Information Everywhere: How the EHR Transformed Care at VHA

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How does the nation's largest integrated healthcare system manage health information? Here, learn how HIM professionals helped the Veterans Health Administration take advantage of EHR technology to improve care.

Think of a healthcare system with 163 medical centers, more than 850 ambulatory care and community-based outpatient clinics, and 137 nursing homes, serving 4 million patients each year. Consider nearly 30 years' worth of data stored in databases across the country, and scores of different software applications, many of them customized for local use. Now, imagine the electronic health record (EHR) system that can pull it all together.

Sound like wishful thinking? It's not. At the Veterans Health Administration (VHA), the Computerized Patient Record System (CPRS) allows clinicians to access medical records wherever patients are seen—in acute settings, clinics, exam rooms, nursing stations, and offices. The system has been implemented at all VA medical centers nationwide and at VA outpatient clinics, nursing homes, and other sites of care. This article offers a closer look at the CPRS system and how HIM supports it.

Integration Fosters Efficiency

Given its scope and degree of automation, VHA is like no other healthcare system in the world. Beginning in the late 1970s—long before such tools were commercially available—VHA developed applications for a variety of care settings, including inpatient, outpatient, home health, and long-term care. In the mid-1990s, VHA embarked on an ambitious effort to improve the coordination of care by providing integrated access to these applications through CPRS implementation. With CPRS, providers can access patient information at the point of care across multiple sites and clinical disciplines. It provides a single interface through which providers can update a patient's medical history, submit orders, and review test results and drug prescriptions.

A key factor that contributes to the effectiveness of CPRS is its degree of integration with other Veterans Health Information System and Technology Architecture (VistA) applications, such as pharmacy, radiology, laboratory, dietetics, progress notes, discharge summary, consults, problem list, VistA imaging, billing, and patient administration. CPRS provides a single graphical user interface to data from a variety of these packages, allowing users to enter, view, and update information without having to log into each application separately. Providers can quickly flip through electronic pages of the chart to review or add information.

Providers are encouraged to enter progress notes directly into CPRS, either during or after the encounter. Some providers use CPRS as an educational tool by graphing lab results so that patients can see their progress over time. For providers who prefer to dictate, notes are transcribed, then uploaded into the system and linked to progress note titles. Reports from external providers can be scanned, indexed, and incorporated into the patient's record.

CPRS also enables providers to electronically order lab tests, medications, diets, radiology tests, and procedures; record a patient's allergies or adverse reactions to medications; request and track consults; enter progress notes, diagnoses, and treatments for each encounter; and enter discharge summaries. Currently, 91 percent of VHA prescription orders are entered electronically.

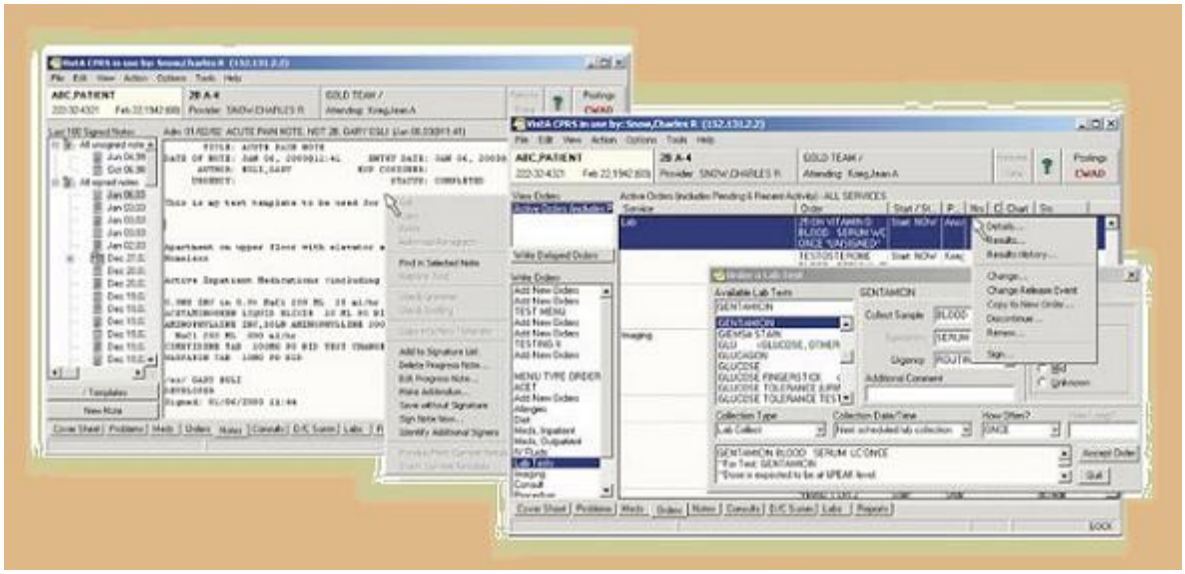
All the Data, All the Time

Although VHA is a national healthcare system, specialized services are frequently regionally located. When necessary, veterans are referred to other sites for care, or may choose to seek treatment at different sites while traveling or vacationing. CPRS's remote data views feature enables data retrieval from all VA facilities at which a patient has sought care. When a user pulls up a patient record and requests remote data views, CPRS queries the VHA master patient index to obtain a list treatment sites for that veteran, and then retrieves and displays patient data from the sites selected by the user. The user can easily review and compare data from different sites.

This capability has virtually eliminated the problem of transferring paper records from location to location to provide care by enabling the clinician to review the veteran's complete medical record at the time of care. More importantly, the remote data view feature has reduced the likelihood that duplicate tests or incompatible medications are ordered for veterans seeking care at more than one site.

The benefits of the EHR to providers and patients are obvious: immediate access to information, elimination of duplicate orders, increased patient safety, and improved information-sharing. VHA scientists, quality managers, and decision makers also use CPRS to collect data for clinical research, quality assurance, program planning, and financial management. A single record can be accessed simultaneously by multiple users at different sites for a variety of purposes. CPRS has been enhanced and refined continuously since its initial implementation, and has been recognized in the mainstream press as one of the most sophisticated EHR systems in the world.[1] As the system has evolved, so has VHA's approach to HIM.

a view of VHA's EHR



New Responsibilities, Roles for HIM

In a paper-based environment, a lot of time is spent simply managing paper. Entire jobs are devoted to filing, retrieving, copying, and distributing paper. The transition to an EHR does not eliminate these activities, but it reduces their frequency as users are able to access the information they need without the involvement of the HIM department.

At VHA medical centers, the file room only pulls paper records upon request; for example, when a clinician needs information that was filed prior to implementation of CPRS. Some file clerks have been retrained to perform scanning and indexing of non-electronic documentation. Most VHA sites have been able to decrease the size of their file room staffs through attrition, while some sites have eliminated their file rooms altogether. The use of CPRS has also increased the efficiency of VHA release of information (ROI) personnel, who are able to fill the majority of requests by printing CPRS reports, rather than pulling and copying paper records.

Like other healthcare organizations, VHA continues to struggle with staffing shortages in many HIM areas. The EHR helps to alleviate this problem by enabling some HIM personnel to work at home or other locations. Transcription, coding, abstracting,

quality review, and ROI processing are a few of the HIM functions that can be performed remotely. This flexibility is a benefit that helps VHA recruit and retain qualified HIM professionals.

While the time spent on paper management has decreased dramatically, the time spent on data and system management has increased. The implementation of CPRS has even produced a new job classification within VHA—the clinical application coordinator (CAC). The CAC serves as a bridge between the provider and the technical staff and is responsible for managing the installation and implementation of new CPRS software at the medical center. CACs come from a variety of backgrounds, including HIM, nursing, pharmacy, and laboratory.

In recognition of these growing data management responsibilities, the organizational alignment of the VHA HIM program changed with the implementation of the EHR. Prior to CPRS, HIM was part of an administrative program office. In 1998, it was moved to the office of information, where it is now part of the health informatics program. As part of the office of information, HIM staff work closely with developers, trainers, and customer support teams, and serve as the liaison to providers, policy makers, and operations managers. HIM is actively involved in the development of functional requirements, user interfaces, business processes, and policy guidance for the field, and participates in virtually every national software development effort in VHA.

HIM Involvement Needed from Step One

HIM involvement is essential during the initial development of an EHR to ensure that the functionality of the automated system reflects acceptable business processes. Policies governing legal access to patient information, or the signature of clinical documents, for example, must be consistently applied whether the system is paper based or electronic. Yet implementation of an EHR changes the way people work within the facility and often requires adjustments to both administrative and clinical work processes. The design of an effective EHR system requires the collaboration of many people, including providers, business users, developers, and HIM professionals.

In VHA, the HIM program provides guidance on a broad range of design and policy issues related to privacy, security, tracking and auditing of user access, and data standardization. HIM professionals work closely with the VA office of general counsel to ensure that automated systems include adequate privacy and security protections in accordance with the Privacy Act of 1974, HIPAA, and other regulatory requirements.

In 2002, for example, VHA implemented a new version of CPRS that enables medical centers to grant authorized users read-only access to veterans' individually identifiable health information, and to restrict a user's access to a specific set of patient records. Among the users of this tool are representatives of veterans service organizations (VSOs) to whom the veteran has granted power of attorney. They help veterans prepare claims for disability awards based on information documented in the medical record and need to search the record for information to support or refute the claim. HIM worked with a cross-functional team to design security and confidentiality protections, prepare guidance and training materials for users and sites, and conduct demonstrations of the system for VSO groups. Read-only access can also be used by VHA billing clerks, quality reviewers, or other authorized users who need to review the information in a patient record, but are not authorized to make entries or modifications to it.

The Privacy Act and HIPAA privacy legislation require VA medical centers to amend health information as requested by the patient, if approved by the appropriate clinician. The electronic environment necessitates a different approach to amendments to medical record documentation and specific procedures for requesting amendments must be developed. Ongoing HIM oversight and training are required to ensure compliance. HIM managers at VHA medical centers also serve as privacy officers and have a great deal of experience with the requirements of the Privacy Act.

The Importance of Standardization

Like most EHRs, CPRS allows users to quickly search for specific medical terms, dates of care, diagnoses, and other information without having to review multiple documents. Although this is a helpful tool, information retrieval can be hampered by a lack of standard naming conventions. Virtually all clinical documents throughout VHA are stored in CPRS; as a result, patient records containing hundreds or thousands of notes are becoming common. As the volume of online information increases, the task of finding a specific note or report among them can be difficult, particularly when different clinicians and sites assign different names to similar documents. A recent article in the *Journal of the American Medical Informatics*

Association described VHA's efforts to speed retrieval of clinical information by creating a controlled terminology for indexing the information stored in CPRS.[2] This collaboration among clinicians, developers, and HIM professionals will improve document selection and support the ability to transfer and incorporate documents from other facilities.

The ability to aggregate and compare information from multiple sites has reinforced the importance of standardization for computable data as well. VHA is developing a health data repository to store clinical information transmitted from VHA sites across the country. The repository will provide a central source of data for analysis, management reporting, performance monitoring, and research. Yet the ability to aggregate this data from different sites will depend on the degree to which data fields are standardized. The HIM program provides expertise in the areas of data content, data quality, and health data standards.

VHA participates with other federal agencies in the Consolidated Health Informatics (CHI) initiative (a part of the eGov initiative), and works closely with the Department of Defense (DoD) and the Department of Health and Human Services (HHS) on related projects.[3] CHI was established to foster the adoption of federal interoperability standards related to healthcare as part of a joint strategy for developing an EHR.

DoD and VHA have already endorsed the use of several standards, including the LOINC laboratory terminology; Health Level Seven versions 2.4 and higher; XML Enabled; and X12 EDI transaction sets in support of HIPAA regulations. DoD laboratory, radiology, and pharmacy data is now available through CPRS via the remote data view feature. This provides greater continuity of care as veterans make the transition from DoD to VHA healthcare.

The formal adoption and integration of standards will help VHA meet legislative requirements, enable more efficient system development and everyday business operations, and support the sharing of health information between VHA and its business partners. The health informatics program has been charged with overseeing VHA standardization efforts and coordinating the adoption of standards throughout the organization.

To the Web and Beyond

In 2002, VHA processed more than 1 million requests from veterans for copies of their health information. Such requests are processed through VHA ROI offices. As the use of personal computers among veterans has increased, so has the interest in electronic access to medical information.

The VHA My HealtheVet project was conceived as a way to help veterans manage their personal health data. This tool, currently being tested, is an Internet-based, secure system that will provide veterans key parts of their VHA health information. My HealtheVet will enable them to enter, view, and update their own health information. With this tool, veterans will be able to consolidate and monitor their own health records and share this information with non-VHA clinicians and others involved in their care. VHA is also working with DoD and other partner organizations to develop a longitudinal health record that will incorporate information from DoD, VHA, and private-sector health providers from whom the veteran has sought care.

In VHA, CPRS is no longer a novelty. It is accepted as the standard tool for the provision of healthcare in VHA. Now the focus is moving from technical implementation issues to those involving data quality, content, standardization, and greater interaction with other electronic systems. As VHA refines and expands its use of electronic data, the HIM program will continue to provide expertise in the development, implementation, and oversight of the EHR system.

Clinicians Go to Camp

The support of clinicians is essential to the successful implementation of any EHR, and ease of access to patient information is often the benefit that spurs their interest. The ability to look up lab results quickly, retrieve findings from an operation performed at another location, or identify chart deficiencies from their homes can increase staff efficiency and make paperwork less cumbersome. However, while clinicians are often the greatest proponents of an EHR, they can also be its harshest critics. At VHA, physicians, nurses, and other providers are actively involved in defining requirements and business rules, prioritizing enhancements, and conducting end-user testing; this involvement

increases user acceptance, minimizes disruption during upgrades, and most importantly, enables VHA to tailor the system to the users' needs.

Part of the VHA effort to encourage clinician involvement in the development and use of the EHR is Camp CPRS. This annual meeting brings together clinicians, clinical application coordinators, HIM professionals, and software developers. Clinicians and their informatics support teams are taught how to maximize the functionality of the software to improve patient care, increase provider efficiency, and meet performance measures. Camp participants can attend hands-on training sessions, workshops on templates and other customizable features, presentations on legal aspects to implementation, and panel discussions tailored to different user groups. Users have the opportunity to hone their skills, interact with their colleagues across the country, talk directly to developers, and propose new features for implementation. In 2002, more than 1,100 VHA professionals participated in Camp CPRS.

Document Imaging as Last Resort

Although the balance has shifted from paper to electronic documentation, some degree of document scanning is still needed to achieve a completely electronic health record in VHA. Over the years, VHA has pilot-tested several commercial imaging products and still has some commercial document scanning products in operation. VHA recently expanded its hospital information system capabilities to include document imaging, with the goal of having document imaging operational at all VHA locations by 2004. One challenge for the HIM staff is to keep document imaging to a minimum and not encourage imaging as an alternative to direct entry of textual information. VHA has not yet deployed electronic patient signature capability, and therefore, items that require a handwritten signature are scanned. However, clinicians are encouraged to directly enter progress notes, discharge summaries, and operative reports or to dictate when necessary.

Notes

1. Rundle, Rhonda L. "Oft-Derided Veterans Health Agency Puts Data Online, Saving Time, Lives." *The Wall Street Journal* (December 10, 2001).

2. Brown, Steven H. et al. "Derivation and Evaluation of a Document-naming Nomenclature." *Journal of the American Medical Informatics Association* 8, no. 4 (2001): 379 - 389.

3. For more information on the eGov initiative and CHI, go to http://egov.gov.

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Charles Arceneaux
Susan Helbig, RHIA
Karla Porter, RHIA
Phyllis Sullivan, RHIA
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Article citation:
Graham, Gail, et al. "Information Everywhere: How the EHR Transformed Care at VHA." *Journal of AHIMA* 74, no.3 (2003): 20-24.