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### **Changing Paradigms Challenge Our Thinking**

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**Leslie:** Human beings do not find it easy to embrace new paradigms, or models for how we learn, work, live, etc. It is difficult for us, not because we are stubbornly resistant to change, but because our brains find it difficult to actually visualize a model different from the one we are accustomed to seeing.<sup>1</sup>

**Patty:** Even when we implement major change in organizations, if that change does not get rooted in the culture, the behavioral norms and values, people “automatically” slip back into old models over time.<sup>2</sup> So much of human behavior operates outside of our awareness, on “automatic pilot,” that we sometimes don’t even realize how hard it is to adopt new models.

**Leslie:** The change from paper records to electronic medical records (EMRs) will represent a major paradigm shift for accomplishing health information management (HIM) functions. Some functions will be eliminated and new ones will be created, but most difficult of all will be inventing new ways to do old functions in the new electronic practice environment.

**Patty:** An analogy that is upper most in people’s minds today is our law enforcement agencies. In responding to the “War On Terrorism,” they are faced with changing their view of law enforcement work from gathering clues and catching the bad guys after they commit a crime, to gathering and analyzing intelligence for prevention purposes. HIM professionals too are faced with changing a long-held view, that either people have to go to the records, or the records have to go to the people. Today, through the advent of the Internet and Internet-derived technologies, patient information can reside securely on a server at the hospital or in a secure data center, and multiple users can access the information from any location.

**Leslie:** That is a remarkably different worldview! It opens up tremendous opportunity for HIM professionals to reinvent HIM processes, to be more efficient and more convenient.

**Patty:** It is really important to realize that it is the invention of Internet technologies that allows us to realize the full benefit of electronic medical records and to make the 40-year-old dreams of EMRs a reality.

**Leslie:** Then it is very important that HIM professionals really understand Internet technologies and how they can promote their use to help their organizations realize the benefits of EMRs. While most people are very comfortable today with e-mail and surfing the Web for information, using the Internet to accomplish HIM functions is still very new. Let’s describe some of the most important technologies that HIM professionals need to know.

**Patty:** The report submitted by the American Health Information Management Association’s (AHIMA) E-health Task Force titled “Report on Roles and Functions of E-health Information Management” highlights “must

know" Internet technologies affecting HIM practice. The report discusses three technologies: Web-based vs. Web-enabled; Intranets; and Wireless and Mobile technologies.<sup>3</sup>

**Leslie:** That's an excellent place to start, especially because this report discusses HIM practice in an Internet environment. Our readers can download this report by logging onto the E-health Communities of Practice (COP) through AHIMA's Web site.

**Patty:** I find that HIM vendors often use the words Web-based and Web-enabled interchangeably creating confusion in the marketplace in understanding the difference. Both terms are used to describe applications that run on Internet-based networks and use Web-browsers. However, under the hood, Web-based applications and Web-enabled applications are very different.

**Leslie:** The report describes Web-based as an application that was built from the ground up to run over the Web. Vendors have written or in some cases re-written their applications using the latest programming languages such as Java, XML, HTML or SGML. Web-based systems use a browser and integrate with other Web-based applications.

**Patty:** Many HIM vendors don't want to invest in re-writing their entire application and therefore are not re-writing their code but are "Web-enabling" their existing legacy or client/server systems instead. This involves building "Web hooks" that can integrate with the old code. But the hooks don't take full advantage of an application's code. Generally, only basic parts of code are re-written so that the application can interact with the Web. Web-enabled products require local software to run the application and have operating system and hardware requirements. Web-based applications work with all operating systems and are hardware neutral. In contrast to Web-enabled, these applications do not require desktop software because the application resides on a Web server.

**Leslie:** In preparing for our discussion, I searched the Internet for definitions of Web-based and Web-enabled. I came across a great analogy on [www.darwinmag.com](http://www.darwinmag.com). "Think of Web-enabling a legacy application as giving a bald man a toupee. He's still a bald man under the rug, but when he's got it on, he looks like he's got hair. You can't grow it or feel confident that it'll stick in a tsunami, but it gets the job done. As for the guy with the full head of hair, think of him as Web-based. When winds shift and styles change, that hair can and will adapt." In the long run, Web-based systems are better investments. You might say Web-based is the real McCoy.

**Patty:** Great analogy Leslie. It helps to reinforce the concept that Web-based systems are more flexible and adaptable. Web-based technology is being used to create computer-based patient records particularly in home health care and physician office settings.

**Leslie:** In addition, consumer Web sites have developed Web-based medical records. It's only a matter of time before vendors begin to re-write their clinical information systems in Web-based languages.

**Patty:** Understanding Intranets is the next important technology concept. The E-health report describes an Intranet as a private internal Internet network within a health care organization. The Intranet network usually consists of many interlinked local area networks and sometimes a wide area network. Through the Intranet network, a gateway exists to the public Internet so that users can access other Internet servers, use e-mail and create internal Web sites. Intranets are commonly deployed to share departmental and organizational information and computing resources among employees. The technology behind Intranets is Internet protocols such as TCP/IP (transmission control protocol/Internet protocols) FTP (file transfer protocol) and HTTP (hypertext transfer protocol).

**Leslie:** Using Internet/Intranet technologies, many of Care Communications Inc.'s clients have implemented

virtual private networks (VPN) to virtually connect hundreds of geographically dispersed remote users. From remote locations, home-based coders can securely access abstracting and encoder applications, transcribed reports can be uploaded to the network and physicians can access the EMR.

**Patty:** There is another technology we should discuss and that's the Extranet. An Extranet is simply two organizations accessing each other's Intranets via the Internet. Extranets are commonly used in e-commerce. In health care, a very common use is exchanging large volumes of data using EDI (electronic data interchange).

**Leslie:** And Extranets use Internet protocols. Let's talk a bit about mobile and wireless technologies.

**Patty:** One of the most exciting technology advances related to mobile devices and wireless technologies is occurring within home health care. Nurses are provided with personal digital assistants (PDAs) to access and update patient records. Nurses download patient data to their PDAs and update patient information via the Internet from any location.

**Leslie:** We know of physicians who are running prescription programs from their PDAs to obtain information about side effects, drug interactions, contraindications and even the cost of the prescription.

**Patty:** As the E-health Task Force's report points out, it remains to be seen if wireless technologies can be successfully integrated to support point-of-care service.

**Leslie:** This topic bears more discussion than we have time for this month. The technology is so interesting, let's discuss it.

## References

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