

GAO

Testimony

Before the Subcommittee on Oversight
and Investigations, Committee on
Veterans' Affairs, House of
Representatives

For Release on Delivery
Expected at 10:00 a.m. EDT
Wednesday, October 24, 2007

INFORMATION
TECHNOLOGY

VA and DOD Continue to
Expand Sharing of Medical
Information, but Still Lack
Comprehensive Electronic
Medical Records

Statement of Valerie C. Melvin, Director
Human Capital and Management Information
Systems Issues





Highlights of [GAO-08-207T](#), a testimony before the Subcommittee on Oversight and Investigations, Committee on Veterans' Affairs, House of Representatives

Why GAO Did This Study

The Department of Veterans Affairs (VA) and the Department of Defense (DOD) are engaged in ongoing efforts to share medical information, which is important in helping to ensure high-quality health care for active-duty military personnel and veterans. These efforts include a long-term program to develop modernized health information systems based on computable data: that is, data in a format that a computer application can act on—for example, to provide alerts to clinicians of drug allergies. In addition, the departments are engaged in short-term initiatives involving existing systems.

GAO was asked to testify on the history and current status of the departments' efforts to share health information. To develop this testimony, GAO reviewed its previous work, analyzed documents about current status and future plans and interviewed VA and DOD officials.

What GAO Recommends

GAO has previously made several recommendations on this topic, including that VA and DOD develop a detailed project management plan to guide their efforts to share patient health data. While the departments agreed with these recommendations, a comprehensive overall strategy that incorporates all of the ongoing activities still needs to be implemented.

www.gao.gov/cgi-bin/getrpt?GAO-08-207T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Valerie Melvin at (202) 512-6304 or melvinv@gao.gov.

INFORMATION TECHNOLOGY

VA and DOD Continue to Expand Sharing of Medical Information, but Still Lack Comprehensive Electronic Medical Records

What GAO Found

For almost a decade, VA and DOD have been pursuing ways to share health information and to create comprehensive electronic medical records. However, they have faced considerable challenges in these efforts, leading to repeated changes in the focus of their initiatives and target completion dates. Currently, the two departments are pursuing both long- and short-term initiatives to share health information. Under their long-term initiative, the modern health information systems being developed by each department are to share standardized computable data through an interface between data repositories associated with each system. The repositories have now been developed, and the departments have begun to populate them with limited types of health information. In addition, the interface between the repositories has been implemented at seven VA and DOD sites, allowing computable outpatient pharmacy and drug allergy data to be exchanged. Implementing this interface is a milestone toward the departments' long-term goal, but more remains to be done. Besides extending the current capability throughout VA and DOD, the departments must still agree to standards for the remaining categories of medical information, populate the data repositories with this information, complete the development of the two modernized health information systems, and transition from their existing systems.

While pursuing their long-term effort to develop modernized systems, the two departments have also been working to share information in their existing systems. Among various short-term initiatives are a completed effort to allow the one-way transfer of health information from DOD to VA when service members leave the military, as well as ongoing demonstration projects to exchange limited data at selected sites. One of these projects, which builds on the one-way transfer capability, developed an interface between certain existing systems that allows a two-way view of current data on patients receiving care from both departments. VA and DOD are now expanding the sharing of additional medical information by using this interface to link other systems and databases. The departments have also established ad hoc processes to meet the immediate need to provide data on severely wounded service members to VA's polytrauma centers, which specialize in treating such patients. These processes include manual workarounds (such as scanning paper records) that are generally feasible only because the number of polytrauma patients is small. While these multiple initiatives and ad hoc processes have facilitated degrees of data sharing, they nonetheless highlight the need for continued efforts to integrate information systems and automate information exchange. At present, it is not clear how all the initiatives are to be incorporated into an overall strategy focused on achieving the departments' goal of comprehensive, seamless exchange of health information.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be a part of today's continuing dialogue on efforts by the Department of Veterans Affairs (VA) and the Department of Defense (DOD) to share electronic medical information. Over most of the past decade, the departments have been pursuing initiatives to share electronic medical information to help ensure that active-duty military personnel and veterans receive high-quality health care. The departments' efforts have included working towards a long-term vision of a single "comprehensive, lifelong medical record"¹ that would allow each service member to transition seamlessly between the two departments, as well as more short-term efforts focused on meeting immediate needs to exchange health information, including responding to current military crises.

Since 2001, we have reported or testified numerous times on the various initiatives undertaken by the departments to develop the capability to share health information. Our last testimony before this Subcommittee on May 8, 2007, highlighted key projects that the departments have pursued in this regard and the progress of their activities.² At your request, my statement today further discusses the history and current status of the departments' efforts.

The information in my testimony is based largely on our previous work in this area. To describe the history and current status of the departments' efforts to exchange patient health information, we reviewed our previous work, analyzed documents on various health initiatives, and interviewed VA and DOD officials about current status and future plans. We conducted our work in support of this testimony during October 2007 in the Washington, D.C., area. Information on costs that have been incurred for the various projects was provided by responsible officials at each department. We did not audit the reported costs and thus cannot attest to their accuracy or completeness. All work on which this testimony is based

¹In 1996, the Presidential Advisory Committee on Gulf War Veterans' Illnesses reported on many deficiencies in VA's and DOD's data capabilities for handling service members' health information. In November 1997, the President called for the two agencies to start developing a "comprehensive, lifelong medical record for each service member," and in 1998 issued a directive requiring VA and DOD to develop a "computer-based patient record system that will accurately and efficiently exchange information."

²GAO, *Information Technology: VA and DOD Are Making Progress in Sharing Medical Information, but Are Far from Comprehensive Electronic Medical Records*, [GAO-07-852T](#) (Washington, D.C.: May 8, 2007).

was conducted in accordance with generally accepted government auditing standards.

Results in Brief

VA and DOD have been pursuing initiatives to share data between their health information systems and create comprehensive electronic medical records since 1998, following a call for the development of a comprehensive, integrated system to allow the two departments to share patient health information. However, the departments have faced considerable challenges in project planning and management, leading to repeated changes in the focus of their initiatives and target completion dates. In prior reviews of their efforts, we noted management weaknesses such as inadequate accountability and poor planning and oversight and made recommendations for improvement, including the development of a comprehensive and coordinated project management plan that defines the technical and managerial processes necessary to satisfy project requirements and to guide their activities. In response, by July 2002, VA and DOD revised their strategy, refocusing the project and dividing it into long-term and short-term initiatives. For the long term, both departments are modernizing their health information systems to replace their existing (legacy) systems and enable the new systems to share data and, ultimately, to have interoperable³ electronic medical records. Unlike the legacy systems, the modernized systems are to be based on computable data—data that can be automatically processed in a healthcare system to, for example, provide alerts to clinicians on drug allergies, or to plot graphs of changes in vital signs such as blood pressure. For the short-term initiative, the departments focused on sharing information in existing systems.

VA and DOD have made progress in both their long-term and short-term initiatives, but much work remains to achieve the goal of interoperable electronic medical records and a seamless transition between the two departments. In the long-term project to develop modernized health information systems, the departments have begun to implement the first release of the interface between their modernized data repositories, and computable outpatient pharmacy and drug allergy data are being exchanged at seven VA and DOD sites. However, significant work remains, including agreeing to standards for the remaining categories of medical information and populating the data repositories with all this information.

³Interoperability is the ability of two or more systems or components to exchange information and to use the information that has been exchanged.

Regarding their short-term projects to share information in existing systems, the departments completed the Federal Health Information Exchange in 2004, and as of this month reported transferring clinical data on more than 4 million veterans. In addition, they have made progress on two demonstration projects: (1) the Laboratory Data Sharing Interface, deployed at 9 localities, allows the departments to communicate orders for lab tests and their results electronically and (2) the Bidirectional Health Information Exchange allows a real-time, two-way view of certain outpatient health data from existing systems⁴ at all VA and DOD sites, and certain inpatient discharge summary data⁵ at all VA sites and 13 large DOD sites. Further, the two departments have undertaken ad hoc activities to accelerate the transmission of health information on severely wounded patients from DOD to VA's four polytrauma centers, which care for veterans and service members with severe traumatic brain injuries or disabling injuries to more than one physical region or organ system. These ad hoc processes include manual workarounds, such as scanning paper records and individually transmitting radiological images, which are generally feasible only because the number of polytrauma patients is small (according to VA officials, about 460 with traumatic brain injuries to date).

Through all of these efforts, VA and DOD are exchanging health information. However, these exchanges have been limited, and it is not yet clear how they are to be integrated into an overall strategy to reach the departments' long-term goal of a comprehensive, seamless exchange of health information. Accordingly, as we have previously recommended, it remains critical for the departments to develop a comprehensive project plan that can guide their efforts to completion.

Background

In their efforts to modernize their health information systems and share medical information, VA and DOD start from different positions. As shown in table 1, VA has one integrated medical information system—the Veterans Health Information Systems and Technology Architecture (VistA)—which uses all electronic records. All 128 VA medical sites thus

⁴DOD's Composite Health Care System (CHCS) and VA's VistA (Veterans Health Information Systems and Technology Architecture).

⁵Specifically, inpatient discharge summary data stored in VA's VistA and DOD's Clinical Information System (CIS), a commercial health information system customized for DOD.

have access to all VistA information.⁶ (Table 1 also shows, for completeness, VA’s planned modernized system and its associated data repository.)

Table 1: VA Medical Information Systems and Data Base

System name	Description
<i>Legacy systems</i>	
VistA Veterans Health Information Systems and Technology Architecture	Existing integrated health information system
<i>Modernized system and repository</i>	
HealtheVet VistA	Modernized health information system based on computable data
HDR Health Data Repository	Data repository associated with modernized system

Source: GAO analysis of VA data.

In contrast, DOD has multiple medical information systems (table 2 illustrates certain selected systems). DOD’s various systems are not integrated, and its 138 sites do not necessarily communicate with each other. In addition, not all of DOD’s medical information is electronic: some records are paper-based.

⁶A site represents one or more facilities—medical centers, hospitals, or outpatient clinics—that store their electronic health data in a single database.

Table 2: Selected DOD Medical Information Systems and Data Bases

System name		Description
<i>Legacy systems</i>		
CHCS	Composite Health Care System	Primary existing DOD health information system
CIS	Clinical Information System	Commercial health information system customized for DOD; used by some DOD facilities for inpatients
ICDB	Integrated Clinical Database	Health information system used by many Air Force facilities
TMDS	Theater Medical Data Store	Database to collect electronic medical information in combat theater for both outpatient care and serious injuries
JPTA	Joint Patient Tracking Application	Web-based application primarily used to track the movement of patients as they are transferred from location to location, but may include text-based medical information
<i>Modernized system and repository</i>		
AHLTA	Armed Forces Health Longitudinal Technology Application ^a	Modernized health information system, integrated and based on computable data
CDR	Clinical Data Repository	Data repository associated with modernized system

Source: GAO analysis of DOD data.

^aFormerly CHCS II.

VA and DOD Have Been Working to Exchange Health Information Since 1998

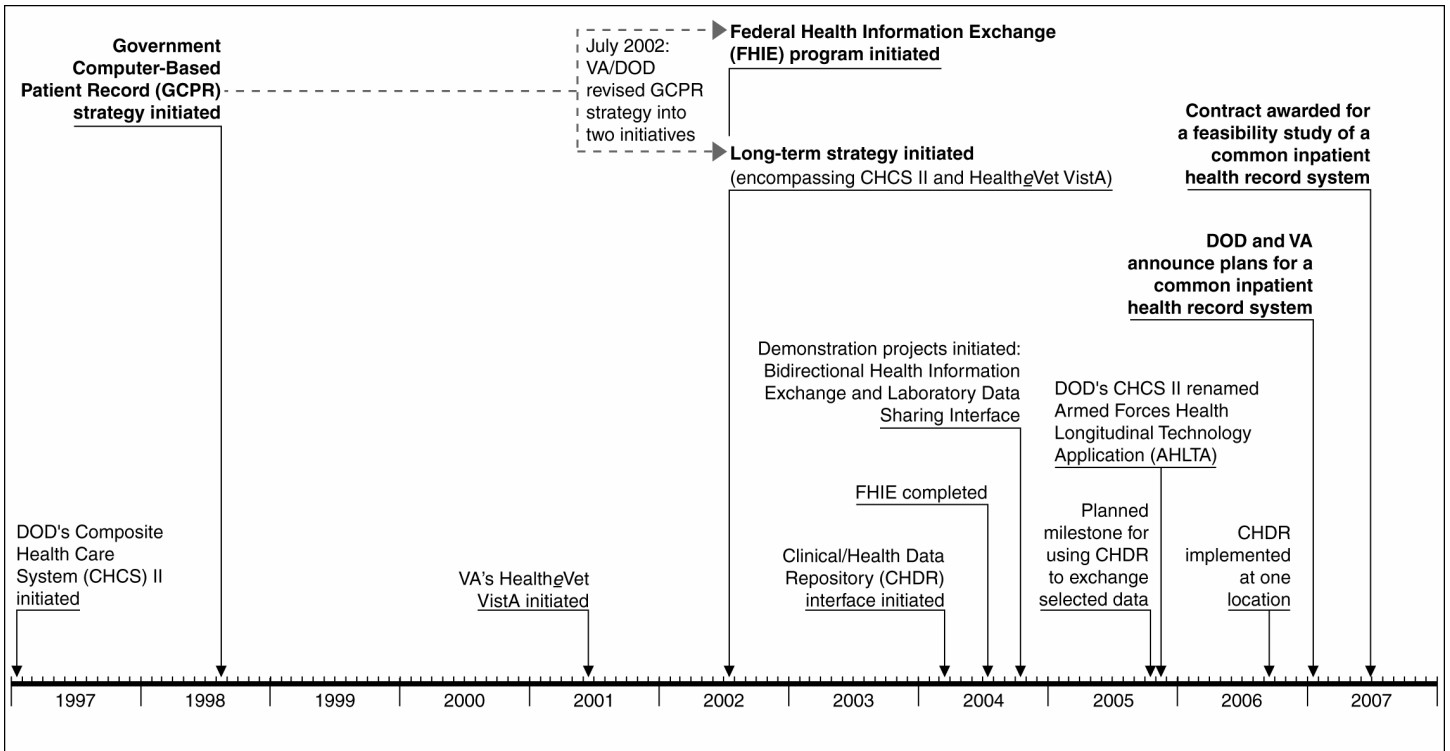
For nearly a decade, VA and DOD have been undertaking initiatives to exchange data between their health information systems and create comprehensive electronic records.⁷ However, the departments have faced considerable challenges in project planning and management, leading to repeated changes in the focus and target completion dates of the initiatives.

As shown in figure 1, the departments' efforts have involved both long-term initiatives to modernize their health information systems⁸ and short-term initiatives to respond to more immediate information-sharing needs.

⁷Initially, the Indian Health Service (IHS) was also a party to this effort, having been included because of its population-based research expertise and its longstanding relationship with VA. However, IHS was not included in a later revised strategy for electronically sharing patient health information.

⁸DOD began efforts to modernize its existing health information system (CHCS) in 1997 and VA began efforts to modernize its existing health information system (VistA) in 2001.

Figure 1: Timeline of Selected VA/DOD Electronic Medical Records and Data Sharing Efforts



Source: GAO analysis of VA and DOD data.

The departments' first initiative was the Government Computer-Based Patient Record (GCPR) project, which aimed to develop an electronic interface that would allow physicians and other authorized users at VA and DOD health facilities to access data from each other's health information systems. The interface was expected to compile requested patient information in a virtual record (that is, electronic as opposed to paper) that could be displayed on a user's computer screen.

We reviewed the GCPR project in 2001 and 2002, noting disappointing progress exacerbated in large part by inadequate accountability and poor planning and oversight, which raised questions about the departments' abilities to achieve a virtual medical record. We determined that the lack of a lead entity, clear mission, and detailed planning to achieve that mission made it difficult to monitor progress, identify project risks, and

develop appropriate contingency plans.⁹ In both years, we recommended that the departments enhance the project's overall management and accountability. In particular, we recommended that the departments designate a lead entity and a clear line of authority for the project; create comprehensive and coordinated plans that include an agreed-upon mission and clear goals, objectives, and performance measures; revise the project's original goals and objectives to align with the current strategy; commit the executive support necessary to adequately manage the project; and ensure that it followed sound project management principles.

In response, by July 2002, the two departments had revised their strategy, refocusing the project and dividing it into two initiatives. A short-term initiative, the Federal Health Information Exchange (FHIE), was to enable DOD to electronically transfer service members' health information to VA when the members left active duty. VA was designated as the lead entity for implementing FHIE, which was completed in 2004. A longer-term initiative was to develop a common health information architecture that would allow a two-way exchange of health information. The common architecture is to include standardized, computable data, communications, security, and high-performance health information systems (these systems, DOD's Composite Health Care System II and VA's *HealthVet VistA*, were already in development, as shown in the figure).¹⁰ The departments' modernized systems are to store information (in standardized, computable form) in separate data repositories: DOD's Clinical Data Repository (CDR) and VA's Health Data Repository (HDR). The two repositories are to exchange information through an interface named CHDR.¹¹

In March 2004, the departments began to develop the CHDR interface. They planned to begin implementation by October 2005;¹² however, implementation of the first release of the interface (at one site) occurred

⁹GAO, *Veterans Affairs: Sustained Management Attention Is Key to Achieving Information Technology Results*, GAO-02-703 (Washington, D.C.: June 12, 2002) and *Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing*, GAO-01-459 (Washington, D.C.: Apr. 30, 2001).

¹⁰DOD's existing Composite Health Care System (CHCS) was being modernized as CHCS II, now renamed AHLTA (Armed Forces Health Longitudinal Technology Application). VA's existing *VistA* system was being modernized as *HealthVet VistA*.

¹¹The name CHDR, pronounced "cheddar," combines the names of the two repositories.

¹²December 2004 VA and DOD Joint Strategic Plan.

in September 2006, almost a year beyond the target date. In a report in June 2004,¹³ we identified a number of management weaknesses that could have contributed to this delay and made a number of recommendations, including creation of a comprehensive and coordinated project management plan. The departments agreed with our recommendations and took steps to improve the management of the CHDR initiative, designating a lead entity with final decision-making authority and establishing a project management structure. However, as we noted in subsequent testimony,¹⁴ the initiative did not have a detailed project management plan that described the technical and managerial processes necessary to satisfy project requirements (including a work breakdown structure and schedule for all development, testing, and implementation tasks), as we had recommended.

In October 2004, responding to a congressional mandate,¹⁵ the departments established two more short-term initiatives: the Laboratory Data Sharing Interface, aimed at allowing VA and DOD facilities to share laboratory resources, and the Bidirectional Health Information Exchange (BHIE), aimed at giving both departments' clinicians access to records on shared patients (that is, those who receive care from both departments).¹⁶ As demonstration projects, these initiatives were limited in scope, with the intention of providing interim solutions to the departments' needs for more immediate health information sharing. However, because BHIE provided access to up-to-date information, the departments' clinicians

¹³GAO, *Computer-Based Patient Records: VA and DOD Efforts to Exchange Health Data Could Benefit from Improved Planning and Project Management*, [GAO-04-687](#) (Washington, D.C.: June 7, 2004).

¹⁴GAO, *Computer-Based Patient Records: VA and DOD Made Progress, but Much Work Remains to Fully Share Medical Information*, [GAO-05-1051T](#) (Washington, D.C.: Sept. 28, 2005) and *Information Technology: VA and DOD Face Challenges in Completing Key Efforts*, [GAO-06-905T](#) (Washington, D.C.: June 22, 2006).

¹⁵The Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Pub. L. No. 107-314, § 721, Dec. 2, 2002) mandated that the departments conduct demonstration projects to test the feasibility, advantages, and disadvantages of measures and programs designed to improve the sharing and coordination of health care and health care resources between the departments.

¹⁶To create BHIE, the departments drew on the architecture and framework of the information transfer system established by the FHIE project. Unlike FHIE, which provides a one-way transfer of information to VA when a service member separates from the military, the two-way system allows clinicians in both departments to view, in real time, limited health data (in text form) from the departments' current health information systems.

expressed strong interest in expanding its use. As a result, the departments began planning to broaden this capability and expand its implementation considerably. Extending BHIE connectivity could provide each department with access to most data in the other's legacy systems, until such time as the departments' modernized systems are fully developed and implemented. According to a VA/DOD annual report¹⁷ and program officials, the departments now consider BHIE an interim step in their overall strategy to create a two-way exchange of electronic medical records.

The departments' reported costs for the various sharing initiatives and the modernization of their health information systems through fiscal year 2007 are shown in table 3.

Table 3: Reported Costs of VA and DOD Initiatives since inception

Project	VA expenditure	DOD expenditure
HealthVet Vista	\$681.7 million through FY 2006	—
AHLTA	—	\$954.3 million through FY 2007 (estimated)
Joint initiatives:		
CHDR	4.1 million	DOD does not account for these projects separately.
FHIE	65.5 million	
LDSI	2.8 million	
BHIE	6.3 million	
Total	\$78.7 million	\$89.7 million through FY 2007

Source: VA and DOD data.

Beyond these initiatives, in January 2007, the departments announced a further change to their information-sharing strategy: their intention to jointly develop a new inpatient medical record system. On July 31, 2007, they awarded a contract for a feasibility study.¹⁸ According to the departments, adopting this joint solution is expected to facilitate the seamless transition of active-duty service members to veteran status, and make inpatient health care data on shared patients immediately accessible to both DOD and VA. In addition, the departments believe that a joint

¹⁷December 2004 VA and DOD Joint Strategic Plan.

¹⁸The contract is for a 6-month base period, with a follow-on 6-month option period. The cost for the 6-month base period is about \$2 million.

development effort could enable them to realize significant cost savings. We have not evaluated the departments' plans or strategy for this new system.

Other Evaluations Have Recommended Strengthening the Management and Planning of the Departments' Health Information Initiatives

Throughout the history of these initiatives, evaluations besides our own have found deficiencies in the departments' efforts, especially with regard to the lack of comprehensive planning. For example, a recent presidential task force identified the need for VA and DOD to improve their long-term planning.¹⁹ This task force, reporting on gaps in services provided to returning veterans, noted problems in sharing information on wounded service members, including the inability of VA providers to access paper DOD inpatient health records. The task force stated that although significant progress has been made towards sharing electronic information, more needs to be done, and recommended that VA and DOD continue to identify long-term initiatives and define the scope and elements of a joint inpatient electronic health record. In addition, in fiscal year 2006, Congress did not provide all the funding requested for *HealtheVet VistA* because it did not consider that the funding had been adequately justified.

VA and DOD Are Exchanging Limited Medical Information, but a Seamlessly Shared Medical Record Will Require Much More Work

VA and DOD have made progress in both their long-term and short-term initiatives to share health information. In the long-term project to modernize their health information systems, the departments have begun, among other things, to implement the first release of the interface between their modernized data repositories. The departments have also made progress in their short-term projects to share information in existing systems, having completed two initiatives, and are making important progress on another. In addition, the departments have undertaken ad hoc activities to accelerate the transmission of health information on severely wounded patients from DOD to VA's four polytrauma centers. However, despite the progress made and the sharing achieved, the tasks remaining to reach the goal of a shared electronic medical record are substantial.

¹⁹Task Force on Returning Global War on Terror Heroes, *Report to the President* (Apr. 19, 2007).

VA and DOD Have Begun Deployment of a Modernized Data Interface

In their long-term effort to share health information, VA and DOD have completed the development of their modernized data repositories, agreed on standards for various types of data, and begun to populate the repositories with these data.²⁰ In addition, they have now implemented the first release of the CHDR interface. According to the departments' officials, all DOD sites can now access the interface, and it is expected to be available across VA when necessary software updates are released. (Currently 103 of 128 VA sites have received these updates.)²¹ At 7 sites, VA and DOD are now exchanging limited medical information for shared patients: specifically, computable outpatient pharmacy and drug allergy information.

CHDR is the conduit for exchanging computable medical information between the departments. Data transmitted via the interface are permanently stored in each department's new data repository, CDR, and HDR. Once in the repositories, these computable data can be used by DOD and VA at all sites through their existing systems. CHDR also provides terminology mediation (translation of one agency's terminology into the other's). The departments' plans call for further developing the capability to exchange computable laboratory results data through the interface during fiscal year 2008.

Although implementing this interface is an important accomplishment, the departments are still a long way from completing the modernized health information systems and comprehensive longitudinal health records. While DOD and VA had originally projected completion dates of 2011 and 2012, respectively, for their modernized systems, the departments' officials told us that there is currently no scheduled completion date for either system. VA is evaluating a proposal that would result in completion of its system in 2015; DOD is evaluating the impact of the new study on a joint inpatient medical record and has not indicated a new completion date.

Further, both departments have still to identify the next types of data to be stored in the repositories. The departments will then have to populate the

²⁰DOD has populated CDR with information for outpatient encounters, drug allergies, and order entries and results for outpatient pharmacy/lab orders. VA has populated HDR with patient demographics, vital signs records, allergy data, and outpatient pharmacy data; in July, the department added chemistry and hematology, and in September, microbiology.

²¹The Remote Data Interoperability software upgrade provides the capability for the automated checks and alerts allowed by computable data.

repositories with the standardized data. This involves different tasks for each department. Specifically, while VA's medical records are already electronic, it must still convert them into the interoperable format appropriate for its repository. DOD, in addition to converting current records from its multiple systems, must also address medical records that are not automated. As pointed out by a recent Army Inspector General's report, some DOD facilities are having problems with hard copy records.²² The report also identified inaccurate and incomplete health data as a problem to be addressed. Before the departments can achieve the long-term goal of seamless sharing of medical information, all of these tasks and challenges will have to be addressed. Accordingly, it is essential that the departments develop a comprehensive project plan to guide these efforts to completion, as we have previously recommended.

Short-Term Projects Are Allowing VA and DOD to Exchange Limited Health Information

In addition to the long-term effort previously described, the two departments have made some progress in meeting immediate needs to share information in their respective legacy systems through short-term projects which, as mentioned earlier, are in various stages of completion. They have also set up special processes to transfer data from DOD facilities to VA's polytrauma centers in a further effort to more effectively treat traumatic brain injuries and other especially severe injuries.

One-Way Transfer Capability Is Operational

DOD has been using FHIE to transfer information to VA since 2002. According to DOD officials, 194 million clinical messages on more than 4 million veterans had been transferred to the FHIE data repository as of September 2007, including laboratory results, radiology results, outpatient pharmacy data, allergy information, consultation reports, elements of the standard ambulatory data record, and demographic data. Further, since July 2005, FHIE has been used to transfer pre- and post-deployment health assessment and reassessment data; as of September 2007, VA had access to data for more than 793,000 separated service members and demobilized Reserve and National Guard members who had been deployed. Transfers are done in batches once a month, or weekly for veterans who have been referred to VA treatment facilities. According to a joint VA/DOD report,²³ FHIE has made a significant contribution to the delivery and continuity of

²²Inspector General, Army, *Army Physical Disability Evaluation System Inspection* (March 2007).

²³December 2004, VA and DOD Joint Strategic Plan.

Laboratory Interface Initiative Allows VA and DOD to Share Lab Resources

care of separated service members as they transition to veteran status, as well as to the adjudication of disability claims.

One of the departments' demonstration projects—the Laboratory Data Sharing Interface (LDSI)—is now fully operational and is deployed when local agencies have a business case for its use and sign an agreement. It requires customization for each locality and is currently deployed at nine locations. LDSI currently supports a variety of chemistry and hematology tests, and, at one of the nine locations, anatomic pathology and microbiology tests.

Once LDSI is implemented at a facility, the only nonautomated action needed for a laboratory test is transporting the specimens. If a test is not performed at a VA or DOD doctor's home facility, the doctor can order the test, the order is transmitted electronically to the appropriate lab (the other department's facility or in some cases a local commercial lab), and the results are returned electronically.

Among the benefits of the LDSI interface, according to VA and DOD, are increased speed in receiving laboratory results and decreased errors from manual entry of orders. The LDSI project manager in San Antonio stated that another benefit of the project is the time saved by eliminating the need to rekey orders at processing labs to input the information into the laboratories' systems. Additionally, the San Antonio VA facility no longer has to contract out some of its laboratory work to private companies, but instead uses the DOD laboratory.

Two-Way Interface Allows Real-Time Viewing of Text Information

Developed under a second demonstration project, the BHIE interface permits a medical care provider to query selected health information on patients from all VA and DOD sites and to view that data onscreen almost immediately. It not only allows the two departments to view each other's information, but it also allows DOD sites to see previously inaccessible data at other DOD sites.

VA and DOD have been making progress on expanding the BHIE interface. As initially developed, the interface provided access to information in VA's VistA and DOD's Composite Health Care System, but it is currently being expanded to query data in other DOD systems and databases. In particular, the interface has been expanded to DOD's:

- Modernized data repository, CDR, which has enabled department-wide access to outpatient data for pharmacy and inpatient and outpatient

allergy, radiology, chemistry, and hematology data since July 2007, and to microbiology data since September 2007.

- Clinical Information System (CIS), an inpatient system used by some DOD facilities; the interface enables bidirectional views of discharge summaries and is currently deployed at 13 large DOD sites.
- Theater Medical Data Store, which became operational in October 2007, enabling access to inpatient and outpatient clinical information from combat theaters.

The departments are also taking steps to make more data elements available through BHIE. VA and DOD staff told us that by the end of the first quarter of fiscal year 2008, they plan to add provider notes, procedures, and problem lists. Later in fiscal year 2008, they plan to add vital signs, scanned images and documents, family history, social history, and other history questionnaires. In addition, a VA/DOD demonstration site in El Paso began sharing radiological images between the VA and DOD facilities in September 2007 using the BHIE/FHIE infrastructure.²⁴

Types of Data Shared by DOD and VA Are Growing but Remain Limited

Although VA and DOD are sharing various types of health data, the type of data being shared has been limited and significant work remains to expand the data shared and integrate the various initiatives. Table 4 summarizes the types of health data currently shared via the long- and short-term initiatives we have described, as well as additional types of data that are currently planned for sharing. While this gives some indication of the scale of the tasks involved in sharing medical information, it does not depict the full extent of information that is currently being captured in the health information systems at VA and DOD.

²⁴To create BHIE, the departments drew on the architecture and framework of the information transfer system established by the FHIE project.

Table 4: Data Elements Made Available and Planned by DOD-VA Initiatives

		Data elements		
Initiative	Available		Planned	Comments
CHDR	Outpatient pharmacy Drug allergy		Laboratory data	Computable data are exchanged between one department's data repository and the other's.
FHIE	Patient demographics Laboratory results Radiology reports Outpatient pharmacy information Admission discharge transfer data Discharge summaries Consult reports Allergies Data from the DOD Standard Ambulatory Data Record Pre- and post-deployment assessments		None	One-way batch transfer of text data from DOD to VA occurs weekly if discharged patient has been referred to VA for treatment; otherwise monthly.
LDSI	Laboratory orders Laboratory results (chemistry, hematology and microbiology at 2 localities)		Microbiology Anatomic pathology	Noncomputable text data are transferred.
BHIE	Outpatient pharmacy data Drug and food allergy information Surgical pathology reports Microbiology results Cytology reports Chemistry and hematology reports Laboratory orders Radiology text reports Inpatient discharge summaries and/or emergency room notes from CIS at 13 DOD and all VA sites		Provider notes Procedures Problem lists Vital signs Scanned images and documents Family history Social history Other history questionnaires Radiology images	Data are not transferred but can be viewed.

Source: GAO analysis of VA and DOD data.

Special Procedures Provide Information to VA Polytrauma Centers

In addition to the information technology initiatives described, DOD and VA have set up special procedures to transfer medical information to VA's four polytrauma centers, which treat active duty service members and veterans severely wounded in combat.²⁵ Some examples of polytrauma include traumatic brain injury, amputations, and loss of hearing or vision.²⁶

When service members are seriously injured in a combat theater overseas, they are first treated locally. They are then generally evacuated to Landstuhl Medical Center in Germany, after which they are transferred to a military treatment facility in the United States, usually Walter Reed Army Medical Center in Washington, D.C.; the National Naval Medical Center in Bethesda, Maryland; or Brooke Army Medical Center, at Fort Sam Houston, Texas. From these facilities, service members suffering from polytrauma may be transferred to one of VA's four polytrauma centers for treatment.²⁷

At each of these locations, the injured service members will accumulate medical records, in addition to medical records already in existence before they were injured. According to DOD officials, when patients are referred to VA for care, DOD sends copies of medical records documenting treatment provided by the referring DOD facility along with them. The DOD medical information is currently collected in several different systems:

1. In the combat theater, electronic medical information may be collected for a variety of reasons, including routine outpatient care, as well as serious injuries. These data are stored in the Theater Medical Data Store. As mentioned earlier, the BHIE interface to this database became operational in October.
2. At Landstuhl, inpatient medical records are paper-based (except for discharge summaries). The paper records are sent with a patient as the individual is transferred for treatment in the United States. DOD

²⁵In particular, clinicians require access to discharge notices, which describe the treatment given at previous medical facilities and the status of patients when they left those facilities.

²⁶Polytrauma centers care for veterans and returning service members with injuries to more than one physical region or organ system, one of which may be life threatening, and which result in physical, cognitive, psychological, or psychosocial impairments and functional disability.

²⁷The four Polytrauma Rehabilitation Centers are in Richmond, Virginia; Tampa, Florida; Minneapolis, Minnesota; and Palo Alto, California.

officials told us that the paper record is the official DOD medical record, although AHLTA is used extensively to provide outpatient encounter information for medical records purposes.

3. At the DOD treatment facility (Walter Reed, Bethesda, or Brooke), additional inpatient information is recorded in CIS and outpatient pharmacy and drug information are stored in CDR; other health information continues to be stored in local CHCS databases.

When service members are transferred to a VA polytrauma center, VA and DOD have several ad hoc processes in place to electronically transfer the patients' medical information:

- DOD has set up secure links to enable a limited number of clinicians at the polytrauma centers to log directly into CIS at Walter Reed and Bethesda Naval Hospital to access patient data.
- Staff at Walter Reed, Brooke, and Bethesda medical centers collect paper records, print records from CIS, scan all these, and transmit the scanned data to the four polytrauma centers. DOD staff pointed out that this laborious process is feasible only because the number of polytrauma patients is small. According to VA officials, 460 severe traumatic brain injury patients had been treated at the polytrauma centers through fiscal year 2007. According to DOD officials, the medical records for 81 patients planned for transfer or already at a VA polytrauma center were scanned and provided to VA between April 1 and October 11 of this year. Digital radiology images were also provided for 48 patients.
- Staff at Walter Reed and Bethesda are transmitting radiology images electronically to the four polytrauma centers. Access to radiology images is a high priority for polytrauma center doctors, but like scanning paper records, transmitting these images requires manual intervention: when each image is received at VA, it must be individually uploaded to VistA's imagery viewing capability. This process would not be practical for large volumes of images.
- VA has access to outpatient data (via BHIE) from all DOD sites, including Landstuhl.

These special efforts to transfer medical information on seriously wounded patients represent important additional steps to facilitate the sharing of information that is vital to providing polytrauma patients with quality health care.

In summary, VA and DOD are exchanging health information via their long- and short-term initiatives and continue to expand sharing of medical information via BHIE. However, these exchanges have been limited, and significant work remains to fully achieve the goal of exchanging interoperable, computable data. Work still to be done includes agreeing to standards for the remaining categories of medical information; populating the data repositories with all this information; completing the development of HealthVet VistA, and AHLTA; and transitioning from the legacy systems. To complete this work and achieve the departments' ultimate goal of a maintaining a lifelong electronic medical record that will follow service members as they transition from active to veteran status, a comprehensive and coordinated project management plan that defines the technical and managerial processes necessary to satisfy project requirements and to guide their activities continues to be of vital importance. We have previously recommended that the departments develop such a plan and that it include a work breakdown structure and schedule for all development, testing, and implementation tasks. Without such a detailed plan, VA and DOD increase the risk that the long-term project will not deliver the planned capabilities in the time and at the cost expected. Further, it is not clear how all the initiatives we have described today are to be incorporated into an overall strategy toward achieving the departments' goal of a comprehensive, seamless exchange of health information.

This concludes my statement. I would be pleased to respond to any questions that you may have.

Contacts and Acknowledgments

If you have any questions concerning this testimony, please contact Valerie C. Melvin, Director, Human Capital and Management Information Systems Issues, at (202) 512-6304 or melvinv@gao.gov. Other individuals who made key contributions to this testimony are Barbara Oliver (Assistant Director), Nancy Glover, Glenn Spiegel, and Amos Tevelow.

Related GAO Products

Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing. [GAO-01-459](#). Washington, D.C.: April 30, 2001.

Veterans Affairs: Sustained Management Attention Is Key to Achieving Information Technology Results. [GAO-02-703](#). Washington, D.C.: June 12, 2002.

Computer-Based Patient Records: Short-Term Progress Made, but Much Work Remains to Achieve a Two-Way Data Exchange Between VA and DOD Health Systems. [GAO-04-271T](#). Washington, D.C.: November 19, 2003.

Computer-Based Patient Records: Sound Planning and Project Management Are Needed to Achieve a Two-Way Exchange of VA and DOD Health Data. [GAO-04-402T](#). Washington, D.C.: March 17, 2004.

Computer-Based Patient Records: VA and DOD Efforts to Exchange Health Data Could Benefit from Improved Planning and Project Management. [GAO-04-687](#). Washington, D.C.: June 7, 2004.

Computer-Based Patient Records: VA and DOD Made Progress, but Much Work Remains to Fully Share Medical Information. [GAO-05-1051T](#). Washington, D.C.: September 28, 2005.

Information Technology: VA and DOD Face Challenges in Completing Key Efforts. [GAO-06-905T](#). Washington, D.C.: June 22, 2006.

DOD and VA Exchange of Computable Pharmacy Data. [GAO-07-554R](#). Washington, D.C.: April 30, 2007.

Information Technology: VA and DOD Are Making Progress in Sharing Medical Information, but Are Far from Comprehensive Electronic Medical Records, [GAO-07-852T](#). Washington, D.C.: May 8, 2007.

Information Technology: VA and DOD Are Making Progress in Sharing Medical Information, but Remain Far from Having Comprehensive Electronic Medical Records, [GAO-07-1108T](#). Washington, D.C.: July 18, 2007.

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to www.gao.gov and select "E-mail Updates."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office
441 G Street NW, Room LM
Washington, DC 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Gloria Jarmon, Managing Director, JarmonG@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

Public Affairs

Susan Becker, Acting Manager, BeckerS@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548