



United States Government Accountability Office

Testimony

Before the Committee on Veterans'
Affairs, House of Representatives

For Release on Delivery
Expected at 10 a.m. ET
Tuesday, June 26, 2018

VA IT MODERNIZATION

Preparations for Transitioning to a New Electronic Health Record System Are Ongoing

Statement of David A. Powner, Director
Information Technology Management Issues

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product 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.

Chairman Roe, Ranking Member Walz, and Members of the Committee:

Thank you for the opportunity to participate in today's hearing on the planned implementation of the Department of Veterans Affairs' (VA) Electronic Health Record Modernization (EHRM) program.

As you know, the use of information technology (IT) is crucial to helping VA effectively serve the nation's veterans and, each year, the department spends billions of dollars on its information systems and assets. Over many years, however, VA has experienced challenges in managing its IT projects and programs. These challenges have spanned a number of critical initiatives related to modernizing major systems within the department, including its electronic health information system—the Veterans Health Information Systems and Technology Architecture (VistA).

We have issued numerous reports on the challenges that the department has faced in managing VistA and working to increase the interoperability¹ of health information.² We also have ongoing work for the Committee on Veterans' Affairs to review VistA and the department's transitional efforts to replace the system with a new, commercial-off-the-shelf (COTS) system that it is acquiring from Cerner Government Services, Inc. (Cerner) under the EHRM program.

At your request, my testimony today summarizes preliminary observations from our ongoing review. Specifically, the statement

¹Interoperability is the ability to exchange and use electronic health information.

²GAO, *Veterans Affairs Information Technology: Historical Perspective on Health System Modernization Contracts and Update on Efforts to Address Key FITARA-Related Areas*, GAO-18-267T (Washington, D.C.: Dec. 7, 2017); *VA Health IT Modernization: Historical Perspective on Prior Contracts and Update on Plans for New Initiative*, GAO-18-208 (Washington, D.C.: Jan. 18, 2018); *Veterans Affairs: Improved Management Processes Are Necessary for IT Systems That Better Support Health Care*, GAO-17-384 (Washington, D.C.: June 21, 2017); *VA Information Technology: Pharmacy System Needs Additional Capabilities for Viewing, Exchanging, and Using Data to Better Serve Veterans*, GAO-17-179 (Washington, D.C.: June 14, 2017); *Electronic Health Records: Outcome-Oriented Metrics and Goals Needed to Gauge DOD's and VA's Progress in Achieving Interoperability*, GAO-15-530 (Washington, D.C.: Aug. 13, 2015); *Electronic Health Records: VA and DOD Need to Support Cost and Schedule Claims, Develop Interoperability Plans, and Improve Collaboration*, GAO-14-302 (Washington, D.C.: Feb. 27, 2014); *Electronic Health Records: DOD and VA Should Remove Barriers and Improve Efforts to Meet Their Common System Needs*, GAO-11-265 (Washington, D.C.: Feb. 2, 2011); and *Electronic Health Records: DOD and VA Have Increased Their Sharing of Health Information, but More Work Remains*, GAO-08-954 (Washington, D.C.: July 28, 2008).

discusses our preliminary observations regarding (1) costs incurred for the system and related activities during the last 3 fiscal years; (2) key components that comprise VistA and are to be replaced; and (3) actions VA has taken to prepare for its transition to the Cerner system. In addition, the statement discusses critical success factors related to major information technology acquisitions. We have previously reported that these success factors could enhance the likelihood that the new electronic health record system acquisition will be successful.

In developing this testimony, we considered our previously published reports that discussed the history of the department's VistA modernization efforts. In addition, we relied on our prior report that discussed critical success factors of major IT acquisitions.³ The reports cited throughout this statement include detailed information on the scope and methodology for our prior reviews.

Further, we considered preliminary observations from our ongoing review of VistA's costs, components, and the actions VA has taken to prepare for transitioning from VistA to the Cerner system. With regard to the total costs of VistA, we obtained records of obligations for VistA-related programs for fiscal years 2015, 2016, and 2017, as tracked by the Veterans Health Administration (VHA)⁴ and VA's Office of Information and Technology (OI&T)⁵. We then combined the amount of those obligations with the amount of other obligations, such as those for supporting interoperability and infrastructure, identified by VA as being closely related to the development and operation of VistA. We interviewed VA officials to understand the source and relevance of the obligations identified by the department and determined that the data were reliable for our purposes.

³GAO, *Information Technology: Critical Factors Underlying Successful Major Acquisitions*, GAO-12-7 (Washington, D.C.: Oct. 21, 2011).

⁴VHA is the major component within VA that provides health care services, including primary care and specialized care, and it performs research and development to improve veterans' health care services.

⁵VA's OI&T oversees the department's IT acquisitions and operations. OI&T has responsibility for managing the majority of VA's IT-related functions. The office provides strategy and technical direction, guidance, and policy related to how IT resources are to be acquired and managed for the department. According to VA, OI&T's mission is to collaborate with its business partners (such as VHA) and provide a seamless, unified veteran experience through the delivery of state-of-the-art technology.

To identify the key components of VistA and the extent to which they support health record capabilities for the department, we analyzed VA documentation that describes the scope of the system. This documentation included the department's *Health Information System Diagram*, the *VA Monograph*,⁶ the VA Systems Inventory, and the *VistA Product Roadmap*. We also reviewed program documentation identifying components of VistA to be replaced by the Cerner system. We analyzed these documents for consistency to provide a reasonable basis for our observations.

To summarize the actions VA has taken to prepare for its transition from VistA to the Cerner system under the EHRM program, we reviewed available program briefings, governance documents, and draft plans for the EHRM program related to, for example, interoperability, data migration, change management, and requirements. We supplemented our analysis with information obtained through interviews with relevant VA officials.

The work upon which this statement is based is being or was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audits to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

VA's mission is to promote the health, welfare, and dignity of all veterans in recognition of their service to the nation by ensuring that they receive medical care, benefits, social support, and lasting memorials. In carrying out this mission, the department operates one of the largest health care delivery systems in the United States, providing health care services to approximately 9 million veterans throughout the United States, Philippines, Virgin Islands, Puerto Rico, American Samoa, and Guam.

In 2015, we designated VA health care as a high-risk area for the federal government, and we continue to be concerned about the department's ability to ensure that its resources are being used cost-effectively and

⁶VA, *VA Monograph*, (Washington, D.C.: Jan.13, 2017). The *VA Monograph* documents an overview of the VistA and non-VistA applications used by VHA.

efficiently to improve veterans' timely access to health care.⁷ In part, we identified limitations in the capacity of VA's existing IT systems, including the outdated, inefficient nature of certain systems and a lack of system interoperability as contributors to the department's challenges related to health care.

Providing health care to veterans requires a complex set of clinical and administrative capabilities supported by IT. VA's health information system—VistA—has been essential to the department's ability to deliver health care to veterans. VistA contains an electronic health record for each patient that supports clinical settings throughout the department. For example, clinicians can use the system to enter and review patient information; 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 encounters; and enter discharge summaries.

VistA was developed in house by clinicians and IT personnel in various VA medical facilities and has been in operation since the early 1980s.⁸ Over the last several decades, VistA has evolved into a technically complex system comprised of about 170 modules that support health care delivery at 152 VA Medical Centers and over 1,200 outpatient sites. In addition, customization of VistA, such as changes to the modules by the various medical facilities, has resulted in about 130 versions of the system—referred to as instances.

According to VA, VistA modules are comprised of one or more software applications that support various health care functions, such as providing care coordination and mental health services. In addition to VistA, the department has other health information systems that must interface with

⁷GAO maintains a high-risk program to focus attention on government operations that it identifies as high risk due to their greater vulnerabilities to fraud, waste, abuse, and mismanagement or the need for transformation to address economy, efficiency, or effectiveness challenges. VA's issues were highlighted in our 2015 high-risk report, GAO, *High-Risk Series: An Update*, GAO-15-290 (Washington, D.C.: Feb. 11, 2015) and 2017 update, GAO, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, GAO-17-317 (Washington, D.C.: Feb. 15, 2017).

⁸VistA began operation in 1983 as the Decentralized Hospital Computer Program. In 1996, the name of the system was changed to VistA.

VistA to send, exchange, or store related health (e.g., clinical and patient) data.⁹

Since 2001, VA has identified the need for enhancements and modifications to VistA and has pursued multiple efforts to modernize the system. Two major efforts have included the VistA Evolution program and, most recently, the planned acquisition of the same electronic health record system that the Department of Defense (DOD) is acquiring.

In 2013, VA established VistA Evolution as a joint program between OI&T and VHA that was comprised of a collection of projects and efforts focused on improving the efficiency and quality of veterans' health care. This program was to modernize the department's health information systems, increase VA's data exchange and interoperability capabilities with DOD and private sector health care partners, and reduce VA's time to deploy new health information management capabilities.¹⁰

In June 2017, the former VA Secretary announced a significant shift in the department's approach to modernizing VistA. Specifically, rather than continue to use VistA, the Secretary stated that the department planned to acquire the same Cerner electronic health record system that DOD has been acquiring.¹¹

⁹Interfaces enable VistA to communicate with applications within other VA systems, as well as selected systems or other federal agencies (e.g., DOD health information systems used to treat injured service members), health information exchange networks, and other COTS products. There are various mechanisms used to facilitate these exchanges to allow the extraction of health information to and from these external products. These interfaces utilize, for example, remote procedure calls, Health Level 7, and in a few cases secure file transfer protocol for queries and other transactions with VistA.

¹⁰VA's former Executive in Charge for Information and Technology testified in December 2017 that the cost to upgrade and maintain VistA to industry standards would be approximately \$19 billion over 10 years, and this still would not provide all the needed enhancements, upgrades, and interoperability with DOD.

¹¹In July 2015, DOD awarded a \$4.3 billion contract for a commercial electronic health record system developed by Cerner, to be known as MHS GENESIS. The transition to the new system began in February 2017 in the Pacific Northwest region of the United States and is expected to be completed in 2022. The former Secretary of Veterans Affairs signed a "Determination and Findings," to justify use of the public interest exception to the requirement for full and open competition, and authorized VA to issue a solicitation directly to Cerner. A "Determination and Findings" means a special form of written approval by an authorized official that is required by statute or regulation as a prerequisite to taking certain contract actions. The "determination" is a conclusion or decision supported by the "findings." The findings are statements of fact or rationale essential to support the determination and must cover each requirement of the statute or regulation. FAR, 48 C.F.R. § 1.701.

Accordingly, the department awarded a contract to Cerner in May 2018 for a maximum of \$10 billion over 10 years. Cerner is to replace VistA with a commercial electronic health record system. This new system is to support a broad range of health care functions that include, for example, acute care, clinical decision support, dental care, and emergency medicine. When implemented, the new system will be expected to provide access to authoritative clinical data sources and become the authoritative source of clinical data to support improved health, patient safety, and quality of care provided by VA.

As previously mentioned, this acquisition is being managed by VA's EHRM program. According to program documentation, EHRM is also to deliver program management support and the infrastructure modernization required to install and operate the new system.

According to EHRM program documentation, the department has estimated that an additional \$5.8 billion in funding, above the contract amount, would be needed to fund project management support and infrastructure improvements over the 10-year period. This amount does not fully include government employee costs.

Deployment of the new electronic health record system at the initial sites is planned for within 18 months of October 1, 2018,¹² with a phased implementation of the remaining sites over the next decade. Each VA medical facility is expected to continue using VistA until the new system has been deployed at that location.

VA Has Reported Obligating about \$3.0 Billion to VistA and Related Activities from Fiscal Years 2015 through 2017

According to VA, the department's costs for VistA and related activities are approximated by funding obligations of about \$1.1 billion, \$899 million, and \$946 million in fiscal years 2015, 2016 and 2017, respectively, for a total of about \$3.0 billion over 3 years to support the system. Specifically, VHA and OI&T reported obligations to cover the costs for the VistA Evolution program, including costs for development, operation and maintenance, and payroll for government employees over the 3 fiscal years.

¹²The three initial deployment sites are the Mann-Grandstaff, American Lake, and Seattle VA Medical Centers.

Further, in their efforts to fully determine the costs associated with VistA, VA officials also reported obligations for activities that supported VistA, but were not included in the VistA Evolution program. These other obligations were for investments in interoperability initiatives, such as increasing data standardization and data sharing between VA, DOD, and other government and non-government entities, and the Virtual Lifetime Electronic Record Health.¹³ These obligations also include other VistA-related technology investments, such as networks and infrastructure sustainment, continuation of legacy systems, and overall patient safety, security, and system reliability.

Table 1 provides a summary of the total VistA and related obligations that VA identified for fiscal years 2015 through 2017.

Table 1: Obligations for the Veterans Health Information Systems and Technology Architecture (VistA) for Fiscal Years 2015 through 2017, as identified by the Department of Veterans Affairs

	2015	2016	2017	Total
VistA Evolution	\$376,503,022	\$195,475,101	\$219,192,925	\$791,171,048
Interoperability	\$55,811,302	\$32,755,060	\$51,617,011	\$140,183,373
Virtual Lifetime Electronic Record Health	\$45,854,411	\$28,953,893	\$6,356,457	\$81,164,761
Additional VistA-Related	\$668,717,821	\$642,100,886	\$668,607,654	\$1,979,426,362
Total	\$1,146,886,556	\$899,284,941	\$945,774,047	\$2,991,945,544

Source: GAO analysis of data provided by the Department of Veterans Affairs. | GAO-18-636T

VA Is Working to Define VistA's Scope and Identify Components to Be Replaced by the Cerner System

Understanding the scope of VA's current health information system is essential to effectively planning for the new system. However, according to VA officials, there is no single information source that fully defines the scope of VistA. Instead, existing definitions of the system, including the components that comprise it, are identified by multiple sources. These

¹³Virtual Lifetime Electronic Record Health is a program initially started in 2009 to streamline the transition of electronic medical, benefits, and administrative information between VA and DOD. It is now referred to as the Veterans Health Information Exchange.

sources include the VA Systems Inventory, VistA Document Library, and *VA Monograph*.

Each of these sources describes VistA from a different perspective. For example, the *VA Monograph* provides an overview of VistA and non-VistA applications used by VHA. The monograph also describes modules and their associated business functions, but does not document all customization at local facilities. The VA Systems Inventory is a database that identifies current IT systems at VA, including systems and interfaces that are related to VistA. The VA Document Library is an online resource for accessing documentation on VA's nationally released software applications, including VistA.

In the absence of a complete definition of VistA, EHRM program officials have taken a number of steps to define the system's scope and identify the components that the Cerner system will replace. These steps have included conducting two analyses, performing preliminary site assessments, and planning for Cerner to perform a detailed assessment of each site where the new system will be deployed.

Specifically, EHRM program subject-matter experts undertook an analysis that identified 143 VistA modules and 35 software applications as representing the scope of the system. They then compared the functionality provided by the VistA modules to the Cerner system's capabilities to identify the VistA components that are expected to be replaced by the Cerner system. The analysis identified 131 (92 percent) of the 143 VistA modules and 32 (91 percent) of the 35 applications that are expected to be replaced by the Cerner system. For example, the analysis determined that the Care Management and Mental Health modules would be replaced by the new system.

EHRM program officials also undertook a subsequent, broader analysis to identify, among other things, the scope of VistA, as well as the department's other health IT systems that could also be replaced by the Cerner system. These other systems include, for example, dentistry and oncology applications. As part of this analysis, the department combined data from the VA Systems Inventory, the VistA Document Library, the *VA Monograph*, and other sources to identify the health information technology environment at a typical VA medical center.

The resulting analysis of VA's health IT environment identified a total of 330 applications that support health care delivery at a medical center, of which 119 applications (approximately 36 percent) have been identified as having similar functionality as a capability of the Cerner system. Further, 128 of the 330 applications are identified as VistA applications.

Of the 128 applications designated as VistA, 58 (approximately 45 percent) have been identified as having similar functionality as a capability of the Cerner system, including pharmacy, laboratory, and scheduling capabilities.

In addition to the analyses discussed above, VA has taken steps to understand differences in VistA at individual facilities. Specifically, according to EHRM officials, representatives from VA and Cerner have visited 17 VA medical facilities to conduct preliminary site assessments. The intent of these assessments is to obtain a broad perspective of the current state of the systems, applications, integration points, reporting, and workflows being utilized at individual facilities. These site visits identified VistA customization that may be site specific. The identification of such site specific customization is intended to help Cerner plan for implementation of its system at each location. According to EHRM program officials, full site assessments that are planned at each location in preparation for implementation of the Cerner system are expected to identify the full extent of VistA customization.

VA's Preparations for Transitioning from VistA to the Cerner System Are Ongoing

Since the former VA Secretary announced in June 2017 that the department would acquire the same electronic health record system as DOD, VA has taken steps to position the department for the transition to the new system. These actions, which are ongoing, have included standardizing VistA, assessing the department's approach to increasing interoperability, establishing governance for the new program and the framework for joint governance with DOD, and preparing initial program plans.

Standardizing VistA

VA's goal is for all instances of VistA being used in its medical facilities to be standardized where practical. Such standardization is intended to better position the department to switch to the Cerner system. To increase standardization, the VistA Evolution program has been focused over the last 5 years on standardizing a core set of VistA modules related to interoperability which, according to the department, accounts for about 60 percent of VistA.

In addition, the program has focused on identifying software that is common to each VistA instance. VA refers to this collection of standard

software as the gold instance. As part of its effort to standardize VistA, VA has implemented a process to compare the system at each site with the gold instance. Sites that are identified as having variations from the gold instance must apply for a waiver to gain approval for continuing to operate a non-standard VistA instance. OI&T and VHA assess the waivers, which may be approved if a site needs non-standard functionality that is deemed critical to that site. Alternatively, waivers are not approved if the assessment determines that a site's needs can be met by reverting to the gold instance of VistA.

Assessing the Approach to Increasing Interoperability

VA has identified increased interoperability as a key expected outcome of its decision to switch from VistA to the Cerner system. To ensure that the contract with Cerner will improve interoperability with community care providers (i.e., non-VA and third party providers), the former VA Secretary announced in December 2017 that the department had taken a "strategic pause" on the electronic health record acquisition process. During the pause, an independent study was undertaken to assess the approach to interoperability with the new acquisition.¹⁴ The assessment made recommendations to improve imported data, address data rights and patient safety risks, and improve data access for patients. VA agreed with all of the resulting recommendations and, according to EHRM program officials, included provisions in the contract with the Cerner Corporation to address the recommendations.

Establishing a Program Office and Governance

Our prior work has identified strong agency leadership support and governance as factors that can increase the likelihood of a program's success.¹⁵ Such leadership and governance can come from the establishment of an effective program management organization and a related governance structure.

VA has taken steps to establish a program management office and drafted a structure for technology, functional, and joint governance of the electronic health record implementation. Specifically, in January 2018, the

¹⁴The MITRE Corporation coordinated the assessment and reported related recommendations in the *VA EHRM Request for Proposal Interoperability Review Report* on Jan. 31, 2018.

¹⁵GAO, *Information Technology: Opportunities for Improving Acquisitions and Operations*, GAO-17-251SP (Washington, D.C.: April 11, 2017).

former VA Secretary established the EHRM Program Executive Office (PEO) that reports directly to the VA Deputy Secretary. According to EHRM program officials, this office supported the contract negotiations with the Cerner Corporation and is expected to continue to manage the program going forward.

Program officials stated that the office is beginning the process of hiring full-time employees. In addition, to support the program office, the department has awarded a contract for project management support and has also reassigned a number of VA staff to the PEO.

Further, VA has drafted a memorandum that describes the role of governance bodies within VA, as well as governance intended to facilitate coordination between DOD and VA. For example, according to the draft memorandum, within VA, the EHRM Steering Committee is expected to provide strategic direction for the efforts while monitoring progresses toward goals and advising the Secretary on the progress and performance of the EHRM efforts. This committee is to include the Deputy Secretary, the Undersecretary for Health, and the Chief Information Officer, among others, and is to meet quarterly or as necessary to make its reports to the Secretary.

Additionally, according to EHRM program documentation, VA is in the process of establishing a Functional Governance Board, a Technical Governance Board, and a Governance Integration Board comprised of program officials intended to provide guidance; coordinate with DOD, as appropriate; and inform the Steering Committee. Further, a joint governance structure between VA and DOD has been proposed that would be expected to leverage existing joint governance facilitated by the DOD/VA Interagency Program Office.¹⁶

Nevertheless, while the department's plans for governance of the EHRM program provide a framework for high-level oversight for program decisions moving forward, EHRM officials have noted that the governance bodies will not be finalized until October 2018.

¹⁶The *National Defense Authorization Act for Fiscal Year 2008* (Pub. L. No. 110-181, Sec. 1635 (2008)) called for DOD and VA to set up an interagency program office. This office is intended to function as the single point of accountability for ensuring that electronic health records systems or capabilities allow for full interoperability of health care-related information between DOD and VA.

Preparing Initial Program Plans

Program planning is an activity for ensuring effective management of key aspects of an IT program. These key aspects include identification of the program's scope, responsible organizations, costs, and schedules.

VA has prepared initial program plans, including a preliminary timeline for deploying the new electronic health record system to its medical facilities. The department also has a proposed 90-day schedule that depicts key program activities currently underway now that the contract has been awarded. For example, the department's preliminary plans include an 8-year deployment schedule beginning with planned implementation at initial sites within 18 months of October 1, 2018.

According to the executive director for the EHRM program, the department also intends to complete a full suite of planning and acquisition management documents to guide the program. These documents include, for example, a life cycle cost estimate, a data migration plan, a change management plan, and an integrated master schedule to establish key milestones over the life of the project. EHRM PEO officials have stated that the department intends to complete the development of its initial plans for the program within 30 to 90 days of awarding the contract (between mid-June and mid-August 2018), and intends to update those plans as the program matures. The plans are to be reviewed during the milestone reviews identified in the department's formal project management framework.

Critical Factors Underlying Successful Major Acquisitions

Our prior work has determined that successfully overcoming major IT acquisition challenges can best be achieved when critical success factors are applied.¹⁷ Specifically, we reported in 2011 on common factors critical to the success of IT acquisitions, based on seven agencies having each identified the acquisition that best achieved the agency's respective cost,

¹⁷GAO-12-7.

schedule, scope, and performance goals.¹⁸ These factors remain relevant today and can serve as a model of best practices that VA could apply to enhance the likelihood that the acquisition of a new electronic health record system will be successfully achieved.

Among the agencies' seven IT investments, agency officials identified nine factors as having been critical to the success of three or more of the seven investments. These nine critical success factors are consistent with leading industry practices for IT acquisition. The factors are:

- Active engagement of senior officials with stakeholders.
- Qualified and experienced program staff.
- Support of senior department and agency executives.
- Involvement of end users and stakeholders in the development of requirements.
- Participation of end users in testing system functionality prior to formal end user acceptance testing.
- Consistency and stability of government and contractor staff.
- Prioritization of requirements by program staff.
- Regular communication maintained between program officials and the prime contractor.
- Sufficient funding.

Officials for all seven selected investments cited active engagement with program stakeholders—individuals or groups (including, in some cases, end users) with an interest in the success of the acquisition—as a critical factor to the success of those investments. Agency officials stated that stakeholders, among other things, reviewed contractor proposals during the procurement process, regularly attended program management office sponsored meetings, were working members of integrated project teams,¹⁹ and were notified of problems and concerns as soon as

¹⁸The seven departments and associated successful IT investments are the Department of Commerce, Decennial Response Integration System; Department of Defense, Global Combat Support System-Joint Increment 7; Department of Energy, Manufacturing Operations Management Project; Department of Homeland Security, Western Hemisphere Travel Initiative; Department of Transportation, Integrated Terminal Weather System; Department of the Treasury, Customer Account Data Engine 2; and Department of Veterans Affairs, Occupational Health Record-keeping System.

¹⁹The Office of Management and Budget defines an integrated project team as a multi-disciplinary team led by a project manager responsible and accountable for planning, budgeting, procurement, and life-cycle management of the investment to achieve its cost, schedule, and performance goals. Team skills include budgetary, financial, capital planning, procurement, user, program, architecture, earned value management, security, and other staff as appropriate.

possible. In addition, officials from two investments noted that actively engaging with stakeholders created transparency and trust, and increased the support from the stakeholders.

Additionally, officials for six of the seven selected investments indicated that the knowledge and skills of the program staff were critical to the success of the program. This included knowledge of acquisitions and procurement processes, monitoring of contracts, large-scale organizational transformation, Agile software development concepts,²⁰ and areas of program management such as earned value management and technical monitoring.

Finally, officials for five of the seven selected investments identified having the end users test and validate the system components prior to formal end user acceptance testing for deployment as critical to the success of their program. Similar to this factor, leading guidance recommends testing selected products and product components throughout the program life cycle.²¹ Testing of functionality by end users prior to acceptance demonstrates, earlier rather than later in the program life cycle, that the functionality will fulfill its intended use. If problems are found during this testing, programs are typically positioned to make changes that would be less costly and disruptive than ones made later in the life cycle.

Use of the critical success factors described above can serve as a model of best practices for VA. Application of these acquisition best practices presents opportunities for the department to increase the likelihood that its planned acquisition of a new electronic health record system will meet its cost, schedule, scope, and performance goals.

In conclusion, VA continued to obligate billions of dollars for its VistA system. Recently, the department has undertaken important analyses to better understand the scope of the system and identify capabilities that can be provided by the Cerner electronic health record system it is acquiring. VA has additional key activities underway, such as establishing program governance and EHRM program planning. Based on these

²⁰Agile software development is not a set of tools or a single methodology, but a philosophy based on selected values, such as prioritizing customer satisfaction through early and continuous delivery of valuable software; delivering working software frequently, from every couple of weeks to every couple of months; and making working software the primary measure of progress.

²¹See, for example, Carnegie Mellon Software Engineering Institute, *Capability Maturity Model® Integration for Acquisition (CMMI-ACQ)*, Version 1.3 (November 2010).

preliminary observations and as the department continues its activities to transition from VistA to the Cerner electronic health record system, critical success factors can serve as a model of best practices that VA could apply to enhance the likelihood that the acquisition of the new system will be successfully achieved. While it is early in VA's acquisition of the Cerner system, it will be important for the department to leverage all available opportunities to ensure that its transition to a new system is carried out in the most effective manner possible. Our experience has shown that challenges can successfully be overcome through using a disciplined approach to IT acquisition management.

Chairman Roe, Ranking Member Walz, and Members of the Committee, this concludes my prepared statement. I would be pleased to respond to any questions that you may have.

GAO Contact and Staff Acknowledgments

If you or your staffs have any questions about this testimony, please contact David A. Powner at (202) 512-9286 or pownerd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony statement. GAO staff who made key contributions to this statement are Mark Bird (Assistant Director), Jennifer Stavros-Turner (Analyst in Charge), John Bailey, Rebecca Eyler, Jacqueline Mai, Scott Pettis, and Charles Youman.