United States Government Accountability Office

Report to Congressional Committees

September 2021

ELECTRONIC HEALTH RECORDS

DOD Has Made Progress in Implementing a New System, but Challenges Persist

Accessible Version

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GAO-21-571

GAO Highlights

Highlights of GAO-21-571, a report to congressional committees

September 2021

ELECTRONIC HEALTH RECORDS

DOD Has Made Progress in Implementing a New System, but Challenges Persist

Why GAO Did This Study

DOD relies on multiple legacy electronic health record systems to create, maintain, and manage patient health information. DOD has determined that these systems, implemented over the past 3 decades, require modernization and replacement. The department has sought to replace these legacy systems with a comprehensive, real-time electronic health record.

The conference report accompanying the *Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019* and *Continuing Appropriations Act, 2019* included a provision for GAO to review DOD's electronic health record deployment. GAO's objectives were to (1) determine what progress DOD has made toward implementing a new electronic health record system, and (2) identify the challenges and key risks to MHS GENESIS implementation and what steps DOD is taking to address them.

To do so, GAO analyzed test reports, briefing materials, and incident report tracking documents. GAO also held discussion groups with 356 users at selected sites and interviewed relevant officials.

What GAO Recommends

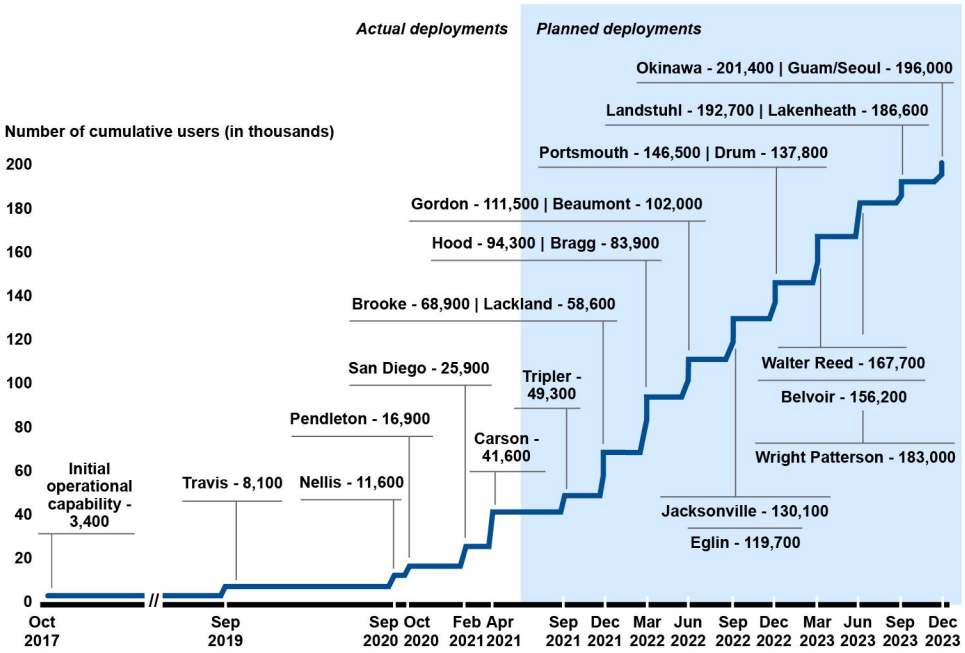
GAO is making three recommendations, including that DOD develop an approach to retesting incidents, improve training, and develop a plan to ensure MHS GENESIS users are aware of system changes. DOD concurred with the recommendations.

View GAO-21-571. For more information, contact Carol Harris at (202) 512-4456 or HarrisCC@gao.gov.

What GAO Found

The Department of Defense (DOD) made progress toward implementing its new electronic health record system, MHS GENESIS. DOD deployed the new system to sites in six of 24 planned deployment phases (i.e., waves), which included about 41,600 users (see figure). DOD also improved system performance and addressed issues experienced at the initial sites. Even with this progress, incidents identified during testing—such as system defects—remain unresolved. DOD has not developed plans to conduct additional testing at future sites to ensure the remaining incidents are fully resolved. As a result, unaddressed incidents could lead to challenges at future sites.

Actual and Planned MHS GENESIS Deployments, 2017-2023, as of June 2021



Source: GAO analysis of Department of Defense data. | GAO-21-571

Additionally, implementation of MHS GENESIS faced training and communication challenges. Test results and selected system users indicated that training for MHS GENESIS and the dissemination of system change information were ineffective. For example, the users stated that training was not consistent with the "live" system. Further, users reported that there were too many system changes to keep up with and that they were not adequately informed as changes were implemented. As a result, users were unaware of important changes to their roles or business processes, or to system revisions and improvements. These challenges could hinder users' ability to effectively use the system, impede their knowledge of new workflows, and limit the utility of system improvements. Regarding key program risks, DOD identified and was tracking risks and their associated mitigation plans.

Contents

Abbreviations

DHA	Defense Health Agency
DOD	Department of Defense
JITC	Joint Interoperability Test Command
MHS	Military Health System
MTF	military treatment facility
VA	Department of Veterans Affairs

441 G St. N.W.
Washington, DC 20548

September 20, 2021

The Honorable Jon Tester
Chair
The Honorable Richard Shelby
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Betty McCollum
Chair
The Honorable Ken Calvert
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Department of Defense (DOD) operates the Military Health System (MHS), one of the nation's largest health care systems. In fiscal year 2019, MHS provided health care to about 9.6 million beneficiaries, including service members, retirees, and their family members, at a cost of approximately $49.2 billion.[1] MHS provides care to beneficiaries at more than 700 military hospitals and clinics (i.e., military treatment facilities (MTFs)) around the world.

DOD relies on multiple legacy electronic health record systems to create, maintain, and manage patient health information.[2] However, the department has determined that these systems, implemented over the past three decades, require modernization; and it has sought to replace them with a comprehensive, real-time electronic health record system.

In 2013, in response to the need to replace the department's legacy systems, the Secretary of Defense chartered the Program Executive Office of the Defense Healthcare Management Systems (the Program Executive Office) to improve the health care of DOD's beneficiaries by

[1]Fiscal year 2019 is the most recent year for which these data were available.

[2]An electronic health record is a collection of information about the health of an individual and the care provided to that individual, such as patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.

modernizing the electronic health record and establishing medical data sharing among DOD, the Department of Veterans Affairs (VA), and the private sector. Toward this end, in 2017 DOD began deploying MHS GENESIS—a commercial electronic health record system intended to integrate inpatient and outpatient medical and dental information.

The conference report accompanying the *Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019* and *Continuing Appropriations Act, 2019* included a provision for GAO to review DOD's electronic health record deployment.[3] Our objectives for this review were to: (1) determine what progress DOD has made toward implementing a new electronic health record system, and (2) identify the challenges and key risks to MHS GENESIS implementation and what steps DOD is taking to address them.

On April 20, 2021, we provided a briefing to congressional staff on the results of our review. The purpose of this report is to deliver the published briefing slides to you and officially transmit our recommendations to the department. The briefing slides, which detail our audit scope and methodology, are reprinted in appendix I.

To determine what progress DOD has made toward implementing a new electronic health record system, we, among other steps:

- analyzed Joint Interoperability Test Command (JITC) operational test reports.[4]
- analyzed test and incident report tracking documents.
- interviewed testing officials to get updates on incident status, system improvements, and future test plans.
- interviewed officials from the Program Executive Office, Defense Health Agency (DHA) Information Operations organization, and DHA Health Informatics organization.

To identify the challenges and key risks to MHS GENESIS implementation and what steps DOD is taking to address them, we

[3]H. Rpt. 115-952 at 450 (Sep. 13, 2018) accompanying *Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019* and *Continuing Appropriations Act, 2019*, Pub. L. No. 115-245, 132 Stat. 2981 (Sep. 28, 2018).

[4]JITC provides risk-based test, evaluation, and certification services to ensure IT capabilities are interoperable and support mission needs.

conducted 36 discussion groups at five MHS GENESIS deployment sites and documented the results. Twenty-four discussion groups were held during our December 2018 and January 2019 visits to the first four (i.e., initial) sites and 12 were held during our January 2020 visits to subsequent deployment sites. We spoke with a total of 356 participants, which included MHS GENESIS users who were administrative staff, clinical support staff, doctors, and nurses.

To identify the key risks for the MHS GENESIS implementation and what steps DOD is taking to address them, we:

- reviewed the program's risk management plan and risk register;
- met with the MHS GENESIS program manager to discuss the risks to the program; and
- observed monthly program management meetings where top program risks were discussed.

Further, subsequent to providing the briefing, we obtained and reviewed information from DOD regarding the status of incident resolution and system deployments that occurred after our briefing, which we incorporated in this report, as appropriate.

We conducted this performance audit from August 2018 to September 2021 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.

DOD Made Progress in Deploying the System and Improving Its Performance, but Test Results Have Not Been Fully Addressed

As we reported in our April 2021 briefing to the congressional subcommittees' staffs, DOD had made progress in implementing MHS GENESIS by deploying it to sites in five of 24 planned deployment

phases (called waves).[5] The department also made progress by improving system performance and addressing issues experienced during deployments to the initial sites.

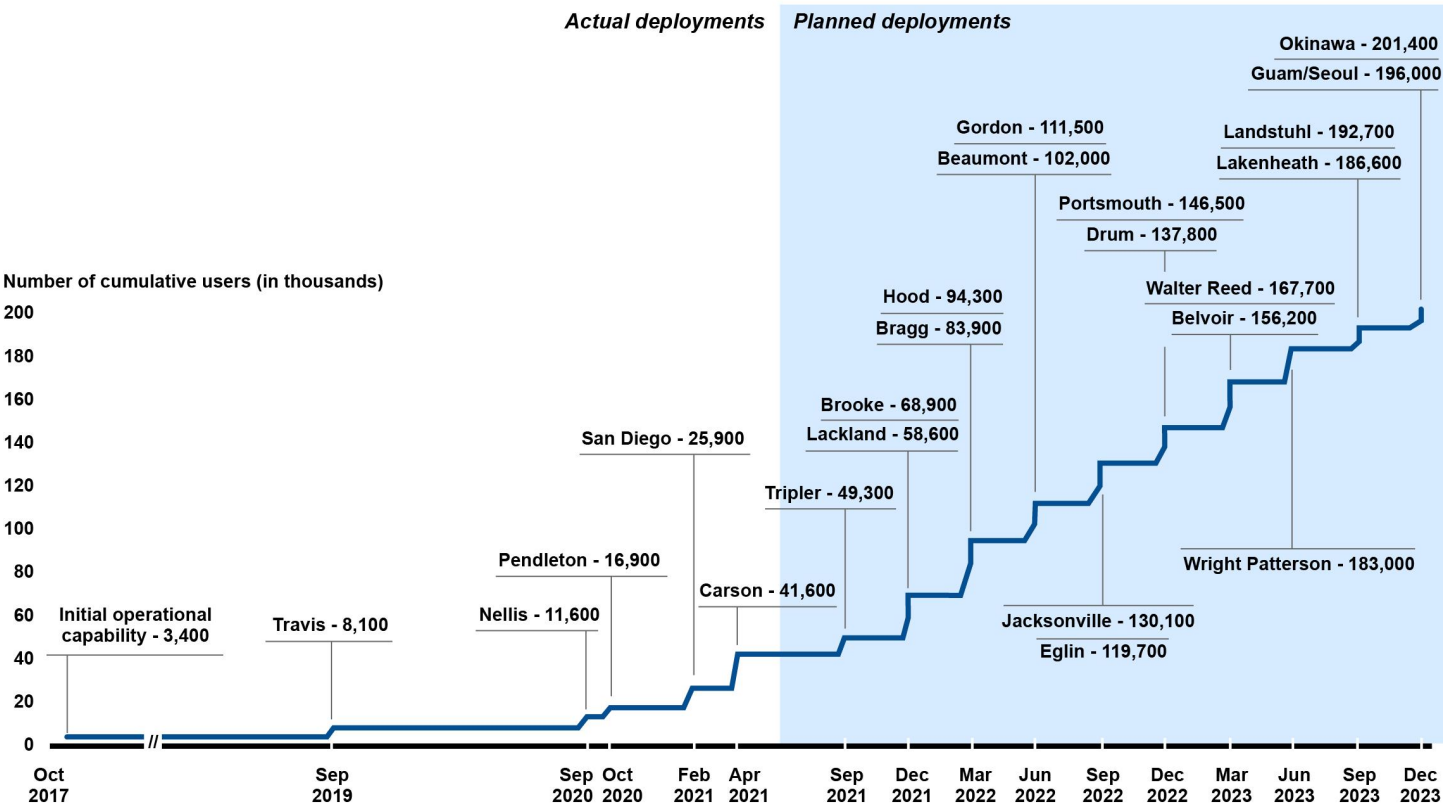
Subsequent to our briefing, in late April 2021, the department deployed MHS GENESIS to sites in an additional wave. Specifically, it deployed the system to the Carson wave, which included sites in 11 states. As a result, six of 24 deployment waves were completed and the system was deployed to approximately 41,600 of about 201,400 planned users.

The program office plans to deploy the system to users at the remaining sites at a pace that is more than five times faster than the pace of deployments that have previously been undertaken. Specifically, according to its deployment schedule, the program office plans to complete the additional 18 waves and, thus, fully deploy the system to the approximately 159,800 remaining users, by the end of December 2023.

Figure 1 shows the updated actual and planned MHS GENESIS deployments to the waves and the cumulative users over time.

[5]Each wave contains between 3,400 and 15,000 users at multiple MTFs and is generally named for the largest MTF in the wave.

Figure 1: Actual and Planned MHS GENESIS Deployments to Waves and Cumulative Users, 2017–2023, as of June 2021



Source: GAO analysis of Department of Defense data. | GAO-21-571

As we also noted in our briefing, DOD had made progress by addressing incidents (i.e., system defects or adverse test findings) identified during MHS GENESIS operational testing. However, some identified incidents remained unresolved. Specifically, during initial and follow-on operational testing of MHS GENESIS, JITC identified 710 incidents, of which 409 had been closed, and 301 remained unresolved as of February 2021.

Subsequent to our briefing, DOD took steps to further improve system performance by closing an additional 13 identified test incidents.[6] Accordingly, as of May 2021, 288 unresolved incidents remained.

[6]DOD reported that it closed eight incidents as a result of an assessment that the department completed in March 2021 of system training and change management improvements.

DOD classified the 288 incidents according to five priority levels: critical, major, moderate, minor, and insignificant. According to the program's test plan, critical incidents can result in mission failure, major incidents could cause partial failure, moderate incidents could result in the degradation of mission-related capabilities, minor incidents are noticeable but do not interfere with mission accomplishment, and insignificant incidents are informational. Table 1 shows the number of unresolved MHS GENESIS incidents for each priority level.

Table 1: Priority Levels of Unresolved MHS GENESIS Testing Incidents (as of May 2021)

Incident Priority Level	Unresolved Incidents
Critical	61
Major	81
Moderate	107
Minor	38
Insignificant	1
Total	**288**

Source: GAO analysis of Department of Defense data. | GAO 21-571

Note: Critical incidents can result in mission failure, major incidents could cause partial failure, moderate incidents could result in the degradation of mission related capabilities, minor incidents are noticeable but do not interfere with mission accomplishment, and insignificant incidents are informational.

Nevertheless, although DOD had made progress toward addressing MHS GENESIS incidents, the department did not develop plans to conduct additional testing at future sites. Without additional testing, the department lacks assurance that unresolved incidents will be fully addressed. As a result, known incidents that have not been addressed could lead to system deployment challenges at future wave sites.

MHS GENESIS Implementation Faced Training and Communication Challenges; DOD Identified Key Program Risks and Plans to Address Them

DOD faced training and communication challenges in implementing MHS GENESIS. Discussion groups, which were generally comprised of MHS GENESIS users, and test results indicated that training on the use of the new system and the dissemination of information about changes to the system were ineffective. Specifically, users said, and test reports

demonstrated, among other things, that training was not targeted to users' specific roles at the facilities and information on system changes was not effectively communicated to users. As a result, users were unaware of important changes to their roles or business processes, or to system changes and improvements. These limitations could hinder users' ability to effectively use the system.

On the other hand, DOD had identified key program risks and plans to address them. Specifically, the department's risk and issue management plan described the detailed processes, responsibilities, tools, and techniques for identifying, analyzing, and responding to risks, opportunities, and issues as part of overall program management. The plan also outlined response strategies for program leadership, so that the program leadership can prioritize and act to resolve risks.

According to the plan, once a risk is identified, the risk is to be assessed to determine the probability of its occurrence and its impact. The plan identifies five categories of risk likelihood: near certainty, highly probable, likely, unlikely, and highly unlikely. The plan also identifies five categories of impact: severe, significant, moderate, minor, and negligible.

The MHS GENESIS program was following its risk management process and was maintaining a register of the program's risks. This register included information such as the title and description of each risk, and steps planned to address them. For example, one risk was that limited resources could lead to the program management office not being able to provide adequate oversight of contractors during concurrent waves while continuing to engage with staff at the deployment sites. The risk was determined to be highly probable with a significant potential impact. To mitigate this risk, DHA planned to develop and implement an internal program management office requirements development and approval process, among other things.

Conclusions

DOD made progress in deploying MHS GENESIS to military health care facilities by, for example, completing six of 24 deployment waves. However, the projected deployment schedule going forward is far more aggressive than the pace of previous deployments.

Additionally, DOD has made progress by addressing incidents identified during MHS GENESIS operational testing. However, some identified

incidents remain unresolved and the department did not develop plans to conduct additional testing at future sites. Without additional testing, the department lacks assurance that these unresolved incidents will be fully addressed. As a result, the program may encounter deployment challenges during future waves. Such issues could impede DOD's ability to deploy the system on schedule.

Further, even with the progress made in addressing test incidents and improving system performance, training and communication challenges remain. Specifically, users said, and test reports demonstrated, that training was not targeted to users' specific roles at the facilities, among other things, and information on system changes was not effectively communicated to users. These challenges could hinder users' ability to effectively use the system, impede their knowledge of new workflows, and limit the utility of system improvements.

As of June 2021, DOD had identified key risks that could negatively affect the program, in accordance with its risk management plan, and was maintaining registers to track risks and their associated mitigation plans.

Recommendations for Executive Action

We are making three recommendations to the Secretary of Defense:

- The Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to develop an approach for retesting the incidents identified by testers to ensure that the incidents have been resolved. (Recommendation 1)
- The Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to improve the effectiveness of MHS GENESIS training by ensuring it is relevant to user roles. (Recommendation 2)
- The Secretary of Defense should direct the Defense Health Agency Chief Health Informatics Officer to ensure users are aware of system changes and to monitor users' awareness of changes. (Recommendation 3)

Agency Comments

DOD provided comments on a draft of this report. In its comments, which are reproduced in appendix II, the department concurred with our recommendations. The department also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to interested congressional committees and the Secretary of Defense. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staffs have any questions on the matters discussed in this report, please contact me at (202) 512-4456 or at harriscc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.

Carol C. Harris
Director, Information Technology Management Issues

Appendix I: Briefing for Staff Members of Congressional Subcommittees

GAO@100

ELECTRONIC HEALTH RECORDS: DOD Has Made Progress in Implementing a New System, but Challenges Persist

Presented to Staff Members of the

Subcommittee on Defense, Committee on Appropriations, United States Senate

Subcommittee on Defense, Committee on Appropriations, House of Representatives

April 20, 2021

Introduction

The Department of Defense (DOD) operates the Military Health System (MHS), one of the nation's largest health care systems. In fiscal year 2019, MHS provided health care to about 9.6 million beneficiaries, including service members, retirees, and their family members, at a cost of approximately $49.2 billion.[7] MHS currently provides care to beneficiaries at more than 700 military hospitals and clinics (i.e., military treatment facilities (MTFs)) around the world.

DOD relies on multiple legacy electronic health record (EHR) systems to create, maintain, and manage patient health information.[8] DOD has determined that these systems, implemented over the past 3 decades, required modernization and replacement. Since at least 2015, DOD has sought to stabilize these legacy systems and replace them with a comprehensive, real-time electronic health record.

In 2013, in response to the need to replace the department's legacy systems, the Secretary of Defense chartered the Program Executive Office of the Defense Healthcare Management Systems (the Program Executive Office) to improve the health care of DOD's beneficiaries by modernizing the EHR and establishing medical data sharing among DOD, the Department of Veterans Affairs (VA), and the private sector. To that end, DOD is implementing MHS GENESIS—a commercial electronic health record system intended to integrate inpatient and outpatient medical and dental information.

[7]Fiscal year 2019 is the last year for which these data were available.

[8]An electronic health record (EHR) is a collection of information about the health of an individual and the care provided to that individual, such as patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.

Objectives

The conference report accompanying the *Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019* and *Continuing Appropriations Act, 2019* directed GAO to review DOD's electronic health record deployment.[9]

Our objectives for this review were to:

(1) determine what progress DOD has made toward implementing a new electronic health record system, and

(2) identify the challenges and key risks to MHS GENESIS implementation and what steps DOD is taking to address them.

[9]H. Rpt. 115-952 at 450 (Sep. 13, 2018) accompanying *Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019* and *Continuing Appropriations Act, 2019*, Pub. L. No. 115-245, 132 Stat. 2981 (Sep. 28, 2018).

Scope and Methodology

To determine what progress DOD has made toward implementing a new electronic health record system, we

- analyzed Joint Interoperability Test Command (JITC) operational test reports from initial system testing and follow-on testing to determine deployment status.[10]
- analyzed initial testing and follow-on testing reports from the Office of the Director, Operational Test and Evaluation (testing director's office) to further understand deployment status and issues identified during testing.
- conducted interviews with testing officials to get updates on incident status, system improvements, and future test plans, among other things.
- analyzed test and incident report tracking documents to determine the number of test incidents and their status.
- analyzed briefing materials provided to the program's oversight group and observed monthly program management meetings.
- interviewed officials from the Program Executive Office, Defense Health Agency (DHA) Information Operations organization, and DHA Health Informatics organization.

[10]JITC provides risk-based test, evaluation, and certification services to ensure IT capabilities are interoperable and support mission needs.

Scope and Methodology

To identify the challenges and key risks to MHS GENESIS implementation and what steps DOD is taking to address them, we conducted and documented the results of 36 discussion groups at five MHS GENESIS deployment sites—24 were held during our December 2018 and January 2019 visits to the first four (i.e., initial) sites and 12 were held during our January 2020 visits to subsequent deployment sites. Each discussion group consisted of four to 26 participants. We spoke with a total of 356 participants, which included MHS GENESIS users who were administrative staff, clinical support staff, doctors, and nurses. The participants also included executives who oversee system users and information technology (IT) staff who support the users.

We held six discussion groups at each of the four initial deployment sites in December 2018 and January 2019.[11] In January 2020, we visited a fifth deployment site and revisited the largest of the initial sites to determine how system deployments and users' experiences may have changed over time.[12] Table 1 identifies the sites we visited, the number of participants, and the dates of our visits.

[11]In December 2018, we visited Naval Health Clinic Oak Harbor, Naval Hospital Bremerton, and Madigan Army Medical Center in Washington. In January 2019 we visited Fairchild Air Force Base in Washington. We selected these sites because, at the time of our visit, they were the only sites with MHS GENESIS.

[12]In January 2020, we visited Travis Air Force Base in California and revisited Madigan Army Medical Center. We selected Travis Air Force Base from a group of system deployment sites because it provided more medical services and had more users than other recent deployment sites. We selected Madigan Army Medical Center as the site to revisit for the same reasons.

Table 1: Participants in GAO's Facilitated Discussions of MHS GENESIS at Five Department of Defense Sites and Dates of the Site Visits

Site	Participants (number)	Site visit date
Naval Health Clinic Oak Harbor (WA)	53	Dec. 2018
Naval Hospital Bremerton (WA)	60	Dec. 2018
Madigan Army Medical Center (WA)	81	Dec. 2018
Fairchild Air Force Base (WA)	48	Jan. 2019
Travis Air Force Base (CA)	88	Jan. 2020
Madigan Army Medical Center (WA)[a]	55	Jan. 2020

Source: GAO.

[a]We visited this site twice; the first visit occurred in December 2018.

Note: The number of staff at each site referred to in the text above does not total to the number of participants we spoke to because some participants with multiple roles at a facility participated in multiple groups. We also spoke to some participants on multiple visits and one participant at different facilities.

Table 2 shows the number of participants that we spoke to during our site visits, by their work roles.

Table 2: MHS GENESIS Discussion Group Participants by Work Roles

Work role	**Participants** (number)
Administrative	72
Clinical support	58
Doctor	69
Executive	79
IT	59
Nurse	85

Source: GAO.

After all these sessions were completed, we performed a content analysis of the discussion results to identify challenges reported by the users. Specifically, two GAO analysts independently reviewed and coded each discussion document using qualitative analysis software. We also compared the results of the content analysis to the findings in the MHS GENESIS system test reports to determine the sources of certain identified concerns.

Scope and Methodology

To identify the key risks for the MHS GENESIS implementation and what steps DOD is taking to address them, we:

- reviewed the program's risk management plan and risk register;
- met with the MHS GENESIS program manager to discuss the risks to the program; and
- observed monthly program management meetings where top program risks were discussed.

We conducted this performance audit from August 2018 to April 2021 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.

Results in Brief

DOD made progress in implementing MHS GENESIS by deploying it to sites in five of 24 planned deployment phases (i.e., waves) and by improving system performance and addressing issues experienced during deployments to the initial sites.[13] Nevertheless, even with this progress, a number of incidents (i.e., system defects or adverse test findings) identified during the initial and follow-on operational testing remain unresolved and DOD has not developed plans to conduct additional testing at future sites to ensure the remaining incidents are fully resolved. As a result, known incidents that have not been addressed could lead to system deployment challenges at future wave sites.

Additionally, DOD's system implementation faced training and communication challenges. Discussion groups, which were generally comprised of MHS GENESIS users, and test results indicated that training on use of the new system and the dissemination of information about changes to the system were ineffective. For example, participants in our discussion groups stated that training was not consistent with the live system and did not adequately cover new workflows. Further, participants reported that there were too many system changes to keep up with and that they were not adequately informed as changes were implemented. As a result, users were unaware of important changes to their roles or business processes, or to system changes and improvements. These limitations could hinder users' ability to effectively use the system.

We are recommending that DOD develop an approach to retesting incidents, improve training, and develop a plan to ensure MHS GENESIS users are aware of system changes.

DOD provided technical comments on this briefing, which we incorporated as appropriate.

[13]Each wave contains between 3,200 and 14,000 users at multiple sites and is generally named for the largest MTF in the wave.

Background

Multiple Legacy Systems Support Health Care Delivery

DOD operates the MHS to support medical readiness by ensuring the health and fitness of service members and to support morale by providing medical care to service members, retirees, and their families. In the MHS, health care services are often provided at MTFs. A wide range of clinical services are available at MTFs, depending on their size, mission, and levels of capability.

To support the delivery of health care services, DOD has, over time, developed, procured, and maintained a variety of legacy EHR systems. Each system has different functions and capabilities; for example, the department operates separate inpatient, outpatient, and dental systems. The department also operates several other individual systems that are used for managing referrals, tracking medical readiness, and sharing data with VA, among other things.

Since 1998, DOD and VA have worked to exchange electronic health records. Further, since 2008, Congress has mandated that the two departments achieve interoperability between their separate health care systems.[14] DOD determined that its systems needed to be modernized and replaced. In order to modernize its systems and achieve interoperability with VA, DOD is acquiring a commercial product.

[14]Interoperability allows patients' electronic health information to move with them from provider to provider, regardless of where the information originated. If electronic health records conform to interoperability standards, they can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization, thus providing patients and their caregivers the necessary information required for optimal care.

Background

DOD Contracted to Implement MHS GENESIS in 2015

DOD awarded a $4.3 billion contract to the Leidos Partnership for Defense Health in July 2015 to implement MHS GENESIS, based on commercially available products, including Cerner Corporation's electronic health record system. In 2018, DOD modified the contract to support incorporating the United States Coast Guard and to create a standardized baseline between the Coast Guard, DOD, and VA at an additional cost of $1.2 billion.

The system is intended to integrate inpatient and outpatient medical and dental information, support the availability of medical records for all DOD beneficiaries worldwide, enable increased standardization, and integrate health care delivery.

Background

Multiple DOD Organizations Have a Role in Deploying MHS GENESIS

DOD acquisition organizations have a role in deploying MHS GENESIS. These include:

- The Program Executive Office, which is the acquisition organization that oversees the DOD Healthcare Management System Modernization Program Management Office. The mission of the Program Executive Office is to transform the delivery of health care and advance data sharing through a modernized electronic health record for service members, veterans, and their families.
- DOD Healthcare Management System Modernization Program Management Office (the program office), which is the office that has primary responsibility for providing the deployment schedule; working with DHA, the military services, and the MTFs to deploy the system; and developing implementation plans and training, among other things.

DHA and MHS organizations have a role in deploying MHS GENESIS. These include:

- MTF commanders, who are responsible for providing guidance that supports the adoption of business processes to facilitate new workflows (i.e., the sequence of steps required to complete a task), the acquisition of manpower to accomplish certain functions, and assistance validating information needed to configure the system, among other things.

Background

- The Assistant Director for Combat Support, Medical Logistics Directorate, Healthcare Technology Management branch, which is responsible for providing guidance on replacing existing medical devices, a governance process to fund development efforts for new interfaces, and a catalog of preapproved medical devices.
- Office of the Chief Health Informatics Officer (DHA Health Informatics), which is responsible for providing change management guidance and resources to implement and run the program, identifying and filling resource gaps, providing resources for on-site deployment staff, and providing workflows, among other tasks.
- The Deputy Assistant Director for Information Operations, which is responsible for preparing the network necessary to implement MHS GENESIS at least 6 months before go-live, supporting the network architecture, and supporting cybersecurity efforts, among other things.

In addition, other DOD components have a role in the MHS GENESIS deployment, including:

- JITC, which provides risk-based test, evaluation, and certification services to ensure IT capabilities are interoperable and support mission needs. The command is responsible for planning and conducting operational tests, reporting results, and providing an evaluation of the operational effectiveness, suitability, interoperability, and security of MHS GENESIS.
- The Office of the Director, Operational Test and Evaluation (testing director's office), which is the principal adviser on operational test and evaluation to the Secretary of Defense and the Under Secretaries of Defense for Acquisition and Sustainment, and Research and Engineering. The office is responsible for monitoring and reviewing all operational test and evaluation activities of DOD, such as MHS GENESIS.

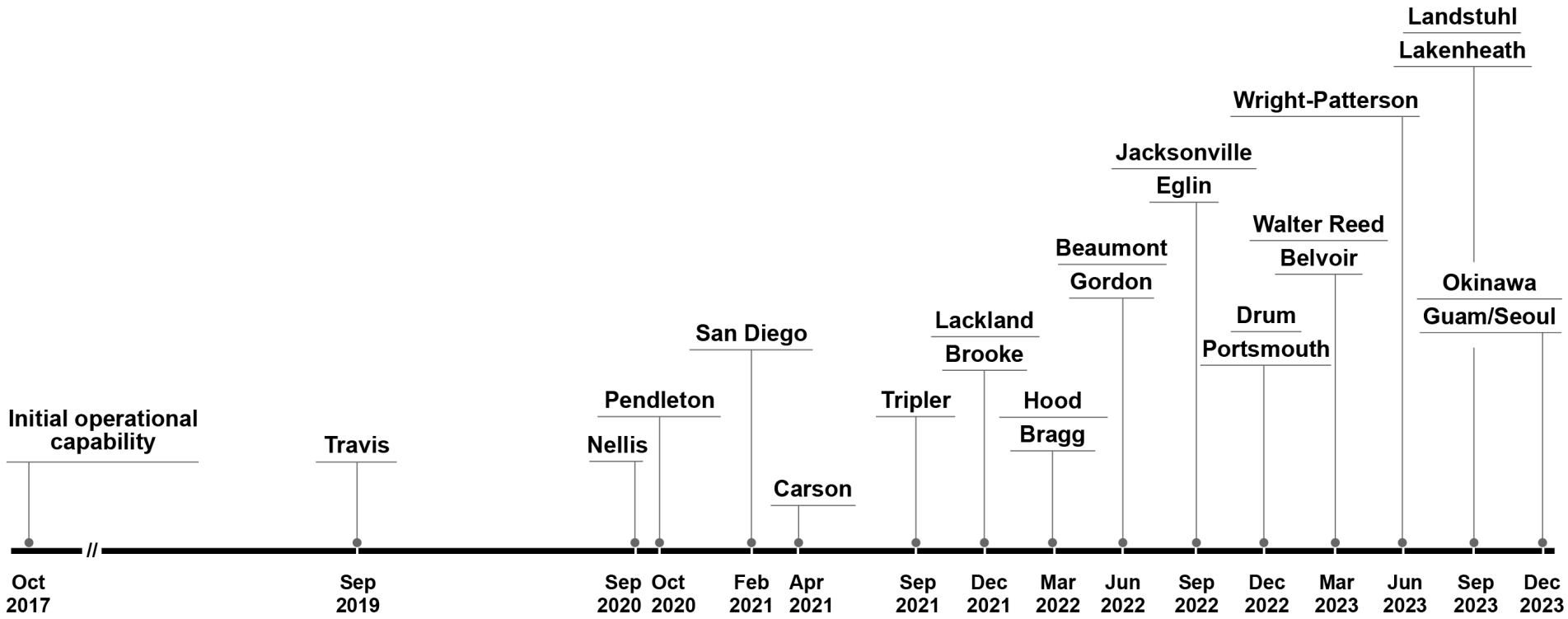
DOD Plans to Deploy MHS GENESIS in Phases Through 2023

DOD's plans call for implementing MHS GENESIS in 24 waves (i.e., phases), with completion of the first wave in October 2017 and the last wave by December 2023.[15] Figure 1 shows the planned deployment timeline.

[15]Each wave contains between 1,500 and 11,000 users at multiple sites and is generally named for the largest MTF in the wave.

Background

Figure 1: Timeline for Completion of 24 Planned Department of Defense MHS GENESIS Wave Deployments



Source: GAO analysis of DOD data.

Background

Users Experienced Challenges during Initial Deployments of MHS GENESIS

JITC conducted operational testing at eight MHS GENESIS deployment sites in the first two deployment waves. During this testing, the test team observed users performing their normal daily operations in a live environment with real patients and distributed surveys to users in order to obtain feedback on the system.

The initial operational testing and evaluation (initial testing) took place in two parts. The first part of initial testing began in September 2017 at Fairchild Air Force Base and Naval Health Clinic Oak Harbor, and in December 2017 at Naval Hospital Bremerton. In March 2018, JITC reported the results of its testing. Among other results, it reported that MHS GENESIS was not operationally effective or operationally suitable. [16]

In April 2018, the testing director's office reviewed the results of the JITC report and validated the findings. The testing director's office concluded that MHS GENESIS was not operationally effective because it did not demonstrate enough functionality to manage and document patient care. Additionally, it was not operationally suitable because of poor system usability, insufficient training, and inadequate help desk support. Because of these findings, JITC postponed further testing planned at Madigan Army Medical Center to allow time for the program to make improvements.

[16]According to JITC, operational effectiveness is the overall degree of mission accomplishment of a system when used by representative personnel in the environment planned or expected for operational employment of the system considering organization, doctrine, tactics, survivability, vulnerability, and threat. Operational suitability is the degree to which as system can be placed satisfactorily in field use with consideration given to availability, reliability, maintainability, usability, documentation, and training requirements.

Background

In June and July 2018, the second part of the JITC testing took place at Madigan Army Medical Center. JITC issued its test report in October 2018 and, again, stated that MHS GENESIS was not operationally effective or operationally suitable, despite efforts to improve the system.

In November 2018, the testing director's office issued a report confirming JITC's findings. The office determined that the system was not operationally effective because MHS GENESIS did not have enough functionality to manage and document patient care and successfully exchange information with required systems. The testing director's office also determined that MHS GENESIS was not operationally suitable because of poor usability, training that did not prepare users to employ the system, a lack of documentation, and insufficient dissemination of system change information.

Nevertheless, the program management office subsequently deployed MHS GENESIS to four sites in September 2019. After these deployments, JITC conducted additional operational testing, referred to as follow-on operational testing and evaluation (follow-on testing). The follow-on testing occurred in January and February 2020. JITC issued its test report in June 2020, which revealed that, despite improvements in the functionality of the system, MHS GENESIS was only partially operationally effective and was not operationally suitable. In July 2020, the testing director's office issued a report confirming the results of JITC's testing.

In addition to the aforementioned findings, the JITC testers generated incident reports to document any anomalies or deficiencies that users experienced while using the new system during initial and operational testing. According to JITC, in order to close out those incident reports, JITC needs to retest the system to ensure that the anomalies or deficiencies have been resolved.

Objective 1 – Progress in Implementing MHS GENESIS

DOD Has Made Progress in Deploying the System and Improving System Performance, but Test Results Are Not Fully Addressed

As of March 2021, DOD had completed five of the 24 deployment waves, which was consistent with its deployment schedule.[17]

- In February through October 2017, the system was deployed at sites in the initial wave, which included four sites in Washington State.
- In September 2019, the system was deployed at sites in the Travis wave, which included four sites in California and Idaho.
- In September 2020, the system was deployed at sites in the Nellis wave, which included 10 sites in California and Nevada.
- In October 2020, the system was deployed at sites in the Pendleton wave, which included four sites in California and Alaska.
- In February 2021, the system was deployed to the San Diego wave, which included one site in California.

[17]Due to the impacts of COVID-19, the program office modified the deployment schedule to delay 2020 deployments by 1 to 3 months, which resulted in one fewer wave in 2020 than previously planned.

Objective 1 – Progress in Implementing MHS GENESIS

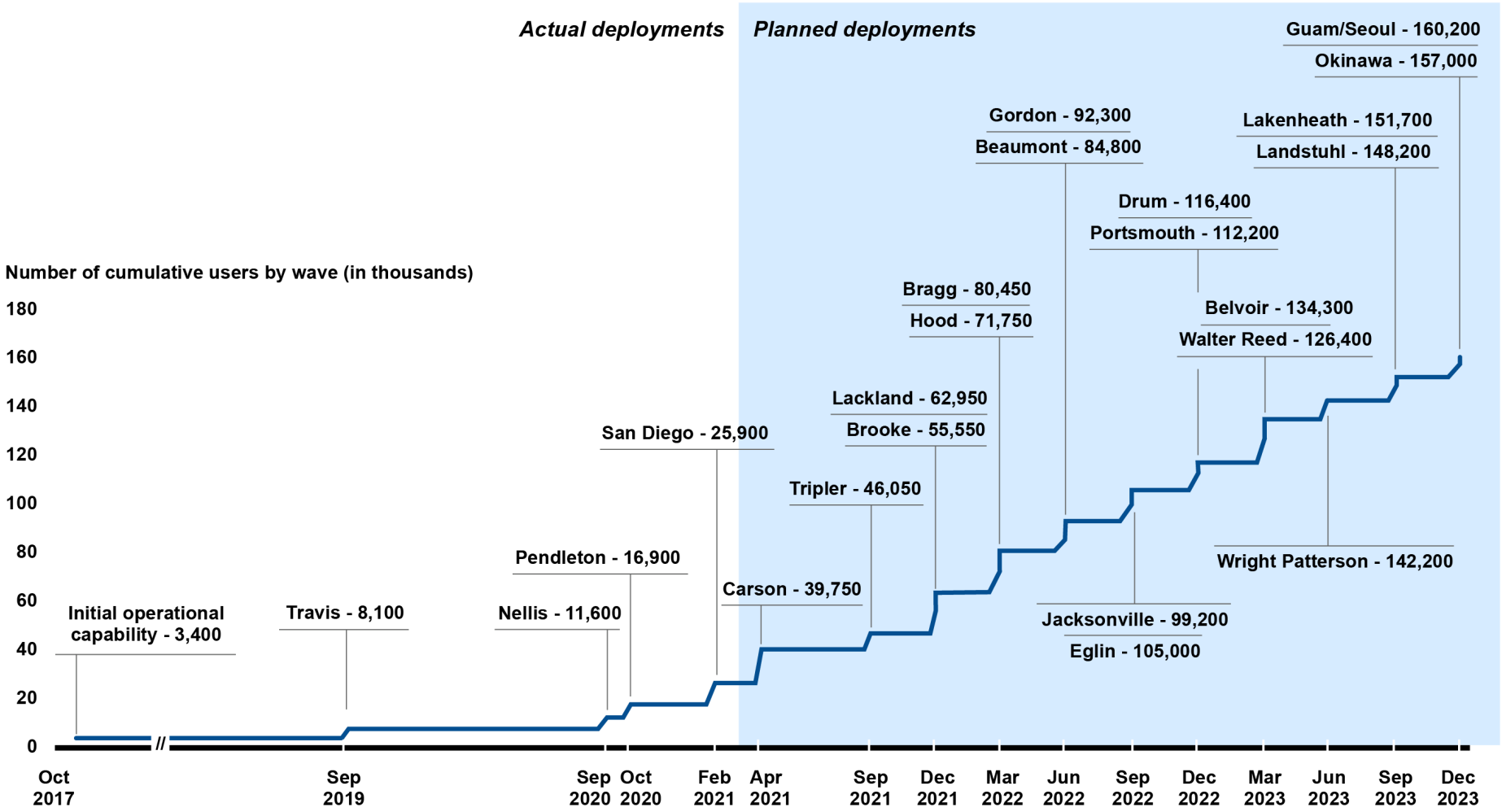
The first five deployment waves between 2017 and 2021 included approximately 25,900 of 160,200 planned users, which was generally consistent with the DOD deployment schedule.

The program office plans to deploy the system to users at the remaining sites at a pace that is more than six times faster than the pace of deployments undertaken to date. Specifically, according to their deployment schedule, by the end of December 2023, the program office plans to complete the additional 19 waves and, thus, fully deploy the system to the remaining 134,100 users.

Figure 2 shows the actual and planned MHS deployments to waves and the cumulative users over time.

Objective 1 – Progress in Implementing MHS GENESIS

Figure 2: Actual and Planned MHS GENESIS Deployments to Waves and Cumulative Users over Time



Source: GAO analysis of Department of Defense data.

Objective 1 – Progress in Implementing MHS GENESIS

DOD Has Made Progress in Improving System Performance

Given the issues identified by JITC during operational testing and the determination that MHS GENESIS was only partially operationally effective and was not operationally suitable, the program office has begun addressing deficiencies and improving performance by taking steps to close incidents and implement system updates.

- Testing conducted by JITC at sites in the Travis wave in January and February 2020 showed performance improvements. Specifically, the testing showed that users were able to complete 78 percent of tested measures of performance compared to 45 percent completed during similar testing at Madigan in 2018.[18] For example, in the pharmacy area, the number of measures of performance determined to be met improved from four out of 15 in 2018 to 13 out of 14 in 2020.

- According to JITC testing, system performance improved in 11 of 21 assessment areas between testing that occurred at Madigan in 2018 and similar testing at sites in the Travis wave in 2020.[19] For example, the operating room assessment improved from “not satisfied” to “satisfied." Thus, operating room users were able to successfully document and manage services, check patients in for procedures, and view required tasks prior to surgery. Pre-operative nurses found that documenting patient care was much quicker with the new system.

[18]The system test plan specified 21 measures of effectiveness that generally aligned with an MTF’s operations. These measures indicate whether the system meets mission needs in each area.

[19]The measures of effectiveness were further broken down into 241 measures of performance. These are program requirements (e.g., managing vaccine records, admitting patients, etc.) that can be individually tested.

Objective 1 – Progress in Implementing MHS GENESIS

Table 3 summarizes the testing director's office's determination of the extent to which there was improvement in the 21 areas between initial and follow-on testing.

Table 3: Testing Director's Office's Assessment of MHS GENESIS Effectiveness, 2018 and 2020

Assessment Area	2018 Assessment	2020 Assessment	Change 2018-2020
En Route Care	Not satisfied	-	N/A
Dentistry	Not satisfied	Partially satisfied	Improved
Emergency Department	Not satisfied	Partially satisfied	Improved
Health Services Management	Not satisfied	Partially satisfied	Improved
Immunizations	Partially satisfied	Not satisfied	Worsened
Laboratory Management	Partially satisfied	Partially satisfied	-
Operating Room	Not satisfied	Fully satisfied	Improved
Pharmacy	Not satisfied	Partially satisfied	Improved
Vision	Not satisfied	Partially satisfied	Improved
Inpatient/Outpatient	Not satisfied	Partially satisfied	Improved
Administrative Support	Not satisfied	Partially satisfied	Improved
Front Desk Operations	Not satisfied	Partially satisfied	Improved
Logistics	-	-	N/A
Business Intelligence	Not satisfied	Not satisfied	-
Facility Review	-	Fully satisfied	N/A
Report Generation	Not satisfied	Not satisfied	-
Case Management	Not satisfied	Not satisfied	–
Personal Health Record Portal	Not satisfied	Partially satisfied	Improved

Assessment Area	2018 Assessment	2020 Assessment	Change 2018-2020
Disconnected User Operations	–	Not satisfied	N/A
Common User Tasks	Not satisfied	Not satisfied	–
Radiology	Not satisfied	Fully satisfied	Improved

○= not satisfied: Less than 75 percent of the tested measures of performance were met and six or more related critical or major incidents were identified during follow-on testing.

◐ = partially satisfied: Items that did not meet the criteria for fully satisfied or not satisfied.

● = fully satisfied: At least 75 percent of the tested measures of performances were met and there were no related critical or major incidents from follow-on testing.

- = not evaluated or no change, ▲= improved, ▼= worsened

N/A = There was no assessment in 1 year; therefore, there could be no change.

JITC = Joint Interoperability Test Command

Source: GAO analysis of Department of Defense data.

The results of our January 2020 discussion groups at Madigan also suggested that there were improvements in how users perceived MHS GENESIS between December 2018 and January 2020. Specifically, during our 2020 Madigan visit, participants in more discussion groups expressed positive sentiments toward the system.[20] In addition, participants in four of the six groups mentioned having improved satisfaction as compared to one of the six groups at Madigan in 2018.

[20]The results of the discussion groups are not necessarily indicative of overall sentiment at the sties and are not generalizable.

Further, in January 2020, we identified more groups in which participants expressed a positive opinion of the MHS GENESIS training that they received, and said that the system had a positive impact on their ability to perform their duties, than during site visits that we conducted about a year earlier. Specifically, during our December 2018 Madigan visit, participants in only one group expressed each of these sentiments, while during our 2020 visit, participants in three groups expressed these sentiments. For example:

- a participant in the doctors' group at Madigan stated that some system changes, such as a more logical display of laboratory results, enabled doctors to complete their rounds faster.
- a participant in the nurses' group stated that the barcode scanning functionality that was added had been an improvement, as had functionality within the blood bank component that checks to ensure that a patient is receiving the correct blood.
- a participant in the executives' group stated that MHS GENESIS had improved their ability to track opioid use.

Additionally, officials at Madigan stated in November 2020 that the system had improved since its deployment. Specifically, they noted that the medication reconciliation process—which helps to ensure adequate tracking of patient medications—had been greatly refined and was safer than when the system was first released.

Objective 1 – Progress in Implementing MHS GENESIS

DOD Has Closed the Majority of Incident Reports, but a Substantial Number Remain Unresolved

A key element of successful system testing is appropriately resolving incidents discovered during testing. Unresolved incidents can delay the release of functionality to end users, denying them the new system's benefits. Key aspects of a sound incident management process include the identification and classification, tracking, and resolution of incidents.[21] To resolve incidents fully, the system must be retested to ensure the issue has been corrected.

DOD's MHS GENESIS incident management process includes the identification and classification of incidents. Specifically, when incidents are identified, a group consisting of user representatives and testers, among others, assigns each incident to one of five priority levels based on its expected impact. Table 4 provides a list of the priority levels and their potential impact.

[21]The Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*, 6th ed., (Newtown Square, Pa.: 2017). *PMBOK* is a trademark of Project Management Institute, Inc.; Institute of Electrical and Electronics Engineers, Software and Systems Engineering—*Software Testing,* ISO/TEC/IEEE Std 29119 (New York, N.Y.: Sept. 1, 2013); Institute of Electrical and Electronics Engineers, *IEEE Standard for Software and System Test Documentation,* IEEE Std 829-2008 (New York, N.Y.: July 10, 2008); Institute of Electrical and Electronics Engineers, *IEEE Standard Classification for Software Anomalies*, IEEE Std 1044-2009 (New York, N.Y.: Jan. 7, 2010); Software Engineering Institute, *CMMI® for Acquisition*, Version 1.3 (Pittsburgh, Pa: November 2010); Software Engineering Institute, *CMMI® for Development*, Version 1.3 (Pittsburgh, Pa: November 2010)

Table 4: MHS GENESIS Incident Priority and Impact Levels and How They Could Affect Systems

Priority Level	Potential Impact
Critical: Mission failure	Could prevent the accomplishment of an essential capability or jeopardize safety, security, or other critical requirements.
Major: Partial failure	Could adversely affect the accomplishment of an essential capability or adversely affect the technical, cost, or schedule risks to the project or life cycle support of the system and no workaround solution is known.
Moderate: Substantial degradation of mission related capabilities	Could adversely affect the accomplishment of an essential capability or adversely affect the technical, cost, or schedule risks to the project or life cycle support of the system but a workaround solution is known.
Minor: Noticeable, but no major interference with mission accomplishment	Could result in user inconvenience or annoyance but does not affect a required operational or mission-essential capability.
Insignificant: Informational	Does not have a potential impact and is only informational.

Source: GAO analysis of Department of Defense data.

During initial and follow-on testing of MHS GENESIS, JITC identified 710 incidents, of which 409 had been closed, and 301 remained unresolved as of February 2021. A group consisting of user representatives and testers had classified more than 140 of the 301 incidents as critical or major. Table 5 identifies the priority levels of the 301 unresolved incidents.

Objective 1 – Progress in Implementing MHS GENESIS

Table 5: Priority Levels of Unresolved MHS GENESIS Testing Incidents (as of February 2021)

Incident Priority Level	Unresolved Incidents
Critical	64
Major	82
Moderate	114
Minor	40
Insignificant	1
Total	301

Source: GAO analysis of Department of Defense data.

Among the 301 incidents that remained unresolved after follow-on testing:

- A user in the pediatric department at one MTF experienced an error when ordering immunizations for patients. This error prevented the user from billing and charting the vaccine, which led to the patients' vaccine records not being properly updated. Further, the user was not able to provide the patients' parents with vaccine information required for the patient to be able to enroll in school. This incident was assigned a priority level of major. Program office officials stated that a tip sheet has been created to assist with this issue but JITC has identified additional concerns and, as of February 2021, the issue remained unresolved.

- A user in the administrative department at an MTF reported during initial testing that they were unable to report infectious disease status. As part of their responsibilities, the user is supposed to monitor all patients who are at an increased risk of developing an infection and those who are being treated for infections. But the administrative user was unable to generate an infection-control-prevention report. This incident was assigned a priority level of critical. During follow-on testing, in 2020, JITC confirmed with users at a different facility that this problem still existed. Accordingly, as of February 2021, the incident remained unresolved.

The program office has been working with JITC to retest certain incidents. Nevertheless, according to the testing director's office, as of February 2021, the program office and the testers had not been able to reach agreement on scheduling and funding additional testing. However, until JITC retests the incidents, the department lacks assurance that these incidents will be resolved, which could lead to deployment challenges at future wave sites due to known system issues.

Objective 2 – Challenges and Key Risks in Implementing MHS GENESIS

MHS GENESIS Implementation Faces Training and Communication Challenges; DOD Has Also Identified Key Risks to the Program

Discussion Groups and Test Results Indicated Ineffective Training

Industry leading practices and GAO guidance note the importance of effective training and communication when undertaking organizational change.[22] To that end, industry leading practices indicate that a lack of knowledge can hinder the successful implementation of change. Moreover, the *Standards for Internal Control in the Federal Government* state that management should demonstrate a commitment to competence by enabling individuals to develop competencies appropriate for roles and tailoring training based on the needs of the role, among other things.

[22]Project Management Institute, Inc., *Managing Change in Organizations: A Practice Guide* (Newtown Square, PA: 2013); GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: Sept. 10, 2014).

However, participants in our discussion groups expressed concerns about the effectiveness of the MHS GENESIS training they received. Specifically, participants in all 36 discussion groups expressed negative opinions about the training. For example:

- A participant in the nurses' discussion group at Madigan stated that the training did not match the live environment in which this participant would be working.
- A participant in the nurses' discussion group at Travis stated that one of their roles was not available in the training environment and they could not find out what the role was until the program was scheduled to go live. The participant also explained that, because of multiple role assignments, more training than necessary was required. Specifically, training included 5 days of classroom training and 72 hours of computer-based training.
- A participant in the clinical support discussion group at Travis stated that workflows could not be practiced during training.
- A participant in the Madigan nurses' discussion group said that the nurses have not been trained to know the difference between the workarounds and the correct MHS GENESIS process.
- A participant in the executives' discussion group at Travis noted that, from an administrative perspective, all of the training was role-based and did not cover how those roles were interconnected.

Objective 2 – Challenges and Key Risks in Implementing MHS GENESIS

The June 2020 JITC follow-on testing report identified several factors that had contributed to the inadequacy of the training. According to the report:

- while on-site experts were helpful, there were not enough of them;
- the training was high-level, did not focus on specialty clinics (such as behavioral health, coding, and report generation), and users from these areas took training that did not apply to their roles;
- users were not provided training on their role in the enterprise, new terminology, or changes in business practices;
- training did not explain how data flowed through the system, nor did the trainers understand the downstream consequences of incorrectly entered data; and
- reference materials and training agendas were outdated and the training environment did not contain all necessary functionality.

Objective 2 – Challenges and Key Risks in Implementing MHS GENESIS

According to the Program Executive Office, training is evaluated on a continuous basis. For example, program office staff:

- hold meetings to discuss training effectiveness with different stakeholders,
- review trouble ticket reports associated with the training delivery system, and
- conduct evaluations to monitor instructor effectiveness.

Nevertheless, the program office did not ensure that training is effective and relevant to all user roles. Until the program office ensures that training is effective, users may continue to be unaware of important changes to their roles or business processes, which could hinder their ability to effectively use the system. Moreover, because of the inadequate MHS GENESIS training, certain users may continue to lack sufficient understanding to effectively use the system.

Objective 2 – Challenges and Key Risks in Implementing MHS GENESIS

Discussion Groups and Test Results Indicated Ineffective Dissemination of System Change Information

As noted previously, GAO guidance and industry best practices state that management should communicate effectively with staff at all levels of the organization to ensure they can achieve their objectives. Specifically, the *Standards for Internal Control in the Federal Government* states that information should be provided across all levels of the organization to enable personnel to perform key roles in achieving objectives.[23]

During our second visit at Madigan in January 2020, participants provided examples of ineffective communication that prevented them from performing their roles and achieving their objectives. They explained that the MHS GENESIS system was updated frequently with new features and bug fixes. However, the frequency and quantity of these updates, paired with the workload of facility staff and the lack of an effective process for informing users, made it difficult for some users to keep up with changes. Additional participants described that they were not fully informed of changes.

[23]GAO-14-704G

- A participant in the doctors' discussion group at Madigan stated that, because there were so many system changes, it was difficult to disseminate the information. This participant said it was difficult to keep their staff apprised of new opportunities and workflows because the doctors and other managers did not have the time or resources to continuously forward pertinent information.
- A participant in the nurses' group at Madigan stated that the changes occurred too rapidly and questioned whether it was useful for something to be fixed if the information about the change was not disseminated to the users who needed to be made aware of the fix.
- A participant in the clinical support group at Madigan stated that changes were spontaneous and there was no time to plan for such changes in advance.

The June 2020 JITC follow-on testing report, which discussed test results at sites in the Travis wave, described reasons why communicating information about MHS GENESIS system changes and improvements to users was ineffective. According to the report:

- users were unaware of information posted to an intranet page and postings were sometimes incomplete.
- across all sites in the Travis wave, there were incidents related to issues that had been resolved but not effectively communicated to the targeted user community.

- DHA Health Informatics and the program office developed separate tip sheets. Those developed by the program office were well vetted and posted to a web portal accessible to all DOD personnel. However, the DHA-developed sheets were not as rigorously reviewed, not as complete as the users needed them to be, and not consistently posted to the portal; thus, users were unable to access them.
- DHA Health Informatics developed training videos, but system users did not know they existed.

According to the Program Executive Office, all system updates that pass through their governance board receive a communications assessment and a communication approach is determined based on the impact the update will have. However, this approach does not ensure that end users are made aware of relevant system change information, as described above.

Effectively communicating change information to users is important to ensure they are aware of relevant system changes and improvements in an efficient manner. Without this information, users may continue to use workarounds or business processes that do not align with the new system and limit its effectiveness. Until DHA takes steps to ensure users receive the necessary information, users may continue to lack the knowledge needed to effectively use the system.

Objective 2 – Challenges and Key Risks in Implementing MHS GENESIS

DOD Has Identified Risks and Plans to Address Them

The department's *Program Executive Office Risk and Issue Management Plan* describes the detailed processes, responsibilities, tools, and techniques for identifying, analyzing, and responding to risks, opportunities, and issues as part of overall program management.[24] The plan outlines response strategies for program leadership, so that the program leadership can prioritize and act to resolve risks.

According to the department's plan, once a risk is identified, the risk is to be assessed to determine the probability of its occurrence and its impact. The plan identifies five categories of risk likelihood: near certainty, highly probable, likely, unlikely, and highly unlikely. The plan also identifies five categories of impact: severe, significant, moderate, minor, and negligible.

The MHS GENESIS program is following its process and is maintaining a register of the program's risks. This register includes information such as the title and description of each risk, and steps planned to address them.

[24]Department of Defense, *Program Executive Office Risk and Issue Management Plan* (Washington, D.C: October 2016) (internal DOD document)

Risks identified in the register include:

- The outpatient pharmacy billing component may hinder DOD's ability to meet a prescription documentation requirement. Specifically, the component may not satisfy a DOD requirement related to sending claims to the health care program for uniformed service members, retirees, and their families. That could lead to an incomplete patient record, according to the risk register. This risk was determined to be likely to happen with a significant potential impact. As of December 2020, to mitigate this risk, the program office was negotiating with the contractor to address DOD requirements, among other things.
- DHA may not be able to supply the necessary personnel to support the deployment of RevX, a module of the Cerner system that provides additional business capabilities. According to the risk register, if DHA is unable to supply the necessary personnel to accomplish program standardization and actively engage with the sites in support of RevX deployment, then the lack of user adoption may cause RevX deployment failure, decreased end user productivity, poor data quality, and decreased collections. The risk was determined to be likely to happen with a significant potential impact. To mitigate this risk, as of December 2020, DHA leadership was working to identify an effective method of patient identification, providing materials to sites prior to end user system training, and finalizing business policies and processes for engaging MTFs.

- Limited resources could lead to the program management office not being able to provide adequate oversight of contractors during concurrent waves while continuing to engage with staff at the deployment sites. The risk was determined to be highly probable with a significant potential impact. To mitigate this risk, DHA plans to develop and implement an internal program management office requirements development and approval process, among other things.

- The availability of a natural language processing capability that enables computers to understand human speech, hosted by VA, could lead to RevX go-live delays. Specifically, according to the risk register, if DOD is not able to establish a connection with VA, there may be insufficient lead time to configure and test the capability for inclusion in the initial RevX deployment and the RevX go-live will be delayed. The risk was determined to be likely to happen with a severe potential impact. To mitigate this risk, as of December 2020, DHA was working with VA to formalize a strategy for the effort.

Conclusions

DOD has made progress in deploying MHS GENESIS to MTFs by, for example, completing deployment for five of 24 deployment waves. However, the projected deployment schedule going forward is far more aggressive than previous deployments.

Additionally, DOD has made progress by addressing incidents identified during MHS GENESIS system testing. However, incidents identified during testing remain unresolved. Without additional testing, the department lacks assurance that these incidents will be fully addressed. As a result, the program may encounter deployment challenges during future deployments. Such issues could impede DOD's ability to deploy the system on schedule.

Further, even with the progress made, training and system change information dissemination challenges remain. Specifically, users said, and test reports demonstrated, that training was not targeted to users' specific roles at the facilities, among other things, and information on system changes was not effectively communicated to users. These challenges could hinder users' ability to effectively use the system, impede their knowledge of new workflows, and limited the utility of system improvements.

As of December 2020, DOD had identified key risks that could negatively affect the program, in accordance with its risk management plan, and was maintaining registers to track risks and their associated mitigation plans.

Recommendations for Executive Action

We are making three recommendations to the Secretary of Defense:

- The Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to develop an approach to retesting the incidents identified by testers to ensure that the incidents have been resolved. (Recommendation 1)
- The Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to improve the effectiveness of MHS GENESIS training by ensuring it is relevant to user roles. (Recommendation 2)
- The Secretary of Defense should direct the DHA Chief Health Informatics Officer to ensure users are aware of system changes and monitor users' awareness of changes. (Recommendation 3)

Agency Comments

We provided a copy of this draft briefing to the Department of Defense for review. The Department provided technical comments, which we incorporated as appropriate.

GAO on the Web

Web site: ***https://www.gao.gov/***

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Appendix II: Comments from the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION AND SUSTAINMENT

2-Aug-2021

MEMORANDUM FOR DIRECTOR, INFORMATION TECHNOLOGY AND CYBERSECURITY, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

FROM: Mr. Christopher C. O'Donnell, Performing the Duties of ASD(A)

SUBJECT: The Department of Defense response to the United State Government Accountability Office Draft Report, GAO-21-571, 'ELECTRONIC HEALTH RECORDS: DOD Has Made Progress in Implementing a New System, but Challenges Persist,' dated July 9, 2021 (GAO Code 105175)

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-21-571, 'ELECTRONIC HEALTH RECORDS: DOD Has Made Progress in Implementing a New System, but Challenges Persist,' dated July 9, 2021 (GAO Code 105175). DoD concurs with GAO's recommendations. DoD's response and technical comments relating to the recommendations for the report are enclosed.

If you have any questions, please contact Ms. Cori Hughes, PEO DHMS, at (703) 588-5391 or via email at cori.b.hughes.civ@mail.mil.

Sincerely,

ODONNELL.CHRISTOPHER.C.1228691310 Digitally signed by ODONNELL.CHRISTOPHER.C.1228691310 Date: 2021.08.02 06:33:50 -04'00'

Christopher C. O'Donnell
Performing the Duties of Assistant Secretary of Defense for Acquisition

Attachments:
As stated

GAO DRAFT REPORT DATED JULY 9, 2021
GAO-21-571 (GAO CODE 105175)

"ELECTRONIC HEALTH RECORDS: DOD Has Made Progress in Implementing a New System, but Challenges Persist"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to develop an approach for retesting the incidents identified by testers to ensure that the incidents have been resolve.

DOD RESPONSE: DOD concurs with Recommendation 1.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to improve the effectiveness of MHS GENESIS training by ensuring it is relevant to user roles.

DOD RESPONSE: DOD concurs with Recommendation 2.

RECOMMENDATION 3: The GAO recommends that the Secretary of Defense should the Defense Health Agency Chief Health Informatics Officer to ensure users are aware of system changes and to monitor users' awareness of changes.

DOD RESPONSE: DOD Concurs with Recommendation 3.

Text of Appendix II: Comments from the Department of Defense

MEMORANDUM FOR DIRECTOR, INFORMATION TECHNOLOGY AND CYBERSECURITY, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

FROM: Mr. Christopher C. O'Donnell, Performing the Duties of ASD(A)

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Sincerely,

CHRIS ODONNELL

Attachments: As stated

GAO DRAFT REPORT DATED JULY 9, 2021 GAO-21-571 (GAO CODE 105175) "ELECTRONIC HEALTH RECORDS: DOD Has Made Progress in Implementing a New System, but Challenges Persist"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense should direct the Program Executive Officer of Defense Health Management

Systems to develop an approach for retesting the incidents identified by testers to ensure that the incidents have been resolve.

DOD RESPONSE: DOD concurs with Recommendation 1.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense should direct the Program Executive Officer of Defense Health Management Systems to improve the effectiveness of MHS GENESIS training by ensuring it is relevant to user roles.

DOD RESPONSE: DOD concurs with Recommendation 2.

RECOMMENDATION 3: The GAO recommends that the Secretary of Defense should the Defense Health Agency Chief Health Informatics Officer to ensure users are aware of system changes and to monitor users' awareness of changes.

DOD RESPONSE: DOD Concurs with Recommendation 3.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Carol C. Harris (202) 512-4456 or harriscc@gao.gov

Staff Acknowledgments

In addition to the individual named above, the following staff made key contributions to this report: Mark Bird (Assistant Director), Thomas Murphy (Analyst in Charge), Christy Abuyan, David Blanding, Roger Bracy, Chris Businsky, Quintin Dorsey, Katherine Noble, Scott Pettis, and Priscilla Smith.

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Website: https://www.gao.gov/about/what-gao-does/fraudnet

Automated answering system: (800) 424-5454 or (202) 512-7700

Congressional Relations

A. Nicole Clowers, Managing Director, ClowersA@gao.gov, (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

Public Affairs

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Strategic Planning and External Liaison

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