STRATEGIC CARE COMMAND

Robert Kolodner, M.D., (right) acting chief health informatics officer at the Veterans Health Administration, identifies four components of the future clinical information technology strategy of the Department of Veterans Affairs:

- Complete electronic medical records

- Common IT standards between all federal agencies that provide healthcare

- The ability to exchange electronic clinical data between federal agencies

- Personal health records, which the VA is pushing through the MyHealtheVet program

Source: Department of Veterans Affairs

James Kegley Photography

WIRED AND READY

With 14,200 physicians, more than 36,000 registered nurses, 4,700 pharmacists and 47 million patient visits each year, the Department of Veterans Affairs operates the largest healthcare delivery system in the country.

But rather than being a bloated federal bureaucracy, the Veterans Health Administration of the VA is remarkably nimble, and nowhere is the VA outrunning the private healthcare sector by a wider margin than in the adoption of clinical information technology.

"For four years, I have never seen any organization move faster," says University of Washington informaticist Thomas Payne, M.D., who from 1997 until 2001 was chief medical information officer at the VA Puget Sound Healthcare System in Seattle. "I have seen many private-sector organizations that are much smaller be hobbled by bureaucracy."

The proposed National Health Information Infrastructure is little more than a grand vision in all but a few regional exceptions. But VA patients can go to any of 172 hospitals and more than 500 outpatient facilities in the nationwide system and have their full medical records and history instantly accessible to a physician.

Vast scope of VistA

The Veterans Health Information Systems and Technology Architecture, or VistA, makes that possible.

While the private sector is struggling to achieve 5% usage of computerized physician order entry in acute care—even less in ambulatory settings—the VA expects to have clinicians entering 95% of all medication orders electronically by Oct. 1.

"At this point, we're over 90% for medication orders entered by physicians," says a confident Robert Kolodner, M.D., acting chief health informatics officer of the VHA.

"We have a PC wired in every clinic room, we have it on every ward, we have one in every office where a physician would see patients. We have more PCs than we have staff," says Lewis Coulson, M.D., associate chief of staff and chairman of the information management committee at the 154-bed West Side Division of the VA Chicago Health Care System. Coulson has become a leading informaticist within the VHA system.

"I don't think there is any system out there that is comparable" in linking inpatient, outpatient, long-term care and home-based primary care staff, says Paul Nichol, M.D., a VA physician since 1980 and the current CMIO at VA Puget Sound. "It really is one record that allows continuity across a vast scope of care environments."

The reason, in Kolodner's opinion, is that physicians have been at the helm.

The VHA is headed by VA Under Secretary for Health Robert Roswell, M.D. His immediate predecessors, Thomas Garthwaite, M.D., and Kenneth Kizer, M.D., not only had similar academic credentials, they also shared the same emphasis on quality and patient safety, according to Kolodner.

"We've had some really enlightened leadership," says Kolodner. "All of them have endorsed the idea of adopting IT as a powerful safety mechanism. That's at the top leadership, and that's also been reflected in the leadership in our facilities and our networks."

Indeed, about the time Kizer took the helm in 1994, Coulson arrived at the Chicago West Side VA to help with the early development of VistA and its comprehensive Computerized Patient Record System, which incorporates CPOE. VistA also includes pharmacy, laboratory, radiology information sys-

While most private-sector healthcare systems are planning for EMR, CPOE and imaging systems, the VA—the nation's largest integrated healthcare network—is well on its way to having an interoperable combination of all three.

By Neil Versel

tems and, at about 30 hospitals, digital imaging.

"The reason we decided to computerize the medical records is because of all the problems with the paper record," Coulson says. "It really took a physician 15 to 20 minutes just to find the latest information" in a paper chart.

Coulson wrote the initial program for physicians to enter progress notes into the EMR. It was then that the VA really showed how physician leadership could triumph over bureaucratic quagmire.

"Washington wanted to hire a private vendor. I convinced Washington to give half the money to the VA and half the money to the private sector," Coulson says.

After two years, the VA had a working system, while the private sector was still doing feasibility studies.

"The reason that it worked well in the VA is because we wrote it for the VA," says Coulson.

As a result, he says, there no longer are technophobic physicians at the VA.

"(Using computers) is a condition of work," he says. "It is part of the job description."

Connecting and achieving nearly full implementation of the computerized patient record at virtually every VA healthcare facility in 50 states, the District of Columbia, three territories and even the Philippines took patience and strategy, according to Coulson.

"It didn't happen overnight, and we didn't get buy-in overnight," he says.

It took seven years before the VHA mandated physician adoption of VistA.

"You have to give your staff a deadline in

Nichol

which it will be computerized," he says. "I would start with departments that are very eager. I would also reward those who are eager."

At the VA, the earliest adopters got the newest, most powerful computers.

"The others got none of that, but they did get time," he says.

VA leadership helped ease the transition for its medical staff by naming clinical application coordinators to bridge the divide between clinicians and software developers.

"We realized early on that there is a considerable demand for support in the implementation of a computerized patient record," Nichol says.

As head of ambulatory care before taking over as CMIO, Nichol has been involved in IT implementation as both a

TWO-FOR-ONE DEAL

Both the Department of Veterans Affairs and the Department of Defense manage massive healthcare delivery networks with the help of advanced, comprehensive electronic medical records that are accessible from virtually every facility within each health system.

Although federal officials say 750,000 Americans are dually eligible for care through the Veterans Health Administration and the Military Health System—and 250,000 receive care from both systems in any given year—their records are only minimally compatible, since each EMR has its own standards.

Connectivity is coming, however.

The two departments have plans for a joint, interoperable health record. The timetable, approved by the Bush administration, calls for the next-generation VA and MHS records systems to be fully operational by 2005.

"At that point we will be able to exchange information and do the necessary checks and know what medications each vet is taking," says Robert Kolodner, M.D., acting VHA chief health informatics officer.

On March 21, the VA, DoD and the Indian Health Service of HHS announced the first set of communication and data standards for clinical information as part of the administration's Consolidated Health Informatics strategy (see April, page 2). The program calls for a governmentwide EMR standard and

Harmon

transmission channel, dubbed the Federal Health Information Exchange.

"We don't want to lose the compatibility of the data" so the EMR can trigger alerts and reminders and check to see if the patient has had recommended tests elsewhere, says Army Lt. Col. Bart Harmon, M.D., chief medical information officer at Tricare, the managed care division of MHS. "The computer is becoming an active participant in healthcare and not an alternative to paper."

Today, members of the military no longer must get one health assessment at the time of discharge from active duty and another exam at the time of entry into the VA—an expensive duplication of services funded by taxpayers.

"For several years now, at the time someone separates from the military, we do one assessment and we pass that electronic information on to the VA," says Harmon.

"We're putting a very big focus on making the information available as quickly as possible."

Since early this year, VA physicians have been able to call up MHS laboratory notes, radiology reports, discharge summaries, medication histories and patient allergy information with a single click on the VHA Computerized Patient Record System, without having to wait for the Pentagon to send the data. But they still cannot write notes to records stored on MHS computers.

—N.V.

user and a leader. "You can't anticipate what a naive user needs."

The next generation

VistA is but one of many components of the broader HealtheVet IT strategy at the VA. Other HealtheVet platforms provide supply management, clinical decision support, medical research and patient education.

The Puget Sound VA, a two-hospital network that handles 500,000 outpatient visits and 11,000 inpatient admissions per year, is one of several test sites in the VHA system that gets early versions of software. It has helped work out bugs in all major enhancements to CPRS over the last six years and was the first large VA site to test CPOE.

Right now, Puget Sound is helping lead

"... THERE IS A CONSIDER- ABLE DEMAND FOR SUPPORT IN THE IMPLEMENTATION OF A COMPUTERIZED PATIENT RECORD."   Paul Nichol, M.D.

the transition to the next generation of the VistA system, known as HealtheVet VistA.

Already quite advanced, the existing CPRS is designed to emulate paper records by having a cover sheet with basic patient information that doctors need right away and electronic tabs at the bottom of the screen to separate each part of the record.

CPRS automatically generates progress notes, codes encounter data captured at the point of care and facilitates CPOE and clinical alerts. It can print graphical displays of changes in vital signs and lab results that patients can review and take home.

Physicians enter clinical notes by keyboard and rely on templates to avoid having to retype basic patient and disease information that does not change, though many VA physicians still rely on dictation for discharge notes because these tend to run two to three pages long.

When a transcript is ready, the physician receives an electronic alert on CPRS. Only the dictating physician can view the note in the EMR until it is signed. Once signed, it cannot be changed, though it can be appended.

"We also have the ability to have countersigned notes," which is useful for notes entered by medical students, Coulson says.

ADOPTING EMR, ADAPTING TO THE FUTURE

O ver the past two years, numerous studies have shown the financial and clinical benefits of deploying physician-based electronic medical records. In the past year, numerous return on investment (ROI) studies indicate that the implementation of EMRs can improve the bottom line of physician practices. During the 2003 TEPR (Toward an Electronic Patient Record) conference, a survey indicated that more than 40% of the nonuniversity-affiliated physicians in private practices were actively investigating the selection and implementation of an EMR.

Anderson

So what is the adoption rate of EMRs? A recent survey of 4,234 practices shows that most of the practices have nine or fewer physicians and their EMR adoption rate is less than 6% overall. The rate of adoption increases as the number of physicians in the practice increases. Large practices, with more than 100 physicians, have an adoption rate over 20%, while the rate of adoption for practices of 10 to 99 physicians is less than 9%.

One of the most significant challenges facing physicians in selecting an EMR is the overabundance of choices. At last count, there were more than 200 companies selling EMR applications to physicians. Where does a physician turn for knowledge on which company is financially viable and which application is the best for their practice? Which product has the best functionality, and what functionality should be evaluated?

To help answer these questions, AC Group, my healthcare research and advisory firm, conducted a comprehensive study of the EMR marketplace during 2002 and 2003. The research and cumulative report included 3,436 func-

Up for adoption

Practice size (physicians)	Market share of practices	EMR penetration*
1 to 5	47.6%	5.2%
6 to 9	30.0	6.2
10 to 49	12.6	7.4
50 to 99	6.5	11.1
100 to 249	1.5	14.2
250+	1.0	28.1

*Estimated Source: AC Group

tional questions divided into 23 categories and four methods of operations.

A free summary of the survey is available at the AC Group Web site, acgroup.org.

Should physicians consider waiting for the coming MedPlexus EMR that is being developed and is beta testing as a low-cost option in cooperation with HIMSS and AAFP? The answer is maybe. Analysts have already indicated the product is not as functionally rich and does not provide the clinical decision support that is recommended by the Leapfrog Group.

Technology is only a tool, but it can improve the flow of information and improve the efficiency of physicians' practices when used effectively. However, if change is not embraced, the probability of success is very low.

In the 1980s, Medicare drove changes in the billing process with the adoption of the HCFA 1500. Now with newer technologies, government regulations and the right financial incentive, physicians will begin embracing new levels of technology that were unavailable only five years ago.

Mark Anderson is a healthcare futurist and IT consultant based in Spring, Texas.

Coulson

Neil Versel

A recent addition to the VA clinical IT system is bar-coded medication administration. The VA has a simple rule: If the code on the bottle does not match the code on the patient's wristband, the medicine is locked out.

A VA study of one medical center showed zero errors in 5.7 million administered doses of bar-coded medications, making the VA bar-coding system superior to the six sigma standard of one error per 3.4 million occurrences—a standard many in the private sector see as ideal.

Soon, clinicians will be required to link diagnoses to orders as an extra safety measure. The VA will begin testing this element before the end of the summer and probably launch the program late this fall. "There is an interest in just looking at practice guidelines and quality of care," says Coulson.

The last piece of the puzzle, according to Kolodner, is imaging, something that is making its way quickly to VA acute care facilities.

The VA has a few contracts with commercial picture archive communication system vendors, but Kolodner says the homegrown VistA Imaging is a much richer system than PACS because it goes beyond radiology to incorporate anything that can be imaged.

Even as they roll out imaging to as many VA hospitals as possible, VA technicians are busy constructing a data repository as part of the next-generation system. This information warehouse will help physicians perform clinical research and population analysis, as well as facilitate patient access to data.

The VHA already has launched a consumer portal called MyHealtheVet, an integral part of the health system's IT strategy. Veterans can register and sign forms digitally, make appointments, check benefits eligibility, refill prescriptions and see personal health records, including test results, through this portal.

"Many of the features in MyHealtheVet are available because we have computerized patient records," says Nichol.

Over the last decade, the development of VistA has taken the VA far beyond most other IT programs in American healthcare, setting an example for the private sector to emulate.

As Kolodner describes it: "The IOM asked, 'Can we get to the paperless record?' After they saw the VistA system, the question became, 'When can we get there?' " ■

"THE IOM ASKED, 'CAN WE GET TO THE PAPERLESS RECORD?' AFTER THEY SAW THE VISTA SYSTEM, THE QUESTION BECAME, 'WHEN CAN WE GET THERE?' "

Robert Kolodner, M.D.

DEFINING, REFINING EMR STANDARDS

While the Department of Veterans Affairs and the Military Health System work on standardizing their clinical records systems by 2005, the private sector is pitching in to develop a universal definition of an electronic medical record.

According to a proposal from the Chicago-based Healthcare Information and Management Systems Society, an EMR should be more than a digitized representation of a paper chart: It should be a real-time information resource for physicians and other practitioners at the point of care. The standard also calls for integration of clinical records with billing, quality management, outcomes reporting and public health surveillance systems.

According to the proposed definition, an EMR "automates and streamlines the clinician's workflow, ensuring all clinical information is communicated and ameliorates delays in response that result in delays or gaps in care."

A HIMSS workgroup that includes informaticists from academia, consulting firms and information technology vendors submitted its proposal last month to Health Level Seven, a health IT standards-setting organization based in Ann Arbor, Mich., and to the Institute of Medicine. HL7 has been charged by CMS and the VA with developing a universal EMR.

At press time, HL7 was preparing to issue its own recommendations for an EMR definition by Aug. 1. Following a monthlong public comment period, HL7 members will refine and vote on the recommended standard.

—N.V.