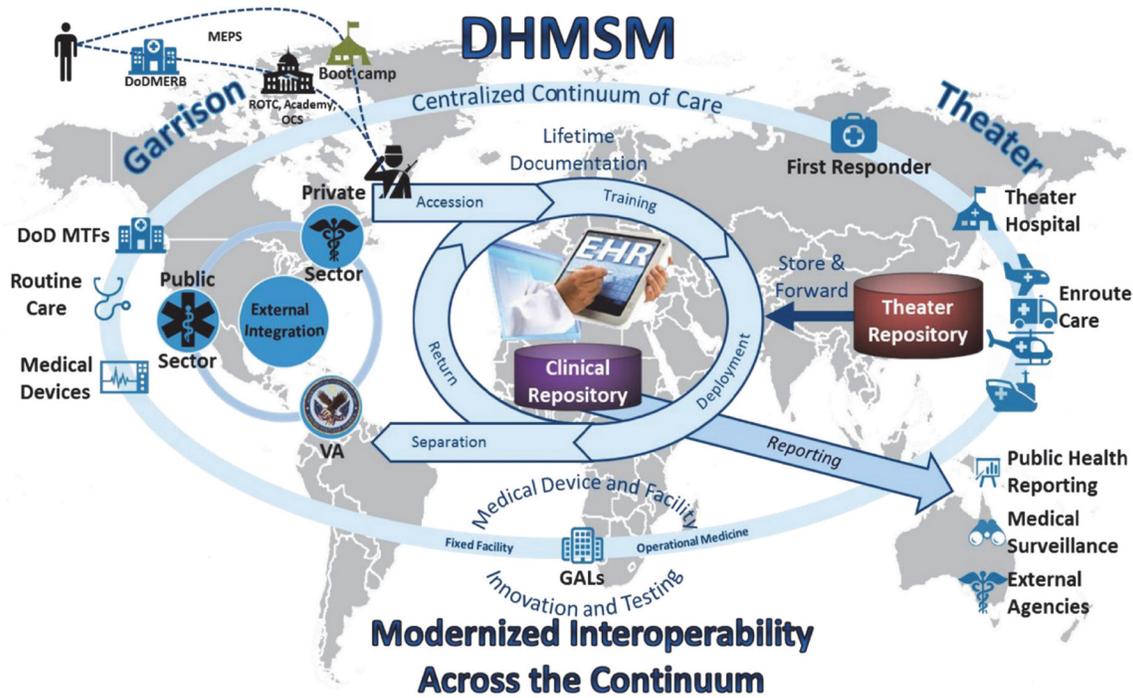


DOD Healthcare Management System Modernization (DHMSM)



LEGEND:			
DHMSM	DoD Healthcare Management Systems Modernization	MERB	Medical Examination Review Board
DoD	Department of Defense	MTF	Military Treatment Facility
EHR	Electronic Health Record	OCS	Officer Candidate School
GAL	Government Authorized Laboratory	ROTC	Reserve Officers' Training Corps
MEPS	Military Entrance Processing Station	VA	Veterans Affairs

Executive Summary

- The DOD Healthcare Management System Modernization (DHMSM) Program Manager completed go-live of the Military Health System (MHS) GENESIS at all four Initial Operational Capability (IOC) sites in 2017.
- The Joint Interoperability Test Command (JITC) conducted the MHS GENESIS operational assessment (OA) from May through June 2017 at the Fixed Facility (FF) Government Approved Laboratory (GAL).
 - During the OA, users completed the majority of the tasks required to accomplish their missions. However, users identified 26 high-priority deficiencies, 14 of which remained open at the end of the OA. The 14 defects were subsequently either resolved by the Program Manager or accepted by the Function Advisory Council prior to receiving authority to go-live at Naval Hospital Bremerton (NHB) and Madigan Army Medical Center (MAMC). Users encountered deficiencies in the dental, immunization, and pharmacy clinical areas, and in common user tasks across multiple clinical areas.
 - JITC only completed a partial interoperability assessment during the OA because the DHMSM Program Manager

did not provide data for all of the planned interfaces. Of the interfaces tested, the majority did not conform to the data standard and/or the Interface Control Document.

- Users at all sites rated the system poorly for usability. Users at Fairchild AFB and Naval Hospital Oak Harbor (NHOH) also indicated that the training they received did not prepare them for using the system to conduct their daily jobs.
- Separate from the OA, the DOD Chief Information Officer (CIO) conducted system scans of MHS GENESIS that revealed a high number of Category (CAT) I cybersecurity vulnerabilities. As of October 2017, 313 CAT I cybersecurity vulnerabilities remained outstanding. These gaps in security indicate MHS GENESIS is not survivable in a contested cyberspace environment. Furthermore, there is currently no alternate server site to support Continuity of Operations.
- JITC is conducting the MHS GENESIS IOT&E, which includes cybersecurity testing, from September 25, 2017, through February 16, 2018. DOT&E plans to release the IOT&E Report in April 2018.

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System

- The DOD DHMSM Program Manager will acquire and field MHS GENESIS, a modernized Electronic Health Records (EHR) system, to 153,000 Military Health System personnel, providing care for 9.4 million DOD beneficiaries worldwide.
- MHS GENESIS comprises three major elements:
 - The Millennium suite of applications, developed by Cerner, which provides clinical capabilities
 - Dentrix Enterprise, developed by Henry Schein Inc., which provides dental capabilities
 - Orion Rhapsody Integration Engine, developed by Orion Health, which enables the majority of the external information exchanges
- The DHMSM Program Manager established two program segments to support deployment of the DHMSM EHR System to the DOD enterprise:
 - Fixed Facility (Segment 1) supports all medical and dental services delivered by permanent inpatient hospitals and medical centers, ambulatory care clinics, and dental clinics.
 - Operational Medicine (Segment 2) supports theater hospitals, hospital ships, forward resuscitative sites, naval surface ships, and submarines. The EHR System will be configured to work in the tactical environment. The DHMSM Program Manager will provide MHS GENESIS

to the Joint Operational Medicine Information System Program Office for implementation.

- MHS GENESIS will replace legacy healthcare systems including the Armed Forces Health Longitudinal Technology Application (AHLTA), Composite Health Care System (CHCS), and Essentris inpatient system. MHS GENESIS will replace legacy Operational Medicine components of the Theater Medical Information Program (TMIP) – Joint software suite including AHLTA-Theater, TMIP CHCS Caché, and AHLTA-Mobile.

Mission

DOD medical staff will use MHS GENESIS to deliver enroute care, dentistry, emergency department, health, immunization, laboratory, radiology, operating room, pharmacy, vision, audiology, and inpatient/outpatient services. DOD medical staff will also use MHS GENESIS to perform administrative support, front desk operations, logistics, billing, and business intelligence.

Major Contractors

- Leidos – Reston, Virginia
- Cerner – Kansas City, Missouri
- Accenture Federal Services – Arlington, Virginia
- Henry Schein Inc. – Melville, New York

Activity

- The DHMSM Program Manager completed MHS GENESIS go-live at all four IOC sites in 2017:
 - Fairchild AFB, Washington, on February 7, 2017
 - NHOH, Washington, on July 15, 2017
 - NHB, Washington, on September 23, 2017
 - MAMC, Washington, on October 21, 2017
- The DOD CIO began cybersecurity scans of MHS GENESIS on January 20, 2017, and plans to continue scanning and performing other evaluation activities through July 2018.
- JITC conducted the MHS GENESIS OA from May 22 through June 23, 2017, at the FF GAL at Auburn, Washington.
- JITC conducted the first component of the MHS GENESIS IOT&E from September 25 through October 6, 2017, at NHOH and Fairchild AFB. JITC will conduct the next two components at NHB and MAMC in FY18.
- JITC intends to conduct a Cooperative Vulnerability and Penetration Assessment and an Adversarial Assessment following go-live at MAMC.
- JITC is conducting MHS GENESIS IOT&E, which includes cybersecurity testing, from September 25, 2017 through February 16, 2018. DOT&E plans to release the IOT&E Report in April 2018.

the Fairchild AFB go-live assessment that JITC conducted in February 2017 augmented the OA results.

- Users completed the majority of the tasks required to accomplish their missions, but also identified 25 high-priority deficiencies, 14 of which remained open at the end of the OA. The 14 defects were subsequently either resolved by the Program Manager or accepted by the Function Advisory Council prior to receiving authority to go-live at NHB and MAMC. Users encountered deficiencies in the dental, immunization, and pharmacy clinical areas, and in common user tasks across multiple clinical areas. In the area of Dentistry Services Management, users could not fully document patient care because of problems with scanning and uploading documents. Millennium and Dentrix failed to exchange data in some instances, resulting in MHS GENESIS failing to exchange information via its internal interfaces and interrupting dental patient care. Users could not complete the mass vaccination of multiple patients in a timely manner because of a defect that required them to restart the application to document vaccines given to each patient. Pharmacists identified discrepancies between prescription order quantities and the amount filled by the interfacing system, preventing management of prescriptions by the pharmacist. Common user tasks span all clinical areas. Users experienced problems managing appointments,

Assessment

- JITC conducted the MHS GENESIS OA at the FF GAL in accordance with a DOT&E-approved test plan. Data from

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medical records, radiology imaging orders, medical history, referrals, physical exams, and patient eligibility through the Defense Enrollment Eligibility Reporting System.

Operational users at Fairchild AFB reported problems with MHS GENESIS billing and report generation.

- The DHMSM Program Manager identified 42 interfaces required to support operations at the four IOC sites. The DHMSM Program Manager did not provide data on 17 of 36 interfaces planned for JITC's pre-IOT&E assessment of interoperability. Of the interfaces with data available, the majority did not conform to the data standards and/or the Interface Control Document.
- MHS GENESIS users at Fairchild AFB, NHOH, and OA participants rated MHS GENESIS usability as "low." Inadequate training, outdated system manuals, the need for multiple roles to accomplish mission tasks, and the increased length of workflows compared to the legacy systems negatively affected users' opinions of the system.
- Users at both Fairchild AFB and NHOH reported similar concerns with the training, stating that clinical specialty training was non-existent or not relevant, they required more practice before go-live, and the training did not prepare them for using MHS GENESIS. The Program Manager incorporated lessons learned from OA and Fairchild AFB, however there is more work required in the area of training effectiveness and planning.
- After the Program Manager discontinued the Leidos Partnership for Defense Health Command Center at Fairchild AFB, users did not have sufficient visibility into trouble tickets, and the lack of consistency in the trouble ticketing process during go-live hindered their ability to follow-up on trouble tickets created.
- The system scans of MHS GENESIS revealed a high number of high severity (CAT I) cybersecurity vulnerabilities. Exploitation of a CAT I vulnerability directly leads to loss of confidentiality, availability, or integrity of data. Though

the DHMSM Program Manager and DOD CIO have been working aggressively to identify and resolve high severity MHS GENESIS cybersecurity vulnerabilities, 313 CAT I cybersecurity vulnerabilities remain outstanding as of October 2017. These gaps in security indicate MHS GENESIS is not survivable in a contested cyberspace environment. Furthermore, there is currently no alternate server site to support Continuity of Operations. Without a functional alternate site, DOD healthcare providers and patients are at risk if the primary site goes down.

Recommendations

- Status of Previous Recommendations. The DHMSM Program Manager addressed one of the two previous recommendations; however, the Program Manager did not fix or mitigate high severity cybersecurity vulnerabilities prior to go-live at Fairchild AFB.
- FY17 Recommendations. The DHMSM Program Manager should:
 1. Resolve high severity cybersecurity vulnerabilities as soon as possible to minimize the risk of a cyber-attack against MHS GENESIS comprising current and former service members' private health records.
 2. Complete the alternate site buildout to enable a functional Continuity of Operations site.
 3. Identify the root causes of the open defects found during the OA and implement fixes in both the test and production environments.
 4. Improve trouble ticket tracking and user follow-up.
 5. Improve training so that clinical specialty training is relevant to each clinical area and specific to the MHS GENESIS Military Baseline and implement the improved training before further fielding.
 6. Incorporate lessons learned from previous go-live events when fielding to future sites.

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