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VETERANS AFFAIRS INFORMATION TECHNOLOGY

Management Attention Needed to Improve Critical System Modernizations, Consolidate Data Centers, and Retire Legacy Systems

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

Accessible Version

GAO Highlights

Highlights of [GAO-17-408T](#), a testimony before the Committee on Veterans' Affairs, House of Representatives

Why GAO Did This Study

The use of IT is crucial to helping VA effectively serve the nation's veterans, and each year, the department spends over \$4 billion on IT. However, over many years, VA has had difficulty managing its information systems, raising questions about the effectiveness of its operations and its ability to deliver intended outcomes needed to help advance the department's mission. GAO has previously reported on a number of the department's IT initiatives.

This statement summarizes results from key GAO reports related to increasing electronic health record interoperability between VA and DOD; system challenges that have contributed to GAO's designation of VA health care as a high-risk area; and VA's development of its system for processing disability benefits, data center consolidation, and legacy systems.

What GAO Recommends

GAO has made numerous recommendations to VA to improve the modernization of its IT systems. For example, GAO has recommended that VA develop goals and metrics for determining the extent to which its modernized electronic health record system is achieving interoperability with DOD's; address challenges associated with modernizing its scheduling system; address shortcomings with VBMS planning and implementation; take actions to improve progress in data center

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Management Attention Needed to Improve Critical System Modernizations, Consolidate Data Centers, and Retire Legacy Systems

What GAO Found

GAO noted in July 2016 that the Department of Veterans Affairs (VA) had moved forward with an effort to modernize its health information system—the Veterans Health Information Systems and Technology Architecture (VistA)—but that the department is uncertain of its long-term plan for addressing its electronic health record system needs beyond fiscal year 2018. Beyond modernizing VistA, GAO reported in August 2015 that VA and the Department of Defense (DOD) had not identified outcome-oriented goals and metrics to clearly define what they aim to achieve from their efforts to increase electronic health record interoperability (i.e., the electronic exchange and use of health records) between the two departments. Moreover, VA has begun to modernize VistA separate from DOD's planned acquisition of a commercially available electronic health record system, even though both departments have many health care business needs in common. In 2014, GAO noted that the departments' decision to abandon the development of a single system in favor of modernizing their two separate systems was not justified and was identified as an example of duplication among government activities. The departments have not yet provided a comparison of the estimated costs and schedules of their current and previous approaches as GAO recommended.

In February 2015, GAO designated VA health care as a high-risk area, with IT challenges being one contributing factor. Specifically, GAO noted that the outpatient appointment scheduling system, which is currently about 30 years old, is time-consuming to use and error prone. However, the project to modernize that system failed after VA spent an estimated \$127 million over 9 years. VA has begun a new initiative to build or purchase another scheduling system.

GAO reported in September 2015, that VA had made progress implementing the Veterans Benefits Management System (VBMS) for processing disability benefits. However, the department had not developed a time frame and a reliable cost estimate for completing VBMS. VA also had not established goals for system response time, and had not minimized incidences of high and medium severity system defects for future VBMS releases. Further, the department had not assessed user satisfaction, or established user satisfaction goals.

In addition, VA's consolidation and closure of data centers has lagged behind other agencies, as GAO reported in March 2016. For example, VA's closure of 20 out of a total of 356 data centers gave the department a 6 percent closure rate through fiscal year 2015 that ranked 19th of the 24 agencies in GAO's study. Also, VA's reported \$19.1 million in cost savings or avoidances from fiscal year 2011 through fiscal year 2015 was only about 0.7 percent of the total of about \$2.8 billion that all 24 agencies reported saving. In addition, the department had not met any of the data center optimization areas established by the Office of Management and Budget.

VA was identified in a May 2016 GAO report as using antiquated and expensive to maintain, legacy IT systems. At that time, the 53-year-old Personnel and Accounting Integrated Data (PAID) system was slated to be replaced in 2017. Further, VA has plans to retire the 51-year-old Benefits Delivery Network, which tracks veterans' claims for benefits, eligibility, and death dates in 2018.

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

Thank you for the opportunity to participate in today's hearing on the information technology (IT) modernization projects and programs at the Department of Veterans Affairs (VA). As you know, the use of 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.

However, over many years, VA has experienced challenges in managing its IT projects and programs, raising questions about the efficiency and effectiveness of its operations and its ability to deliver intended outcomes needed to help advance the department's mission. These challenges have spanned a number of critical initiatives related to sharing electronic health record data and developing major systems, in addition to improving the efficiency of operations by closing and optimizing data centers and decommissioning antiquated legacy systems. We have previously reported on these and other IT management challenges at the department.

At your request, my testimony today summarizes findings from a number of our reports that addressed VA's efforts toward exchanging electronic health records with the Department of Defense (DOD) and highlighted IT challenges that have contributed to our designation of VA health care as a high-risk area.¹ In addition, it discusses our prior work on the department's development and use of its benefits claims processing system, the Veterans Benefits Management System (VBMS), as well as our recent reports that addressed VA's data center consolidation and legacy systems.²

¹GAO, *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) and High Risk Series: An Update, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015).

²GAO, *Veterans Benefits Management System: Ongoing Development and Implementation Can Be Improved; Goals Are Needed to Promote Increased User Satisfaction*, [GAO-15-582](#) (Washington, D.C.: Sept. 1, 2015); *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established*, [GAO-16-323](#) (Washington, D.C.: Mar. 3, 2016); and *Information Technology: Federal Agencies Need to Address Aging Legacy Systems*, [GAO-16-468](#) (Washington, D.C.: May 25, 2016).

In developing this testimony, we relied on our previous reports, as well as information provided by the department on its actions in response to our previous recommendations. The reports cited throughout this statement include detailed information on the scope and methodology for our reviews.

The work upon which this statement is based was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit 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. VA is the second largest federal department and, in addition to its central office located in Washington, D.C., has field offices throughout the United States, as well as the U.S. territories and the Philippines.

The department's three major components—the Veterans Health Administration (VHA), the Veterans Benefits Administration (VBA), and the National Cemetery Administration (NCA)—are primarily responsible for carrying out its mission. More specifically, VHA provides health care services, including primary care and specialized care, and it performs research and development to improve veterans' needs. VBA provides a variety of benefits to veterans and their families, including disability compensation, educational opportunities, assistance with home ownership, and life insurance. Further, NCA provides burial and memorial benefits to veterans and their families.

Collectively, the three components rely on approximately 340,000 employees to provide services and benefits. These employees work in VA's Washington, D.C. headquarters, as well as 167 medical centers, approximately 800 community-based outpatient clinics, 300 veterans centers, 56 regional offices, and 131 national and 90 state or tribal cemeteries situated throughout the nation.

VA Relies Extensively on IT

The use of IT is critically important to VA's efforts to provide benefits and services to veterans. As such, the department operates and maintains an IT infrastructure that is intended to provide the backbone necessary to meet the day-to-day operational needs of its medical centers, veteran-facing systems, benefits delivery systems, memorial services, and all other systems supporting the department's mission. The infrastructure is to provide for data storage, transmission, and communications requirements necessary to ensure the delivery of reliable, available, and responsive support to all VA staff offices and administration customers, as well as veterans.

Toward this end, the department operates approximately 240 information systems, manages approximately 314,000 desktop computers and 30,000 laptops, and administers nearly 460,000 network user accounts for employees and contractors to facilitate providing benefits and health care to veterans. These systems are used for the determination of benefits, benefits claims processing, patient admission to hospitals and clinics, and access to health records, among other services.

VHA's systems provide capabilities to establish and maintain electronic health records that health care providers and other clinical staff use to view patient information in inpatient, outpatient, and long-term care settings. The department's health information system—the Veterans Health Information Systems and Technology Architecture (VistA)—serves an essential role in helping the department to fulfill its health care delivery mission. Specifically, VistA is an integrated medical information system that was developed in-house by the department's clinicians and IT personnel, and has been in operation since the early 1980s.³ The system consists of 104 separate computer applications, including 56 health provider applications; 19 management and financial applications; 8 registration, enrollment, and eligibility applications; 5 health data applications; and 3 information and education applications. Within VistA, an application called the Computerized Patient Record System enables

³VistA began operation in 1983 as the Decentralized Hospital Computer Program. In 1996, the name of the system was changed to VistA.

the department to create and manage an individual electronic health record for each VA patient.

VBA relies on VBMS to collect and store information such as military service records, medical examinations, and treatment records from VA, DOD, and private medical service providers. In 2014, VA issued its 6-year strategic plan, which emphasizes the department's goal of increasing veterans' access to benefits and services, eliminating the disability claims backlog, and ending veteran homelessness. According to the plan, the department intends to improve access to benefits and services through the use of enhanced technology to provide veterans with access to more effective care management. The plan also calls for VA to eliminate the disability claims backlog by fully implementing an electronic claims process that is intended to reduce processing time and increase accuracy. Further, the department has an initiative under way that provides services, such as health care, housing assistance, and job training, to end veteran homelessness. Toward this end, VA is working with other agencies, such as the Department of Health and Human Services, to implement more coordinated data entry systems to streamline and facilitate access to appropriate housing and services.

VA reported spending about \$3.9 billion to improve and maintain its IT resources in fiscal year 2015. Specifically, the department reported spending approximately \$548 million on new systems development efforts, approximately \$2.3 billion on maintaining existing systems, and approximately \$1 billion on payroll and administration. For fiscal year 2016, the department received appropriations of about \$4.1 billion for IT—about \$505 million on new systems development, about \$2.5 billion on maintaining existing systems, and about \$1.1 billion on payroll and administration.

For fiscal year 2017, the department's budget request included nearly \$4.3 billion for IT. The department requested approximately \$471 million for new systems development efforts, approximately \$2.5 billion for maintaining existing systems, and approximately \$1.3 billion for payroll and administration. In addition, in its 2017 budget submission, the department requested appropriations to make improvements in a number of areas, including:

- veterans' access to health care, to include enhancing health care-related systems, standardizing immunization data, and expanding telehealth services (\$186.7 million);

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- veterans' access to benefits by modernizing systems supporting benefits delivery, such as VBMS and the Veterans Services Network (\$236.3 million);
 - veterans' experiences with VA by focusing on integrated service delivery and streamlined identification processes (\$171.3 million);
 - VA employees' experiences by enhancing internal IT systems (\$13 million); and
 - information security, including implementing strong authentication, ensuring repeatable processes and procedures, adopting modern technology, and enhancing the detection of cyber vulnerabilities and protection from cyber threats (\$370.1 million).

VA Has a Long History of Working to Share Electronic Health Records with DOD

Electronic health records are particularly crucial for optimizing the health care provided to veterans, many of whom may have health records residing at multiple medical facilities within and outside the United States. Taking steps toward interoperability—that is, collecting, storing, retrieving, and transferring veterans' health records electronically—is significant to improving the quality and efficiency of care. One of the goals of interoperability is to ensure that patients' electronic health information is available from provider to provider, regardless of where it originated or resides.

Since 1998, VA has undertaken a patchwork of initiatives with DOD to allow the departments' health information systems to exchange information and increase interoperability.⁴ Among others, these have included initiatives to share viewable data in the two departments' existing (legacy) systems, link and share computable data between the departments' updated health data repositories, and jointly develop a single integrated system that would be used by both departments. Table 1 summarizes a number of these key initiatives.

⁴DOD uses a separate electronic health record system, the Armed Forces Health Longitudinal Technology Application, which consists of multiple legacy medical information systems developed from customized commercial software applications.

Table 1: History of the Departments of Veterans Affairs' and Defense's Electronic Health Record Interoperability Initiatives

Initiative	Year begun	Description
Government Computer-Based Patient Record	1998	This interface was expected to compile requested patient health information in a temporary, "virtual" record that could be displayed on a user's computer screen.
Federal Health Information Exchange	2002	The Government Computer-Based Patient Record initiative was narrowed in scope to focus on enabling the Department of Defense (DOD) to electronically transfer service members' health information to the Department of Veterans Affairs (VA) upon their separation from active duty. The resulting initiative, completed in 2004, was renamed the Federal Health Information Exchange. This capability is currently used by the departments to transfer data from DOD to VA.
Bidirectional Health Information Exchange	2004	This capability provides clinicians at both departments with viewable access to records on shared patients. It is currently used by VA and DOD to view data stored in both departments' health information systems.
Clinical Data Repository/Health Data Repository Initiative	2004	This interface links DOD's Clinical Data Repository and VA's Health Data Repository to achieve a two-way exchange of health information.
Virtual Lifetime Electronic Record	2009	To streamline the transition of electronic medical, benefits, and administrative information between the departments, this initiative enables access to electronic records for service members as they transition from military to veteran status and throughout their lives. It also expands the departments' health information-sharing capabilities by enabling access to private-sector health data.
Joint Federal Health Care Center	2010	The Captain James A. Lovell Federal Health Care Center was a 5-year demonstration project to integrate DOD and VA facilities in the North Chicago, Illinois, area. It is the first integrated federal health care center for use by beneficiaries of both departments, with an integrated DOD-VA workforce, a joint funding source, and a single line of governance.

Source: GAO summary of prior work and department documentation | GAO-17-408T.

In addition to the initiatives mentioned in table 1, VA has worked in conjunction with DOD to respond to provisions in the National Defense Authorization Act for Fiscal Year 2008.⁵ This act required the departments to jointly develop and implement fully interoperable electronic health

⁵Pub. L. No. 110-181, § 1635, 122 Stat. 3, 460-463 (2008).

record systems or capabilities in 2009. Yet, even as the departments undertook numerous interoperability and modernization initiatives, they faced significant challenges and slow progress. We have reported, for example, that the two departments' success in identifying and implementing joint IT solutions has been hindered by an inability to articulate explicit plans, goals, and time frames for meeting their common health IT needs.⁶

In March 2011, the secretaries of VA and DOD announced that they would develop a new, joint integrated electronic health record system (referred to as iEHR). This was intended to replace the departments' separate systems with a single common system, thus, sidestepping many of the challenges they had previously encountered in trying to achieve interoperability. However, in February 2013, about 2 years after initiating iEHR, the secretaries announced that the departments were abandoning plans to develop a joint system, due to concerns about the program's cost, schedule, and ability to meet deadlines. The Interagency Program Office (IPO), put in place to be accountable for VA's and DOD's efforts to achieve interoperability, reported spending about \$564 million on iEHR between October 2011 and June 2013. Following the termination of the iEHR initiative, VA and DOD moved forward with plans to separately modernize their respective electronic health record systems.

In light of VA and DOD not implementing a solution that allowed for the seamless electronic sharing of health care data, the National Defense Authorization Act for Fiscal Year 2014⁷ included requirements pertaining to the implementation, design, and planning for interoperability between the departments' electronic health record systems. Among other actions, provisions in the act directed each department to (1) ensure that all health care data contained in their systems (VA's VistA and DOD's Armed Forces Health Longitudinal Technology Application, referred to as AHLTA) complied with national standards and were computable in real

⁶GAO, *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); *Electronic Health Records: DOD and VA Interoperability Effort are Ongoing; Program Office Needs to Implement Recommended Improvement*, [GAO-10-332](#) (Washington, D.C.: Jan. 28, 2010); *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); 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).

⁷Pub. L. No. 113-66, Div. A, Title VII, § 713, 127 Stat. 672, 794-798 (Dec. 26, 2013).

time by October 1, 2014; and (2) deploy modernized electronic health record software to support clinicians while ensuring full standards-based interoperability by December 31, 2016.

In August 2015, we reported that VA, in conjunction with DOD, had engaged in several near-term efforts focused on expanding interoperability between their existing electronic health record systems. For example, the departments had analyzed data related to 25 “domains” identified by the Interagency Clinical Informatics Board⁸ and mapped health data in their existing systems to standards identified by the IPO. The departments also had expanded the functionality of their Joint Legacy Viewer—a tool that allows clinicians to view certain health care data from both departments.

More recently, in April 2016, VA and DOD certified that all health care data in their systems complied with national standards and were computable in real time. However, VA acknowledged that it did not expect to complete a number of key activities related to its electronic health record system until sometime after the December 31, 2016, statutory deadline for deploying modernized electronic health record software with interoperability. Specifically, the department stated that deployment of a modernized VistA system at all locations and for all users is not planned until 2018.⁹

VA's IT Organization Has Undergone Recent Changes

VA's recently departed Chief Information Officer (CIO) initiated an effort to transform the focus and functions of the Office of Information and Technology (OI&T), which is responsible for providing IT services across VA and managing the department's IT assets and resources. The CIO's transformation strategy, initiated in January 2016, called for OI&T to focus on stabilizing and streamlining processes, mitigating weaknesses highlighted in GAO assessments, and improving outcomes by institutionalizing a new set of IT management capabilities.

⁸This board is made up of senior clinical leaders who represent the user community and establish priorities for interoperable health data between VA and DOD.

⁹Full operational capability of DOD's modernized health information system is not planned to occur until the end of fiscal year 2022.

As part of this transformation, the CIO began transitioning the oversight of and accountability for IT projects to a new project management process called the Veteran-focused Integration Process in January 2016, in an effort to streamline systems development and the delivery of new IT capabilities. The CIO established five new functions within OI&T:

- The enterprise program management office is to serve as OI&T's portfolio management and project tracking organization.
- The account management function is to be responsible for managing the IT needs of VA's major components.
- The quality and compliance function is to be responsible for establishing policy governance and standards and ensuring adherence to them.
- The data management organization is expected to improve both service delivery and the veteran experience by engaging with data stewards to ensure the accuracy and security of the information collected by VA.
- The strategic sourcing function is to be responsible for establishing an approach to fulfilling the department's requirements with vendors that provide solutions for those requirements, managing vendor selection, tracking vendor performance and contract deliverables, and sharing insights on new technologies and capabilities to improve the workforce knowledge base.

According to the former CIO, the transformation strategy was completed in the first quarter of fiscal year 2017.

FITARA Requires VA to Address Data Center Consolidation

Recognizing the importance of reforming the government-wide management of IT, Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) were enacted in December 2014 as part of the Carl Levin and Howard P. "Buck" McKeon National

Defense Authorization Act for Fiscal Year 2015.¹⁰ The law was intended to improve covered agencies' acquisitions of IT and further enable Congress to monitor agencies' progress and hold them accountable for reducing duplication and achieving cost savings. FITARA includes specific requirements related to seven areas, including data center consolidation.¹¹

Under FITARA, VA and other covered agencies are required to provide OMB with a data center inventory, a strategy for consolidating and optimizing the data centers (to include planned cost savings), and quarterly updates on progress made. FITARA also requires OMB to develop a goal for how much is to be saved through this initiative, and provide annual reports on cost savings achieved.

In addition, in August 2016, OMB released guidance intended to, among other things, define a framework for achieving the data center consolidation and optimization requirements of FITARA.¹² The guidance includes requirements for covered agencies such as VA to:

- maintain complete inventories of all data center facilities owned, operated, or maintained by or on behalf of the agency;
- develop cost savings targets due to consolidation and optimization for fiscal years 2016 through 2018 and report any actual realized cost savings; and
- measure progress toward meeting optimization metrics on a quarterly basis.

The guidance also directs each covered agency to develop a data center consolidation and optimization strategic plan that defines the agency's data center strategy for fiscal years 2016, 2017, and 2018. This strategy is to include, among other things, a statement from the agency CIO stating whether the agency has complied with all data center reporting

¹⁰Pub. L. No. 113-291, div. A, title VIII, subtitle D, 128 Stat. 3292, 3438-3450 (Dec. 19, 2014).

¹¹FITARA also includes requirements for covered agencies to enhance the transparency and improve risk management of IT investments, enhance CIO authority, annually review IT investment portfolios, expand training and use of IT acquisition cadres, and compare their purchases of services and supplies to what is offered under the federal strategic sourcing initiative that the General Services Administration is to develop.

¹²OMB, *Data Center Optimization Initiative (DCOI)*, Memorandum M-16-19 (Washington D.C.: Aug. 1, 2016).

requirements in FITARA. Further, the guidance indicates that OMB is to maintain a public dashboard that will display consolidation-related costs savings and optimization performance information for the agencies.

VA Has Begun to Implement VistA Modernization Plans amid Concerns about Its Long-term Approach, Metrics, and Duplication

Although VA has proceeded with its program to modernize VistA (known as VistA Evolution), the department's long-term plan for meeting its electronic health record system needs beyond fiscal year 2018 is uncertain. The department's current VistA modernization approach is reflected in an interoperability plan and a roadmap describing functional capabilities to be deployed through fiscal year 2018. Specifically, these documents describe the department's approach for modernizing its existing electronic health record system through the VistA Evolution program, while helping to facilitate interoperability with DOD's system and the private sector. For example, the VA Interoperability Plan, issued in June 2014, describes activities intended to improve VistA's technical interoperability,¹³ such as standardizing the VistA software across the department to simplify sharing data.

In addition, the VistA 4 Roadmap, which further describes VA's plan for modernizing the system, identifies four sets of functional capabilities that are expected to be incrementally deployed during fiscal years 2014 through 2018 to modernize the VistA system and enhance interoperability. According to the roadmap, the first set of capabilities was delivered by the end of September 2014 and included access to the Joint Legacy Viewer and a foundation for future functionality, such as an enhanced graphical user interface.

Another interoperable capability that is expected to be incrementally delivered over the course of the VistA modernization program is the

¹³Technical interoperability refers to the ability of multiple systems to be able to transmit data back and forth.

enterprise health management platform.¹⁴ The department has stated that this platform is expected to provide clinicians with a customizable view of a health record that can integrate data from VA, DOD, and third-party providers. Also, when fully deployed, VA expects the enterprise health management platform to replace the Joint Legacy Viewer.

However, an independent assessment of health IT at VA questioned whether the VistA Evolution program to modernize the electronic health record system can overcome a variety of risks and technical issues that have plagued prior VA initiatives of similar size and complexity.¹⁵ For example, the study raised questions regarding the lack of any clear advances made during the past decade and the increasing amount of time needed for VA to release new health IT capabilities. Given the concerns identified, the study recommended that VA assess the cost versus benefits of various alternatives for delivering the modernized capabilities, such as commercially available off-the-shelf electronic health record systems, open source systems, and the continued development of VistA.

In speaking about this matter, VA's former Under Secretary for Health asserted that the department will follow through on its plans to complete the VistA Evolution program in fiscal year 2018. However, the former CIO also indicated that the department would reconsider how best to meet its electronic health record system needs beyond fiscal year 2018. As such, VA's approach to addressing its electronic health record system needs remains uncertain.

¹⁴The enterprise health management platform is a graphical user interface that is intended to present patient information to support medical care to the veteran from a standardized set of information, regardless of where the veteran receives care. Clinical information captured at the point of care is made available to all authorized providers across the enterprise.

¹⁵MITRE Corporation, *Independent Assessment of the Health Care Delivery Systems and Management Processes of the Department of Veterans Affairs, Volume 1: Integrated Report* (Washington, D.C.: Sept. 1, 2015). This assessment was conducted in response to a requirement in the Veterans Access, Choice, and Accountability Act of 2014, Pub. L. No. 113-146, § 201, 128 Stat. 1754, 1769 (Aug. 7, 2014).

VA, Together with DOD and the Interagency Program Office, Have Not Developed Goals and Metrics for Assessing Interoperability

Beyond modernizing VistA, VA has undertaken numerous initiatives with DOD that were intended to advance electronic health record interoperability between the two departments. Yet, a significant concern is that these departments have not identified outcome-oriented goals and metrics to clearly define what they aim to achieve from their interoperability efforts, and the value and benefits these efforts are expected to yield. As we have stressed in our prior work and guidance,¹⁶ assessing the performance of a program should include measuring its outcomes in terms of the results of products or services. In this case, such outcomes could include improvements in the quality of health care or clinician satisfaction. Establishing outcome-oriented goals and metrics is essential to determining whether a program is delivering value.

The IPO is responsible for monitoring and reporting on VA's and DOD's progress in achieving interoperability and coordinating with the departments to ensure that these efforts enhance health care services. Toward this end, the office issued guidance that identified a variety of process-oriented metrics to be tracked, such as the percentage of health data domains that have been mapped to national standards. The guidance also identified metrics to be reported that relate to tracking the amounts of certain types of data being exchanged between the departments, using existing capabilities. This would include, for example, laboratory reports transferred from DOD to VA via the Federal Health Information Exchange and patient queries submitted by providers through the Bidirectional Health Information Exchange.

Nevertheless, in our August 2015 report, we noted that the IPO had not specified outcome-oriented metrics and goals that could be used to gauge the impact of the interoperable health record capabilities on the departments' health care services. At that time, the acting director of the

¹⁶GAO, *Electronic Health Record Programs: Participation Has Increased, but Action Needed to Achieve Goals, Including Improved Quality of Care*, [GAO-14-207](#) (Washington, D.C.: Mar. 6, 2014); *Designing Evaluations: 2012 Revision*, [GAO-12-208G](#) (Washington, D.C.: Jan. 31, 2012); *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington, D.C.: May 2, 2011); and *Executive Guide: Effectively Implementing the Government Performance and Results Act*, [GAO/GGD-96-118](#) (Washington, D.C.: Jun. 1, 1996).

IPO stated that the office was working to identify metrics that would be more meaningful, such as metrics on the quality of a user's experience or on improvements in health outcomes. However, the office had not established a time frame for completing the outcome-oriented metrics and incorporating them into the office's guidance.

In the report, we stressed that using an effective outcome-based approach could provide the two departments with a more accurate picture of their progress toward achieving interoperability, and the value and benefits generated. Accordingly, we recommended that the departments, working with the IPO, establish a time frame for identifying outcome-oriented metrics; define related goals as a basis for determining the extent to which the departments' modernized electronic health record systems are achieving interoperability; and update IPO guidance accordingly.

Both departments concurred with our recommendations. Further, since that time, VA has established a performance architecture program that has begun to define an approach for identifying outcome-oriented metrics focused on health outcomes in selected clinical areas, and it also has begun to establish baseline measurements. We intend to continue monitoring the departments' efforts to determine how these metrics define and measure the results achieved by interoperability between the departments.

VA's Plan to Modernize VistA Raises Concern about Duplication with DOD's Electronic Health Record System Acquisition

VA has moved forward with modernizing VistA despite concerns that doing so is potentially duplicative with DOD's acquisition of a commercially available electronic health record system. Specifically, VA took this course of action even though it has many health care business needs in common with DOD. For example, in May 2010, both departments issued a report on medical IT to congressional committees that identified 10 areas—inpatient documentation, outpatient documentation, pharmacy, laboratory, order entry and management, scheduling, imaging and radiology, third-party billing, registration, and

data sharing—in which the departments have common business needs.¹⁷ Further, the results of a 2008 consultant’s study pointed out that over 97 percent of inpatient requirements for electronic health record systems are common to both departments.¹⁸

We also issued several prior reports regarding the plans for separate systems, in which we noted that the two departments did not substantiate their claims that VA’s VistA modernization, together with DOD’s acquisition of a new system, would be achieved faster and at less cost than developing a single, joint electronic health record system. Moreover, we noted that the departments’ plans to modernize their two separate systems were duplicative and stressed that their decisions to do so should be justified by comparing the costs and schedules of alternate approaches.¹⁹

We recommended that VA and DOD develop cost and schedule estimates that would include all elements of their approach (i.e., to modernize both departments’ health information systems and establish interoperability between them) and compare them with estimates of the cost and schedule for developing a single, integrated system. If the planned approach for separate systems was projected to cost more or take longer, we recommended that the departments provide a rationale for pursuing such an approach.

VA, as well as DOD, agreed with our recommendations and stated that an initial comparison had indicated that the approach involving separate systems would be more cost effective. However, as of January 2017, the

¹⁷Department of Defense and Department of Veterans Affairs Joint Executive Council and Health Executive Council, *Report to Congress on Department of Defense and Department of Veterans Affairs Medical Information Technology*, required by the explanatory statement accompanying the Department of Defense Appropriations Act, 2010 (Public Law 111-118).

¹⁸Booz Allen Hamilton, *Report on the Analysis of Solutions for a Joint DoD-VA Inpatient EHR and Next Steps*, Task Order W81XWH-07-F-0353: Joint DoD-VA Inpatient Electronic Health Record (EHR) Project Support, July 2008.

¹⁹GAO, *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). See also GAO, *2014 Annual Report: Additional Opportunities to Reduce Fragmentation, Overlap, and Duplication and Achieve Other Financial Benefits*, [GAO-14-343SP](#) (Washington, D.C.: Apr. 8, 2014), and *2015 Annual Report: Additional Opportunities to Reduce Fragmentation, Overlap, and Duplication and Achieve Other Financial Benefits*, [GAO-15-404SP](#) (Washington, D.C.: Apr. 14, 2015).

departments had not provided us with a comparison of the estimated costs of their current and previous approaches. Further, with respect to their assertions that separate systems could be achieved faster, both departments had developed schedules which indicated that their separate modernization efforts are not expected to be completed until after the 2017 planned completion date for the previous single-system approach.

Scheduling System Challenges Contributed to Designation of VA Health Care as High Risk

In February 2015, we designated VA health care as a high-risk area.²⁰ Among the five broad areas contributing to our determination was the department's IT challenges.²¹ Of particular concern was the failed modernization of a system to support the department's outpatient appointment scheduling.

We have previously reported on the department's outpatient appointment scheduling system, which is about 30 years old. Among the problems that VA employees responsible for scheduling appointments have cited, are that the system's commands require the use of many keystrokes, and that it does not allow them to view multiple screens at once. Thus, schedulers must open and close multiple screens to check a provider's or a clinic's full availability when setting up a medical appointment, which is time-consuming and can lead to errors.

In May 2010, we reported that, after spending an estimated \$127 million over 9 years on its outpatient scheduling system modernization project, VA had not implemented any of the planned system's capabilities and was essentially starting over by beginning a new initiative to build or purchase another scheduling system.²² We also noted that VA had not

²⁰GAO, *High Risk Series: An Update*, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015).

²¹The remaining four areas are ambiguous policies and inconsistent processes, inadequate oversight and accountability, inadequate training for VA staff, and unclear resource needs and allocation priorities.

²²GAO, *Information Technology: Management Improvements Are Essential to VA's Second Effort to Replace Its Outpatient Scheduling System*, [GAO-10-579](#) (Washington, D.C.: May 27, 2010).

developed a project plan or schedule for the new initiative, stating that it intended to do so after determining whether to build or purchase the new system.

We recommended that the department take six actions to improve key systems development and acquisition processes essential to the second outpatient scheduling system effort. The department generally concurred with our recommendations, but as of May 2016, had not addressed four of the six recommendations. Addressing our recommendations should better position VA to effectively modernize its outpatient scheduling system, and ultimately, improve the quality of care that veterans receive.

Efforts to Develop and Use the Veterans Benefits Management System Can Be Improved

In September 2015, we reported that VBA had made progress in developing and implementing VBMS, its system that is to be used for processing disability benefit claims.²³ Specifically, it had deployed the initial version of the system to all of its regional offices as of June 2013. Further, after initial deployment, VBA continued developing and implementing additional system functionality and enhancements to support the electronic processing of disability compensation claims. As a result, 95 percent of records related to veterans' disability claims were electronic and resided in the system.

Nevertheless, we found that VBMS was not able to fully support disability and pension claims, as well as appeals processing. While the Under Secretary for Benefits stated in March 2013 that the development of the system was expected to be completed in 2015, implementation of functionality to fully support electronic claims processing was delayed beyond 2015. In addition, VBA had not produced a plan that identified when the system would be completed. Accordingly, holding VBA management accountable for meeting a time frame and demonstrating progress was difficult.

²³[GAO-15-582](#).

Our report further noted that, even as VBA continued its efforts to complete the development and implementation of VBMS, three areas were in need of increased management attention.

- **Cost estimating:** The program office did not have a reliable estimate of the cost for completing the system. Without such an estimate, VBA management and the department's stakeholders had a limited view of the system's future resource needs, and the program risked not having sufficient funding to complete development and implementation of the system.
- **System availability:** Although VBA had improved its performance regarding system availability to users, it had not established system response time goals. Without such goals, users did not have an expectation of the system response times they could anticipate and management did not have an indication of how well the system performed relative to performance goals.
- **System defects:** While the program had actively managed system defects, a recent system release had included unresolved defects that impacted system performance and users' experiences. Continuing to deploy releases with large numbers of defects that reduced system functionality could have adversely affected users' ability to process disability claims in an efficient manner.

We also noted in the report that VBA had not conducted a customer satisfaction survey that would allow the department to compile data on how users viewed the system's performance, and ultimately, to develop goals for improving the system. Our survey of VBMS users in 2014 found that a majority of them were satisfied with the system, but that decision review officers were considerably less satisfied.²⁴

However, while the results of our survey provided VBA with data about users' satisfaction with the system, the absence of user satisfaction goals limited the utility of the survey results. Specifically, without having established goals to define user satisfaction, VBA did not have a basis for gauging the success of its efforts to promote satisfaction with the system, or for identifying areas where its efforts to complete development and implementation of the system might need attention.

²⁴Decision review officers examine claims decisions and perform an array of duties to resolve issues raised by veterans and their representatives.

We recommended, among other actions, that the department develop a plan with a time frame and a reliable cost estimate for completing VBMS, establish goals for system response time, assess user satisfaction, and establish satisfaction goals to promote improvement. While all of our recommendations currently remain open, the department indicated that it has begun taking steps to address them. For example, the department informed us of its plans to distribute its own survey to measure users' satisfaction with VBMS and to have the results of this survey analyzed by May 2017. In addition, the department has developed draft metrics for measuring the performance of the most commonly executed transactions within VBMS. Continued attention to these important areas can improve VA's efforts to effectively complete the development and implementation of VBMS and, in turn, more effectively support the department's processing of disability benefit claims.

VA's Progress on Data Center Consolidation Lags Behind Other Agencies

We previously reported²⁵ that VA was among the agencies that had collectively made progress on their data center closure efforts,²⁶ nevertheless, it had fallen short of OMB's goal for agencies to close 40 percent of all non-core centers by the end of fiscal year 2015.²⁷

VA's progress toward closing data centers, and realizing the associated cost savings, lagged behind that of most other covered agencies. Specifically, we reported that VA's closure of 20 out of its total of 356 data

²⁵[GAO-16-323](#).

²⁶The 24 agencies that FITARA requires to participate in the federal data center consolidation initiative are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development.

²⁷Until August 2016, OMB categorized data centers as "core" (i.e., primary consolidation points for agency enterprise IT services) or "non-core."

centers gave the department a 6 percent closure rate through fiscal year 2015—ranking its closure rate 19th lowest out of the 24 agencies we studied. Further, when we took into account the data centers that the department planned to close through fiscal year 2019, VA's 8 percent closure rate ranked 21st lowest out of 24.

With regard to cost savings and avoidance resulting from data center consolidation, our analysis of the department's data identified a total of \$19.1 million in reported cost savings or avoidances from fiscal year 2011 through fiscal year 2015. This equated to only about 0.7 percent of the total of approximately \$2.8 billion that all 24 agencies reported saving or avoiding during the same time period. Also, when we reported on this matter in March 2016, the department had not yet estimated any planned cost savings or avoidances from further data center consolidation during fiscal years 2017 through 2019.

VA also lagged behind other agencies in making progress toward addressing data center optimization metrics established by OMB in 2014.²⁸ These metrics, which applied only to core data centers, addressed several data center optimization areas, including cost per operating system, energy, facility, labor, storage, and virtualization. Further, OMB established a target value for nine metrics that agencies were expected to achieve by the end of fiscal year 2015. As we previously reported, 20 of 22 agencies with core data centers met at least one of OMB's optimization targets. VA was the only agency that reported meeting none of the nine targets.²⁹

Accordingly, we recommended that VA take action to improve its progress in the data center optimization areas that we reported as not meeting OMB's established targets. The department agreed with our recommendation and has since stated that approximately 70 data centers have been tentatively identified for potential consolidation by the end of fiscal year 2019. VA is anticipating that, upon completion, these consolidations will improve its performance on OMB's optimization metrics.

²⁸OMB, Memorandum M-14-08.

²⁹The Social Security Administration reported that it did not meet seven of OMB's nine data center optimization targets and that the remaining two targets were not applicable.

VA Plans to Retire Two Legacy Systems That Are Over 50 Years Old

The federal government spent more than 75 percent of the total amount budgeted for IT for fiscal year 2015 on operations and maintenance, including for the use of legacy IT systems that are becoming increasingly obsolete. VA is among a handful of departments with one or more archaic legacy systems. Specifically, our recent report on legacy systems used by federal agencies identified 2 of the department's systems as being over 50 years old, and among the 10 oldest investments and/or systems that were reported by 12 selected agencies.³⁰

- Personnel and Accounting Integrated Data (PAID)—This 53-year old system automates time and attendance for employees, timekeepers, payroll, and supervisors. It is written in Common Business Oriented Language (COBOL), a programming language developed in the late 1950s and early 1960s, and runs on IBM mainframes. VA plans to replace this system with the Human Resources Information System Shared Service Center in 2017.
- Benefits Delivery Network (BDN)—This 51-year old system tracks claims filed by veterans for benefits, eligibility, and dates of death. It is a suite of COBOL mainframe applications. VA has general plans to roll the capabilities of BDN into another system, but has not established a firm date doing so.

Ongoing use of antiquated systems such as PAID and BDN contributes to agencies spending a large, and increasing, proportion of their IT budgets on operations and maintenance of systems that have outlived their effectiveness and are consuming resources that outweigh their benefits. Accordingly, we recommended that VA identify and plan to modernize or replace its legacy systems. VA concurred with our recommendation and stated that it plans to retire PAID in 2017 and to retire BDN in 2018.

³⁰[GAO-16-468](#).

In conclusion, effective IT management is critical to the performance of VA's mission. However, the department faces challenges in several key areas, including its approach to pursuing electronic health record interoperability with DOD. Specifically, VA's reconsideration of its approach to modernizing VistA raises uncertainty about how it intends to accomplish this important endeavor. VA has not yet defined the extent of interoperability it needs to provide the highest possible quality of care to its patients, as well as how and when the department intends to achieve this extent of interoperability with DOD. Further, VA has not justified the development and operation of an electronic health record system that is separate from DOD's system, even though the departments have common system needs.

The department also faces challenges in modernizing its approximately 30-year old outpatient appointment scheduling system and improving its development and implementation of VBMS. Further, the department has not yet demonstrated expected progress toward consolidating and optimizing the performance of its data centers. In addition, VA's continued operation of two of the oldest legacy IT systems in the federal government raises concern about the extent to which the department continues to spend funds on IT systems that are no longer effective or cost beneficial. While we recognize that VA has initiated steps to mitigate the IT management weaknesses we have identified, sustained management attention and organizational commitment will be essential to ensuring that the transformation is successful and that the weaknesses are fully addressed.

Chairman Roe, Ranking Member Walz, and Members of the Committee, this completes 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

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