STATEMENT OF DEPUTY INSPECTOR GENERAL DAVID CASE
OFFICE OF INSPECTOR GENERAL, *DEPARTMENT OF VETERANS AFFAIRS*
BEFORE THE
U.S. SENATE COMMITTEE ON VETERANS' AFFAIRS
HEARING ON
VA ELECTRONIC HEALTH RECORDS: MODERNIZATION AND THE PATH AHEAD
July 14, 2021

Chairman Tester, Ranking Member Moran, and Committee Members, thank you for the opportunity to discuss the Office of Inspector General's (OIG's) oversight of the Department of Veterans Affairs' electronic health record modernization (EHRM) program. The OIG recognizes the enormity and complexity of converting VA's electronic health record (EHR) systems for millions of veterans receiving VA care and acknowledges the significant work and commitment of VA staff to accomplish this task. This was evident in a variety of contexts, but of note, OIG staff observed that employees at the first deployment site—the Mann-Grandstaff VA Medical Center (VAMC) in Spokane, Washington—and other VA staff consistently demonstrated a commitment to transitioning to a new EHR while continuing to prioritize the care of patients during the COVID-19 pandemic.

The OIG's early oversight efforts of the EHRM program have been primarily focused on VA's preparation and implementation of the initial deployment at the Mann-Grandstaff VAMC, infrastructure for the new system, any impact on patients' access to care, user training, and other critical issues. Deficiencies identified and risk mitigations recommended for this first site revealed corrective measures that need to be addressed as additional facilities go live with the deployment.

As detailed in this statement, we have repeatedly found unreliable and incomplete estimates for upgrades and costs, inadequate reporting affecting transparency to Congress, and stove-piped governance with decision making that does not appropriately engage Veterans Health Administration (VHA) personnel who are the end users of the new EHR system. The 38 recommendations from our five reports published between April 2020 and July 2021 are meant to help VA make modifications to its roadmap for future implementation efforts. If VA does not address identified issues, it is at risk for cascading failures, breakdowns, delays, and poor health care when deploying the new electronic health record (EHR) system nationwide.

BACKGROUND

The OIG's mission is to conduct effective oversight of VA programs and operations to help make certain that veterans receive access to quality health care and benefits in a timely manner, as well as ensure VA funds are appropriately spent. The OIG has been conducting early oversight of the EHRM program because of the tremendous cost and scale of the effort and because prior modernization efforts by VA have been unable to achieve seamless interoperability with the Department of Defense (DoD). Since 2000, the OIG has identified VA's information management as a "major management challenge" because VA has a history of not always properly planning, overseeing, and implementing updates to its critical IT investments.[1]

VA's legacy EHR system, VistA, has served the department for more than 40 years but lacks needed interoperability and is too costly to maintain. While VA has taken steps to modernize VistA, these attempts have not resulted in a single, interoperable EHR system with DoD. Moreover, the Government Accountability Office (GAO) previously reported that these prior efforts have cost VA over a billion dollars.[2] VA determined that using a common EHR system with DoD will drive better clinical outcomes by giving healthcare providers a more comprehensive picture of the veteran's medical history and enhancing collaboration with VA's community healthcare partners.

Then-VA Secretary David Shulkin signed a Determination and Findings on June 1, 2017, authorizing VA to issue a solicitation directly to Cerner to acquire the EHR system being deployed by DoD. VA signed a contract with Cerner for the system on May 17, 2018, planning for an initial deployment in 2020. The new EHR system's initial deployment at Mann-Grandstaff VAMC was scheduled for March 28, 2020, but on February 10, 2020, a VA spokesperson announced that the deployment would be postponed indefinitely because at six weeks prior to the go-live date, it was only 75–80 percent ready. The patient appointment scheduling package was deployed at the Chalmers P. Wylie Ambulatory Care Center in Columbus, Ohio, in August 2020. Ultimately, the new EHR system went live at Mann-Grandstaff VAMC, its affiliated facilities, and the West Consolidated Patient Account Center on October 24, 2020, for clinical and administrative work.

2020 EHRM OVERSIGHT REPORTS

The OIG published two reports about the EHRM effort on April 27, 2020, discussed in more detail below. The first report examines the potential impact of VA's transition to the new EHR system on patients' access to care and the initially available capabilities. The OIG found that the Mann-Grandstaff VAMC lacked adequate staffing to navigate the additional strains of the transition and had not received formal, written guidance on minimizing obstacles to patients' access to care. The OIG also found that

[1] Department of Veterans Affairs, *"*Inspector General's VA Management and Performance Challenges,*"* Fiscal Year (FY) 2020 Agency Financial Report, sec. III, (2020). The OIG reports annually on VA's major management challenges.

[2] Government Accountability Office, "VA Health IT Modernization: Historical Perspective on Prior Contracts and Update on Plans for New Initiative," July 25, 2019.

the risk mitigations facility leaders would employ during the planned go-live period were inadequate to address the gaps in capabilities and presented a potential yet significant risk to patient safety. The second report focuses on the gaps in VA's efforts to update the Mann-Grandstaff VAMC's physical and information technology (IT) infrastructure to support the new system. The OIG found that VA did not meet its own timelines to complete critical physical and IT infrastructure upgrades at the facility.

Review of Access to Care and Capabilities during VA's Transition to a New Electronic Health Record at the Mann-Grandstaff VA Medical Center

VA expected a productivity drop associated with the facility's preparations for going live with the new EHR system.[3] Mann-Grandstaff VAMC leaders consulted with DoD staff, who transitioned to the Cerner system in 2017 and experienced a 30-percent decrease in productivity for the subsequent 18 months. VA had plans to mitigate the impact on facility personnel for the March 2020 go-live event, including adding facility staff, enhancing clinical space, changing clinic processes, and a greater use of community care. At publication, however, the OIG did not find evidence of VA providing final guidance to Mann-Grandstaff VAMC leaders on carrying out these plans.

Some of the problems that emerged in preparing for going live were foreseeable. VA's Office of Electronic Health Record Management (OEHRM) and Cerner determined in July 2019 that not all anticipated capabilities of the new EHR would be available for the March 2020 go-live date. Mann-Grandstaff VAMC leaders and staff told the OIG of concerns related to the deployment of limited capability sets including

- not knowing what capabilities would be available at the first implementation site;
- VA changing the capabilities to meet the tight go-live timeline, instead of changing the go-live timeline to align with the completion of capabilities;
- challenges in having adequate training due to incomplete information regarding which capabilities would be available;
- an inability to accurately predict patient safety risks due to the lack of clarity around which capabilities would be available;
- limitations in Capability Set 1 (limited subset of functions that would be available to the first implementation site) that present as "significant handicaps at day zero;"
- requiring staff to use two systems (Joint Longitudinal Viewer and new EHR system) while providing patient care to compensate for the new EHR's limited legacy information; and
- feeling compelled to go live in March 2020, without the full capability set being ready.

[3] VA OIG, *Review of Access to Care and Capabilities during VA's Transition to a New Electronic Health Record at the Mann-Grandstaff VA Medical Center Spokane Washington*, April 27, 2020.

The gaps in functionality were significant. For example, the OIG reviewed facility pharmacy refill requests during calendar year 2019 and found the MyHealtheVet portal was the most frequently used method for patients to request prescription refills.[4] At the time of publication, the limited capabilities that were to be made available to patients and facility staff did not include a new patient portal and the VA's present portal, MyHealtheVet, would not be connected to the new system. Facility leaders and staff told the OIG of safety concerns related to losing access to the MyHealtheVet electronic refill portal and that mitigation strategies seemed insufficient to meet patient needs. The OIG was unable to determine all potential patient safety risks associated with the new EHR, but the work-around for the electronic prescription refill process alone presented significant concerns as it could have impacted a given patient's ability to fill a life-sustaining medication after go-live.[5]

The OIG made eight recommendations, of which six remain open as unimplemented. The recommendations were directed to the under secretary for health, the executive director of OEHRM, the VISN director, and the Mann-Grandstaff VAMC director. The recommendations' text and status can be found in appendix A of this statement, as well as on the recommendations dashboard on the OIG website. The OIG routinely requests updates on the status of recommendations published in all oversight reports every 90 days from VA.

Deficiencies in Infrastructure Readiness for Deploying VA's New Electronic Health Record System

To deliver patient care using the new EHR system, significant upgrades are needed to VA's physical and IT infrastructure.[6] The OIG audited VA's infrastructure readiness activities at the Mann-Grandstaff VAMC in anticipation of the initial March 2020 go-live date. OEHRM leaders testified before the House Committee on Veterans' Affairs Technology Modernization Subcommittee in June 2019 that having the infrastructure in place six months before deployment was a program goal to help ensure smooth deployment, meaning that infrastructure upgrades should have been completed by the end of September

[4] My HealtheVet, *Get to Know Rx Refill Options*, https://www.myhealth.va.gov/mhv-portal-web/ss20180423-prescription-refill-options-for-veterans. (The website was accessed on July 6, 2021.) MyHealtheVet is an online personal health portal in which patients can schedule appointments, view medical records, refill prescriptions, and send secure messages to their care providers. VA medical facilities provide patients with several methods to refill VA-prescribed medications: online through the MyHealtheVet portal, by phone through the automated telephone refill line, in person at a VA pharmacy, and by mail through the VA mail order pharmacy.

[5] Currently, OIG staff are conducting a review of Mann-Grandstaff VAMC's pharmacy operations since the October 2020 go-live date after receiving numerous complaints from staff and veterans. The review has identified issues with fragmented data, workflow challenges, and the potential for human error due to the need for significant work-arounds.

[6] VA OIG, *Deficiencies in Infrastructure Readiness for Deploying VA's New Electronic Health Record System*, April 27, 2020.

2019. The OIG found critical physical infrastructure upgrades had not been completed at the facility in October 2019, about five months prior to the planned go-live date.

"Physical infrastructure" refers to the underlying foundation that supports the system, such as electrical; cabling; and heating, ventilation, and air-conditioning. "IT infrastructure" includes network components such as wide and local area networks, end-user devices (e.g., desktop and laptop computers, and monitors), and medical devices.

The OIG found some infrastructure upgrades intended to mitigate diminished system performance were not projected to be completed until months after going live. For example, modifications to telecommunications rooms were not estimated to be completed until up to four months after the planned initial March 2020 go-live date. The audit team also identified deficiencies with the preparedness of IT infrastructure upgrades. In early January 2020, VA had not received about half of the medical devices needed at go live and had not received DoD approval to connect the medical devices to the network.

Infrastructure upgrades were not completed at the facility in a timely manner because VA lacked

- comprehensive site assessments to determine a realistic go-live date,
- requisite specifications for infrastructure and appropriate monitoring mechanisms, and
- adequate staffing.

VA committed to an aggressive, but apparently unrealistic, deployment date of March 2020 without having the necessary information about the facility's infrastructure. On June 26, 2018, VA announced the go-live date of March 2020; however, it was not until May 2019 that an assessment of physical infrastructure needs was performed. Concerningly, OEHRM first made requirements for physical infrastructure available to VHA in April 2019, just five months before the infrastructure was supposed to be ready for the go-live event.

Further, VA lacked some management controls and the adequate staffing needed to effectively monitor infrastructure readiness at the facility. For example, OEHRM's internal tracking tool addressing infrastructure was not put into use until June 2019, three months before VA's goal to have infrastructure upgrades complete. As of November 2019, four of six positions on the infrastructure readiness team were unfilled, while the director position was vacant in August 2019, about two months before VA's goal of having infrastructure upgrades complete.

Finally, OIG staff found some physical security vulnerabilities at the facility, which, if exploited, could have resulted in a campus-wide loss of connectivity and patient care downtime.

The OIG made seven recommendations for corrective action to the executive director of OEHRM, and the eighth to the Mann-Grandstaff VAMC director. These recommendations, of which five remain open as not implemented, can be found in appendix B of this statement.

2021 EHRM OVERSIGHT REPORTS

Thus far in 2021, the OIG has published three reports on the EHRM program. For the new EHR system to operate as intended, it needs to invest in both the physical and IT-related infrastructure upgrades previously discussed. Physical and IT infrastructure upgrades are generally funded from different sources and have different entities responsible for cost-estimating. To develop a more comprehensive picture of the costs and risks, the OIG conducted two audits separately examining cost estimates for the two types of infrastructure upgrades. Reporting reliable cost estimates for upgrades is imperative so that Congress has the information needed to make informed budgetary and investment decisions. Within VA, senior leaders depend on these cost estimates to plan program budgets, make acquisitions, and monitor program execution. For these reasons, VA needs to have cost estimates that are reliable and ensure all program-related costs are reported to achieve program success. For the third report, the OIG conducted a healthcare inspection of the development and delivery of training content to users of the new EHR, and the assessment of post-training staff proficiency.

Deficiencies in Reporting Reliable Physical Infrastructure Cost Estimates for the Electronic Health Record Modernization Program (May 2021)

This audit was conducted to determine if VA developed and reported reliable physical infrastructure upgrade cost estimates for the new EHR system.[7] As discussed previously, VHA medical facilities need significant physical infrastructure upgrades, such as electrical work, cabling, heating, ventilation, and cooling to successfully deploy the new EHR system. The audit examined whether the cost estimates developed by VHA met VA standards and were comprehensive, well documented, accurate, and credible. It also reviewed whether OEHRM reported these cost estimates to Congress in accordance with statutory mandates.

VHA and OEHRM share responsibilities for estimating and reporting physical infrastructure upgrade costs. VHA develops the physical infrastructure upgrade cost estimates, while OEHRM is responsible for reporting all program life-cycle cost estimates to Congress in accordance with the Veterans Benefits and Transition Act of 2018.[8] That Act requires quarterly reporting on the EHRM program's status, including annual and life-cycle cost estimates and defines the program as any activities to procure or implement the new EHR system. In early 2019, VA's Office of General Counsel determined that physical infrastructure upgrades must be funded from accounts specifically available for construction-type purposes, such as VHA's nonrecurring maintenance and minor construction funds. Recognizing the need for more involvement in the completion of these upgrades, VHA created a special team to spearhead the identification of facility deficiencies and develop life-cycle cost estimates for physical infrastructure upgrade work to support the new EHR system.

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[7] VA OIG, *Deficiencies in Reporting Reliable Physical Infrastructure Cost Estimates for the Electronic Health Record Modernization Program*, May 25, 2021.

[8] The law was signed on December 31, 2018 and became Public Law 115-407.

VHA Cost Estimates for Physical Infrastructure Upgrades Needed in Support of the EHRM Program Were Not Reliable

The OIG found VHA's cost estimates were not reliable under VA standards and GAO guidance.[9] These standards and guidance state that cost estimates should be comprehensive, well documented, accurate, and credible. However, neither of VHA's formal cost estimates for physical infrastructure, dated June 2019 ($2.7 billion) and November 2019 ($1.1 billion), fully met these criteria, and thus could be significantly understated. In addition, VA lacked effective quality controls and procedures to evaluate the estimates and had conducted insufficient planning from the start.

1. Cost Estimates Were Not Comprehensive

Comprehensive cost estimates provide management officials with reasonable assurance that all costs are included so they can make well-informed decisions. VHA's November 2019 estimate, totaling about $1.1 billion for physical infrastructure upgrades needed to support nationwide deployment only reflected about 25 percent of nationwide cabling costs, understating the costs by at least $481 million.[10] VHA stated the costs were not included as they were focused on identifying costs for infrastructure needed immediately. However, all cabling costs should be included in the cost estimate because upgraded cabling is required to be completed prior to full system deployment. In addition, both VHA's June and November 2019 estimates omitted estimated costs of upgrades paid with minor construction funds. As of July 2020, the OIG team noted VHA had awarded contracts for two minor construction projects totaling about $11 million for new data centers necessary to support the EHR system at two VA medical facilities.

2. Cost Estimates Were Not Well Documented

Sufficient documentation supports an estimate's validity and provides an audit trail allowing the estimate to be easily recreated and updated. Both June and November estimates lacked documented evidence they were approved by senior leaders. The director of the Special Engineering Projects team explained there is implicit approval from leaders when cost estimates are used for VHA's operating plan, as the November 2019 cost estimate was. Other VA leaders told the OIG team they review and approve operating plans, which include a single year of estimated costs. The OIG believes better controls and a more formal process would help ensure senior leaders approved and documented cost estimates.

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[9] VA Cost Estimating Guide, ver. 2.2, August 17, 2016; GAO, Cost Estimating and Assessment Guide, GAO-20-195G, March 2020.

[10] In September 2019, VHA's executive in charge signed a memo requiring facilities to replace any cabling below category 6 with category 6a cabling before nationwide system deployment is complete. This is consistent with OEHRM requirements and industry standards.

The estimates also failed to comply with the documentation standard because they did not have enough detail to allow an independent party to trace and recreate the costs.[11] As an example, both estimates included $458 million in fiber optic cabling costs but lacked documentation to support how VHA estimated these costs. Both estimates also lacked required supporting documentation that would enable an independent reviewer to ensure costs were not double counted in two cost categories: "other infrastructure" and "miscellaneous." Totaled, these cost categories accounted for about 15 percent and 18 percent of the total June and November estimates, respectively.

3. Cost Estimates Were Not Accurate

Neither cost estimate met the standard for accuracy—that is, free of mathematical errors and not overly conservative or optimistic. First, in the June 2019 estimate, calculation errors omitted about $90 million of fiscal year (FY) 2021 construction design costs, or about 10 percent of total physical infrastructure upgrade costs estimated for the next fiscal year. Second, the November 2019 estimate erroneously omitted about $138 million in escalation costs for upgrades expected to take place in future years, and did not include the cost of completely upgrading the cabling required at VHA facilities nationwide

4. Cost Estimates Were Not Credible

Credible cost estimates identify for decision makers the limitations of the data and assumptions and are to be measured against independent or third-party cost estimates. Under this standard, neither cost estimate was credible.

Both estimates lacked a risk and uncertainty analysis, which is used to disclose the likelihood actual costs may differ from estimated costs. VHA did not conduct this type of analysis because VA did not have accurate assessments of what infrastructure upgrades were needed at its facilities. Both estimates also lacked a sensitivity analysis, which is used to explain how much impact each cost factor has on the overall estimate. It provides leaders with cost ranges for each category and offers an explanation of why the cost estimates could change. Both cost estimates were also not compared to a third-party cost estimate, a best practice in validating the reliability and reasonableness of cost estimates.

Using the planned and obligated costs at VA's three planned initial operating capability sites, the OIG team statistically projected program-wide physical infrastructure costs to be between approximately $3.1 and $3.7 billion.[12] Notably, VHA's June 2020 estimate projects physical infrastructure upgrade costs to be about $3.1 billion, consistent with the OIG team's low-end projection.[13]

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[11] To be well documented, an estimate should be thoroughly documented such that someone unfamiliar with the estimate could easily update or recreate it.
[12] The three facilities were the Seattle, American Lake, and Mann-Grandstaff VAMCs, all located in Washington State.
[13] VHA provided a third, estimate dated June 2020 still in draft form that the OIG team did not review for reliability because its calculations were not finalized.

5. Lack of Effective Quality Controls and Procedures to Evaluate Estimates

Deficient quality controls contributed to the unreliability of both cost estimates. Independent cost estimates—a control used to validate the data and determine the reasonableness of a VA estimate—are required by VA policy to be performed on all major IT programs. However, the office within VA with the responsibility to perform these reviews essentially existed as a group on paper only, and an independent cost estimate was not performed on either estimate.

6. Insufficient Planning at the Program's Start

Consistent with findings from the April 2020 OIG report, the audit team found neither OEHRM nor VHA knew the true state of infrastructure at facilities at the time the Cerner contract was signed, and when this audit was completed in March 2021, VHA was still identifying necessary infrastructure upgrades. As of January 2021, infrastructure requirements continue to be defined, making it difficult for VHA to identify gaps in infrastructure and estimate related costs. Additionally, VHA did not create the group responsible for cost-estimating until 2019, with a director retained six months later.

Continued underestimated or unreliable cost estimates increases the risk that available funding will be insufficient to cover EHRM program-related physical infrastructure upgrades. Underestimates could require VHA to shift funds intended for other medical facility projects to cover the cost of these upgrades. In fiscal years 2019 and 2020 combined, facilities used about $60 million of funds from the medical facilities appropriation to cover EHRM-related physical infrastructure upgrades.

OEHRM Did Not Include Cost Estimates for Upgrading Physical Infrastructure in Reports to Congress

The OIG found that OEHRM did not include the cost of physical infrastructure upgrades in all eight of its quarterly reports to Congress, which are intended to meet the program's requirements under the Veterans Benefits and Transition Act.[14] This is significant, as it understates the program's cost in reports submitted to Congress. The reports gave the impression that these costs were included because seven of the eight reports contained language that infrastructure costs include "physical infrastructure at VA medical centers and other sites." To the contrary, these reports did not include the $2.7 billion for physical infrastructure upgrades as identified in the June 2019 estimate VHA provided to OEHRM.

On numerous occasions, VA officials reported the total program cost to be approximately $16 billion. About two years after the Cerner contract was signed, the VHA executive in charge publicly disclosed to Congress the need for billions of dollars to support physical infrastructure upgrades. Neither OEHRM nor VHA leaders could provide evidence they informed Congress or other public stakeholders of this significant EHR system-related cost prior to this hearing.

[14] OEHRM produced its ninth report after the OIG report was drafted and did not include physical infrastructure upgrade costs in that document.

When questioned by the OIG as to why they had not reported this significant cost in congressionally mandated reports, OEHRM officials explained they did not because these upgrades were outside the office's funding responsibility. OEHRM also said the upgrades had been needed for years and VHA is responsible for them.

The OIG contended that this argument is not supportable for the following reasons:

- The Act requires VA to report on the life-cycle costs of the program, including any activities to implement an EHR system.
- VA and GAO guidance require a life-cycle cost estimate to include all costs, regardless of funding source.[15]
- VHA and OEHRM leaders have defined these upgrades as critical and necessary to support and sustain the new EHR.

OEHRM has since committed to including physical infrastructure upgrade costs in future congressionally mandated EHRM reports.

The OIG made two recommendations to the executive director of OEHRM, one to the assistant secretary for management, and two to the director of special engineering projects for VHA's Office of Healthcare Environment and Facilities Programs. Appendix C contains a list of this report's recommendations made in May 2021, which remain open as of July 2021.

UNRELIABLE INFORMATION TECHNOLOGY INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD PROGRAM (July 2021)

The second audit examined VA's estimates of IT infrastructure upgrades.[16] Of EHRM's estimated $16.1 billion total program cost, VA has estimated about $4.3 billion would be directed for IT infrastructure upgrades, which are distinct from the physical infrastructure costs and include system interfaces and updates to end-user devices like desktop and laptop computers. This audit examined whether OEHRM-developed cost estimates were well-documented, comprehensive, credible, and accurate. The OIG also examined whether OEHRM reported to Congress all IT infrastructure upgrade costs, including future technology updates.[17] The OIG found the $4.3 billion estimate was not reliable, and a lack of complete documentation made it difficult to determine the extent of the estimate's accuracy. The OIG also identified that VA did not report to Congress critical program-related IT infrastructure upgrade costs in congressionally mandated reports and did not update annual IT infrastructure cost estimates.

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[15] *VA Cost Estimating Guide*, ver. 2.2, August 17, 2016; GAO, *Cost Estimating and Assessment Guide*, GAO-09-3SP, March 2009, and GAO-20-195G, March 2020.

[16] VA OIG, *Unreliable Information Technology Infrastructure Cost Estimates for the Electronic Health Record Modernization Program*, July 7, 2021.

[17] Technology refreshment is the process of replacing certain infrastructure on a regular schedule, instead of using the systems or devices until they can no longer function. For example, devices like laptops are replaced every four years.

IT Infrastructure Upgrade Cost Estimates Were Not Reliable but Improvements Have Been Made

As discussed previously, reliable estimates should be well-documented, comprehensive, credible, and accurate. The audit team evaluated two estimates OEHRM provided to Congress dated December 2018 and August 2020—each estimating about $4.3 billion for the IT infrastructure upgrades. Neither met the reliability criteria, and the OIG could not evaluate their accuracy because they lacked documentation to support many of the calculations. Like the physical infrastructure cost audit, VA did not complete an independent cost estimate, which could have revealed the OIG-identified issues sooner.

OEHRM's August 2020 estimate was supported by significantly more details than the initial estimate. For example, the August 2020 end-user device cost category details 20 subcategories including laptops and desktops, monitors, and printers, while the December 2018 estimate only provided end-user device totals by year. Despite that, the August 2020 cost estimate was still not considered well-documented because it lacked information to support most costs, including manually entered amounts for laptop and desktop computer costs. In January 2021, in part due to discussions with the audit team, OEHRM began developing procedures for staff that align with cost-estimating guidance and include controls to help address the issues identified in the OIG report. During the audit, the team noted that VA also began making improvements to the cost model used to develop the estimate, facilitating more detailed support.

IT Infrastructure Costs Were Omitted and Not Updated for Accuracy

The OIG found OEHRM did not include costs for critical program-related IT infrastructure upgrades in the estimates reported to Congress, effectively underreporting program costs by nearly $2.5 billion. The $2.5 billion in costs are for IT infrastructure upgrades that VA's Office of Information and Technology (OIT) and VHA are expected to fund.[18] Like the physical infrastructure costs, OEHRM officials stated they felt the omitted costs were outside their scope of responsibility, but neither OIT nor VHA reported these costs to Congress, despite VA and GAO guidance requiring life-cycle cost estimates to include all costs, regardless of funding source. These costs should have been disclosed by OEHRM.

OEHRM also did not include updates to future year IT infrastructure cost estimates in reports to Congress. In February 2020, OEHRM knew of changes to fiscal year 2021 costs requiring revisions to expected annual costs but did not update the life-cycle cost estimate in any of the four subsequent reports. It was not until August 2020 that OEHRM briefed Congress on the updated estimates. However, as of January 2021, OEHRM had not updated the life-cycle cost estimate in the program's two subsequent reports, contrary to the Act's requirement for quarterly program updates on annual costs, and

[18] OIT is expected to fund some upgrades for the local area network, end-user devices, phones, and Wi-Fi, while VHA is expected to fund upgrades mostly for medical devices.

VA financial policy that states life-cycle cost estimates should be regularly updated to reflect the current status of the program.[19]

This lapse in accurate reporting occurred because OEHRM has not established procedures to assist staff in determining if a cost-estimate update is needed in the program's reports and, if so, when this update should occur. Instead, staff relied on unclear internal guidance. Without all critical IT infrastructure upgrade costs accurately presented, Congress lacks the comprehensive picture of total program costs needed to make informed oversight and investment decisions.

All six recommendations to the executive director of OEHRM are listed in appendix D. However, unlike the other OIG reports discussed in this statement, OEHRM did not provide target completion dates for the action plans but rather stated they would be provided at a later time.

TRAINING DEFICIENCIES WITH VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER IN SPOKANE, WASHINGTON (July 2021)

The OIG conducted this healthcare inspection regarding OEHRM's delivery and assessment of the training on the new EHR system for Mann-Grandstaff VAMC staff.[20] OEHRM's Change Management team is charged with reviewing and approving Cerner's development of training plans and materials that Cerner then delivers to VA employees. The centrality of successfully training employees to use the new EHR system cannot be understated—from business operations that help ensure prompt access to quality patient care to employee morale. The importance of reviewing training for the new EHR is heightened given the issues the DoD found with training on the Military Health System GENESIS, which is essentially the same EHR system VA purchased. The DoD found numerous deficiencies with training on the new EHR including the following:[21]

- Undocumented and inconsistent work-arounds
- Poor computer-based training
- Lack of documentation
- "Badly" assigned user roles
- Instructors' lack of both clinical experience and familiarity with the new EHR

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[19] VA Financial Policy, vol. III, chap. 12, "Life Cycle Cost Estimating," May 4, 2017.

[20] VA OIG, *Training Deficiencies With VA's New Electronic Health Record System at the Mann-Grandstaff VA Medical Center in Spokane, Washington*, July 8, 2021.

[21] The Department of Defense's Joint Interoperability Test Command tests and certifies the armed forces' information technology systems and equipment. They completed analyses of the training for the new EHR in April 2018 and July 2020, which identified many concerns. Defense Information Systems Agency, Testing, accessed March 24, 2021, https://storefront.disa.mil/kinetic/disa/service-catalog#/forms/testing.

- Insufficient training to overcome EHR usability problems
- Inadequate resources for content development and continued training

Because DoD's early EHR deployments faced multiple delays and setbacks, VA's transition to the new records system was supposed to be structured to benefit from these experiences. However, the OIG found that VA experienced many of the same problems during its initial deployment.

The OIG identified concerns related to governance challenges with VHA and OEHRM that manifested in these training deficiencies. Notably, the OIG did not find evidence that VHA had a defined role in participating in decision-making or oversight related to training activities. First, near the time of the planned March 2020 go-live period, VHA had concerns regarding the need for an operational readiness assessment that were not were not adequately addressed by OEHRM. Second, the OIG found that during that time, the Mann-Grandstaff VAMC director and acting under secretary for health reported concerns to OEHRM leaders regarding some disturbing feedback from staff on the insufficiency of the training curriculum. With both issues, VHA personnel met resistance from OEHRM leaders or were not included in discussions leading to decisions.

Additionally, the OIG confirmed decreased job productivity due to training. During the OIG's April 2020 review of patients' access to care, the OIG found VHA anticipated "30% [healthcare provider] productivity reduction for [a] nine-month period due to training requirements" of the new EHR. During this review, the OIG found a 30.7 percent decrease in volume in August 2020, a 25.6 percent decrease in September 2020, a 42.1 percent decrease in October 2020, and a 41.5 percent decrease in November 2020. The OIG also found the facility's patient advocates did not consistently track, trend, and report patient complaints to facility leaders about the new EHR, contrary to VHA policy.

The OIG identified training concerns that can be grouped into the following three categories:

1. Training content
2. Training delivery
3. Training assessment

Training Content

The OIG reviewed the training content and materials associated with the system applications, the software programs that end users operate to perform tasks in the new EHR, and the new EHR workflows. New workflows result in changes to how end users perform their jobs, such as the scheduling of consults (referrals) or how a provider performs a physical examination. Workflow training focuses on process changes and results in an end user understanding how their distinct role fits into the overall delivery of patient care.

The OIG found that systems software applications training both in the classroom and through supplemental materials were insufficient. Facility staff used the term "button-ology" to describe the

training content. An end user reported that, "it was just people sitting down and learning to use buttons and not having any context for what they were doing." Without additional training, it is inadequate to effectively demonstrate how the EHR is used in a clinical and administrative context. The OEHRM Change Management Director of Training Strategy acknowledged to OIG staff that not all content was included in formal training course materials and some topics required more time and information. For example, the new EHR has a Message Center function enabling staff to communicate about patients, but it was only discussed generally in class. However, the OIG determined that because the supplemental materials were optional resources, no means existed to ensure staffs' awareness, review, or proficiency.

The OIG found that classroom workflows training was also insufficient. The new EHR introduced more than 900 novel workflows to facility staff. Per the EHR training strategy, Cerner was to ensure that these workflow and process changes were incorporated into training. Facility leaders and staff told the OIG that the workflows classroom training did not prepare them for going live with the new system, teach them how to apply what they learned to their work, or explain the meaning behind the process of which buttons to push. The VA OEHRM director of Change Management corroborated that the classroom workflow training was inadequate to handle the change management needs of the staff.

Training Delivery

The OIG identified four aspects of training delivery that may have negatively affected the new EHR's use: (1) insufficient time for training, (2) limitations with the training domain (a close facsimile of the program for users' practice), (3) challenges with user role assignments, and (4) gaps in training support.

Training Time

The OIG found that facility leaders and staff perceived they did not have enough training hours given the increased complexity of the new EHR and the poor quality of the training content. A primary care EHR user shared that "a lot of other people … were literally crying" over problems with completing training and managing patient care. A facility leader who scheduled staff training described OEHRM's scheduling instructions as chaotic and confusing, which caused staff to show up for classes for which they were not scheduled. These challenges were magnified given the stresses of the global pandemic.

Training Domain

Cerner was contracted to provide a training domain that closely mirrored the new EHR so staff could practice before implementing the system. However, OEHRM materials described the training domain as a "limited use version of the live EHR system used by trainers, super users, and end users" during training courses. An OEHRM Change Management leader confirmed that some EHR functionalities were still being developed after the training domain content was finalized. Facility leaders and staff also said lack of access to the training domain outside of the classroom contributed to the knowledge deficit. OEHRM's director of Change Management opined that not having contact with facility staff for five months due to the COVID-19 pandemic had the biggest impact on training, but acknowledged that staff understood they would have a practice EHR and that "it was a miss from a communication standpoint."

User Role Assignments

VA's legacy VistA EHR system assigns permissions based on each user's needs. However, the new EHR is not permissions-based, but provides access through Cerner-defined user roles. Correctly assigned user roles are a key aspect of training, as the assigned role determines the employee's training. The EHR training strategy required VA to provide Cerner with role-based data, including job descriptions, job titles, and human resources information to classify facility staff positions into over 300 VHA-specific user roles. The OIG found the complex user role assignment process resulted in inaccuracies that also led to end users being given incorrect training. OEHRM's director of Change Management validated concerns about the user role assignment process describing it as "very painful in the beginning" and noted OEHRM had problems with training staff on the user role assignment process.

Training Support

The OIG found that facility leaders and staff largely relied on VHA employees who were "super users" within the medical center to provide training support during the new EHR implementation. They supplemented Cerner's classroom trainers and adoption coaches. The super users received additional training to provide peer-to-peer support during classroom instruction and to facilitate training scenarios. They also provided facility staff with "over-the-shoulder" assistance during and after the go-live period.

Facility leaders and staff identified concerns with Cerner classroom trainers including a lack of clinical knowledge, EHR expertise, and an inability to address questions. Facility staff repeatedly heard Cerner trainers defer questions by stating, "let's put that in the parking lot," but then did not return to the issue. Facility staff felt the trainers and coaches knew how to perform specific tasks but had some difficulty when training deviated from plans.

The OIG administered a survey to Mann-Grandstaff VAMC EHR users two to three months after the go-live date. The users self-reported perceived proficiency level with core applications and workflow functions. Results included the *disagreement or strong disagreement* with the following statements:

- "Relevant patient information is readily available within the new VA EHR and/or JLV [Joint Longitudinal Viewer]"—62 percent of respondents
- "I am able to share patient information within the new VA EHR with other clinicians without difficulty"—53 percent of respondents
- "I am able to navigate the different applications of the new EHR without difficulty"—65 percent of respondents
- "I am able to document patient care in the VA EHR without difficulty"—55 percent of respondents

Only 5 percent of respondents reported they agree or strongly agree to all four items.

While OEHRM's Director of Change Management acknowledged the significant deficits and described ongoing corrective efforts, the OIG could not determine whether they would remediate the identified training content and delivery problems.

Training Assessment

The OIG found that the OEHRM's Office of Change Management completed ongoing assessments of Cerner's training. The OIG's review of OEHRM's documentation of contractor performance from September 2018 through September 2020 revealed the Office of Change Management identified multiple, recurrent contractor weaknesses in staffing, management, meeting project deadlines, and providing high quality products. The director of Change Management reported that dissatisfaction with Cerner's deficiencies was "not a secret" and OEHRM leaders were aware of the concerns.

The OIG found the Office of Change Management failed to effectively evaluate training. OEHRM officials did not determine and track metrics as part of a quality assurance surveillance plan to monitor the training evaluation work. In early 2021, the director of Change Management described the training evaluation plan as "immature" and "in its infancy" but as a priority for the next several months.

The OIG requested "any and all data" from OEHRM's training evaluation plan. Disturbingly, OEHRM staff withheld some data from OIG staff and altered other data before transmission. In particular, OEHRM staff provided information that claimed "89% of proficiency checks were passed with a score of 80% or higher, in three attempts or less." However, the OIG found that an earlier version of proficiency check results drafted by VA OEHRM staff for the OIG's request, but not forwarded, that detailed much lower proficiency check results and showed that "44% of proficiency checks were passed with a score of 80% or higher in three attempts or less" This number was changed when OEHRM leaders urged their staff to "remove outliers" and recalculate the scores. OEHRM's director of Change Management told OIG staff that OEHRM recalculated some results for OIG review "just for cleanliness." However, the OIG concluded that OEHRM leaders removed and altered data prior to submission and provided incomplete and insufficient results of OEHRM's assessment of training. Presently, the OIG is conducting an administrative investigation and informed VA leaders of this matter.

The OIG made eight recommendations to the deputy secretary for veterans affairs and three to the under secretary for health. All recommendations are open as of this hearing and may be found in appendix E.

PENDING OIG REVIEWS

The OIG has several ongoing efforts across its directorates. In addition to the administrative investigation regarding the alleged manipulation of information provided to OIG staff, the Office of Special Reviews is continuing with a joint project with the DoD Office of Inspector General. That joint project examines the extent to which VA's new EHR will achieve interoperability with DoD and community healthcare providers, and the Federal Electronic Health Record Modernization Program Office's role. As previously mentioned, the OIG's Office of Healthcare Inspections is looking at patient care issues, governance, and pharmacy operations during the go-live at Mann-Grandstaff VAMC.

The OIG's Office of Audits and Evaluations recently started examining the EHR system's national deployment schedule because of the impact that delays or a lack of programmatic oversight could have on this program's success and its costs. Additionally, this office is finalizing the report *New Patient*

Scheduling System Needs Improvement as VA Expands Its Implementation. This report assesses the implementation of the EHR system's patient scheduling component at the Chalmers P. Wylie VA Ambulatory Care Center in Columbus, Ohio and the Mann-Grandstaff VAMC.

CONCLUSION

This Committee and VA have focused tremendous resources on the successful transition to the new EHR system. The OIG's work highlighted in this statement reveals there are still considerable challenges, particularly regarding the true costs and scope of critical physical and IT infrastructure upgrades at all VHA facilities and the training and knowledge that VA staff receive before using the new EHR. The OIG is committed to providing thorough and practical recommendations that flow from its oversight work to help VA deploy the new EHR efficiently and in a manner that improves veterans' experiences. The OIG will continue to monitor VA's EHRM efforts to help facilitate the improvements needed to fulfill its promise the veteran community and make the most effective use of taxpayer dollars.

Chairman Tester, this concludes my statement. I would be happy to answer any questions you or other members may have.

APPENDIX A: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *REVIEW OF ACCESS TO CARE AND CAPABILITIES DURING VA'S TRANSITION TO A NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER* – APRIL 27, 2020

1. The Under Secretary for Health, in conjunction with the Office of Electronic Health Records Modernization (OEHRM), evaluates the impact of the new electronic health record implementation on productivity and provides operational guidance and required resources to facilities prior to go-live.
Status: Open

2. The Under Secretary for Health, in conjunction with OEHRM, identifies the impact of the mitigation strategies on user and patient experience at go-live and takes action, as needed.
Status: Open

3. The Executive Director, OEHRM, in conjunction with the Under Secretary for Health, ensures that clear guidance is given to facility staff on what electronic health record capabilities will be available at go-live.
Status: Closed January 13, 2021

4. The Under Secretary for Health, in conjunction with OEHRM, reevaluates the EHRM deployment timeline to minimize the number of required mitigation strategies at go-live.
Status: Open

5. The Veterans Integrated Service Network (VISN) Director collaborates with facility leaders to implement VA-provided operational guidance and supports required resources needed throughout the transition to the new electronic health record system.
Status: Open

6. The VISN Director ensures that positions required for the transition to the new electronic health record system are staffed and trained prior to go-live.
Status: Closed October 16, 2020

7. The Mann-Grandstaff VA Medical Center Director ensures that community care consults are managed through go-live to ensure accuracy, completeness, and to avoid the need for manual reentry after go-live.
Status: Open

8. The Mann-Grandstaff VAMC Director ensures that patients receive medication refills in a timely manner throughout the transition to the new electronic health record system.
Status: Open

APPENDIX B: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *DEFICIENCIES IN INFRASTRUCTURE READINESS FOR DEPLOYING VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM* – APRIL 27, 2020

Finding 1 Recommendations

1. The executive director of OEHRM should establish an infrastructure-readiness schedule for future deployment sites that incorporates lessons learned from the Department of Defense.
Status: Closed October 1, 2020

2. The executive director of OEHRM should reassess the enterprise-wide deployment schedule to ensure projected milestones are realistic and achievable, considering the time needed for facilities to complete infrastructure upgrades.
Status: Closed October 1, 2020

3. The executive director of OEHRM should implement tools to comprehensively monitor the status and progress of medical devices at the enterprise level.
Status: Open.

4. The executive director of OEHRM should standardize infrastructure requirements in conjunction with the VHA and the Office of Information and Technology and ensure those requirements are disseminated to all necessary staff.
Status: Open.

5. The executive director of OEHRM should evaluate physical infrastructure for consistency with OEHRM requirements and monitor completion of those evaluations.
Status: Open.

6. The executive director of OEHRM should fill infrastructure-readiness team vacancies until optimal staffing levels are attained.
Status: Open.

Finding 2 Recommendations

7.The executive director of OEHRM should ensure physical security assessments are completed and addressed at future electronic health record deployment sites.
Status: Open.

8. The Mann-Grandstaff VA Medical Center director should ensure all access points to physical infrastructure are secured and inaccessible to unauthorized individuals
Status: Closed October 1, 2020

APPENDIX C: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *DEFICIENCIES IN REPORTING RELIABLE PHYSICAL INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD MODERNIZATION PROGRAM* – MAY 25, 2021

Finding 1 Recommendations

1. The executive director for OEHRM should ensure an independent cost estimate is performed for program life cycle cost estimates including related physical infrastructure costs funded by VHA.
Status: Open.

2. The VA assistant secretary for management and chief financial officer should ensure the Office of Programming, Analysis and Evaluation, or another office performing its duties, conducts independent cost estimates as required by VA financial policy, and performs an independent estimate of EHRM program life cycle cost estimates including physical infrastructure.
Status: Open.

3. The director of special engineering projects for VHA's Office of Healthcare Environment and Facilities Programs should develop a reliable cost estimate for EHRM program-related physical infrastructure in accordance with VA cost-estimating standards and incorporate costs for upgrade needs identified in facility self-assessments and scoping sessions.
Status: Open.

4. The director of special engineering projects should also continuously update physical infrastructure cost estimates based on emerging requirements and identified project needs.
Status: Open.

Finding 2 Recommendation

5. The executive director for OEHRM should ensure costs for physical infrastructure upgrades funded by VHA or other sources needed to support the EHRM program are disclosed in program life cycle cost estimates presented to Congress.
Status: Open.

APPENDIX D: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *UNRELIABLE INFORMATION TECHNOLOGY INFRASTRUCTURE COST ESTIMATES FOR THE ELECTRONIC HEALTH RECORD MODERNIZATION PROGRAM* – JULY 7, 2021

Finding 1 Recommendations

1. The executive director of OEHRM should ensure an independent cost estimate is performed for program life-cycle cost estimates related to information technology infrastructure costs.
Status: Open.

2. The executive director of OEHRM should reassess the cost estimate for EHRM program-related information technology infrastructure and refine as needed to comply with VA's cost-estimating standards.
Status: Open.

3. The executive director of OEHRM should develop procedures for cost-estimating staff that align with VA cost-estimating guidance.
Status: Open.

Finding 2 Recommendations

4. The executive director of OEHRM should ensure costs for all information technology infrastructure upgrades funded by OIT and VHA or other sources needed to support the EHRM program are disclosed in program life-cycle cost estimates presented to Congress
Status: Open.

5. The executive director of OEHRM should formalize agreements with OIT and VHA identifying the expected contributions from each entity toward information technology infrastructure upgrades in support of the EHRM program.
Status: Open.

6. The executive director of OEHRM should establish procedures that identify when life-cycle cost estimates should be updated and ensure those updated estimates are disclosed in the program's congressionally mandated reports.
Status: Open.

APPENDIX E: ACTIONS TAKEN BY VA IN RESPONSE TO OIG RECOMMENDATIONS FROM *TRAINING DEFICIENCIES WITH VA'S NEW ELECTRONIC HEALTH RECORD SYSTEM AT THE MANN-GRANDSTAFF VA MEDICAL CENTER IN SPOKANE, WASHINGTON* – JULY 8, 2021

1. The Under Secretary for Health explores the establishment of a group of VHA staff comprised of core user roles with expertise in VHA operations and Cerner EHR use with data architect level knowledge to lead the effort of generating optimized VHA clinical and administrative workflows.
Status: Open.

2. The Deputy Secretary establishes an EHR training domain that ensures close proximation to the production environment and is readily available to all end users during and following training.
Status: Open.

3. The Deputy Secretary ensures end users receive training time sufficient to impart the skills necessary to use the new electronic health record prior to implementation.
Status: Open.

4. The Deputy Secretary ensures the user role assignment process addresses identified facility leaders and staff concerns.
Status: Open.

5. The Deputy Secretary ensures Cerner trainers and adoption coaches have the capability to deliver end user training on Cerner and VHA EHR software workflows.
Status: Open.

6. The Deputy Secretary evaluates the process of super user selection and takes action as indicated.
Status: Open.

7. The Deputy Secretary reviews OEHRM's performance-based service assessments for Cerner's execution of training to determine whether multiple, recurrent concerns are being accurately captured and addressed.
Status: Open.

8. The Deputy Secretary oversees the revision of an OEHRM training evaluation plan and ensures implementation of stated objectives.
Status: Open.

9. The Deputy Secretary reviews the EHRM governance structure and takes action as indicated to ensure the Under Secretary for Health's role in directing and prioritizing EHRM efforts is commensurate with VHA's role in providing safe patient care.
Status: Open.

10. The Under Secretary for Health establishes guidelines and training to capture new electronic health record-related patient complaints, including patient advocacy.
Status: Open.

11. The Under Secretary for Health ensures an assessment of employee morale following implementation of a new electronic health record and takes action as indicated.
Status: Open.