



THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, DC 20301-1200

DEC 21 2006

The Honorable Michael O. Leavitt  
Secretary of Health and Human Services  
Washington, D.C. 20201

Dear Mr. Secretary:

I am pleased to forward the enclosed Military Health System (MHS) White Paper that responds to the Request for Information: Improving Health and Accelerating Personalized Health Care Through Health Information Technology and Genomic Information in Population and Community-based Health Care Delivery Systems.

The White Paper provides an overview of AHLTA's Electronic Health Record, the MHS's focus on advancing science through genomic/proteomic capabilities, and the Department of Defense's globally normalized clinical data repository. Each of these activities enhances the ability of the MHS to provide quality personalized healthcare.

Thank you for the opportunity to contribute to the transformation of our Nation's healthcare delivery.

Sincerely,

A handwritten signature in black ink that reads "William Winkenwerder, Jr." The signature is written in a cursive style.

William Winkenwerder, Jr., MD

Enclosure:  
As stated

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# Personalized Health Care

Military Health System Current and Future Capabilities to Incorporate Health Information Technologies and Biomedical Advances to Support Personalized Health Care

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*Office of the Assistant Secretary of  
Defense (Health Affairs)*

21 December 2006

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DoD Response to U. S. Department of Health and Human Services Request for Information

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## **The Purpose of this White Paper**

This white paper has been prepared in response to the U.S. Department of Health and Human Services (DHHS) Request For Information on improving health and accelerating personalized healthcare through Health Information Technology (HIT) and genomic information in population and community based healthcare systems. DHHS solicited input from the public and private sectors on plans for developing and using resources involving HIT and genetic and molecular medicine, with specific reference to incorporating these capacities in evidence-based clinical practice, health outcomes evaluations, and research.

## **Office of the Assistant Secretary of Defense (Health Affairs) Mission and Vision of the Military Health System**

The mission of the Military Health System (MHS) is to enhance the Department of Defense (DoD) and our Nation's security by providing health support for the full range of military operations and sustaining the health of all those entrusted to our care. Our vision is a world-class health system that supports the military mission by fostering, protecting, sustaining, and restoring health. We deploy the most advanced electronic health record (EHR) in the world along with human resources, financial, logistics, and other systems to create an integrated information network for the entire MHS.

## **Background**

For the future, DoD is exploring technology for meeting its patient health record challenges. For the past 15 years, our legacy system, Composite Health Care System (CHCS), has provided a medical information system with essential laboratory, pharmacy, patient administration, and encounter functions. The newest generation of technology, known as AHLTA, provides an enterprise EHR with a combat-deployable version, known as AHLTA-T. AHLTA is a medical and dental clinical information system generating and maintaining a comprehensive, life-long EHR for each MHS beneficiary. AHLTA contains health-related information that includes provider encounters, health status, and clinical problems. Over the next few years, Warfighter personalized health record information will be available via an electronic information carrier (EIC), and the Theater Medical Information Program (TMIP) will integrate EIC records during overseas deployments and military operations.

## **Electronic Health Record**

The MHS Strategic Road Map directs that our EHR must enable early detection of medical threats by identifying patterns of symptoms even before they are identified as a disease and it must provide real-time, evidence-based decision support. The EHR will replace paper-based records, providing timely access to health information in a readily accessible form for pre, during and post deployment health surveillance, health resource planning, and healthcare delivery. Additionally, the longitudinal data created through a Service member's lifecycle will enable a seamless exchange of complete patient information between DoD and the Department of Veterans Affairs (DVA). Future developments will enhance clinical decision support; analysis of diagnoses, treatments, and illnesses; medical alerts tailored to a Service member's requirements; and best practice multidisciplinary guidelines.

## **Applications**

### **Applications for genome based clinical testing**

At the most fundamental level, the availability of genomic based clinical testing will add to the DoD toolbox for delivering high-quality patient care. With the Human Genome Project and successful sequencing of the human genome, we anticipate revolutionary changes in clinical medicine and

bioinformatics to ensue. We look forward to technologies that will enable us to target patients at risk for disease and respond with early detection, surveillance, and treatment. Clinical genomic testing capabilities will dramatically increase the precision of automated clinical decision support, making it more relevant at the point of care.

Today AHLTA handles genetic screenings as it does other measurable lab tests. To date AHLTA has 147 genetic tests resulted in the system to address 44 different genetically linked diseases. Currently genetic testing is primarily focused on newborn screening. However, in one month, we conducted 15 genetic tests for homocystinuria, 9 tests for hemochromatosis, and 4 for cystic fibrosis.

The second order effects in healthcare delivery that result from genome based clinical testing are significant. By personalizing treatments, patient demands for health information and their involvement in prevention and treatment become interactive and create a central and essential role for the personalized EHR.

We anticipate a growing need for translational research to help bring laboratory research into applied clinical settings. DoD sponsors the following translational clinical research programs:

- The Comprehensive Reproductive System Care Program (CRSCP) is a collaborative research effort between Walter Reed Army Medical Center (WRAMC), Windber Research Institute and Medical Center, and the Henry M. Jackson Foundation. CRSCP has a unique translational research paradigm that combines clinical care in breast disease and cancer with research knowledge development of new findings.
- The Uniformed Services University (USU) has established the Center for Prostate Disease Research (CPDR), which combines a clinical research center at WRAMC with a biospecimen repository linked to other research tissue and serum banks that support molecular genetic studies.
- The U.S. Army Telemedicine and Advanced Technology Research Center (TATRC) has provided extramural funds to the H. Lee Moffitt Cancer Center to establish the National Functional Genomics Center (NFGC), an integrated research program focusing on gene expression analysis, proteomics, and translational research linked through bioinformatics programs.

## **Longitudinal Data Collection**

### **Databases for longitudinal data collection**

The DoD legacy system, CHCS, has been used to collect healthcare information on beneficiaries since 1991. Our EHR, AHLTA, which is now deployed worldwide, expands the longitudinal data collection capability of CHCS by adding highly structured clinical documentation and a globally normalized Clinical Data Repository (CDR) based on standardized terminologies. With the added capability made possible by AHLTA, our healthcare providers are able to review clinical treatment and disease course both over time and across military treatment facilities (MTFs) subspecialty care.

A unique feature of DoD is that beneficiaries enjoy a single healthcare system for 20 years or more. AHLTA documents the health and healthcare from birth to 22 years for dependent children and age 18 to 65 years or older for adults. AHLTA incorporates genetic testing results and through its structured documentation feature can store detailed family medical history. By spanning child and adult lifecycles of individuals and families, AHLTA will generate one of the richest sources of longitudinal health data in the world.

Storing patient data from AHLTA and other clinical systems, our Clinical Data Warehouse (CDW) will reformat and subset longitudinal healthcare data to facilitate secondary analysis for clinical research, community prevention, and force health readiness. A second engine, the Clinical Data Mart (CDM), will house smaller customized datasets from the CDW. Smaller datasets will facilitate high-quality research, enhance clinical decision support and community disease prevention, and support Automated Clinical Practice Guideline (ACPG) wellness reminders.

The CDW/CDM will support the following future USU initiatives:

- Study the effect of select, evidence-based treatment interventions, stratified by various patient characteristics to include genetic testing results
- Research the effect of leveraging informatics resources to enhance clinical care (e.g. guidelines embedded within AHLTA, to include those based on genomic testing)
- Study the effect of specific drug treatment regimens on clinical care
- Investigate the prevalence of various cancers and chronic diseases among subpopulations and occupational exposures
- Study the effects of primary prevention care in targeted subpopulations and settings

The Armed Forces Institute of Pathology (AFIP) is another source of longitudinal data providing both archived storage and active data feeds to many Armed Forces controlled pathology databases. Since 1917, AFIP has collected and preserved longitudinally based tissue specimen collections.

The Defense Medical Epidemiology Database (DMED) maintains longitudinal data on personnel characteristics and deployment experiences. Operated by the Army Medical Surveillance Activity (AMSA) Center for Health Promotion and Preventive Medicine (CHPPM), DMED is a subset of the Defense Medical Surveillance Service (DMSS).

The Millennium Cohort Study is the newest longitudinal data collection effort. Tracking a cohort of Service members, the study seeks to examine the health effects of deployment. The Millennium Cohort Study is DoD funded and sponsored by the Naval Health Research Center (NHRC).

## **Treatment Effectiveness**

### **Models to fill gaps in evidence for effectiveness of interventions for different populations**

AHLTA offers an excellent platform for translational research. The EHR houses patient medical history, health status changes, and diagnostic testing results across multiple medical specialties for more than 8.7 million patients. Because of the large sampling universe, clinical researchers and practitioners can stratify by population characteristics without loss of statistical power.

Using a combination of clinical data from AHLTA along with data collected through studies, some investigators have begun to fill gaps in research while “personalizing” treatments by conducting research in clinical settings.

- TATRC funds the Molecular and Clinical Based Comprehensive Cardiac Care Program (MCBCCCP), which combines clinical care and cutting-edge molecular medicine to link causative genes and markers for cardiovascular disease. This research aims to identify patients at cardiovascular disease risk as early as possible in order to educate, implement, and study lifestyle changes to promote cardiovascular health.
- TATRC funds extramural research on gynecologic disease at WRAMC to evaluate the accuracy of proteomics techniques in identifying protein signature patterns in the serum of patients with gynecologic cancers. The program seeks to improve early detection and treatment of gynecologic tumors using preexistent strategies as well as novel genetic and vaccine based therapies.
- At USU, investigators with the Health Disparities Initiative, Center for Prostate Disease Research, and the Clinical Research Program at WRAMC have examined the relation of genes to prostate cancer occurrence in African American men. In separate studies they have analyzed genes and prostate cancer risk among African American and Asian men; compared gene expression among prostate cancer in Caucasian and African American men; and studied dietary fat, fat metabolizing genes, and prostate cancer in men.
- Funded as an Investigator Initiated Research Award under the Health Disparities Initiative, the U.S. Army Medical Research and Materiel Command (MRMC) recently funded a study on the ethnic/cultural dimensions of risk assessment decision-making in specialty breast cancer patients.

### **Incorporating genomic information as part of longitudinal data collection**

We anticipate that the number of genetic markers will increase in the future. Genetic tests can be used for targeted prevention, enhanced treatment, disease risk surveillance, and genetic counseling of family members. AHLTA incorporates new genetic tests as they are discovered. As new genetic-based tests are available, these tests are configured in our clinical laboratory system, mapped to the concept identifier in the AHLTA CDR, and put into use. When these tests are not included in the Logical Observation Identifiers, Names and Codes (LOINC) terminology standard that AHLTA uses for lab tests, we coordinate the addition to LOINC and proceed as above.

Translation and dissemination of genomic research into the longitudinal care of patients can be seen today in DoD academic centers such as the USU Graduate School of Nursing where educators are collaborating nationally to promote professional education and access to information about advances in human genetics. However, genetic testing is not a new capability in the DoD.

- The DoD has a long institutional history of collecting genetic information because DNA plays a significant role in disease surveillance and human remains identification. Determining the genetic structure of the 1918 influenza virus was a central achievement of Dr. Jeffery Taubenberger, an early molecular pathologist at AFIP. Key to his success was the availability of tissue that had been stored at AFIP.
- The DoD Serum Repository (DoDSR) receives and stores remaining serum specimens from DoD HIV testing of active duty Service members. It is the main source for serial serologic specimens in DoD. Matched with relevant personnel demographic, occupational, and medical information, DoDSR can make significant contributions to clinical and sero-epidemiologic investigations.

## **Bio-specimen Resources**

### **Establish biospecimen resources**

Over the years the AFIP Tissue Repository has accumulated more than three million reported cases. There are approximately 40 million glass slides and 10 million paraffin blocks and 500 thousand wet tissue samples. Under Base Re-Alignment and Closure (BRAC), AFIP became host to an additional one million cases for 8 million glass slides and 2 million paraffin blocks now preserved in the BRAC repository.

The AFIP Tissue Bank and BRAC repository, and the U.S. Military Cancer Institute at USU have recently developed a proposal to merge repositories to form the DoD Tissue Microarray Core Facility. Tissue microarrays will be made to enable tissue validation of proteins suspected of being associated with certain diseases. The tissue microarrays will facilitate definitive analysis of biomarkers associated with cancers and help build an archive of rare tumors that cannot normally be investigated because of small sample size. Accessed through the USU Walter Reed Academic Health Center at WRAMC, the Core Facility will supply biospecimen samples and data to address key research questions.

AFIP is executive agent to the Automated Central Tumor Registry (ACTUR). ACTUR was established in 1986 by the Assistant Secretary of Defense (Health Affairs) to meet American College of Surgeons requirements for a comprehensive cancer reporting system. The long-term vision is to link DoD cancer data with data from TRICARE, DVA, and state cancer registries to track cancer data for veterans and beneficiaries across time. All personnel discharged by or treated for a reportable cancer in a DoD MTF are in this system.

At USU, the CPDR has established the Biospecimen Banking Program to collect, process, and bank well characterized prostate cancer tissue and blood related biological samples. These samples are linked to clinical and pathological data for translational prostate cancer research within and outside the CPDR. The bio-repository consists of paraffin-embedded whole-mounted prostate tissue specimens, embedded frozen tissue specimens, peripheral blood derived epithelial cell/DNA/RNA samples, a large serum bank, a Prostate Cell Center developing novel primary cell cultures, and a laser capture micro-dissection (LCM)-derived paired tumor and normal cell DNA/RNA bank.

## **Clinical Repositories**

### **Utilizing large clinical data repositories**

The DoD has an operational CDR, which collects medical records of DoD beneficiaries including normalized laboratory results and medication profiles from 70 hospitals and more than 400 medical clinics worldwide. These records are also linked with the records of highly structured clinical notes from the same facilities at a volume of more than 100,000 encounters per day.

The CDR is structured to optimize encounter based storage and retrieval of data. The CDW project reorganizes CDR data into a flat, non-patient-centric scheme to facilitate a wider range of queries such as those needed for clinical and population-level research. The CDW is currently being used to supply data for the Integrated Clinical Database (ICDB) and Population Health Portal. When fully developed, the CDW will provide a platform to flatten and reorganize data from the CDR. Data will be partitioned into smaller data subsets and housed in the CDM. Researchers will request data through the CDM. The CDM will request the data elements and other parameters from the CDW.

AFIP maintains clinical databases that actively support more than 180 active research protocols. Some of the larger AFIP tissue and data systems are the Pathology Information Management System (PIMS)

containing AFIP consultation reports from 1999 to the present, which are searchable by natural language and SNOMED codes; the Pathology Natural Language Retrieval System (PANLARS), which provides demographic, clinical, and diagnostic information on pathology cases accessioned into the Institute from 1970 to 1999 with backup paper and digital images; and the Standard Nomenclature of Disease and Operations (SNDO) system containing data and microfiche backup of cases from 1917 to 1970. Other clinical databases include Former POWs, Vietnam War/Agent Orange, Persian Gulf War, Operations Iraqi Freedom and Enduring Freedom, tissue reactions to drugs, and the newest Leishmaniasis database.

### **Accumulating patient data for research not available through EHRs**

Force health protection and biomedical disease surveillance requirements of our Armed Forces makes DoD a good source for clinically relevant data that may not be available through the patient EHR. Data obtainable from the Leishmaniasis Registry and the HIV Registry are good examples of health data outside AHLTA that can be accessed for patient care and research. The MCS is a unique cohort study that combines AHLTA with survey data on a cohort of military personnel. Recommended by Congress in 1999 and funded by the DoD Director for Defense Research and Engineering, the study aims to analyze the long-term health effects of military service with particular interest in the effects of deployments.

Incorporating functional genomics into healthcare delivery and translational research is the heart of this RFI. Personalized medicine offers exciting opportunities. In DoD, our conceptualization and development of personalized medicine is tailored to the Warfighter and has led to research and development to create troop physiological technologies that supplement AHLTA in real time. The Defense Advanced Research Projects Agency (DARPA) has funded a variety of innovations, from miniature disposable drug infusion pumps, to physiological monitoring of pre- and post-injury data such as detecting and measuring blood loss, hydration, and infectious disease detection. Developments are ongoing to create the technologies as well as the wireless infrastructure to facilitate remote triage and casualty status assessment.

### **Use of disease registries to track diseases and response to drug therapy across subpopulations**

Organizations such as AFIP have contributed significantly to the availability of disease registries in DoD, but AHLTA also has huge potential for translational research to track disease and response to drug therapies across subpopulations. AHLTA posts diagnosed conditions to a patient's problem list and associates treatments and encounters related to diagnoses to the problem list items. This, in conjunction with highly structured clinical documentation, provides associations among conditions, treatments, and clinical findings (responses, to include adverse responses) almost without parallel. In effect, a query of problem list items for a population becomes a real-time disease registry for 8.7 million people, with embedded disease management clinical support tools and a pharmacology component. For example, the Automated Clinical Practice Guideline will allow providers to create disease registries in order to track response to therapies.

### **Data Integration**

#### **Community-wide, large-scale data integration**

The MHS has a single EHR that links all of its 9.1 million beneficiaries around the globe. Large-scale efforts to integrate data sources are summarized as follows:

- AHLTA-T is the theater version of the EHR, creating the first-ever theater integration of electronic patient information across forward deployed operational areas.

- The MHS is collaborating with the DVA to increase data interoperability between automated patient systems. The Clinical Health Data Repository (CHDR) interface will provide seamless transitional care for disabled veterans while completing a longitudinal health record that spans the adult lifecycle of the Service member.
- The AHLTA enterprise-wide pharmacy interaction functionality known as the Pharmacy Data Transaction Service (PDTs) integrates civilian and DoD pharmacy data to help prevent adverse drug events that can occur from drug-drug and drug allergy reactions.
- The military public health system is embedded within the MHS healthcare delivery system. This provides comprehensive integration of data sources for community-wide surveillance and population health initiatives. Service-level database tools supplement data integration where needed, such as the ICDB used by the Air Force for disease management, population health, and clinical practice guideline implementation.

### **Using clinical data for research applications**

The development of the CDW/CDM will aid us in secondary data collection of clinical data stored in the CDR. The capability to systematically mine CDR data reduces the need for original data collection, which in turn reduces research costs and patient burden. A key feature of AHLTA is the structured content generated with each clinical encounter note, further enriching availability of high-quality research data.

Using patient data bases engenders the need for policies and organizational structures that optimize data use while protecting patient privacy, data integrity, and collection issues. With a USU proposal to create the Walter Reed Academic Health Center there are opportunities to create common clinical data sets that support clinical, translational, and population-based research, as in the following examples:

- The USU Center for Population Health, in partnership with the U.S. Military Cancer Institute, plans to engage in cancer-related population studies.
- The USU Center for Healthcare Disparities plans to engage in studies to identify disparities in care that transcend demographics.
- The WRAMC Center for Clinical and Translational Science plans to leverage the CDW as the primary platform for driving clinical and translational science research from discovery to practice.

TATRC sponsors extramural research to use clinical data from AHLTA for improving treatment and improving patient safety. The Clinical Breast Care Project uses a combination of EHR and biospecimen data in their research to develop new findings in breast disease and cancer. DoD-funded researchers are also seeking to develop software that extracts data elements from the EHR, utilizing patterns matching and abstraction to identify record segments that correspond to adverse drug events and to look for greater than expected frequencies of drug event associations.

One example of coordinating data sources between government agencies is the research that led to the recently published "Patterns of Help Seeking Among Gulf War Veterans" from the May 2006 issue of *Military Medicine*. Investigators with the Institute of Medicine Medical Follow-up Agency combined clinical AHLTA records with Gulf War Registries to examine Service member health variables.

## **Integration and analysis of clinical parameters in large data sets**

Between the rapid advances in genomic testing and the growth of technological solutions to deal with terminology and free text issues, we are faced with integrating and analyzing a greater number of clinical parameters than ever before. Although our ultimate success hinges upon a consistent ontological data structure, several developments are bringing us closer.

The Medcin clinical documentation tool set and terminologies organic to AHLTA are designed around structured content. This makes extrapolating clinical data easier than with free text. Content management tools such as XML and Documents, Files and Images (DFI) software applications employ technologies that, like the Medcin tree, force users to organize content in way that can be analyzed.

The TATRC Military Health Data Mining Algorithms Library (M-HDML) seeks to develop knowledge infrastructure systems to tap into our medical data by creating extendible knowledge analysis software templates to enable integration and mining of hierarchical datasets.

## **Linkages between Systems**

### **Develop ontologies across different clinical repositories**

The DoD is making rapid advances in mapping terminologies between data sets such that we precisely define the relationships between similar and hierarchical terminologies. DoD pharmacies use National Drug Code (NDC); laboratories use LOINC as universal identifiers; diagnoses are International Classification of Disease; and Current Procedural Terminology (CPT) and Evaluation and Management (E&M) codes are part of the Healthcare Common Procedure Coding System (HCPCS). TATRC recently funded a program to create Proteomic and Bioinformatics Core Facility, which must map terminology across multi-institutional biomedical databases.

AHLTA encounter notes employ Medicomp's Medcin tree, which offers greater granularity in clinical notes than ever before. DoD collects data that is structured and stored against a clinical finding ontology (for clinical findings) and an overall ontology for medication items and lab tests. These can be mapped to reference ontologies as they are constructed by the commercial vendors of our clinical terminology and CDR. SNOMED, an industry preference for biomedicine reference terminology has been in use at AFIP in their PIMS database since 1999 and is partially used by the Terminology Service Bureau (TSB) behind certain Health Level Seven (HL7) messaging.

### **Linking repositories across provider systems**

As reference terminology is declared, our terms will be mapped to the standards across provider systems. As mentioned previously, our commercial terminologies are, in several cases, linked to candidate reference terminologies internally already. As reference or aggregation terminologies are declared, we will work with our commercial vendors to assure that our current highly structured terminologies are mapped to the standards so that the data can be exported for aggregation – if they are not already mapped within the commercial product.

Our capability to map terms among AHLTA, TMIP, CHDR, and managed care support contractors is an ongoing development. DoD uses the TSB to produce HL7 messaging. HL7 is an American National Standards Institute (ANSI) accredited standards developing organization for the healthcare domain. The national standards under development are critically important to DoD. We are actively engaged in the standards processes within the Office of the National Coordinator for Health Information Technology and sponsored by the American Health Information Community, to include the work of the Health

Information Technology Standards Panel. We need to adjust our plans to the same national standards sets as the rest of the nation so that we will benefit from the leverage of broad standards and incorporation of those standards into the commercial off-the-shelf (COTS) products we use.

TATRC currently supports extramural research to develop patient-centric, standards-based information integration. Researchers are developing an enterprise software product to enable seamless interoperability between civilian and military emergency medical systems in times of disaster when military patients must be treated at civilian healthcare facilities.

## **Establishing linkages with private and public databases**

We have several initiatives to combine databases primarily in the public sector. One translational research program at USU is interested in establishing linkages on a national scale for sharing clinical information. DoD currently provides anonymized data feeds to Centers for Disease Control and Prevention on more than 100,000 encounters per day. The Federal Health Information Exchange allows AHLTA to send EHR data to the DVA. CHDR allows exchange of medication and allergy information between DoD and DVA in a way that supports proactive alerts during order entry. PDTS enables drug-drug and drug-allergy checking across the DoD enterprise and with our civilian partners and is a data feed to the DoD-DVA CHDR solution.

## **Patient Privacy**

### **Patient privacy and social implications**

DoD is dedicated to protecting patient health information. Some recent developments include creating an electronic patient signature in AHLTA for release of information and informed consent and TRICARE Online authentication mechanisms for patients. Every research facility has an Institutional Review Board to review proposed and ongoing research to protect patient privacy. The USU translational research program includes explicit regulatory information about translational research as part of its informed consent process. At the DoDSR, AMSA defines explicit criteria for the use of specimens for patient care and criteria for the use of specimens for research. Patients may be recruited for research directly from AHLTA, which could be a privacy concern. Conversely, using existing data for research reduces the patient burden associated with data collection.

## **Valuations**

### **Models of cost-benefit analysis to inform medical decision making**

Utilizing large patient databases enables a greater amount of research to be carried out and reduces costs that result from original data collection. Large databases enable the application of simulation models (e.g. Monte Carlo models) to predict economic consequences of targeted evidence-supported interventions in clinical care and help investigators compensate for missing data in statistically valid ways.

The enhanced medical decision support driven by genomic testing and data mining gives way to more precise estimates of the benefit-to-cost ratio. AHLTA functionality currently supports providers linking therapeutic interventions to diagnoses, which allows tracking of ancillary costs per diagnosis. One of the newest AHLTA features is Injury Cause Coding, which will allow tracking costs (supplies, lost work days) to specific injury causes. This development will inform injury-prevention endeavors and enable Medical Affirmative Claims (functionality) so that MTFs can recover care costs when third-party liability is involved.

## **Appendix A**

### **Contributors**

Major Jacob Aaronson, U.S. Army OTSG  
Colonel Thomas Beach, Clinical Information Technology Program Office  
Colonel Lou Bennett, U.S. Army OTSG Clinical Quality Management  
Colonel William Boisvert, WRAIR  
Lieutenant Colonel Reginald Coffey, Patient Administration, TRICARE Operations (TMA)  
Lieutenant Colonel Nhan Do, OASD (TMA) IMT&R (IM)  
Lieutenant Commander Ron Gimbel, Uniformed Services University of Health Sciences  
Dr Mark Hamra, OASD (TMA) IMT&R (IM)  
Colonel Bart Harmon, OASD (TMA) IMT&R  
Dr Lewin-Smith Armed Forces Institute of Pathology  
Mr. Charles Ork, U.S. Army Medical Command Staff Judge Advocate  
LtCol Rhonda Ozanian, OASD (TMA) IMT&R  
Dr Diane Seibert, Uniformed Services University of the Health Sciences  
Lieutenant Colonel Vancosky, U.S. Army OTSG

### **Contributing Agencies**

Armed Forces Institute of Pathology  
6825 16th Street N.W. Bldg. 54, Room M098  
Washington DC 20306-6000

OASD (TMA) Information Management Technology and Reengineering (IMT&R)  
5109 Leesburg Pike Skyline 6 Suite 508  
Falls Church, VA 22041

Telemedicine & Advanced Technology Research Center (TATRC)  
U.S. Army Materiel and Research Command (MRMC)  
BLDG 1054 Fort Detrick, Maryland 21702

TRICARE Operations Division TRICARE Management Activity  
5109 Leesburg Pike Skyline 6 Suite 508  
Falls Church, VA 22041

Uniformed Services University of the Health Sciences  
4301 Jones Bridge Road  
Bethesda MD 20814

U.S. Army Center for Health Promotion & Preventive Medicine  
5158 Blackhawk Road  
Aberdeen Proving Ground, MD 21010-5403

U.S. Army Office of the Surgeon General  
5109 Leesburg Pike Skyline 6 Suite 692  
Falls Church, VA 22041

Walter Reed Army Institute for Research (WRAIR)

503 Robert Grant Ave  
Silver Spring, MD. 20910

## Appendix B

### Definitions and Acronyms

References: (a) <http://www.tricare.mil/>  
(b) DoD 6015.1-M, "DoD Glossary of Healthcare Terminology"

Following are the definitions:

ACTIVE DUTY MEMBER. A person appointed, enlisted, inducted or called, ordered, or conscripted into a military service. Active duty members include members of the National Guard or Reserve who are ordered to active duty or active duty for training.

BENEFICIARY. An individual who has been determined to be eligible for medical benefits and is therefore authorized treatment in a Military Treatment Facility.

ENCOUNTER. A face-to-face contact between a patient and a provider who has primary responsibility for assessing and treating the patient at a given contact, exercising independent judgment.

OUTPATIENT. An individual receiving health care services for an actual or potential disease, injury, or lifestyle related problem that does not require admission to a medical treatment facility for inpatient care.

TRICARE. The Department of Defense's worldwide healthcare program for active duty and retired uniformed Services members and their families. TRICARE consists of TRICARE Prime, a managed care option; TRICARE Extra, a preferred provider option; and TRICARE Standard, a fee-for-service option.

VETERAN. A person who served on active duty in the Armed Forces and was discharged or released therefrom under conditions other than dishonorable.

Following are the acronyms:

ACTUR. Automated Central Tumor Registry

ACPG. Automated Clinical Practice Guideline

AMSA. Army Medical Surveillance Activity

AFIP. Armed Forces Institute of Pathology

ANSI. American National Standards Institute

BRAC. Base Re-Alignment and Closure

CDM. Clinical Data Mart

CDW. Clinical Data Warehouse

CHCS. Composite Health Care System

CHDR. Clinical/ Health Data Repository

CHPPM. Center for Health Promotion and Preventive Medicine

CPDR. Center for Prostate Disease Research

CRCSP. Comprehensive Reproductive System Care Program

CPT. Current Procedural Terminology

DARPA. Defense Advanced Research Projects Agency

DFI. Documents, Files and Images

DMSS. Defense Medical Surveillance System

DoDSR. Department of Defense Serum Repository

EIC. Electronic Information Carrier

EHR. Electronic Health Record

E&M. Evaluation and Management

HCPCS. Healthcare Common Procedure Coding System

ICC. Injury Cause Codes

ICD. Integrated Clinical Database

IOM. Institute of Medicine

LCM. laser capture micro-dissection

LOINC. Logical Observation Identifiers, Names and Codes

MAC. Medical Affirmative Claims

MCBCCCP. Molecular and Clinical Based Comprehensive Cardiac Care Program

M-HDML. Military Health Data Mining Algorithms Library

MHS. Military Health System

MTF. military treatment facility

NDC. National Drug Code

NFGC. National Functional Genomics Center

NHRC. Naval Health Research Center

PANLARS. Pathology Natural Language Retrieval System

PDTS. Pharmacy Data Transaction Service

PIMS. Pathology Information Management System

SNDO. Standard Nomenclature of Disease and Operations

SNOMED-CT. Systematized Nomenclature of Medicine-Clinical Terms

TMIP. Theater Medical Information Program

TATRC. Telemedicine and Technology Research Center

TSB. Terminology Service Bureau

USUHS. Uniformed Services University of Health Sciences

WRAMC. Walter Reed Army Medical Center

## Appendix C

### References

Following are the references:

- (a) Official Web site for all TRICARE information - <http://www.tricare.mil/>
- (b) Automated Central Tumor Registry - <http://tele2.afip.org/actur/index.html>
- (c) U.S. Army MEDCOM Quality Management Office, VA/DoD Clinical Practice Guidelines – <http://www.cs.amedd.army.mil/qmo/pguide.htm>
- (d) Armed Forces Institute of Pathology - <http://www.afip.org/Departments/oafme/dna/>
- (e) American National Standards Institute - <http://www.ansi.org/>
- (f) Official Department of Defense Website - <http://www.defenselink.mil/>
- (g) U.S. Army Center for Health Promotion and Preventive Medicine - <http://chppm-www.apgea.army.mil/>
- (h) DoD Center for Prostate Disease Research - <http://www.cpdr.org/>
- (i) American Medical Association - <http://www.ama-assn.org/ama/pub/category/3113.html>
- (j) Defense Advanced Research Projects Agency - <http://www.darpa.mil/>
- (k) Deployment Health Support Directorate - <http://deploymentlink.osd.mil/index.shtml>
- (l) Centers for Medicare & Medicaid Services - <http://www.cms.hhs.gov/MedHCPCSGenInfo/>
- (m) Institute of Medicine - <http://www.iom.edu/>
- (n) Logical Observation Identifiers, Names and Codes -  
<http://www.regenstrief.org/medinformatics/loinc/>
- (o) Military Health Data Mining Algorithms Library –  
<http://www.kbsi.com/Solutions/HealthServices/MHDML.htm>
- (p) National Drug Code - <http://www.fda.gov/cder/ndc/>
- (q) National Functional Genomics Center - <http://www.moffitt.org/>
- (r) Naval Health Research Center - <http://www.nhrc.navy.mil/>

(s) Systematized Nomenclature of Medicine-Clinical Terms - <http://www.snomed.org/snomedct/index.html>

(t) Telemedicine and Technology Research Center - <http://www.tatrc.org/>

(u) Uniformed University of Health Sciences - <http://www.usuhs.mil/>

(v) Walter Reed Army Medical Center - <http://www.wramc.amedd.army.mil/>