Please take the time to complete the online evaluation. Your feedback is crucial to the continued success of the Tri-Service Medical Information Management Symposium.

The Integrated Electronic Health Record, Virtual Lifetime Electronic Record and Data Sharing

Briefing to

Tri-Service Medical Information Management Symposium

February 19, 2012
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DoD/VA Interagency Program Office
Learning Objectives

- Describe existing health data sharing initiatives that support improved healthcare delivery

- Explain the direction from the Secretaries of Defense and Veterans Affairs to pursue a joint, common platform that will allow a seamless transition of a Service member's medical information between the military healthcare system and the Veterans Affairs healthcare system

- Describe the synergies and common business processes already identified, including common data standards and data center consolidation, common clinical applications, and a common user interface
Agenda

- Current Electronic Health Record (EHR) Systems
- Current health data sharing
- What’s next for EHR
Current EHR Systems

• Working to maximize speed, availability, and usability of the current EHR
• Supporting legacy systems to ensure timely access to and use of clinical systems

- AHLTA
- Essentris
- Composite Health Care System (CHCS)
- AHLTA-Theater
- Theater Medical Information Program CHCS Cache (TC2)
- Theater Medical Data Store (TMDS)
**Current Health Data Sharing**

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**DoD**

**Data on Shared Patients**
- Current Viewable Data
  - Outpatient pharmacy data, laboratory and radiology results
  - Inpatient laboratory and radiology results
  - Inpatient consultations, operative reports, history and physical reports, transfer summary notes, initial evaluation notes, procedure notes, evaluation and management notes, pre-operative evaluation notes, and post-operative evaluation and management notes (58 DoD sites - available to all DoD providers and VA providers enterprise wide)
  - Allergy data and problem list data
  - Theater clinical data: Theater inpatient notes, outpatient encounters, and ancillary clinical data
  - Ambulatory encounters, procedures, and vital signs
  - Family, social, and other history, and questionnaires
- Current Computable Data (limited VA sites) - enables drug-drug and drug allergy safety checks and alerts
  - Pharmacy data
  - Medication allergy data

* Walter Reed AMC & Bethesda NNMC merged to form WRNMMC in Sept. 2011

**Data on Separated Service Members**
- Outpatient pharmacy data, lab and radiology results
- Inpatient laboratory and radiology results
- Allergy data
- Consult reports
- Admission, disposition, transfer data
- Standard ambulatory data record elements (including diagnosis and treating physician)
- Pre-/post-deployment health assessments
- Post-deployment health reassessments

**Data on OIF/OEF Polytrauma Patients**
- Radiology images
- Scanned medical records

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**VA**

**All VA Medical Facilities**
- 4.3 million correlated patients, including 1.9 million patients not in FHIE repository
- 148,140 average weekly FHIE/BHIE queries
  1st qtr FY 2012
- Computable pharmacy and allergy exchange on more than 1,338,750

**Bidirectional Health Information Exchange**
- Live data flow beginning 2004; data from 1989 forward

**Federal Health Information Exchange**
- Live data flow beginning 2002; data from 1989 forward

**5 VA Polytrauma Centers**
(Tampa, Richmond, Minneapolis, Palo Alto, San Antonio)
- Radiology images for more than 470 patients
- Scanned records for more than 570 patients

*As of Jan 2012*
Current Health Data Sharing

James A. Lovell Federal Health Care Center

December 2010

- Infrastructure
  - Data Center
  - Virtualization
  - Enterprise Service Bus
- Build a Single Patient Registration process
- Create Medical Single Sign-On with Patient Context Management

Fiscal Year 2011

- Single Order Entry process (orders portability) for Radiology
- Single Graphical User Interface (GUI)

Fiscal Year 2012

- Single Order Entry process for Laboratory

Defer to iEHR
- Pharmacy
# Current Health Data Sharing

## VLER Health -- Pilots

### Six Month Increments

<table>
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<tr>
<th>Date</th>
<th>San Diego Pilot</th>
<th>Tidewater Pilot</th>
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* will display but not send
Current Health Data Sharing

VLER Health -- Provider Access via AHLTA

NOTE -- The health record depicted here contains sample test data used for demonstration purposes.
TRICARE Online and the DoD Blue Button

Initial Blue Button Capabilities (June 2010)
- View, download (.pdf), and print personal health data
- Access outpatient medication profile
- Access allergy profile

Additional Patient Portal Capabilities (January 2011)
- Book unlimited number of appointments
- Access TRICARE benefits and general healthcare information and services
- Access laboratory results, outpatient problem lists, and outpatient encounter notes
EHR Milestones (1979 – 2011)

1979: First concept for Computerized Physician Order Entry (CPOE)
1981: Deployment of standalone medical info systems TRIPHARM, TRILAB, TRIRAD, TRIPAS and AACCESS in 19 MTFs
1986: Interim Tri-Service Micro Pharmacy System
1987: CHCS development begins; deliver CPOE and MTF-centric EHR.
1988: Limited early inpatient documentation (CIS)
1996: CHCS - providing CPOE - completed worldwide.
1998: CHCS II initial concept development

2000: CHCS II initial deployment
2000-03: Further concept development: application / infrastructure refinements
2003: Initial TMIP-J deployment to Theater
2004: Worldwide implementation of global system begins 2005: Initial EHR in 77 MTFs and 11 time zones
2006: AHLTA Block 1 worldwide deployment completed to all MTFs
2007: Began initial implementation of updated inpatient EHR (Essentris)
2008: Began TMIP Block 2 deployment (EHR first time on ships)

DoD: In March 2010, stood up the EHR Way Ahead Planning Office to facilitate the acquisition and deployment of the next generation EHR
VA: Focused on enhancing their EHR and pursuing an open source solution to transform their current capabilities

Oct 2011: Secretary of Defense and Secretary of VA signed IPO Charter

On 4 Dec 2010, DEPSCEDF, DEPSECVA, and VCJCS directed VA and DoD teams to describe and analyze a DoD-VA integrated electronic health record (EHR) to be incorporated into the DoD AoA process

On 12 Feb 2011, DEPSCEDF, DEPSECVA, and VCJCS reached agreements on much of the proposed approach for a joint DoD-VA EHR (iEHR)

On March 17, 2011, the Secretary of Defense and the Secretary of the VA agreed to jointly pursue a common EHR acquisition
What’s Next for EHR
What’s Next for EHR

iEHR -- Governance Structure

- Secretary of Defense
  - DEPSECDEF / VCJCS
- Secretary of Veterans Affairs
  - DEPSEC VA
- iEHR Advisory Board
- iEHR Program Executive
- Health Executive Council

- Functional/Perf Requirements
- Data Standards & Compliance
- Architectural
- Clinical/Ops Workflow
- Bus. Process Reengineering

- Data Centers
  - DoD - DISA
- Innovation & Dev Test Bed
- Identity Mgmt
  - DoD - DMDC
- Apps/Capabilities
  - VA
- Apps/Capabilities
  - DoD
- Common GUI
  - VA
- Joint ESB
  - DoD
- Translation/ClIF
  - TBD
- CSB
  - TBD

Open Source Custodial Agent

CEO

HHS (ONC), National Health IT Task Force

13
What’s Next for EHR

iEHR -- “To Be” Architecture

Common DoD-VA Requirements: HL7 EHR-S Functional Model with DoD and VA vetted Extensions (SV-4)
Common DoD-VA Integrated Health Business Reference Model (OV-5)
Common DoD-VA “To Be” Process Flow Model (OV-6C)

Presentation
(Common GUI)

Applications and Services

DoD Unique
- Battlefield Care
- Pediatrics
- Military Readiness
- Obstetrics
- Enroute Care
- Veterinary

Common (Joint) Applications & Services
- Pharmacy
- Personal Health Record
- Laboratory
- Blood Mgmt
- Disability Evaluation
- Inpatient Orders Mgmt
- Emergency Dept Care
- Document Mgmt
- Dental Care
- Consult & Referral Mgmt
- Immunization
- Operating Room Mgmt

VA Unique
- Nursing Home
- Long Term Care
- Rehabilitative Care
- Transient Outreach
- Occupational Health (VA)

Common Interface Standards

Common Services Broker
(includes Enterprise Service Bus (ESB) and Infrastructure Services)

Common Data Centers

Common Information Interoperability Framework (CIIF)

Common Information Model, Common Terminology Model,
Information Exchange Specifications, Translation Service

Common Data Standards: SNOMED CT and Extensions, LOINC and RxNorm

Common DoD-VA Measures of Effectiveness, Measures of Performance and Key Performance Parameters

Joint DoD/VA  DoD Only  VA Only
What’s Next for EHR

iEHR -- Presentation Layer

Clinician View (Home Page)

NOTE -- The health record depicted here contains sample test data used for demonstration purposes.
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What’s Next for EHR

iEHR -- Applications and Services

<table>
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<tr>
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- **Presentation Layer / GUI**
  - Target: 6+ capabilities per set

**Capability Set 1A**
- Pharmacy
  - Inpatient & Outpatient Orders Fulfillment
  - Inventory Management
- Allergies
- CDS
- Immunization
- Consult & Referral Management

**Capability Set 1B**
- Care Management
- Emergency Department Care
- Laboratory
- Registration
- Scheduling Appointment
- Documentation

**Capability Sets 2**
- Anatomic Pathology
- Disability Evaluation
- Dental Care
- Credentialing
- Personal Health Record
- Radiology/Imaging

**Information Infrastructure Capability Set**

**Capability Sets 3-8**
- Patient Portal Infrastructure
- Anesthesia Documentation
- Operating Room Management
- Medical Device Management
- Disease Management
- Disconnected Care
- Business Intelligence
- Patient Questionnaire
- Patient Consent
- Patient Education
- Alerts and Reminders
- Patient Self Report
- DoD/VA Registries
- NCAT (TBI Testing)
- Global Image Access
- Patient Safety Reports
- Teleconsultation
- Document Management
- Blood Management
- Private Sector Data Access
- Nutrition Care
- XML Forms Tool
- Utilization Management
- Genomics
- Encounter Coding

* iEHR Capability Sets as identified by the ICIB 5 Dec 2011

**Information Infrastructure Capability Set 0A (Enabling Capabilities)**
- Identity Management
- Access Control
- Presentation Layer (GUI)
- SSO-CM
- Information Model and Terminology Services
- Federated Data Repository / Data Warehouse
- Network and Security Architecture
- SOA Architecture

**Capability Set 0B (Common Services)**
- Enrollment Eligibility
- Orders Service
- Clinical Decision Support (CDS)
- Barcoding
- Secure Messaging
  - Provider-Provider
  - Patient-Provider

**Common Graphic User Interface (GUI)**

1.0 Investment
What’s Next for EHR

**iEHR -- Common Interface Standards**

**ICIB Recommended FOCUS**

**Architecture Standards**
- EHR Svc. Platform Conceptual Architecture
- EHR Use Cases
- FHIM/EHR Data Model
- EHR-S Services Model
- EHR Interoperability Profiles
  - Terminology Standards
  - Terminology implemented in data messaging standards

**Implementation Standards**
- Patient Registry
- HL7 Provider Registry
- HL7 Pharmacy
- Laboratory
- Public Health Services Standards
- Public Health Surveillance Standards
- Diagnostic Imaging/Teleradiology
- Clinical Messaging
- Technical Standards
What’s Next for EHR

**iEHR -- Enterprise Service Bus**

- Facilitates development of business process-based common services
- Promotes system interoperability
- Provides enterprise application integration
- Improves application integration
- Enhances speed to market
iEHR -- Common Data Centers

• September 2011-- Memorandum of Agreement between DoD and VA to consolidate VA data centers into existing Defense Information Systems Agency (DISA) data centers

• By 2015 -- The Departments expect to have consolidated more than 800 data centers

Strategy and Goals

• Establish core data centers that will support enterprise applications/services
• Increase mission effectiveness, enhance security, and improve efficiency across the enterprise
What’s Next for EHR

Team Approach

Shared Program Development and Execution
The mission of the CIRD is:

To promote safe, efficient and quality patient care through the development and implementation of iEHR capabilities and initiatives that allow for full interoperability between the Departments to better serve Service Members, their families, and Veterans.
CIRD will be comprised of a cross-functional team of clinicians representing VA and DoD organizations.

Assigned clinicians will serve as a liaison between the IPO and their home organizations.

**Benefits to Clinical Organizations**
- **Real-Time Coordination**
  - Continuous flow of information
  - Immediate reach within IPO
- **Open Line of Communication**
  - Regular updates on iEHR progress
  - Active two-way communication to IPO leadership about the iEHR
- **Hands-on Participation in Requirements Development**
  - Direct influence on iEHR requirements
  - Alignment of iEHR requirements with their beneficiary community

**Benefits to Interagency Program Office**
- **Collaborative Environment**
  - Side-by-side collaboration between clinical and business communities
  - Enhanced information sharing
- **Direct Access within Clinical Organizations**
  - Quick access to feedback on pending iEHR clinical decisions
  - Support for all iEHR strategic planning
- **Trusted Requirements**
  - Active participation from clinical organizations
  - Prioritized and rigorously reviewed requirements

What’s Next for EHR

Real-Time Coordination

- Continuous flow of information
- Immediate reach within IPO

Open Line of Communication

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- Active two-way communication to IPO leadership about the iEHR

Hands-on Participation in Requirements Development

- Direct influence on iEHR requirements
- Alignment of iEHR requirements with their beneficiary community

A trusted requirements process is established to ensure effective collaboration between the clinical and business communities.
Problem Space

Vision...
“... full and seamless electronic exchange and record portability of healthcare information in a secure and private format ...to ensure ... effective delivery of healthcare services.”

DEPSECDEF, DEPSECVA and VCJCS Update on 12 February 12, 2011

Where we are...
• Overarching iEHR portfolio being defined
• Functional requirements baseline with bounded scope, capability prioritization, and user stories advancing towards one authoritative product
• Agency modernization strategies being synchronized to a common architecture
• Acquisition policies, life cycle processes, and program execution converging to a single program plan
• Organization/Agency Structures and Investment Strategies are aligning for joint program management and centralized execution
• Enterprise Governance Framework being extended
• Technology assessments and capability enhancement planning moving forward

PM iEHR Mission...
Deliver affordable, interoperable and time-critical integrated electronic healthcare capability across DoD and VA

Where we are going...
• Single Organization Structure for agile execution
• Clearly delineated roles and responsibilities
• Joint and synchronized program execution
• Validated Requirements Baseline
• Operationally-adaptive Common Frameworks and Business Processes with Governance Structure, Business Rules, and Reference Architecture
• Federated Development and Test Environment
• Unified approach across all disciplines
• Centralized Investment process
• Standards-based development with implementation compliance

Requires Unified Strategy and Synchronized Execution at all levels
Accomplishments to Date...

- Signed Interagency Program Office Charter, October 27, 2011
- Established an operational Open Source Custodial Agent, October 31, 2011
- Initiated Development Test Center / Environment (DTC/DTE) Configuration
- Deployed early version of iEHR joint presentation layer at North Chicago on December 1, 2011
- Achieved high level definition of Capability Sets 0 and 1 from the DoD/VA Interagency Clinical Informatics Board, December 6, 2011
- Established Capability-Integrated Project Team (CIPT) for Presentation Layer
- Published Requests For Information for Pharmacy, Immunization, and Scheduling capabilities (1QFY12)
- Finalized Health Data Dictionary legal license negotiations to enable Salt Lake City mapping project, January 12, 2012
- Defined the Organization Structure and Staff Profile for the IPO and iEHR Program Management Office (PMO)
- Stood-up iEHR PMO Working Groups / Integrated Product Teams
- Published Request For Information (RFI) for Pharmacy and Immunization
- Applied critical stabilization fixes to DoD current systems, i.e., Clinical Data Repository and Applications

Planned Execution

- Capability Execution
  - Complete Business Requirements Document (BRD) for Consults Orders Portability for North Chicago
  - Start establishing the demonstration and test environment
  - Begin mapping the VA Salt Lake City Health Care System to the Health Data Dictionary (HDD)
  - Implement iEHR Single Sign On/Context Management (SSO/CM) capabilities with JANUS at North Chicago
  - Evaluate open-standards, open-source portal infrastructure and portlet interoperability standards and product(s)
  - Continue VA deployment of Lab capability and complete DoD Implementation Plan
  - Perform gap analysis of Pharmacy capability and determine path forward

- Program Execution
  - Stand-up the iEHR Program Management Office (PMO), to include Organization Structure, Staff Profile, and Integrated Product Teams
  - Define the bounded iEHR Portfolio
  - Define a Functional Requirements Baseline (FRB) and conduct Requirements Review
  - Establish a Development and Test Environment at Richmond
  - Finalize the Acquisition Strategy
  - Establish Baseline Cost Profile
  - Define the Transition and Target iEHR Architectures
  - Define the iEHR Data Strategy
  - Align program increments with ICIB-defined Capability priorities
Agile Methodology

iEHR System

User (Business and IT)
- Business Capability
- IT Capability
- IBRM
- IT Standards

IT System
- System
- Subsystem
- Component
- Feature Sets
- Features
- Design Artifacts
- Technical Req's

iEHR Outcomes

Engineering Development (Materiel Solution)
- Each Increment

Base lined requirements that comply with Healthcare community of practice standards, government mandates, and are aligned to user stories
Summary

- Current EHR efforts continue to focus on speed, availability and usability
- Continuing to share health data with partners to support healthcare delivery for our beneficiaries across the continuum of care
- DoD and VA working together on the next-generation EHR
Questions