Internet: What Does it Mean for Healthcare Provider Organizations

by John Hoben

Editor's note: This article is an adaptation from The 1996 Guide to Health Care Resources on the Internet, edited by John Hoben and published by Faulkner & Gray's Healthcare Information Center.

Internet Background and Value Analysis

History

Long familiar to scientists and academics, the Internet recently has become a mainstream tool in many industries, and it is quickly becoming one in healthcare. The Internet is the network of networks that became linked as a result of US Department of Defense funding in the late 1960s and early 1970s. A telecommunications protocol known as TCP/IP was developed to make it possible to transmit information in packets over multiple networks in the event of nuclear war. That technology enabled scientists and other technical researchers to share data from databases all over the world as long as they were familiar with the arcane language of computer technology. [1]

What's Happened Recently? The Web.

Given the high level of current media attention pertaining to the Internet, a busy healthcare executive might ask, "How do I gain access and benefit without becoming a computer programmer?" This paper will highlight a balanced approach to leveraging Internet-based technology for healthcare provider organizations.

Today's Internet growth is focused on the World Wide Web (the Web). The special feature of the Web is that it is multimedia by nature, providing a means of communicating voice, video, image, and text all within one protocol on the Internet. The Web is also the fastest growing sector of the Internet, with over 11 million Web pages that are accessible through various search tools. More and more users today are gaining access using personal computers and a dial-up Internet account through standard telephone lines and modems. According to the November 1995 issue of *Internet World* magazine, the number of servers (computers providing information on the Internet) grew from approximately 5000 in September 1994 to over 35,000 in June 1995. According to a 1995 Nielsen Study, approximately 37 million people (16 years of age or older) in the US and Canada have access to the Internet. Although the focus of this paper is on healthcare resources, other resources ranging from news, weather, sports, entertainment, science, religion, and every other facet of life are available on this global network. The biggest benefits over current media are the two-way and many-to-many nature of the communication medium and its worldwide breadth, which are not easily achieved with other current media. The figure on the following page provides an overview of the Web and its associated addressing or "channel selection" process.

Business and Clinical Value In Healthcare: Immediate, Short- and Long-term Value

Implementing Internet-based capabilities can translate into immediate value in the following areas:

- Increased customer service (improved patient/ practitioner relationship)
- Improved access to domain-specific information and knowledge for both patient and practitioner (through database access, discussion group lists and archives, web sites, etc.)

Short-term (six to 18 months) value includes the following components:

- Improved supply chain management (Internet-based EDI with all suppliers)
- Enhanced human resource management (through flexible telecommuting options for nonessential physical presence tasks)

Long-term (18 months and beyond) value can be realized through:

- Global operations potential
- Enabled finance and accounting functions and ubiquitous EDI for all processes and transactions

The following table provides a review of current healthcare pro-cess areas, current Internet usage/acceptance status, and associated tools and resources on the Internet.

Figure 1—Anatomy of a Web Address

Just like pressing in the TV channel into a remote control, certain characters need to be entered that tell your computer to "go to a channel" or what is called a "web site." The nice thing is that this channel is interactive, and marketing professionals at the sponsoring company like to hear directly from their customers in "real time" rather than through ratings reports. Conversely, you can be in the broadcast business too, communicating interactively with your customers, without spending money on human resources to guide your customers through your "web site" for demand management, disease management and other information based health services. It's this potential that has driven the rush to the web.

http://www.hirs.com/new.htm

http stands for "hyper-text transfer protocol" which is the way information is communicated from the web browser.

www stands for the "world wide web," since the http can point to other Internet resources, like files (FTP) and information "gophers"

hirs is the proper name of the site, usually a company name's abbreviation. For example, http://www.nbc.com is the "home page" for the National Broadcasting Company.

com stands for "commercial" web site, and denotes the type of organization sponsoring such a site. Other frequent types: ORG is an organization, NET is a network, MIL is military, EDU is educational, and GOV is governmental.

new.htm is the file or "web page" within the web site that contains the specific information requested. Without this extension, the web address is usually referred to as the "home page" or the top of the hierarchy on the web site. File extensions of .htm stand for "hypertext markup language."

Source: *The 1996 Guide to Health Care Resources on the Internet*, edited by John Hoben. Copyright ©1996: Faulkner & Gray.

Table 1—Internet Use in Healthcare

Healthcare Process Example	Internet Usage/Acceptance Status	Tools Required/Example Resources
Communicate with board members and support collaboration online	Technology available today; acceptance and usage growing	E-mail, interactive Web -- American College of Healthcare Executives at http://www.ache.org
Perform "demand management" and prevention services	Some technology components in place and in use	Web/e-mail -- MedSource Inc. at http://www.medsource.com/ Avaciennna at http://www.lancet.com/metal.html
Inform community of organization's initiatives and	Technology available and being deployed today; HospitalWeb	Web/HospitalWeb at http://gnn.com/wic/wics/promed.04.html

obtain direct, real-time community feedback without need for phone operators and other dedicated customer service personnel	lists over 150 hospital and healthcare organizations with a Web site in place	Hospital Net at http://www.hospital.net/ Medicine Online at http://www.medicineonline.net/hospit.htm
Provide continuing medical education	Technology available today; acceptance and usage growing	American Medical Association at http://www.ama.org HealthSeek at http://www.healthseek.com
Develop and maintain clinical practice guidelines	Several public and private Web sites with specific guidelines	PSL Consulting Group at http://www.pslgroup.com/
Reference online health administration resources	Good indexes available today on the Web	HealthSeek at http://www.healthseek.com/
Communicate with other healthcare professionals	Several professional societies establishing Web presence which is fueling peer communication	AHIMA at http://www.ahima.org American College of Healthcare Executives at http://www.ache.org Healthcare Information and Management Systems Society at http://www.himss.org/ Health Management Discussion List Archives and Subscription Information at gopher://ursus.jun.alaska.edu:70/11/lists/healthmgmt
Monitor health policy and legislation	Specific Web sites dealing with health policy; entire US House of Representatives work available on Thomas (to review bills such as the Bennett Bill, S 1360), etc.	Policy Information Exchange Network at http://pie.org/ US House of Representatives Work available on Thomas at http://thomas.loc.gov/home/c104query.html#keyword
Monitor general business and healthcare trends and gather empirical/comparative statistics	Robust news databases being developed and useable today	MedAccess at http://www.medaccess.com General business and information at http://www.newspage.com Hoover Business Intelligence at http://www.hoover.com
Perform daily intelligence gathering	Robust news databases being developed and useable today	Web/e-mail -- NewsPage at http://www.newspage.com/NEWSPAGE/info/NEWSPAGE/cgi-bin/walk.cgi/d15/
Access patient records	Technology near ready; pilot projects currently under way for computer-based patient records, many funded through the National Library of Medicine	Web/Telemedical Office at http://www.cts.com:80/~drcarr/ Columbia Presbyterian Medical Center at http://www.cpmc.columbia.edu/intermed/CDAS.html
Purchase goods and services online	Most services and transactions for purchase today are information resources (company background, news items, etc.)	Baxter Healthcare at http://www.intnet.net/baxter/ Healthcare Marketplace at http://www.healthseek.com/mktplace.htm
Perform disease management information gathering and services planning	Technology ready/emerging; pharmaceutical companies piloting "general information: sites for future interactivty	http://www.newspage.com/NEWSPAGE/cgi-bin/walk.cgi/NEWSPAGE/info/d15/d2/ Pharminfonet at http://www.pharminfo.com PSL Consulting Group at http://www.pslgroup.com/DIABETES.HTM#Abreast
Provide health consumer comparative information on health plans, options	Technology ready and currently used in some areas (state of Minnesota)	Web/MedAccess Inc. at http://www.medaccess.com Minnesota Health Data Institute, comparisons of health plans at http://www.mhdi.com Health Information Resources and Services Inc. at http://www.hirs.com

Phased Approach and Cost Components

Every healthcare worker who currently uses a fax machine or telephone to conduct business should acquire basic e-mail and Web browser connectivity as soon as possible. But what about other investments in building a Web site for your organization? Answers to these questions are discussed below.

What Costs Are Associated with Internet Use

Certain parts of Internet transaction usage are as "free" as local telephone calls today. You can buy your own equipment, pay to install the lines, and pay a flat monthly rate to make as many local calls as you want without being charged per call. Like any business initiative or change, realizing benefits requires investments in planning, design, testing, and implementation. The good news is that these investments can be put forth incrementally and be synchronized with an organization's needs and forces in the marketplace.

One external driver for adopting Web server technology within any healthcare organization is the rate of adoption within the local community. If, for example, the organization is in Palo Alto, CA, their rate of adoption should be fairly early, given the public and private initiatives in the Silicone Valley to get all citizens wired for the Internet. Rural communities might find themselves in an early adopter stage as well, given the large number of people who connect through local phone numbers or 800 numbers to their respective Internet service-provider gateways.

Healthcare organizations should adopt at least an initial, rudimentary one-way server presence for their organization and e-mail/Web client personal browser capabilities as soon as possible. Most Web browser and e-mail software packages are free of charge and bundled into Internet service provider (ISP) agreements when opening an account. New types of software are now available that will allow use of an Internet account to place voice telephone calls through a computer (if you have the appropriate microphone and voice card hardware installed in your computer).

Internet e-mail is quickly becoming as common as the acquisition of fax machines in the early 1980s or telephones in the first part of the twentieth century. Opening an account is analogous to obtaining local telephone access service, and pricing is the same as monthly single-line phone service today. Several Internet service provider companies associated with the local telephone exchange carrier company for a given region are just adding an additional flat rate onto customers' local phone bills for unlimited Internet access service. Certain ISPs allow callers from long-distance areas to dial their 800 Internet telephone access number and bypass long-distance charges, allowing unlimited, fixed-fee access to the Internet over regular dial-up telephone lines from multiple locations. (These technology changes are key drivers for the recent US telecommunications legislation overhaul and have significant implications for related businesses and consumers.)

Relatively easy and low-cost (less than $200 per month) approaches to obtaining the technology resources to build a rudimentary Web presence within a Web home page are available today. This is in contrast to a larger investment (of approximately $50,000 to $70,000, not including outside services) in technology and support personnel to build a complex, interactive, custom Web presence (discussed below). Companies such as CompuServe, America Online, and other Internet service provider companies usually provide their subscribers with a limited number of Web pages for their use as part of the standard account. Some companies will provide outsourcing of the entire Web presence. Many organizations start out with building their company's Web presence on a third-party platform. When the monthly charges start to grow, the service is brought in-house.

Clearly, two very important groups of stakeholders for any organization are its suppliers and its customers. One EDI requirement traditionally has been for the supplier and purchaser organization to be linked through a value-add network (VAN) or some other closed, proprietary communication vehicle. Today, with security and other mechanisms being built into the Internet technology, costs associated with EDI VANs go away or are transformed into the Internet and Web model, whereby everyone can communicate with everyone else based on predefined business terms and avoid expensive proprietary/closed hardware, software, and support costs for linkages to each different EDI VAN supplier. This is the beauty that Internet-based technology can bring to efficient and effective supply chain management. If everyone uses the same protocols and the same tools and focuses on the content and the relationship, we finally will fully realize the benefits of open systems and Internet-based secure commerce processing.

Security and confidentiality are definitely the top concern when dealing with the Internet for health data. Each organization must ensure the appropriate security technology (secured commerce servers, encryption standards, authentication mechanisms, etc.) is implemented and confidentiality standards are enforced through policy and procedure development. Training and education are also effective in minimizing an organization's risk. There is an exponential inverse relationship between risk and costs (e.g., investing nothing in this area increases your risk exponentially from both obsolescence exposure and risk from data confidentiality litigation).

Healthcare executives operate in interesting times today. CEOs should not relegate Internet deployment to the basement resident techie. A multidisciplinary team under the leadership of the CIO, composed of health information, marketing, development, and public relations professionals, the chief medical officer, and chief operating officer, should define the policy guidelines and then turn procedure development over to the organization's operating committee. Ongoing strategy and visioning opportunities should then be pursued by an Internet strategic planning group to review the key opportunity areas listed below.

As growing numbers of citizens are insured through capitated payment arrangements, utilization of resources and margin management of such utilization becomes critical to healthcare organizations. Internet-based technologies are uniquely positioned to support this strategic initiative, given the fact that the Internet treats each individual as a "node on the network" thereby allowing constant, two-way communication between patients, providers, case managers, and other health status stakeholders.

As individual citizens gain access to the Internet and the Web, patients are empowering themselves to use the technology to improve their own health. There is a long and growing list of Internet-based patient support groups.

Examples of Value Created

Several organizations are beginning to serve their communities by deploying Web-based presence in the hopes of capitalizing on the potential benefits of this emerging technology. Four such organizations are Blue Cross/Blue Shield, Columbia/HCA, Group Health of Puget Sound, and Rush Presbyterian St. Luke's Medical Center.

Blue Cross/Blue Shield of Massachusetts, Boston, MA
BC/BS MA represents one health plan's entry into the use of the Internet for patient empowerment and promotion of its organization's services. Using the Web, this organization provides a "public service announcement" for consumers regarding preventive care and other insurance offerings. Information for the employer (purchaser) of health plans is provided, along with an easy mechanism to give e-mail based responses to the organization. These are the first steps to getting more in-depth two-way communication with existing health plan members and other potential customers.

Columbia/HCA, Nashville, TN
This organization is using the Web to try to overcome its image among competing hospitals as a ruthless competitor. Columbia/HCA provides statistics on how much uncompensated care it provides to communities around the US, as well as the fact that 29 of the nation's top 100 hospitals ranked by HCIA were this organization's facilities. Several consumer focused offerings appear on this company's Web site, including: Columbia Pharmacy Solutions, Physician's Corner, One Source, and Senior Friends. Clearly, the initial web presence is positioning this organization for further interactive "citizen as patient" communication to improve its relationship with the communities it serves.

Group Health of Puget Sound (GHPS), Seattle, WA
Group Health has a long tradition of being consumer focused, right up to the governance structure of this successful health plan. GHPS publishes all of its HEDIS report indicators on its Web site, complete with definitions and discussion for general consumers. Their current Web presence provides other high-quality background information on managed care and what it means to a patient.

Rush Presbyterian Saint Luke's Medical Center, Chicago, IL
RPSL enjoys benefits for both internal and external stakeholder communications. It uses Web pages for "Intranet" communication, whereby internal employees can view internal documentation and policy and procedure documents. External Web visitors can review profiles of physicians, conduct online database reviews, and learn about clinical protocols.

Health Policy Discussion Sites and "Global Perspectives"

Several sites deal with health policy that strives to realize the visions of healthy cities. One such site is the Center for Health Care Quality's (http://www.chmis.org/) online directory for community health management information systems projects (CHMIS) sponsored by the Hartford Foundation. This site contains ongoing links to other Web sites in support of some of the innovative directions communities are taking in building healthier communities.

Note

1. Appleby, Chuck. "The Internet: What Does it Mean for Healthcare Providers?" Center for Clinical Integration (CCI) Information Edge Report, February 1996.

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