Defense Medical Information Exchange (DMIX)

Executive Summary

Defense Medical Information Exchange Program

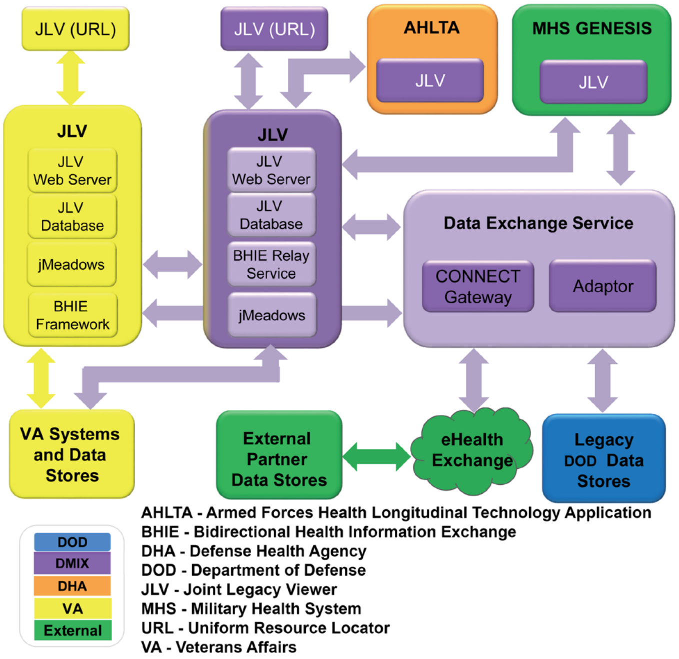
- The Program Executive Office (PEO) Defense Healthcare Management Systems (DHMS) moved the Defense Medical Information Exchange (DMIX) program under the DOD Healthcare Management System Modernization (DHMSM) Program Manager in August 2016. The DHMSM Program Manager is acquiring the Military Health System (MHS) GENESIS system as part of the DHMSM program, of which DMIX is a critical component.

Defense Medical Information Exchange Release 5

- The Army Test and Evaluation Command (ATEC) and Space and Naval Warfare (SPAWAR) Red Team conducted a cybersecurity Cooperative Vulnerability and Penetration Assessment (CVPA) on DMIX Release 5 from May 1-19, 2017, at Walter Reed National Military Medical Center (WRNMMC).
- ATEC, the Army Research Laboratory (ARL), and the SPAWAR Red Team conducted a cybersecurity Adversarial Assessment (AA) on DMIX R5 from August 28 through September 1, 2017, at WRNMMC.
- DMIX Release 5 is not survivable against cyber-attacks. DMIX cybersecurity testing discovered three high severity vulnerabilities that could allow an adversary to compromise patient data.

Defense Medical Information Exchange Release 6

- PEO DHMS fielded DMIX Release 6 in September 2017. DMIX Release 6 implemented a capability to parse MHS GENESIS notes into individual Joint Legacy Viewer (JLV) widgets and a capability to view Veterans Affairs (VA) scanned documents and artifacts in JLV.
- The Joint Interoperability Test Command (JITC) will operationally test DMIX Release 6 during the MHS GENESIS IOT&E to validate DMIX fixes from previous releases and to assess new capabilities.



AHLTA - Armed Forces Health Longitudinal Technology Application
BHIE - Bidirectional Health Information Exchange
DHA - Defense Health Agency
DOD - Department of Defense
JLV - Joint Legacy Viewer
MHS - Military Health System
URL - Uniform Resource Locator
VA - Veterans Affairs

System

- The DMIX program supports integrated sharing of standardized health data among MHS GENESIS, DOD legacy systems, VA, other Federal agencies, and private-sector healthcare providers.
- Together, MHS GENESIS and DMIX are intended to modernize the Military Health System to enhance sustainability, flexibility, and interoperability for improved continuity of care.
- The DOD is developing DMIX incrementally, delivering upgrades to already fielded capabilities. DMIX comprises two main components:
  - The JLV provides an integrated, read-only, chronological view of health data from DOD and VA electronic health record systems, eliminating the need for VA or DOD clinicians to access separate viewers to obtain real-time patient information. DOD and VA users log on to their respective JLV web servers using a URL address in their web browser. Users of the Armed Forces Health Longitudinal Technology Application can connect to the JLV web server through the system menu.
  - The Data Exchange Service (DES) receives user queries entered through JLV and queries DOD, VA, and external partner data stores, returning the results to jMeadows. jMeadows maps local VA and DOD clinical terms to standard medical terminology and aggregates the data for presentation by the JLV web server.

Mission

The DOD, VA, Federal agencies, and private-sector health providers use the DMIX infrastructure and services to:

- Share standardized health data using standard terminology
- Exchange standardized electronic health data securely and reliably with all partners
- Access a patient's medical history from a single platform, eliminating the need to access separate systems to obtain patient information
- Maintain continuity of care
- Exchange outpatient pharmacy and medication allergy data and check for drug-to-drug and drug-to-allergy interaction

Major Contractors

- DES/JLV: ManTech – Arlington, Virginia, and Hawaii Resource Group – Honolulu, Hawaii
- Test Support: Deloitte – Falls Church, Virginia
- Program Manager Support: Booze Allen Hamilton – McLean, Virginia

Activity

Defense Medical Information Exchange Program

- PEO DHMS moved the DMIX program under DHMSM in August 2016.
- PEO DHMS transitioned DMIX into sustainment in October 2016.

Defense Medical Information Exchange Release 5

- PEO DHMS fielded DMIX Release 5 in October 2016 and issued seven patches in FY17 that implemented new capabilities and fixed defects. The capabilities included a new widget to view MHS GENESIS patient data in JLV and created a mechanism to prepopulate MHS GENESIS with Procedure, Allergies, Medications, Problems, and Immunization patient data from legacy systems.
- ATEC, ARL, and the SPAWAR Red Team conducted a cybersecurity CVPA on DMIX Release 5 from May 1-19, 2017, and a cybersecurity AA from August 28 through September 1, 2017, both at WRNMMC. ATEC and SPAWAR conducted the testing in accordance with the DOT&E-approved test plan.

Defense Medical Information Exchange Release 6

- The program manager conducted developmental testing from August 4 through September 14, 2017, at Allegany Ballistics Laboratory (ABL), Rocket Center, West Virginia. DMIX Release 6 functionality improvements include the parsing of MHS GENESIS notes in individual widgets as well as the ability to view VA scanned documents and artifacts in JLV.
- PEO DHMS fielded DMIX Release 6 in September 2017.
- JITC will operationally test DMIX Release 6 during the MHS GENESIS IOT&E to validate DMIX Release 3 fixes and to assess new capabilities, such as the ability of DOD and VA users to view scanned documents and artifacts in JLV.

Assessment

Defense Medical Information Exchange Release 5

- DMIX Release 5 is not survivable against cyber-attacks. The CVPA revealed several vulnerabilities that could allow an adversary to compromise patient data. The cyber test aggressors then exploited these vulnerabilities during the Adversarial Assessment.

Recommendations

- Status of Previous Recommendations. The DHMSM Program Manager has addressed all FY16 recommendations, with the exception of the following which require support from the VA:
  - PEO DHMS has not expanded VA testing of correlation between the DOD and VA terminology maps.
  - The VA has not allowed a DOD Red Team to perform cybersecurity testing of DMIX components and interfacing systems on VA networks.
- FY17 Recommendations. The DHMSM Program Manager should:
  1. Correct the three cybersecurity vulnerabilities identified during DMIX Release 5 cybersecurity testing.
  2. Verify DMIX cybersecurity fixes as part of the MHS GENESIS cybersecurity testing.