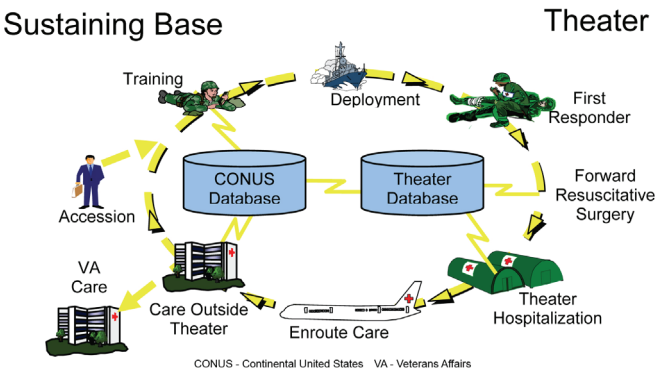
Theater Medical Information Program – Joint (TMIP-J)

Executive Summary

- The Army Test and Evaluation Command (ATEC) led a Multi-Service Operational Test and Evaluation (MOT&E) of Theater Medical Information Program – Joint (TMIP-J) Increment 2 Release 2 (I2R2) from May 20 through June 13, 2013. All four Service Operational Test Agencies (OTAs) participated, as did the Army Medical Department Board, the Air Force Medical Evaluation Support Activity, Army Research Laboratory (ARL), Navy Information Operations Command (NIOC), and the Joint Interoperability Test Command (JITC).
- TMIP-J I2R2 is operationally effective and operationally suitable for all four Services. TMIP-J I2R2 is survivable for the Army, Air Force, and Marine Corps, but not for the Navy. An Information Assurance (IA) defect related to the backup and restoration of the Maritime Medical Modules (MMM) application must be corrected before introducing TMIP-J to the Navy fleet.
- Joint concerns that require prompt action include IA vulnerabilities; a logistics defect that can cause incorrect units of purchase, training on manual procedures for allergy entries, and testing of joint interfaces in the production environment once TMIP-J I2R2 is fielded.

System

- TMIP-J is a Major Automated Information System that integrates software from sustaining base medical applications into a multi-Service system for use by deployed forces. Examples of integrated applications include the theater versions of the Armed Forces Health Longitudinal Technology Application (AHLTA), Composite Health Care System, and Defense Medical Logistics Standard Support.
- TMIP-J provides the following medical capabilities:
  - Electronic Health Record (EHR)
  - Medical command and control
  - Medical logistics
  - Patient movement and tracking
  - Patient data to populate the Theater Medical Data Store (theater database) and the Clinical Data Repository (Continental U.S. database)



- The Services provide their own infrastructure (networks and communications) and computer hardware to host the TMIP-J software.
- TMIP-J consists of two increments. Increment 1 was fielded in 2003. Increment 2 is being developed in multiple incremental releases. Release 1 was fielded in 2009. I2R2 was the system under test during 2013.

Mission

- Combatant Commanders, Joint Task Force commanders, and their medical staff equipped with TMIP-J can make informed and timely decisions regarding the planning and delivery of health care services in the theater.
- Military health care providers equipped with TMIP-J can electronically document medical care provided to deployed forces to support the continuum of medical care from the theater to the sustaining base.

Major Contractors

- SAIC – Falls Church, Virginia
- Northrop Grumman – Chantilly, Virginia
- Akimeka LLC, Kihei – Maui, Hawaii

Activity

- ATEC led an MOT&E of TMIP-J I2R2 from May 20 through June 13, 2013, in accordance with the DOT&E-approved Test and Evaluation Master Plan and the detailed OTA test plan. The OTAs of all four Services participated, as did the Army Medical Department Board, the Air Force Medical Evaluation Support Activity, ARL, NIOC, and JITC.
- The MOT&E evaluated production-representative software at simulated deployment sites at Fort Detrick, Maryland (Army and Air Force); Camp Pendleton, California (Marine Corps); and aboard the USS *Ronald Reagan* (Navy).

- ARL, the Army's Threat System Management Office, and NIOC performed Red Team penetration testing to evaluate IA vulnerabilities.

Assessment

- TMIP-J I2R2 is operationally effective and operationally suitable for all four Services. TMIP-J I2R2 is survivable for the Army, Air Force, and Marine Corps, but not for the Navy. A defect related to the backup and restoration of the MMM application must be corrected before introducing TMIP-J I2R2 to the fleet.
- Red Team penetration testing revealed that the system has a strong security posture when faced with cyber security threats from outside the network but is vulnerable to threats originating from "insiders" with direct access to TMIP-J applications and from "nearsiders" who have network but not application access. A password discrepancy that facilitated this was corrected and retested by ARL with satisfactory results.
- One major deficiency was noted in TMIP-J's core mission area of medical logistics that produced incorrect item quantities in some cases. A viable workaround was developed that adequately mitigates this problem until a material fix can be applied in the next software release. The temporary workaround was agreed to by user representatives of the Service logistics communities and sanctioned by the OTAs.
- JITC successfully tested 8 joint interfaces in the test environment, but 38 other interfaces had no test bed and must await interoperability certification in the production environment in order to achieve net-ready compliance.
- Although training was adequate overall, several minor deficiencies could be traced to insufficient training. One major deficiency revealed that special training is needed for manually inputting allergy information.
- TMIP is the EHR system for deployed military forces. The private health care sector is currently conforming to EHR standards for medical nomenclature and a national health information infrastructure, as defined by Health and Human Services health information technology standards. In the future, medication reconciliation and real-time sharing of medical records across DoD, Veterans Affairs, and private health care EHR systems will be necessary as military personnel transfer to and from the private and public segments. Future testing will need to demonstrate that TMIP-J conforms to appropriate standards to maintain EHR interoperability with other medical systems as required.

Recommendations

- Status of Previous Recommendations. The program has satisfactorily addressed all previous recommendations.
- FY13 Recommendations.
  1. The Deployment and Readiness Systems and TMIP Maritime Program Offices must investigate and correct the major defect regarding restoration of MMM. Restoration must be successfully retested by NIOC and validated by the Commander, Operational Test and Evaluation Force and ATEC prior to introduction of TMIP-J I2R2 to the Navy fleet.
  2. The joint and Service TMIP program managers should address remaining cyber security vulnerabilities and the Service OTAs should verify corrective action.
  3. The Deployment and Readiness Systems Program Office should ensure that the next software release of the logistics module includes a fix to the defect regarding incorrect units of purchase.
  4. JITC needs to test all joint interfaces in the production environment and certify interoperability once I2R2 is fielded.
  5. The Service Program Offices should ensure that TMIP-J training for new personnel is more robust and includes manual procedures for allergy entries where applicable.