

HRSA CARE ACTION



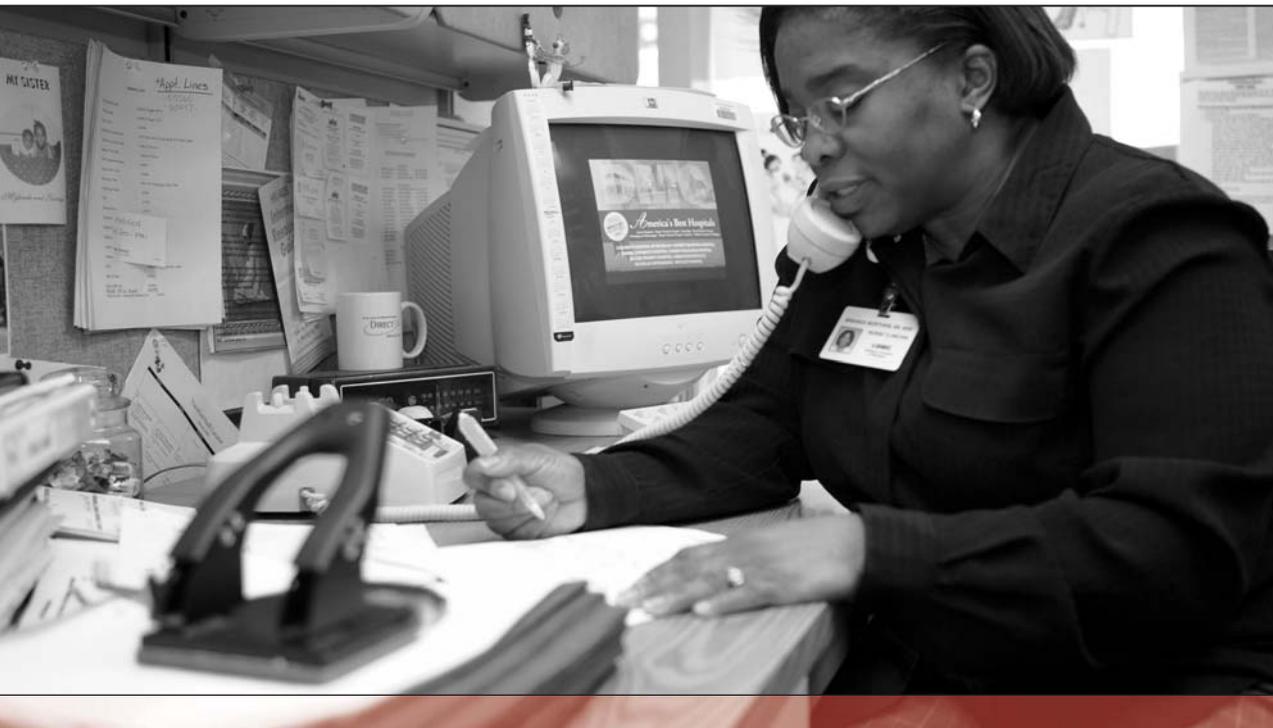
MARCH 2008

What is HIT?

Patient-Provider Dialogue

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THE POWER OF TECHNOLOGY

It's 7:51 a.m. A doctor steps out of Foggy Bottom Metro station in Washington, DC, personal digital assistant (PDA) in hand. She puts down her briefcase and reviews an e-mail from a rural clinic in Virginia for which she is a radiology consultant. A set of digital X-rays is attached. She reviews them and then speaks into a small microphone on her PDA. Her spoken comments are translated into a text message using speech recognition software, which she attaches to the e-mail and forwards to a colleague for review.

Also in her in-box: a prescription renewal request. With a few clicks, she authorizes the prescription, which is sent electronically to the patient's neighborhood pharmacy to be filled. It's now 7:58 and she's already served two patients before even stepping into her office—with time to spare to pick up coffee at the café down the block.

HIT or Miss

This scenario is not far-fetched. All over the country, technology is helping clinicians treat patients more efficiently and effectively. The health information technology (HIT) available today offers many possibilities for storing, computing, analyzing, and sharing health data. It could have many other advantages as well.

ONLINE RESOURCES

"What's Going on at SPNS"
—SPNS IT Initiative:
<http://careacttarget.org/>

Pediatrics on Hand:
www.dcchildrens.com/pdas/home.aspx

Free eRx NOW software from AllScripts: www.allscripts.com/products/physicians-practice/eprescribing-medservices/erxnow/default.asp

▶▶▶▶ Please visit our Web site at www.hrsa.gov



DIRECTOR'S NOTES

In the HIV/AIDS field, we constantly strive to change health outcomes and change perceptions—all in an effort to effect the biggest change of all: the eradication of a deadly disease. But change comes in waves, and we know that we can't just wait for the waves to crash onto the shore before we make our next move. We have a history of ensuring that we stay ahead of the waves when it comes to delivering HIV/AIDS care.

Over time, one of the biggest changes in the HIV/AIDS field has been a rise in technologies that continually expand our capacity to deliver HIV/AIDS care. HRSA has invested in the Special Projects of National Significance (SPNS) Information Technology (IT) Initiative to explore new ways of using IT to improve HIV care delivery and health outcomes, because one thing that we've experienced as health care providers is that the increasing amount of information that we need to manage sometimes feels like it is managing us. IT helps us take back control by allowing us not only to manage information effectively, but also to share it and learn from it better than ever before.

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In 2004, the national health care bill was estimated to be \$1.79 trillion.¹ Of that total, an estimated 31 percent (\$555 billion) was spent on administration alone.² Estimates are that HIT-like electronic medical records (EMRs) could save the American health industry approximately \$162 billion a year.^{3,4}

If widely adopted, HIT also could reduce the occurrence of serious medication errors by 55 percent.⁵ This effect is no trifling matter: The Institute of Medicine estimates that hospital health errors lead to a staggering 44,000 to 98,000 lives lost each year.⁶ "The only way that computers make errors is if they've been programmed wrong," affirms David Stockwell, assistant professor of pediatrics and critical care at the National Children's Medical Center in Washington, DC.

Opportunities to use information technology (IT) to achieve better health outcomes, fewer medical errors, and greater administrative efficiency are being pursued by just about everyone in the health care field. This interest extends to the Federal Government, which is pushing for the increased use of EMRs and the establishment of a nationwide health information network (NHIN) by 2014.⁷ When implemented, the NHIN would provide a secure, nationwide, interoperable health information infrastructure to connect providers, consumers, and others involved in supporting health and health care.⁸ Moreover, the network would enable EMRs to be easily transported and shared among a host of diverse parties.

What is HIT?

HIT comes in many forms and provides many functions. As a result, it can be hard to define and understand. The U.S. Department of Health and Human Services (HHS) defines HIT as technology that "allows comprehensive management of medical information and its secure exchange between health care consumers and providers."⁹ Ultimately, understanding what HIT *is* means understanding what HIT can *do* (Table 1).

TABLE 1: THE ABCs OF HIT

Type	Definition
Audio computer-assisted survey interview (ACASI)	An application by which patients can complete a touch-screen questionnaire that screens for various behaviors; the ACASI system helps clinicians initiate and prioritize areas for intervention by providing synthesized information for treatment reinforcement. ¹⁰
Computerized physician order entry (CPOE) Systems	Electronic applications that allow doctors to enter orders for medications, diagnostic tests, referrals, and other services through an automated computer system. ^{11,12} CPOEs also can issue electronic reminders and alerts that can improve clinician adherence to specific practice guidelines. ^{13,14}
Electronic medical record (EMR)	A computer-based electronic health record containing a wide range of documentation, including multimedia elements (e.g., EKG output, heart and lung sounds) and digitized photographs (e.g., rashes, retina changes). EMRs are more likely than paper-based records to be fully understandable, to be fully legible, and to have at least one diagnosis recorded. They also improve the documentation of services, referrals, and the drug dosage of prescribed treatment. ¹⁵ Doctors using EMRs have been shown to recall advice given to patients better than doctors using paper-based records. ¹⁶
Electronic prescription software	Enables a physician to transmit a prescription electronically to a patient's pharmacy of choice.
Nationwide health information network	A secure, nationwide, interoperable health information infrastructure that will connect providers, consumers, and others involved in supporting health and health care. ¹⁷
Personal digital assistant (PDA)	A hand-held computer, often pen-based, that provides organizational software (e.g., appointment calendar, billing software) and communications hardware (e.g., cell phone, modem). ¹⁸ The PDA software also can include digital drug databases, drug interaction checkers, and medical books and references. ¹⁹
Smartphone	A PDA that includes a mobile telephone.
Speech recognition software (SRS)	Enables a machine or program to recognize and carry out voice commands or take dictation and incorporate the voice data into an EMR. The technology can match a voice pattern against vocabulary that has been preprogrammed or acquired when the user records additional words. SRS reduces or eliminates the need to enter or correct data after taking clinical notes. The most up-to-date technology, SRS has the ability to accept natural speech (i.e., speech as it is naturally spoken rather than carefully enunciated). ²⁰



Seeing the Big Picture

Using HIT is, in many ways, like putting together a jigsaw puzzle—it allows the many pieces of a patient’s or a population’s health profile to be viewed as a whole. EMRs, for example, allow text like X-ray reports and clinical notes to be imported. Using a scanner and an optical character recognition program, text on the pages is converted to a format compatible with the EMR. This process saves a great deal of physical storage space and allows information to be accessed and organized more efficiently.²¹ With an EMR system, a doctor or nurse ideally would have a computer or PDA available in the examination room and would record findings by typing them into the computer rather than writing them down. Some blood pressure cuffs and thermometers automatically send their readings to computers.²²

Electronically stored data also facilitate the creation of summary information, which can be used to create summaries and graphs of test results over time and aid providers in the preparation of data summaries like the Ryan White Program Data Report.*

* Formerly known as the Ryan White CARE Act Data Report (CADR).

The Personal Touch

Providers and administrators aren’t the only ones using HIT. Now that consumers can electronically manage everything from their bank accounts to their dating lives, managing personal electronic health information is a natural next step. Personal electronic health records can help patients store all of their health information in one secure place. They also allow patients to share their data with their providers, leading to better health data management and, ultimately, better health.

PDA’s can help patients manage and organize health-related information. A study by the University of Maryland School of Medicine investigated using PDA’s to help adolescents with their HIV medication regimens.²³ The PDA’s were used to issue reminders and assist with self-reporting of medications taken, thereby facilitating reporting of medication adherence and allowing the young people living with HIV/AIDS (PLWHA) to better manage their disease.²⁴

Opening the Patient-Provider Dialogue

In 2003, the Ryan White HIV/AIDS Program established an IT initiative under the Special Projects of National Significance (SPNS) program to determine how HIT can contribute to measurable and sustainable improvements in the delivery, quality, and cost-effectiveness of HIV/AIDS care for PLWHA. (For more information, see http://hab.hrsa.gov/special/it_index.htm.)

Two of the six grantees, Cornell University and Johns Hopkins University (JHU), are evaluating whether audio computer-assisted survey interviews (ACASI) can improve patient involvement in—and adherence to—HIV care. Prior studies have documented that patients disclose information about health-related behaviors more readily when responding privately to electronic surveys than when speaking with interviewers. ACASI’s audio feature also prevents low literacy from being a barrier to a patient’s ability to use the technology.²⁵

Cornell’s project tested whether ACASI screening in hospital community HIV clinics could improve patient-provider communication while improving patient satisfaction and health outcomes, including medication adherence, lab values (HIV RNA), depression symptoms and treatment, and condom use. Computer workstations were set up in private settings, and patients completed ACASI questionnaires (in English or Spanish) that were immediately transmitted to their providers.

At JHU, ACASI was used to evaluate patient adherence to treatment regimens and identify risk-taking behaviors that could interfere with adherence. Despite the sensitive nature of the assessment, “We received an overwhelmingly good response not just from our providers but from our patients,” says Beulah Sabundayo, research associate at the JHU School of Medicine. “And that’s ultimately who this technology is about.” The final results of the Cornell and JHU projects are forthcoming.

Safety First

If knowledge is power, PDAs pack a mighty punch. “You can have volumes and volumes of references in your PDA that you can take anywhere,” says Stockwell. PDAs can contain drug databases and drug interaction alert systems and store entire medical references. They offer a combination of portability and depth of information unrivaled by traditional paper information sources.²⁶

PDAs also enable electronic prescribing (EP), which helps physicians avoid potentially harmful drug interactions or allergies. HIV medications, in particular, “are notorious for interacting with other drugs,” says Stockwell. “Electronic prescribing is great for determining if there are interactions with other drugs the patient is taking.”

EP can reduce pharmacy phone calls (which often result from doctors’ hard-to-read handwriting) and allows greater access to patient medication history. EP also enables an easier prescription renewal process and formulary status* on each medication prescribed.

EP is not a stand-alone service—it can work with EMRs, PDAs, and nearly any other form of technology from the alphabet soup of HIT. “I can take my smart-phone anywhere it can get cellular service,” says Stockwell. “I could get a call for a prescription and send one to any pharmacy the patient wants. And I can do it even if I’m in the middle of the woods somewhere.”

Bridging the Divide

Today, patients and providers increasingly meet in a virtual landscape. Take the example of an HIV-positive patient who is due for a checkup and labwork but lives hundreds of miles from the nearest primary care doctor’s office, let alone an HIV clinic. Specialty HIV clinics are a luxury that many rural areas cannot afford given scant resources and limited patient volume. Even if the nearest primary care doctor can refer the patient to a specialist in a nearby city, the visit may require the patient to drive an hour or more and lose time from work. This scenario is a common complication of rural living that can cause patients with chronic diseases to postpone making appointments with distant specialists. As a result, their conditions worsen.

The situation may sound discouraging, but it does not have to be. The State of Georgia has made great strides in using HIT to narrow the gap in service to its rural residents, establishing one of the largest integrated telemedicine programs in the country.²⁷ Across 39 rural counties, patients and their doctors can visit a local tele-conference center and meet remotely with one of 75 specialists at 11 urban sites.²⁸

* HRSA defines a *formulary* as “a preferred list of drug products that typically limits the number of drugs available within a therapeutic class for purposes of drug purchasing, dispensing, or reimbursement” (see www.hrsa.gov/opa/glossary.htm).



*If knowledge is power, PDAs pack a mighty punch.
“You can have volumes and volumes of references
in your PDA that you can take anywhere...”*

Hurdles to HIT

Experts identify four major hurdles to HIT: inertia, cost, the patient's perception of provider competence, and lack of standards.

Inertia

Despite evidence of the benefits of HIT, only 10 to 15 percent of hospitals use computerized physician order entry (CPOE) systems.²⁹ These systems can serve as an electronic platform for physicians to enter a variety of clinical orders (e.g., prescriptions, lab tests) that are then integrated with background information about the patient being treated. CPOE systems can automatically check for and intercept possible errors, such as harmful medication interactions, at the time of the order.³⁰

But of the hospitals that use CPOE systems, only 1 in 10 store all necessary data, offer clinical reminders, and permit electronic test orders in their systems, according to HHS.³¹ In fact, just 5 percent of 6,000 U.S. hospitals have systems that support computerized ordering of drugs and tests.³²

The number of hospitals that have adopted CPOE is small, in part, because HIT is no different from any other tool—it requires human influence to accomplish its ends. Unfortunately, resistance to change can be a greater influence.

A 2004 study interviewed top management at 72 U.S. hospitals to identify the barriers to adopting CPOE systems. Management cited various reasons including:

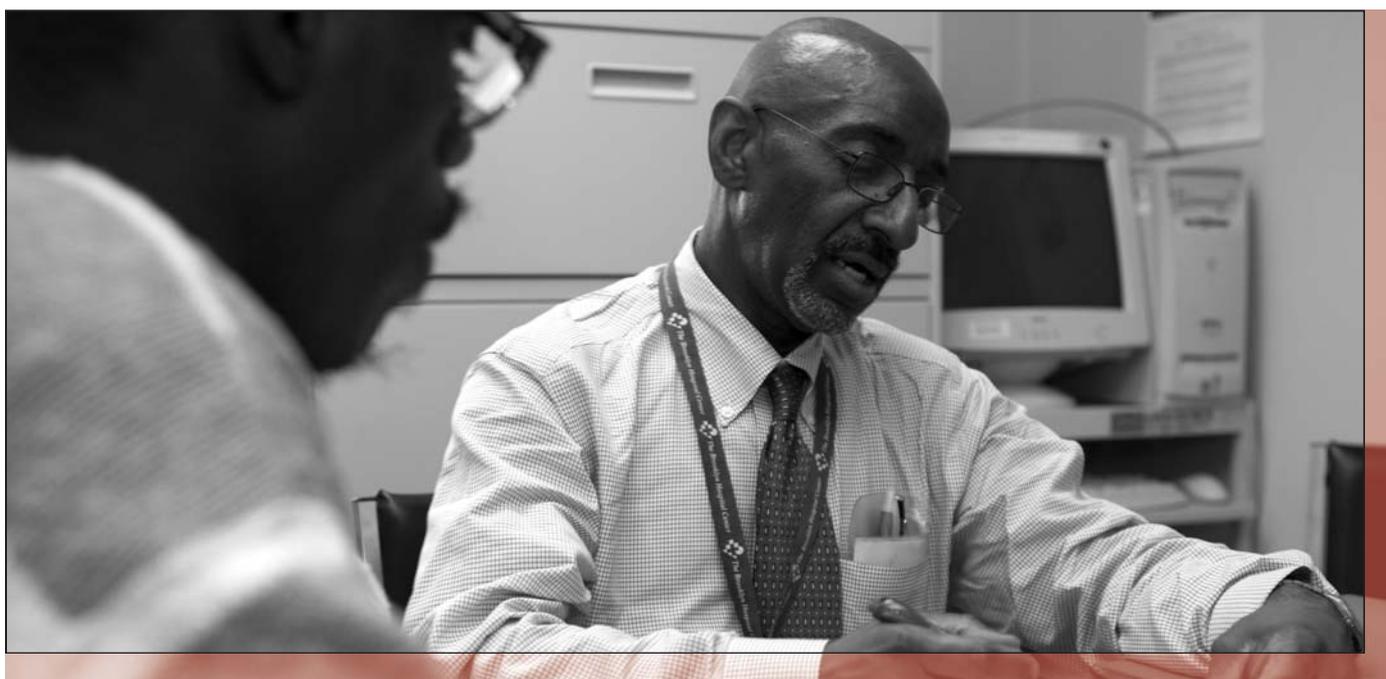
- ▶ the belief that CPOE would create more work and be slower to use than traditional, paper-based ordering methods;
- ▶ low computer literacy among some physicians;
- ▶ a lack of user involvement in the implementation process; and
- ▶ fear that new mistakes would occur.³³

“There’s always going to be a spectrum of acceptance in any health care environment,” observes Stockwell. “There are people who can’t wait to try new technology. There are people in the middle who want you to prove that it works before they start thinking of using it. Then there are people on the other end of the spectrum who say, ‘I’m fine! I don’t need to use this.’”

Bridging the spectrum of acceptance requires providing consistent support and encouragement to users. It requires establishing administrative leadership to manage change and addressing workflow concerns by providing HIT training. It also may require that clinicians comfortable with a technology tout its benefits to colleagues not yet “on board.”

Cost

The health care industry spends only 2 percent of gross revenues on IT,³⁴ in contrast, other information-intensive industries, such as finance, spend 10 percent of their gross revenues on IT. Nevertheless, cost is a factor that few, if any, health care providers have the luxury to ignore. The initial investment in EMRs alone can range from a few million dollars to upwards of \$60 million,



CASE STUDY: NEW YORK'S EMR SYSTEM



EMRs are being implemented in a radically new way by New York City's Department of Health and Mental Hygiene (DHMH). The department recently announced that it will provide free EMR software to more than half of all high-volume Medicaid providers in the city (medical practices in which more than 30 percent of patients are covered by Medicaid or are uninsured).³⁸ Software will be distributed to about 1,500 practices over the next 2 years, including small neighborhood doctors' offices, large clinics, and the medical offices at the Rikers Island jail.³⁹

"As a doctor, I'm likely to pay attention to the patient's acute complaint and not notice, "Oh, my goodness, she hasn't had a mammogram," says Farad Mostashari, the assistant city health commissioner overseeing the EMR project for the DHMH, echoing the concerns of many overtaxed health professionals. "But the computer never forgets, and it will remind me."⁴⁰

according to Pat Wise, an executive with the Healthcare Information and Management Systems Society.³⁵

Although it is true that progress has a price, sometimes it comes at a discount. HIT can streamline service delivery, improve quality of care, and make care delivery more cost-effective in the long run.³⁶ Organizations that have kept their benefits in mind have found the following ways to circumvent financial challenges:

- ▶ Using differential reimbursements from payers that could be passed on to physicians;
- ▶ Encouraging malpractice insurers to discount rates for physicians who use advanced HIT; and
- ▶ Issuing government or commercial grants or loans to assist providers with implementation.³⁷

Patient Confidence in Provider Competence

Some providers may feel as though patients will think they are uncertain or uninformed if they use IT to identify symptoms or reference drug interactions. "Physicians were initially worried about using PDAs because they were worried about showing the patient that they have to look something up," remarks Stockwell. Over time, however, experience has taught otherwise. "People are starting to realize that patients like knowing that the

care they are receiving is as accurate as possible," he adds.

According to Frank Lombard, project director at the Duke SPNS IT project, "There's always a large fear among providers that patients are going to be very resistant to having their information collected electronically. But we've found that actually isn't a significant issue." He adds, "One of our case managers says that when he encounters clients suspicious of how the information will be used, they complete the form together so the patient can see everything that goes on the screen. They see exactly what's happening and that it's only going to be shared with their doctors."

Lack of Standards

A nationwide health information infrastructure is still a dream, but the need for it is rooted in reality. Health information networks have been successfully implemented by various regional health care systems across the country. But with disparate systems come disparate standards of operation.

According to the HHS National Coordinator of Health Information Technology Robert Kolodner, "determining the appropriate standards to use to forward the national agenda" is among the biggest challenges to

developing a nationwide system. “That’s why we have a panel that serves not as a standards developer but to harmonize standards, identifying which to use for which purpose, all within the context of accomplishing health goals,” he explains. Kolodner’s office is well on its way to accomplishing its goal, having researched and established several “use cases,” or best practices, to guide the adoption of a set of national standards for HIT. (For more information, see www.hhs.gov/healthit/usecases/).

The Next Horizon

HIT is full of imaginative applications to real health challenges, and an ever-expanding selection of technologies is available to health care providers and consumers. It is up to us to use them, because when we push the limits—which may be self-imposed—on how knowledge is managed and optimized, we deliver better care. And better care means better health and better lives.

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