home page,” Dr. Leviss says.

Anyone can go to Yahoo!, Google, MSN, America Online or other Internet search engines and create customized pages for free. Through My Yahoo!, My MSN or similar personal pages, anyone can subscribe to automatic feeds from countless news sources and on-line diaries called Weblogs or blogs, thanks to a technology known as RSS, for “real simple syndication.”

The forthcoming Version 7 of Microsoft Internet Explorer will support RSS as well.

Also popular are “aggregators”—Websites that collect RSS

### E-Detailing a Growing Trend

Pharmaceutical companies are taking advantage of physicians’ increased use of the Internet through e-detailing—delivering information on pharmaceutical products through the Internet.

Last summer, Manhattan Research reported that the majority of physicians are willing to make time for e-detailing because they view the service as an educational opportunity rather than a substitute for a visit from a pharma sales representative—as long as the session lasts less than five minutes, is available anytime, delivers new information and has some sort of incentive attached.

Manhattan Research also said that 246,000 U.S. doctors are participating in e-detailing sessions. That is 74 percent more than the 141,000 physicians who took part in 2002.

feeds from multiple sources onto a single page. Well-known aggregators include NewsGator, Bloglines, Newz Crawler and SharpReader.

“You have to set yourself up and get ready because you can’t afford to spend even five minutes looking for this information when you have a patient with a question or if you have a question about a patient. You need it at your fingertips,” Dr. Leviss says.

“I would argue that today, if you don’t get your computer ready to access the information that you want, your exam room is not ready to see patients,” says Dr. Leviss. He says it is no different from hanging a blood-pressure cuff next to the examining table so that it is at the doctor’s fingertips whenever needed.

Dr. Leviss also checks ICD-9 codes on-line, not just to make sure he is billing at an appropriate level, but also so that he is confident that payers will understand his documentation.

He looks up patient resources and rules for insurance coverage, including formularies. “Obviously, I want to prescribe the antibiotic, the pain-management medication that they have covered. Sometimes it’s for referrals,” he says. Is a particular cardiologist or radiologist part of the patient’s health plan?

Although so much on the Internet is free, there are some time-saving services worth paying for, according to Dr. Leviss.

PubMed, a journal indexing service from the National Library of Medicine, is free. “But then you are going to find 4,000 responses for back pain,” Dr. Leviss says. To sort through all the choices, it may be wise to order a paid subscription to a trusted source of information, such as a specialty-specific journal or a clinical research service from a medical society.

## **Practice Management Assistance**

Beyond the individual physician’s reference needs, the Internet holds great potential for managing a practice.

As discussed in previous chapters, the Internet facilitates centralized hosting of networks and databases via application service provider (ASP), off-site backup of critical data, remote access to EHRs, telemedicine and instantaneous transmission of electronic prescriptions.

Additionally, it can speed the transcription process, or at least eliminate the need to pay rush charges.

“You don’t have to pay a higher premium for quick dictation if it’s recorded digitally,” says Rosemarie Nelson, a Syracuse, N.Y.-based consultant for the Medical Group Management Association (MGMA). If a specialist needs to access a referring physician’s notes immediately, the referring practice can simply e-mail a digital recording rather than having to wait for a transcription to come back or trying to find a convenient time to get both doctors on the phone together.

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By means of electronic data interchange (EDI), the Internet also speeds up the claims, billing and payment processes, thus improving cash flow, truly the lifeblood of any business, medical or otherwise.

The simplest way of understanding how EDI accelerates payments is to understand current Medicare policy. The Centers for Medicare and Medicaid Services (CMS) has two separate payment schedules. Claims submitted electronically, in accordance with Health Insurance Portability and Accountability Act (HIPAA) transaction regulations, are paid two weeks sooner than paper and nonstandard electronic claims.

That may be just the tip of the iceberg, though. A number of payers have been talking about real-time adjudication of claims in recent years, the idea that a healthcare provider can submit claims electronically through a Web portal or through a direct link and the health plan can tell instantly if the documentation is adequate and what the exact reimbursement will be. It’s mostly been talk, but some actually have tried the idea; Blue Cross and Blue Shield of Florida has offered the service since 2000.

The vast majority of claims still go through clearinghouses, rather than directly from provider to payer. The advent of the HIPAA transaction rules in October 2004 did little to change that, but some recent developments may have an effect.

In December 2005, one major clearinghouse, ProxyMed, changed its name to MedAvant Healthcare Solutions and

launched a product called Envision Portal for Providers, a single platform for customers to submit claims, check patient eligibility, get referral authorization and, yes, adjudicate claims on-line. The company also said that it would migrate all of its customers' transactions to a common technology platform in 2006.

In another move toward automating claims, Companion Technologies, a for-profit arm of BlueCross BlueShield of South Carolina, is testing a swipe-card system similar to a retail credit-card terminal to allow medical offices to check patient eligibility, submit claims and process financial transactions.

For the test, Companion has signed up Cigna, Aetna, United-Health Group, the Military Health System's Tricare and South Carolina Medicaid to provide real-time eligibility checking. "We have partners that provide connections to nearly every commercial payer," says Deryl Metze, vice president for electronic data interchange at Companion Technologies.

Right now, instant claims adjudication is available only for South Carolina Blues enrollees, but others will add the feature later this year.

Called Companion Direct Point of Care, the system is a modified Verifone Omni 3750 credit-card terminal that processes credit and debit payments. It reads most insurance cards containing magnetic strips, Mr. Metze says. Practices can key in insurance identification numbers for patients whose cards are not electronically enabled.

"The whole purpose behind this box is to turn a healthcare transaction into a retail transaction," Mr. Metze says. Where there is real-time connectivity to payers, patients can know exactly what they owe for the visit and practices can collect full remittances before a patient leaves the office.

## **Practice Websites**

Another aspect of the consumerization going on in healthcare is the growth of interactive practice Websites.

Officials with Medem, a San Francisco-based physician communications network founded by the AMA and other medical specialty societies, say that the company hosts Websites for more than 90,000 physicians. Similarly, every one of the more than 380,000 doctors listed in The Little Blue Book directory of

healthcare providers already has a free site through a service called MDhub—and many do not even know it.

The excuses for not having a Website are dwindling fast, given reports that about three-fourths of adults in the U.S. are on-line.

“People increasingly live on the Web,” says Dr. Eric Liederman, director of medical informatics for Kaiser Permanente HealthConnect, an initiative to integrate health records with scheduling, registration and billing services for the Oakland, Calif., healthcare giant.

**The simplest way of understanding how electronic data interchange can improve cash flow is to understand current Medicare physician reimbursement policy. Claims submitted electronically, in accordance with HIPAA transaction regulations, are paid two weeks sooner than paper and nonstandard electronic claims.**

A key component of Kaiser Permanente HealthConnect is on-line access for patients to communicate with physicians, make appointments, request prescription refills and check various aspects of their records.

In a more perfect world, patients would be able to register for appointments in advance, entering their history on-line from home or from an in-office

kiosk. The practice would know right away whether a particular service is covered. Patients would be able to pay at the kiosk at the time of care or pay their bills from home by going to a secure Web page.

The registration and billing systems would be integrated with an EHR, affording office staff the chance to greet patients by name because each record would include a digital photograph of the patient. Waiting times would be minimal because the history is up to date and the doctor is on schedule, thanks to electronic tools.

A nurse would take vitals immediately and the data from blood pressure gauges, scales and other devices would automatically feed the EHR. States or school districts could get child immunization data directly from pediatric offices.

The EHR would present the physician with a summary screen—something vendors often refer to as a “dashboard” view of the patient’s health. “If they wanted to go deeper, they could go deeper,” Ms. Nelson says.

A controversial component of Web integration with practice

systems is an engine to allow patients to make their own appointments on-line, rather than just requesting office visits. But many doctors are squeamish about opening up their scheduling books.

Ms. Nelson says practices ideally only would post open slots, rather than an entire calendar. “The beauty of it is that the schedule isn’t published,” Ms. Nelson says.

She suggests that practices start out by offering patients PDF versions of paper forms to print and fill out before visiting the office. “It helps transition patients to the Web,” says Ms. Nelson.

## Electronic Communication

The 2003 Institute of Medicine (IOM) report, “Patient Safety: Achieving a New Standard for Care,” specifically called for electronic communication between providers and patients and for electronic tools to help patients track their own health status and manage medical conditions.

The communication piece has been problematic.

For one thing, standard e-mail generally is not secure enough under the HIPAA privacy regulations for sending patient-specific clinical information, so electronic communication that involves any aspect of a health record needs to go through a secure, password-protected Web portal.

And then there is the widely held fear among physicians that they will be inundated with messages if they give out an e-mail address. “Doctors are protective of their time,” Dr. Liederman explains. “They sell their knowledge and their skill [and] they are afraid of anything that’s going to steal their time,” he says.

Ms. Nelson says that doctors do not have to be on the front lines of electronic messaging if they do not want to be. “I tell them to treat it the way they treat incoming phone calls,” she says. A nurse can triage incoming e-mail to make sure physicians are not flooded with unnecessary messages.

For practices still averse to checking e-mail, MDhub will deliver patient messages by fax.

Dr. Greg Hinson chose eClinicalWorks for his EHR a year and a half ago, in part because that company was developing a Web portal for patients to access parts of their records.

“That’s something that’s just getting up and running, and it looks like it’s going to be wonderful,” he says.

He already gets 15 to 20 e-mails a day from patients. “Now that I can do this from within the charting program, all of these encounters I am having are automatically charted,” he says. The secure notes go directly into the patient’s record and are time-stamped, so there never is any question if the doctor was informed of a condition or communicated information to the patient. That, some experts say, may have the side benefit of being an ironclad defense in a malpractice case.

Dr. Hinson looks at Internet messaging not as a burden but as a way to reduce the number of phone calls he has to make. “If a patient’s got a question, they’re going to ask it one way or another. Fortunately, my patients have a pretty good sense of what they should and what they shouldn’t e-mail,” he says.

**In a perfect world, patients would be able to enter their history on-line from home or from an in-office kiosk. The practice would know right away whether a particular service is covered. Patients would be able to pay at the kiosk at the time of care or pay their bills from home by going to a secure Web page.**

Dr. Hinson had been using regular e-mail, but recently switched to a secure system, so there are no more concerns

about unauthorized disclosure of sensitive health information.

For privacy reasons, “I’ve never actually initiated contact. If somebody e-mailed me, I’ve always taken that as implicit permission to e-mail them back. But now, all that contact is going to be through the secure portal, so that’s going to make it easier for us also to then initiate contact,” Dr. Hinson says.

Another dimension of the practice Website, at least one linked to an EHR, is the personal health record (PHR).

Since 2002, the Palo Alto Medical Foundation (PAMF) in Palo Alto, Calif., has offered a consumer-centric Web portal called PAMF Online. Through the site, patients can view their own health history, check test results, request appointments and prescription refills, send secure messages to their physicians and find health information related to their conditions.

“Patients don’t get to see their progress notes,” says chief medical information officer Dr. Paul C. Tang, who practices internal medicine at PAMF’s Los Altos, Calif., clinic. But they can see diagnoses, medication lists, allergies and lab and radiology reports.

A 2004 survey of participants found that 90 percent of users were “satisfied” or “very satisfied” with PAMF Online. With an open-access scheduling system, patients can go on-line and find out exactly when a physician can take them on short notice. “PHRs can help make the benefits of an EHR tangible to patients,” says Dr. Tang, chairman of the IOM Committee on Data Standards for Patient Safety.

Physicians get to choose which parts of the record patients can view. They are aided by problem lists that have hyperlinks to clinical information and patient-friendly educational materials.

A relatively new PHR product is one targeted for smaller practices, Medem’s iHealthRecord, introduced in May 2005. The on-line iHealthRecord lets patients, physicians and health plans alike update individual records with information on current conditions, medical history, medication lists, allergies and advance directives, according to Medem. Patients can opt to receive educational material and safety advisories, such as drug recalls.

There is no charge for patients, but the iHealthRecord service lists for \$25 per physician per month. Medem has said that discounts are available.

### **‘Virtual Visits’**

An extension of the interactive Web portal is the on-line “virtual visit,” by which a physician gives a clinical opinion, makes a diagnosis and/or prescribes a medication for a patient based on symptoms or conditions described in an electronic message, often aided by branch-logic questionnaires.

Sometimes, the doctor instead will tell the patient to make an appointment. Always, the system will instruct the patient to call 911 immediately if any life-threatening symptoms are present.

Large organizations like Partners HealthCare in Boston, the Cleveland Clinic, Johns Hopkins University in Baltimore and the University of Texas M.D. Anderson Cancer Center have been offering on-line virtual visits and remote second opinions for several years—and getting paid to do so. However, these services focus more on comprehensive reviews of patient records from referring physicians than on diagnosing patients with whom they have established relationships.

Insurance reimbursement for on-line visits has lagged even

though the AMA has created a Current Procedural Technology (CPT) code so that practices can bill for Internet-based consultations. The code, 0074T, is for “on-line evaluation & management service, per encounter, provided by a physician, using the Internet or similar electronic communications network, in response to a patient’s request; established patient.”

Typically, practices have the option of charging a fee for an episode of care delivered on-line. There have been some small-scale tests of reimbursement, though, notably one spearheaded by RelayHealth, an Emeryville, Calif., provider of what that company calls “webVisits.”

For a 2002 study, Blue Shield of California, ConnectiCare and 10 self-insured large employers in Northern California agreed to pay physicians \$25 per on-line visit; some patients also had co-payments of up to \$10.

The study found a 63-percent satisfaction rate among partici-

### Websites Offer CME Programs

An offshoot of the wide availability of medical research on the Internet is the growing selection of continuing medical education (CME) programs.

Numbers supplied by the Accreditation Council for Continuing Medical Education (ACCME) suggest that in 2004, only about 4 percent of all physician CME credits were earned on-line, though other estimates place the rate as high as 14 percent. The vast majority of those offerings counted by the ACCME must be downloaded for or printed for off-line use, rather than in a “live” or interactive format.

As of June 2005, there were 284 sites offering more than 25,000 credit hours of on-line CME to U.S. physicians, according to *www.cmelist.com*, a directory of on-line CME maintained by Dr. Bernard Sklar, a psychiatrist and family physician in Berkeley, Calif.

About 70 percent of sites offer free CME courses, though only about 20 percent of all available credit hours are free, he reports. The majority of fee-based courses cost about \$5 to \$15 per credit.

The American Medical Association and most state and specialty medical societies provide some CME courses on-line. Popular commercial on-line CME sites include CMEweb, from Thomson American Health Consultants, and Medscape, a service of WebMD Health.

pating physicians, and a majority said they preferred the on-line encounter to an office visit for dispensing non-urgent health advice. For patients, 71 percent rated the overall quality of the virtual visit as good or excellent, and the satisfaction rate was 95 percent for those who got a response by the next business morning.

The consult took less than 10 minutes for 77 percent of patients, a finding that RelayHealth says makes the technology attractive to employers, since workers did not have to take time off to visit the doctor for minor health issues. Indeed, the study found that patients who tried the service were 50 percent less likely to miss work because of illness than those in a control group.

But will patients embrace PHRs on a wide scale and give physicians an impetus to make computers and the Internet an integral part of the workday?

“Smart cards,” with embedded microchips, have been talked about for more than a decade as a means of storing personal health records, though they have yet to catch on. A test among low-income residents of the New York City borough of Queens did show potential, however.

A paper presented at the 2004 MedInfo international conference on medical informatics reported that during a one-month test period, 99 percent of returning primary-care patients at one public hospital retained their cards from prior visits.

The researchers said that the patients “really developed a sense of ownership” of their health cards, holding onto them as if they were driver’s licenses.

Imagine the usage rate if patients did not have to carry a physical representation of their records because the information was stored on-line.