THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

HEALTH AFFAIRS

DEC 19 2005

The Honorable John W. Warner
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510-6050

Dear Mr. Chairman:

I am pleased to forward the enclosed annual report as requested by Section 753 of the National Defense Authorization Act for Fiscal Year (FY) 2001. The report discusses the coordination of development, deployment, progress, and maintenance of health care informatics systems in the Federal Government and the private sector in FY 2005.

The report highlights the significant strides the Department of Defense continues to make in sharing electronic health information and adoption of data, communication, security, and technology standards. The report also demonstrates the Department's firm commitment to continued collaboration of the appropriate collection and sharing of health information as systems and data repositories mature, and the Federal Health Architecture is further defined and implemented.

The Department remains an integral part of interagency activities that capitalize on the use of medical informatics through joint participation in the Departments of Defense and Veterans Affairs' Joint Executive and Health Executive Councils, the Federal Health Architecture, and the Consolidated Healthcare Initiative. The Department also actively pursues the goal of the President's executive order to establish an interoperable health record for most Americans within ten years through outreach activities and IT-industry partnerships.

Thank you for your continued support for the Military Health System.

Sincerely,

William Winkenwerder, Jr., MD

cc:
Senator Carl Levin

Enclosure:
As stated

Report to Congress

Fiscal Year 2005
Report on Medical Informatics

Required by:

Section 753, National Defense Authorization Act for Fiscal Year 2001

and

House Armed Services Committee Report 106-616

REPORT ON MEDICAL INFORMATICS

Background

This report is required by Section 753 of the National Defense Authorization Act for fiscal year 2001. The report includes a discussion of the following: the coordination of the development, deployment, and maintenance of health care informatics systems within the Federal Government, and the private sector; the progress occurring in the area of medical informatics; and how the Military Health System and the Department of Veterans Affairs health care system can use the advancement of knowledge in medical informatics to raise the standards of health care and treatment and the expectations for improving health care and treatment.

The committee also directed the Secretary of Defense to provide an annual report beginning March 1, 2001, to the Senate Committee on Armed Services and House Committee on Armed Services 106-616 on the progress to date and the remaining timelines and tasks associated with integrating Department of Defense (DoD), the Department of Veterans Affairs (VA), and the Indian Health Service medical information systems.

Interagency Oversight

DoD/VA Joint Executive Council (JEC): The JEC was established in February 2002, and is co-chaired by the Deputy Secretary of Veterans Affairs and the Under Secretary of Defense for Personnel and Readiness, and comprised of senior leaders from DoD and VA. The JEC was created to:

- Enhance DoD and VA collaboration
- Ensure the efficient use of federal services and resources; remove barriers and address challenges that impede collaborative efforts

- Assert and support mutually beneficial opportunities to improve business practices
- Facilitate opportunities to improve resource utilization and to enhance sharing arrangements that ensure high quality cost effective services for both VA and DoD beneficiaries and
- Develop a joint strategic planning process to guide the direction of joint sharing activities.

The Joint Executive Council oversees the Benefits and Health Executive Councils.

DoD/VA Health Executive Council (HEC): The HEC works to institutionalize DoD and VA sharing and collaboration to ensure efficient use of health services and resources. The HEC oversees the cooperative efforts of each agency's health care organizations. Through the HEC, DoD and VA have worked closely to support expanding electronic health information sharing between our Departments.

The Chief Information Officers (CIOs) of the Military Health System and the Veterans Health Administration (VA) meet on a continuing basis to explore, assess, develop, and monitor joint medical informatics initiatives. Both CIOs are members of and report bi-monthly to the DoD/VA Health Executive Council which is co-chaired by the Assistant Secretary of Defense (Health Affairs) and the VA Undersecretary for Health. Periodically, information management and technology issues also are briefed to the DoD/VA Joint Executive Council.

Joint Strategic Plan (JSP): The JSP was developed by the HEC and approved by the JEC in April 2003. The JSP articulates a vision for collaboration; established priorities for partnering; launched processes to implement interagency policy decisions and develop joint operation guidelines; and instituted performance monitoring to track the Departments' progress in meeting the specific goals and objectives defined in the plan. The JSP goals include: Leadership Commitment and Accountability; High Quality Health

Care; Seamless coordination of Benefits; Integrated Information Sharing; Efficiency of Operations; and Joint Contingency/Readiness Capabilities.

In FY 2004, the JEC reviewed and updated the JSP. During the planning process, the JEC clarified roles and responsibilities of the entities under the Executive Council structure, included specific performance metrics, and introduced a more strategic planning. Progress on the JSP objectives, strategies and key milestones, and performance measures is reported on a monthly basis. Currently, the HEC and the VA/DoD Benefits Executive Council are engaged in the annual review and update of the VA/DoD Joint Strategic Plan.

Health Architecture Interagency Group (HAIG): The HAIG is a joint effort by DoD/VA to facilitate interagency cooperation, and oversee DoD/VA Shared Health Architecture Initiative including initiatives in the Electronic Health Records Interoperability Plan. The HAIG aims to gain consensus on common standards for Enterprise Architecture (EA) regarding security, communications, data, and technology. The DoD/VA Shared Health Architecture Plan, version 1, was signed by both DoD and VA in January 2005. The HAIG meets quarterly and recently initiated a joint agency compliance review process for the DoD/VA interagency initiative.

DoD/VA Interagency Health Informatics Initiatives and Cooperative Efforts

The DoD and VA continue to be involved in numerous multi-agency medical informatics activities that pursue enhancements to information management and technology initiatives to significantly improve the secure sharing of appropriate health information. These initiatives enhance health care delivery to beneficiaries and improve the continuity of care for those who have served our country. Examples of joint efforts are as follows:

Federal Health Information Exchange (FHIE): FHIE supports the monthly transfer of electronic health information from DoD to VA at the point of a Service member's separation. VA providers and benefits specialists access this data daily for use in the delivery of health care and claims adjudication. Data transferred includes: laboratory results (clinical chemistry, blood bank information, microbiology, surgical pathology, and cytology); radiology results; outpatient pharmacy data from military treatment facilities, retail network pharmacies, and DoD mail order pharmacy; allergy information; discharge summaries (inpatient history, diagnosis, and procedures); admission, disposition, and transfer information (admission and discharge dates); consult reports (referring physician and physical findings); standard ambulatory data record (diagnosis and procedure codes, treatment provided, encounter date and time, and clinical services); and patient demographic information (name, social security number, date of birth, sex, race, religion, patient category, marital status, primary language, and address).

DoD has transferred records for over 3 million unique patients to the FHIE repository. Of the 3 million unique patients, the Departments have identified approximately 1.4 million patients as having presented to the VA for care, treatment, or claim determination. The amount of data transferred continues to grow as health information on recently separated Service members is extracted and transferred to VA monthly. FHIE is executed in a manner that is compliant with Health Information Portability and Accountability Act (HIPAA) regulations.

Building on the FHIE capability, DoD is now also transferring data for VA patients being treated in DoD facilities under local sharing agreements. Over 398 thousand messages, such as laboratory results, radiology, pharmacy, consults, have been transmitted on VA patients treated in DoD facilities.

Bidirectional Health Information Exchange (BHIE): BHIE enables real-time sharing of allergy, outpatient prescription and demographic data, and laboratory and radiology

results between DoD and VA for patients treated by both DoD and VA. BHIE is operational in the Seattle, WA area, El Paso, TX, Eisenhower Army Medical Center in Ft. Gordon, GA and Naval Hospital Great Lakes, IL. BHIE is scheduled to be installed at the Naval Medical Center in San Diego, CA in September 2005. Deployment to additional sites in FY06 is being coordinated with the Services, and local DoD/VA sites. Site selection was based on support to returning members of Operation Enduring Freedom and Operation Iraqi Freedom, number of visits for VA beneficiaries treated in DoD facilities, current Federal Health Information Exchange usage, number and types of DoD medical treatment facilities, local sharing agreements, retiree population, and local site interest. BHIE is anticipated to be implemented at the following sites in early FY06: Bassett Army Community Hospital, Fairbanks, AK; Brooke Army Medical Center, San Antonio, TX; National Capital Area to include Walter Reed, Bethesda, Dewitt and others; Landstuhl Regional Medical Center; David Grant Medical Center, CA; Elmendorf AFB Medical Facility, Anchorage, AK; Mike O'Callaghan Federal Hospital (Nellis AFB) NV; and Wilford Hall Medical Center, San Antonio, TX.

Clinical Data Repository/Health Data Repository (CHDR): CHDR establishes interoperability between DoD's Clinical Data Repository and VA's Health Data Repository. The Departments successfully tested the exchange of computable outpatient pharmacy and allergy data in a laboratory environment in September 2004. This test demonstrated the ability to do drug-drug and drug-allergy checking using outpatient pharmacy and allergy information from both Departments. DoD and VA are working on the ability to exchange outpatient pharmacy and medication allergy data on shared patients in the DoD Clinical Data Repository (CDR) and the VA Health Data Repository (HDR) in FY 2006. This data will be computable allowing the DoD and VA systems to perform drug interaction checking and drug allergy checking. The outpatient pharmacy data being exchanged utilizes DoD Pharmacy Data Transaction Service (PDTS) so that DoD pharmacy data includes military treatment facility pharmacy, retail pharmacy, and mail order pharmacy. Following implementation of pharmacy and allergy domains and

the CHDR infrastructure, the work necessary to exchange laboratory data between the repositories will be completed.

Pre and Post Deployment Health Assessments: DoD has extended the FHIE capabilities to incorporate pre- and post-deployment health assessment information for separated service members. Pre-deployment and post-deployment health assessments are provided to service members as they leave and return from duty outside the US. This information is used to monitor the overall health condition of deployed troops, inform them of potential health risks, as well as maintain and improve the health of service members and veterans.

DoD has successfully tested the capability to add electronic pre- and post-deployment health assessment information from the Defense Medical Surveillance System (DMSS) to the information being sent with the FHIE data feed. The historical data extraction was completed in July 2005 resulting in approximately 400,000 pre and post deployment health assessments being loaded into the FHIE data repository at the VA Austin Automation Center. Transmitting of electronic pre and post deployment health assessment data monthly to the FHIE data repository is scheduled to begin in September 2005. VA is scheduled to have the capability to retrieve the data in November 2005. DoD plans to initiate activity to add post-deployment health reassessment information later this year.

Laboratory Data Sharing Initiative (LDSI): LDSI facilitates the electronic sharing of laboratory order entry and results retrieval between DoD, VA and commercial reference laboratories. LDSI supports the electronic ordering and results retrieval of chemistry laboratory tests by VA from DoD, or DoD from VA, where the business case exists.

Development is underway to add the capability for the electronic ordering and results retrieval of anatomic pathology and microbiology. The Departments will be using the

Consolidated Health Informatics (CHI) adopted standards, Logical Observation Identifier Name Codes (LOINC) and Systematized Nomenclature of Medicine Clinical Terminology (SNOMED CT) for this new capability. LDSI is available for use throughout DoD, and actively being used daily between DoD and VA at several sites where one Department uses the other as a reference lab. Either Department may function as the reference lab for the other with electronic orders and results retrieval depending on the local business case.

William Beaumont Army Medical Center (AMC) and El Paso Veterans Affairs Health Care System successfully utilize the LDSI software. Initially, when LDSI was made operational in El Paso, the sites were able to use LDSI for 4 laboratory chemistry tests. On seeing the value of electronic order entry and results retrieval, the DoD and VA local laboratory directors requested that more tests be made available through LDSI. Now VA is using LDSI for 22 laboratory chemistry tests. In August 2005, LDSI was used to provide electronic order entry and results retrieval of over 700 laboratory tests at the William Beaumont AMC and El Paso VA Healthcare System. El Paso will also be one of the first sites to receive the functionality for anatomic pathology and microbiology when it becomes available.

The LDSI software is operational at the following sites:

- Tripler Army Medical Center and the VA Pacific Island Health Care System
- Kirtland Air Force Base (377th Medical Group), Brooks Air Force Base, and VA Albuquerque Medical Center
- Naval Medical Center San Diego and San Diego VA Medical System
- Naval Hospital Great Lakes, Hines VA Hospital and North Chicago VA Medical Center
- William Beaumont Army Medical Center and El Paso VA Health Care System
- Brooke Army Medical Center, Wilford Hall Medical Center and VA South Texas Health Care System

Ongoing functional and technical discussions are being conducted with Bassett Army Community Hospital and VA Alaska Health Care System and Mike O'Callaghan Federal Hospital (Nellis Air Force Base) and VA Southern Nevada Health Care System as LDSI sites in the future.

E-portal Systems: TRICARE Online, the Military Health System (MHS) secure portal, serves as the central platform for enterprise-wide business rules supporting a single, common Internet portal for DoD patients, providers, and managers. Continual collaboration with Veterans Affairs (VA) to coordinate and leverage emerging technologies, including business processes and the "look and feel" of DoD's and VA's respective web Portal systems, has resulted in maximized benefits for both Departments' constituencies. TRICARE Online is deployed worldwide with over 337 thousand registered users at 383 Military Treatment Facilities. Of the over 128 thousand total appointments scheduled using TOL, over 21 thousand of those were scheduled using TOL in 3rd Quarter, FY05. This represents a twelve percent increase in online appointing from the previous quarter.

General Accountability Office (GAO) Report on Lesson Learned: In May 2005, GAO issued a final report on Lessons Learned and Best Practices for Successful Electronic Medical Record (EMR) Implementation entitled "Health Information Technology: HHS Is Taking Steps to Develop a National Strategy." GAO identified lessons learned and best practices from DoD and VA that will provide valuable insight to HHS as it works toward implementation of a national health information IT infrastructure. DoD provided lessons learned and best practices for successful Electronic Medical Record implementation in four key areas; 1) pre-implementation, 2) implementation, 3) post-implementation, and 4) management and sustainment of successful organizational change. The GAO noted several common lessons learned that were also found across DoD, VA, Canada, Denmark and New Zealand, such as the need to: obtain the

endorsement of top leadership, define and adopt standards, address the needs of stakeholders, deploy IT solution in small increments, and build on successes.

National Defense Authorization Act (NDAA) 2003 Information Management/ Information Technology (IM/IT) Demonstration Sites: The FY 2003 NDAA mandated the selection and incremental funding of joint and proximally located VA and DoD sites to demonstrate the feasibility and effectiveness of measures designed to improve the sharing of health care and health care resources. The Departments were directed to select sites in each of three areas: 1) budget and financial management system; 2) staffing and coordinated assignment system; and 3) medical information and information technology management systems.

In 2003, the VA/DoD Health Executive Council selected three IM/IT sites to pilot health information technology projects:

- El Paso VA Health Care System and William Beaumont Army Medical Center System are conducting a demonstration project to:
  - Implement Laboratory Data Sharing Initiative (LDSI) that supports the electronic ordering and results retrieval of chemistry laboratory tests by VA from DoD
  - Add capability for LDSI to support the electronic ordering and results retrieval of chemistry laboratory tests by DoD to VA for contingency purposes
  - Utilize BHIE in a Composite Health Care System II environment

- South Texas Veterans Health Care System, Wilford Hall Medical Center, and Brooke Army Medical Center are conducting a demonstration project to:
  - Implement the same LDSI software

- Enhance LDSI with the addition of anatomic pathology and microbiology using Logical Observation Identifiers, Names and Codes (LOINC) and Systematized Nomenclature of Human Medicine Clinical Terminology.
- Implement the credentialing interface for DoD Centralized Credentialing Quality Assurance System and the VA VetPro Credentialing System (CCQAS/Vet Pro) to share credentialing elements for first time credentialing for physicians, nurses, and other licensed providers

- Madigan Army Medical Center and the VA Puget Sound Healthcare System are conducting a demonstration project to:
  - Test the implementation of BHIE
  - Develop the capability using Health Level 7 (HL7) Clinical Document Architecture (CDA) to extract and share inpatient documentation starting with the discharge summary

These demonstration projects will run through FY 2007.

Joint Incentive Fund (JIF) Proposals: The FY 2003 National Defense Authorization Act, Public Law 107-314, Section 721, required that DoD and VA establish a joint incentives program, through the creation of a DoD-VA Health Care Sharing Incentive Fund. The intent of the program is to identify, fund and evaluate creative local, regional and national sharing initiatives. In FY 2004, 58 proposals were initially submitted, 29 proposals selected for further consideration, and 12 selected for implementation.

In FY 2005, the Work Group received 56 proposals for evaluation in January 2005. Of these, 25 were selected to continue to a second round review and asked to submit more detailed information, including a cost benefit analysis. The final selection and funding of the projects from these 25 is pending leadership approval. Selected projects will be required to submit quarterly interim progress reports on their initiative during

implementation for the purpose of determining if projects are progressing and if performance measures have been met.

For FY 2006, the JIF proposal submission process is being refined to require both the proposal and the business case analysis packages to be submitted together. In addition, the submission dates will be earlier in the fiscal year to allow for earlier approval and funding of the selected projects.

Multi-Agency Health Informatics Initiatives

In FY 2005, the Department of Health and Human Services (HHS), Office of National Coordinator (ONC) for Health Information Technology assumed the lead for Consolidated Health Informatics (CHI) initiative from the Centers for Medicare and Medicaid Services (CMS). CHI was integrated into the Federal Health Architecture (FHA) initiative. DoD remains a lead partners with VA on CHI and FHA.

CHI continues to build on the important work accomplished earlier. To recap past CHI accomplishments, in March 2003, the HHS announced the first set of standards to be adopted by the federal entities involved in health. They included four messaging and one vocabulary standard. In May 2004, HHS announced the adoption of 15 additional standards for vocabulary; medication related terminologies, transactions and code sets. Adopted standards are to be used for new systems development and in the requirements for acquisition of commercial-off-the-shelf (COTS) software. Federal adoption of standards, and requiring their use in COTS acquisitions and software development efforts, should become a catalyst for their adoption in the private sector. The use of standards will support a more seamless exchange of health care data.

The next phase in CHI focuses on the enhancement and usability of interoperability standards adopted during the first phase and to address any gaps and harmonize future standards needed for interoperability. The CHI Council revalidated the formation of three new sub-workgroups: Implementation of Adopted Standards; Maintaining Adopted Standards; and New Standards Adoption.

DoD and VA are co-leads on the New Standards Adoption sub-workgroup. The New Standards Adoption sub-workgroup has begun work on data standards for Allergies. This work encompasses five different types of Allergies: Medication, Food, Animals, Plants, Chemicals, and Environmental. The standard for medication allergies was determined as the top priority due to importance in supporting e-Prescribing initiatives and DoD/VA bidirectional health information exchange efforts. DoD and VA are reviewing existing standards available for medication allergies within federal agencies and across health standards development organizations.

A significant element in ensuring adoption and use of standards achieves the desired of effect of making sharing meaningful information easier, is the development, adoption, and use of standards implementation guidelines. Implementation guidelines provide further clarification to federal agencies on how to implement and use CHI standards to achieve interoperability. DoD and VA have taken the lead on the development of implementation guidelines for Health Level 7 Clinical Documentation Architecture, and Logical Observation Identifier Name Codes (LOINC) standards. These are two standards supporting DoD/VA data sharing initiatives. DoD and VA also drafted an implementation guideline for Digital Imaging Communication in Medicine (DICOM) that was approved by the DoD/VA Health Architecture Interagency Group (HAIG) at the September 2005 meeting. It will be forwarded to CHI for consideration for federal-wide adoption. CHI initiative is also assessing government-wide investments in licenses and

support for the recommended standards and providing requirements for government-wide usage of health IT architecture standards through FHA.

The members of the CHI are also participating in a number of projects, individually and as part of the Consolidated Health Informatics group, to establish widespread use of electronic health data systems and programs including electronic health records. Among these are "two new steps in building a national electronic health care system that will allow patients and their doctors to access their complete medical records anytime and anywhere they are needed, leading to reduced medical errors, improved patient care, and reduced health care costs," as HHS Secretary Tommy G. Thompson announced 1 July, 2003, at the National Health Information Infrastructure Conference in Washington, DC.

- First, the Secretary announced that the Department has signed an agreement with the College of American Pathologists (CAP) to license the College's standardized medical vocabulary system and make it available without charge throughout the U.S. This action opens the door to establishing a common medical language as a key element in building a unified electronic medical records system in the U.S. The CAP agreement announced 1 July 2003, will be administered through the National Library of Medicine (NLM), a component of HHS' National Institutes of Health (NIH).

- Second, the Secretary announced that HHS commissioned the Institute of Medicine to design a standardized model of an electronic health record. The health care standards development organization known as HL7 was asked to evaluate the model HHS has shared the standardized model record at no cost with all components of the U.S. health care system. The design, entitled, the Electronic Health Record System (EHR-S) Functional Model –Functional Model was released by HL7 as a Draft Standard for Trial Use in the late spring of 2004 and the next major revision was out for comment in the summer of

2005. DoD, among other federal agencies, is actively participating as an organizational member of HL7 in the development of the functional model design and evaluation.

CHI is only one of the five FHA workgroups. The others are Food Safety, Health Services and Electronic Health Record, Interoperability, and Public Health Surveillance. FHA is one of the lines of business identified in the Federal Enterprise Architecture (FEA) and is a multi-departmental business and technical architecture.

The revised draft CHI charter as of 15 June, 2005 states its goals and next steps as being:

- Regular meetings with industry to prevent major incompatibilities in partnership with the National Committee on Vital and Health Statistics
- Defined change management role for the initiative's merger into Federal Health Architecture (FHA)
- CHI goals incorporated into the FHA and activities coordinated through the Office of the National Coordinator for Health Information Technology
- Next Steps:
    - Maintain adopted standards enhancing usability and interoperability
    - Create implementation guides for adopted standards
    - Implement adopted standards in new opportunities
    - Adopt new standards
    - Identify appropriate pilots, demonstrations, and deployments

Both the DoD and VA are active participants on the Federal Health Architecture e-Government Initiative, defining business processes for the electronic health record and establishing data health standards to improve interoperability and health sharing. The signed Interagency Agreement between the DoD and HHS provides the mechanism to delineate the roles and responsibilities between the Departments in support of the FHA e-

Gov Initiative, as required by the Office of Management and Budget. In addition, DoD also provides in-kind services and funding to support CHI and FHA activities.

ONCHIT Anti-Fraud Work Group: DoD participates in the ONCHIT Anti-Fraud Work Group and has shared its experience and expertise in anti-fraud efforts, especially in data warehousing to support anti-fraud efforts. In May 2005 the Military Health System hosted an Information Technology briefing on the Composite Health Care System II (CHCS II) and Coding Compliance Editor, with a special emphasis on coding and the use of electronic health record anti-fraud efforts, for the members of the ONCHIT Anti-Fraud Work Group. DoD's Program Integrity Office also participated in a video teleconference with the Anti-Fraud Work Group regarding fraud detection and prosecution efforts. In addition, DoD was an active participant in the Anti-Fraud Executive Committee.

Data Feeds to the Center for Disease Control (CDC): On a daily basis, the DoD provides the CDC with outpatient encounter data and diagnostic and procedure codes associated with outpatient visits in Military Treatment Facilities. Personal health information is removed from the records, in accordance with HIPPA and associated privacy regulations, prior to transmission. Over 121 million records have been transmitted to the CDC since May 2003.

Military Health System (MHS) Medical Informatics Decision Making Tools

DoD is actively optimizing the organization and use of digital information available as a result of innovations in medical informatics. This process involves not only creating the hardware and software specific to these needs, but also developing approaches to collecting, integrating, analyzing, and presenting the information to monitor, guide, and eventually improve the performance of the health care system through effective use of information.

Several systems have demonstrated successful implementation of these principles, and now serve as the cornerstones of medical information throughout the MHS. These systems include the MHS Data Repository (MDR) and the MHS Management Analysis and Reporting Tool (M2). Both systems have completed development and deployment, and are currently undergoing routine software releases to address changing business practices and data requirements.

MHS Data Repository (MDR): The MDR is an exceptionally robust clinical and business data warehouse supporting executive information and decision support for the MHS. To facilitate providing complete and accurate information, the MDR manages the receipt, processing, storage, and distribution of tremendous volumes of data. Data in the repository reflect health plan utilization by MHS beneficiaries around the globe. The MDR is populated with clinical encounter and cost data from the MTFs as well as purchased care data from contracted MHS network providers. More than 260 worldwide systems contribute both encounter data and reference files. This enables crosscutting analysis among financial, clinical, enrollment and eligibility, and purchased care databases. Demographic data is fed into the data warehouse from the Defense Manpower Data Center, elucidating not only the geographic locations of eligible beneficiaries but also their history of health plan enrollment. Finally, a nearly continuous stream of laboratory, radiology, and pharmacy data populates the warehouse with remarkably detailed results that make the MDR one of the most clinically rich data repositories in existence today.

Multiple executive information and decision support tools have been developed to utilize the MDR. These systems allow MHS executives and analysts to perform a wide range of analytical and managerial functions. Clinical researchers and analysts also can study everything from a horizontal view of a single patient's care to the effects of legislated changes in health plan policies on financial planning.

MHS Management Analysis and Reporting Tool (M2): M2 is a powerful analytic tool that supports healthcare analysts and decision makers to manage and oversee MHS operations. M2 combines a powerful commercial ad hoc query tool with MHS data covering the clinical, financial, and beneficiary demographic domains with the MTF, purchased care, pharmacy, and enrollment/eligibility data. In M2, the frequency of some of the data feeds has been increased from monthly to weekly to provide more timely data.

Additional initiatives under development are the Defense Medical Surveillance System and the Clinical Data Mart.

Defense Medical Surveillance System (DMSS): DMSS is a web-based data mart that collects and concentrates routine encounter data to assist analysts in determining health trends in beneficiary populations. These trends may include long-term studies, such as medical effects of deployment, or near-real-time studies, such as outbreaks of types of diseases. The application has already helped clinicians identify an *Acinetobacter* outbreak in returning Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) veterans. The system is expected to replace the existing Essence application in 2006.

Clinical Data Mart (CDM): CDM will allow analysts to review large data samples from the military's longitudinal medical record, the CHCS II. The CDM receives data from the CHCS II Clinical Data Repository (CDR) and offers it to users through a secure web interface based on Business Objects software. The first release is designed for MTF health care professionals and analysts; the follow-on will focus on enterprise-level users.

Population Health Operational Tracking and Optimization (PHOTO): The PHOTO system is a data mart that provides easy access to standardized MHS performance metrics, which include data from direct care facilities and the MCSCs. It provides a

concise set of health plan performance measures in a single, user-friendly, web-based application to inform TRICARE program managers of the effectiveness and efficiency of their program execution. The PHOTO metrics offer visibility into beneficiary health care patterns and provide important information for evaluating the implementation of TRICARE and the MHS Optimization Plan in the areas of Customer Responsiveness, Best Clinical Practices, Best Business Practices, and Population Health Management. Multiple levels of aggregation allow managers at corporate, regional, and local levels to determine their contribution to total plan performance and for the retrieval of appropriately detailed information for effecting change at all levels of the enterprise. During 2003, PHOTO added eight new metrics. These are clinical measures based on the Health Plan Employer Data and Information Set (HEDIS) methodology.

MHS IT Partnership and Outreach Activities

DoD has systematically developed and matured the Health Enterprise Architecture (EA), governance structures, and processes over the last four years. In FY 2005, the MHS Chief Enterprise Architecture (CEA) established an outreach goal to better educate MHS staff, industry partners, other Federal Agencies, and professional organizations on the uses and benefits of an EA to include standardization of data, messaging and communications standards. The outreach effort included presentations at several notable conferences. For example, in November 2004, DoD and representatives from key contacts participated in a briefing and interactive discussion on FHIE/BHIE at the Gartner Application Integration and Web Services Summit in Orlando, Florida. This interactive discussion explored the business and technical issues, results achieved and lessons learned in an ambitious project that combined Service-oriented and event-driven design patterns. Another example is in December 2004, when the MHS Chief Enterprise Architect (CEA) participated in a presentation at the Government Electronics and Information Technology Association's Federal Health Care Information Technology Forum. The presentation focused on the benefits derived from the Federal Health

Architecture. More recently in September 2005, DoD presented on XXX at the first Federal Computer Week Enterprise Architecture Conference.

Health Information Technology (HIT): In April 2004, the President signed an Executive Order, "Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator," calling for the majority of Americans to have an interoperable electronic health record within 10 years. Additionally, the Executive Order directed the DoD and the VA to jointly report on the approaches the Departments could take to work more actively with the private sector to make their health information systems available as an affordable option for providers in rural and medically underserved communities.

The DoD response, "The Report on Approaches to Work with the Private Sector to Make Health Information Systems Available and Affordable to Rural and Medically Underserved Communities," was submitted on July 21, 2004 to the Honorable Tommy G. Thompson, Secretary of Health and Human Services, along with "The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care – Framework for Strategic Action." The DoD report recommended the need for a common "blueprint" or "road map" from which all interested parties can proceed. The Department recommended approaches that focus on standards (e.g. data, security, messaging, technical, and communication) and interoperability; infrastructure considerations (e.g., networks, hardware, and software); contracting incentives; technology transfer; and sharing of lessons learned.

DoD has outlined several key goals and strategies to collaborate and coordinate recommendations with ONCHIT in support of the development of the strategic plan. DoD will communicate, encourage and share lessons learned to ardently support the President's agenda. DoD will continue to actively participate with Standards Development Organizations in development of national data, technical, security and

communication standards that foster interoperability and data exchange. The Department is sharing lessons learned and clinical practice templates on appropriate topics in various forums with national, regional, state, and local authorities and the private sector.

Health Information Technology (HIT) Conference Series: In June of 2005, the Harvard Interfaculty Program for Health Systems Improvement, cosponsored with DoD and VA, the third in a series of conferences on HIT, in Washington, DC. This session focused on "Using Information Technology to Transform Clinical Care in Large Health Care Organizations." Health care leaders from HHS, Kaiser Foundation Health Plan, Vanderbilt University, Partners Healthcare, and others attended this invitation-only, one-day conference. The purpose of the series is to help others carry out the President's goal of having interoperable electronic health records for most Americans within a decade.

The series of conferences began in July 2004, when the group collaborated to hold a pre-conference to the HHS Secretarial Summit on HIT in Washington, DC. At the Summit, Dr. David Brailer, the National HIT Coordinator, revealed his Strategic Framework to institute the President's plan. The purpose of this first Harvard/DoD/VA/HHS Conference was to share lessons learned on "Implementation of Large Clinical Information Systems (CIS): Achieving Success," including overviews of system capabilities and challenges to committing to CIS. Other participants included high level executives from Kaiser Permanente Ohio, Partners HealthCare, and the Regenstrief Institute. In March 2005 the group met again, with many of the original participants and additional health care systems, including Vanderbilt, Cleveland Clinic Foundation, and Palo Alto Medical Foundation. The theme of this event was, "Challenges in Clinical IT Implementation in Large Healthcare Organizations: Personal Health Records and Data Sharing." Dr. Brailer was again a featured speaker, and emphasized the challenges of HIT adoption for small or single practitioners.

Healthcare Information and Management Systems Society (HIMSS): HIMSS frames and leads healthcare public policy and industry practices through its legislative advocacy, knowledge sharing, collaboration, and community affiliations. The MHS works with HIMSS year round on efforts to help advance the President's goal of interoperable EHRs for most Americans within a decade.

The MHS Chief Enterprise Architect (CEA) provided three MHS EA outreach presentations at the February 2005, HIMSS annual meeting: "Blueprints for Success: Building Strong Foundations through Enterprise Architecture" at a Department of Defense session; "Enterprise Architecture: Building Blocks for Business Success" at a general HIMSS session; and "Federal Health Architecture Consolidated Health Informatics" at the HIMSS Advocacy Breakfast panel. All three sessions stressed the criticality of adopting and implementing universally understood standards to derive maximize healthcare benefits. At the HIMSS annual meeting, DoD also:

- Hosted a booth, "Integrating the Healthcare Enterprise (IHE)" Showcase. This booth, which had tremendous support from VA and integration contractors, showcased the healthcare information interoperability achievements realized through FHIE and BHIE.

- Held a briefing on FHIE and BHIE titled, "Health Information Interoperability Realized", which provided an overview of FHIE with a focus on BHIE. As background, BHIE leverages already developed joint DoD/VA infrastructure, substantial interagency IT investments, VA/DoD test facilities, and existing personnel resources to support the real-time, bidirectional interface between the two Departments. BHIE exchanges outpatient pharmacy, laboratory, radiology, allergy, and demographic data on shared patients from VA's and DoD's CHCS through reuse and enhancement of existing FHIE assets.

In April 2005, MHS presented a demonstration at HIMSS 4th annual Advocacy Day, an event HIMSS members from all over the country attend to visit with elected officials and staff and to learn about upcoming legislation and funding. The theme of the education sessions held earlier in the day was "Setting Priorities and Expectations for HIT." The Solutions Showcase Technology Demonstration was held that evening, as one of the Advocacy Day events. MHS demonstrated using the electronic health record (EHR) with TRICARE Online appointing. The demo attracted much attention, interest and questions.

In June 2005, the MHS CEA attended an HIMSS Summit in New York City as both a conference committee member and facilitator. The theme of the summit was "Achieving National Healthcare Transformation." Dr. David Brailer, National Health Information Coordinator, was a keynote speaker and announced the release of four Request For Proposals (RFPs) as part of a contracting process to address fundamental issues critical to achieving an interoperable Nationwide Health Information Network (NHIN) and driving electronic health record (EHR) adoption.

Committee of the Chiefs of Military Medical Services (COMEDS), North Atlantic Treaty Organization (NATO), Medical Communication and Information Systems (MedCIS) Work Group (WG): COMEDS is the senior military medical advisory committee of the NATO, and is composed of the Surgeons General of each NATO nation, the Medical advisors of their Strategic Commands and the Medical Staff Officer of the International Military Staff. DoD hosted a planning meeting of the NATO/COMEDS MedCIS WG in August 2005, and finalized the agenda for their 10th Meeting to be held September 2005, in Athens, Greece. The meeting also accomplished a status update of the COMEDS website, outstanding action items, and the draft Plenary Report. A meeting was also held with Partnership for Peace Information Management Systems (PIMS), a virtual organization aimed at improving relationships between the U.S., NATO, and Partner Nations through collaboration and information sharing, which provided an opportunity

for the MedCIS co-chairs, and MHS representatives, to meet the PIMS representatives prior to the September Work Group meeting.

Publication: *Advances in Patient Safety: From Research to Implementation*: In May 2005, the Agency for Healthcare Research and Quality (AHRQ) and DoD announced the new publication of this four-volume set of 140 peer-reviewed articles representing an overview of patient safety studies by AHRQ-funded researchers and other government-sponsored research. It is the federal government's first compendium of studies on the successes and challenges of efforts to improve patient safety and reduce medical errors. Authors from the DoD's Information Management, Technology and Reengineering Directorate wrote the chapter in Volume 3--Implementation Issues, Section 1--Information Technology, "Improving Patient Safety with the Military Electronic Health Record."

American Health Information Community (AHIC): On June 6, 2005, Department of Health and Human Services announced the formation, under the auspices of the Federal Advisory Committee, of a national collaboration to serve as a national standards and policy body to make recommendations to the federal government on how to make health records digital and interoperable, and assure that the privacy and security of those records are protected. The AHIC will be chaired by HHS and include commissioners, 8 each, from the public and private sectors, for a total of 17 commissioners. Over 600 nominations were received by HHS. DoD has received one of the public-sector seats. The first AHIC meeting is planned for October 2005.

DoD, with its long history in the development and implementation of electronic health records has much to contribute to the AHIC, including (1) experience in the use of health data standards, both as a large organization with over 9.2 million beneficiaries worldwide and as a globally active federal agency; (2) more than 25 years of lessons learned in the

development, implementation, and use of clinical, administrative, and management information technology systems; and (3) expertise in security and privacy.

Military Health System (MHS) Business-to-Business (B2B) Gateway: The MHS B2B Gateway is designed to provide authorized DoD partners from the commercial environment with secure access to DoD systems in the military environment. Operational in September 2003, the MHS B2B Gateway currently supports connectivity to 24 commercial partners. The MHS B2B Gateway provides layered security, high availability, scalability and authentication and access controls. The gateway supports both Web and non-Web based applications. Existing utilization is at approximately 25% of the total capacity with new partners projected in the upcoming months. The MHS B2B successfully supports the documented requirements for the MHS Business Partner connections and services, while maintaining DoD healthcare authentication, integrity and confidentiality requirements.

The Terminology Service Bureau (TSB): With the maturing of the CHCS II clinical technology environment, it became clear several years ago that a robust system for reliably translating medical data from one part of the system to another would be critical. This system had to be both deep and flexible in order to accommodate the best of breed products within CHCSII and the dynamic, and ever growing, nature of medical knowledge and concepts. It became quickly apparent that no such system existed in the commercial world.

The MHS is determined to design and implement a new approach to this longstanding stumbling block to medical informatics interoperability. TSB has demonstrated the extraordinary value of this dual-use project, which provides a public domain lexicon for use by the commercial medical informatics world as well as CHCS II. Key commercial vendors are now regularly placing all their proprietary medical concepts and codes into a

carefully integrated and publicly available environment through participation in the TSB. The MHS is currently discussing the TSB system with the VA.

United Kingdom National Health Service (NHS) Visit: In June 2005, the MHS hosted 12 members of the UK NHS visiting the US seeking lessons learned and hurdles faced by the DoD as we fielded our first and second generation electronic health records (EHRs). The day opened with remarks by the Principal Deputy, Assistant Secretary of Defense for Health Affairs, followed by panel discussions on pre-implementation, implementation and post implementation of an IT system. The British visitors then were bused to the Pentagon for a VIP tour and a visit to the Pentagon Health Clinic, where they viewed many health Information Technology products in action. They clearly indicated that they hoped this was a highlight of their U.S. trip.

Summary

DoD continues to make significant strides in sharing electronic health information technology and in the adoption of standards. This has been demonstrated with the continued collaboration between DoD, VA, and HHS. These efforts align with the President's Health Technology Plan. Much has been accomplished in a short period of time and the ground work has been laid for even greater progress in the future. Our shared commitment to strong DoD/VA/HHS collaboration in the area of information technology places us in the forefront of interagency health information technology across the federal government.

Advancements in medical informatics have the potential to greatly enhance the information that is readily available. Increased access to information will help to facilitate and evaluate care, identify opportunities for improvement, and highlight examples of clinical and business best practices. Advancements in information can improve health care quality by measuring performance in real-time, providing an

overview of the most current outcomes and increasing accountability. The timely provision of appropriate information about the patient's care and outcomes to health care providers will enhance the quality of health care delivered by DoD.

DoD remains an integral part of interagency activities that capitalize on the use of medical informatics through joint participation with informatics-focused organizations. Senior DoD leaders are committed to joint initiatives, as evidenced by their participation in the DoD/VA Joint Executive Council (JEC), the DoD/VA Health Executive Council (HEC), the VA/DoD Health Architecture Interagency Group (HAIG), the Health Information Technology initiative, Federal Health Architecture (FHA), and the Consolidated Healthcare Initiative (CHI). These organizations ensure that the developing capabilities of medical informatics will be implemented in a timely and cost effective manner, to support the quality and availability of medical care to all beneficiaries.

In FY 2005, DoD is actively working to advance the goal of the President's executive order to establish an interoperable health record for most Americans within 10 years through outreach activities and IT industry partnerships. In conjunction, the MHS CEA established an outreach goal to better educate MHS staff, industry partners, other Federal Agencies, and professional organizations on the uses and benefits of an EA to include data, messaging and communications standards. The ongoing effort involved participation in several notable conferences, meetings, briefings and demonstrations that included not only the Healthcare Information and Management Systems Society (HIMSS), but also the United Kingdom National Health Service, and the Committee of the Chiefs of Military Medical Services, the North Atlantic Treaty Organization (NATO/COMEDS), Medical Communication and Information Systems Work Group (Med CIS WG).

The Department is firmly committed to continued collaboration to expand the appropriate sharing of health information as systems and data repositories mature and standards and

processes are further defined and implemented. Exchanging appropriate health information between Departments, in keeping with applicable privacy and security regulations, will not only enhance the quality of health care delivered, but will also establish a federal model for electronically exchanging medical records.