Electronic Health Records (EHR) and Teleradiology in the Department of Defense (DOD)

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Disclosure Statement

■ The views expressed in this presentation do not reflect official policy or position of the following:

• Department of the Air Force
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Overview

■ DOD EHR Mission
■ The Longitudinal Health Record
■ EHR Challenges
■ Current EHR Implementation
■ Why Teleradiology?
■ Teleradiology Challenges
■ Current Teleradiology Implementation
■ Future Directions
■ Summary
■ Questions

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DOD EHR Mission

- **Big Picture**
  - **DOD Mission: Provide the military forces needed to deter war and to protect the security of our country**
  - **Military Health System (MHS) Mission: Provide health support for the full range of military operations and sustain the health of all who are entrusted to MHS care**
- **MHS reasons for existence**
  - **(Primary) Maintain personnel deployment readiness**
    - **Fitness, Immunizations, Injury/Disease Treatment, etc..**
  - **(Primary) Maintain a wartime medical support capability**
    - **Resources, Facilities, Trained Personnel**
  - **(Secondary) Provide medical services for beneficiaries**

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The Longitudinal Health Record

- **Presidential Directive**
  - **"I am directing the Department of Defense and Veterans Affairs to create a new Force Health Protection program. Every soldier, sailor, airman, and marine will have a comprehensive, life-long medical record of all illnesses and injuries they suffer, the care and inoculations they receive and their exposure to different hazards. These records will help us prevent illness and identify and cure those that occur."**
    - *— President Bill Clinton, 8 Nov. 1997*
- **Required Attributes:**
  - **Comprehensive: Surgical procedures to occupational hazards (e.g. radiation, jet fuel, loud noises)**
  - **Merged: CT scan at Air Force hospital, vitals assessment by Army medic on frontline**
  - **Availability: Right information at the right time**

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The Longitudinal Health Record

- **Motivation**
  - **Enhanced Medical Care**
    - **Faster and more accurate diagnosis/treatment**
    - **Reduction of unnecessary/repeat procedures**
  - **Public Health Analysis**
    - **Example: Lack of records prevented ruling out drugs/vaccines as cause of Gulf War Veteran's illness**
  - **Disability Claims**
    - **Prevention of unjustified claims (e.g. radiation exposure)**
    - **Easier justification of valid claims (e.g. hearing loss)**
  - **Commander Decision Making**
    - **Readiness status of personnel**

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EHR Challenges

- **Large Scale Enterprise**
  - Numerous facilities across CONUS (Continental US) and OCONUS (Outside Continental US)
  - Varied technology (e.g. PACS vendors)
  - Varied policies/products
    - Administrative Only (e.g. naming conventions)
    - Resource Restricted (e.g. available lab tests)
- **Information Technology Issues**
  - Intermittent Connectivity (particularly w/ ships)
  - DOD Network Security Restrictions
  - DOD Information Assurance Certification and Accreditation Process (DIACAP)

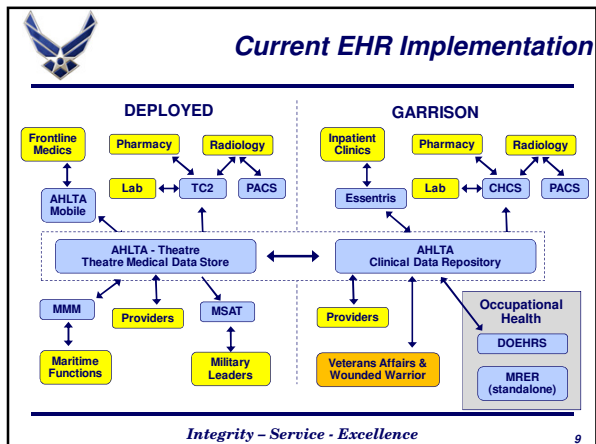*Integrity – Service - Excellence*

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EHR Challenges

- **Medical Operations in Wartime Environment**
  - EHR Accessibility at the front
  - Medical documentation of care while under fire
- **Patient Mobility**
  - Patient's move often (e.g. PCS)
  - Medical evacuation (patient may outpace records)

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Current EHR Implementation

DEPLOYED

Frontline Medics — Pharmacy — Radiology
AHLTA Mobile — Lab — TC2 — PACS
AHLTA - Theatre Theatre Medical Data Store
MMM — Providers — MSAT
Maritime Functions — Military Leaders

GARRISON

Inpatient Clinics — Pharmacy — Radiology
Essentris — Lab — CHCS — PACS
AHLTA Clinical Data Repository
Providers
Veterans Affairs & Wounded Warrior

Occupational Health
DOEHRS
MRER (standalone)

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Current EHR Implementation

- **AHLTA – Armed Forces Health Longitudinal Technology Application**
  - **Backbone application for interfacing with the Clinical Data Repository and Theatre Medical Data Store**
  - **AHLTA Theatre is variation designed for deployed areas**
  - **AHLTA Mobile runs on handheld devices for use by frontline medics**

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Current EHR Implementation

- **CHCS – Composite Health Care System**
  - **Predecessor to AHLTA which was largely replaced by it**
  - **Continues to fill the following roles:**
    - **Order entry to pharmacy scripts and lab/radiology services**
    - **Reporting of results for laboratory and radiology**
  - **TC2 is a variant designed for deployed areas**

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Current EHR Implementation

- **Essentris**
  - **Used in support of Inpatient Care**
  - **Captures data at patient bedside (e.g. heart rhythms)**
  - **Shares information with AHLTA**
  - **Also used at Veterans Affairs facilities**

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Current EHR Implementation

- **MMM – Maritime Medical Module**
  - Compilation of Naval applications:
  - Functions include:
    - Patient management
    - Monitoring of environmental hazards
- **MSAT – Medical Situational Awareness in Theatre**
  - Provides analysis tools to aid in military decision making

Current EHR Implementation

- **DOEHRS – Defense Occupational Environmental and Health Readiness System**
  - Used to document occupational exposure to hazards
  - Tracks exposure to individuals and groups
- **MRER – Master Radiation Exposure Registry**
  - Maintains records of occupational radiation exposure
  - Currently standalone database

Why Teleradiology?

- **DOD Radiology Mission: Provide quality, world-class diagnostic and therapeutic imaging to eligible beneficiaries <u>anywhere</u> in the world at <u>anytime</u>**
- **Without Teleradiology, this is only possible with sufficient staffing of qualified Radiologists at each site**
  - There are insufficient Radiologists to accomplish this
  - Many smaller sites have insufficient workload to merit a Radiologist
  - Deployed locations may need surge capacity

Teleradiology Challenges

- **Challenges are numerous / varied**
- **Administrative**
  - Communication of Critical Results
  - 24 / 7 / 365 Coverage
  - Dynamic Manning
  - Workload Crediting
  - Credentialing
  - Differing Protocols
- **Technical**
  - Connectivity Issues
  - Differing Platforms
  - Decentralized PACS
  - Modality Specific Concerns
  - Quality Control

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Teleradiology Challenges

- **Communication of Critical Results**
  - Critical results need to be conveyed to providers quickly
  - Difficult at times within a facility, more so at distance
  - Continual effort required to maintain telephone contacts
- **24 / 7 / 365 Coverage**
  - Facilities seeing emergent cases require round the clock radiology coverage
  - DOD uses a "Nighthawk" program where needed
    - Army contracts night time support to civilian facilities
    - Navy contracts support for small CONUS facilities
    - Navy uses large CONUS sites for OCONUS coverage
    - Air Force uses large CONUS sites for coverage

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Teleradiology Challenges

- **Dynamic Manning**
  - Teleradiology assumes certain manning distributions
  - Manning always changing (PCS, Deployment, Etc)
  - Air Force Radiologist Manning (currently 120) expected to fall to 59
- **Workload Crediting**
  - Military uses workload to determine allowed manning
  - Who gets credit for procedure? Usually site performing the exposure
  - Workload numbers could penalize sites performing teleradiology support

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Teleradiology Challenges

- Credentialing
  - Providers have to be credentialed to perform services
  - Credentials are managed at the individual facilities
  - Staff performing teleradiology services have additional burden of obtaining credentialing from all sites
  - Reciprocity initiatives are in the work to resolve
- Differing Protocols
  - Different sites may have different expectations (e.g. content/formats of reports)
  - Different sites may use different imaging parameters

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Teleradiology Challenges

- Connectivity Issues
  - BANDWIDTH
    - Some sites cannot perform support for trauma interpretation because connections are too slow
  - Intermittent Connections
    - Network outages
    - Security blackouts of communications systems
    - Competing priorities for bandwidth on Naval Ships
- Differing platforms
  - Air Force principally uses AGFA for PACS
  - Army and Navy use multiple PACS vendors
  - Modalities used at sites span a wide variety or makes/models; each has its own nuances

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Teleradiology Challenges

- Decentralized PACS
  - Ideally, all images would be available anywhere
  - Unfortunately many only available within regions for immediate interpretation
  - Army and Navy currently awarding contract for a unified, mirrored, PACS archive.
- Modality Specific Concerns
  - Ultrasound: Requires a lot of trust from radiologist to technologist they may have never met
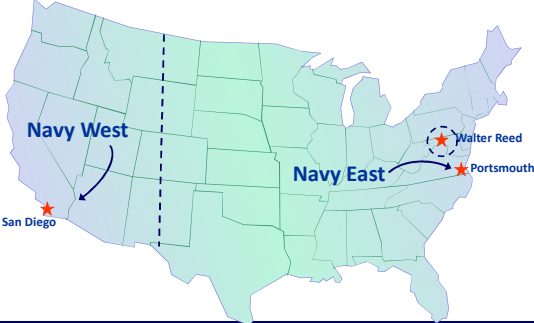 - Mammography: How do you met all the requirements of the MQSA; who is responsible for program failures?

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Teleradiology Challenges

- **Quality Control**
  - Technologists are responsible for daily/weekly/monthly testing. However, who audits these programs?
  - Medical Physics Services
    - Army, Navy, and Air Force all rely on regional support
    - Does the medical physicist covering the Telerad Hub Site have authority to effect needed changes at the spoke site

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Current Teleradiology Implementation
NAVY

Navy West

Navy East

San Diego

Walter Reed

Portsmouth

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Current Teleradiology Implementation
ARMY

Fort Campbell

Fort Huachuca

Fort Bliss

Redstone Arsenal

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Current Teleradiology Implementation Air Force (CONUS)

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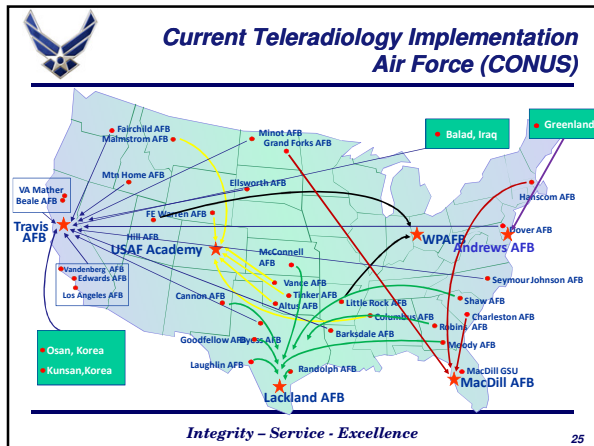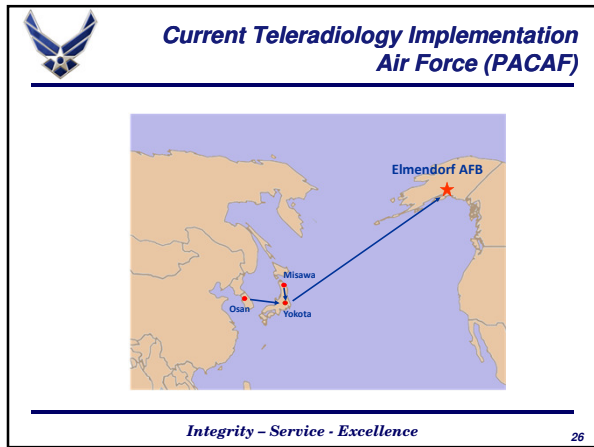*Current Teleradiology Implementation Air Force (PACAF)*

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Current Teleradiology Implementation Europe

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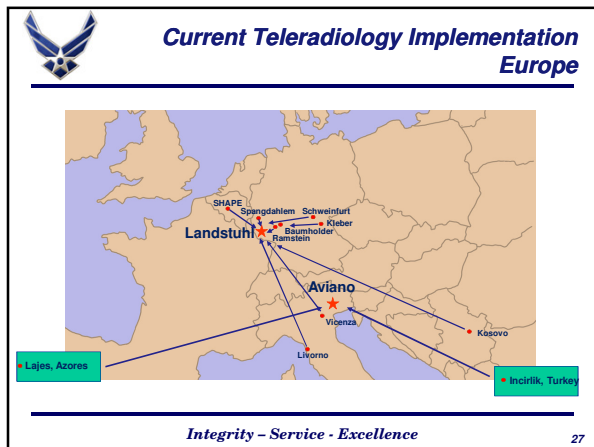
Current Teleradiology Implementation CENTCOM

Manas, Kyrgyzstan

Kirkuk, Iraq
Balad, Iraq

TRAVIS

Al Udeid, Qatar
Al Dhafra, UAE

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Future Directions

- Implementation of DOD ID number
  - Unique ID that will not use a "family medical prefix"
  - Will mitigate risk of orphaned studies/records
- HAIMS - Healthcare Artifact and Image Management Solution
  - Software application that will enable clinicians to view radiology images (low resolution)
- Creation of a mirrored, unified, PACS archive server
- Implementation of radiation dose monitoring software

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Summary

- DOD required to maintain a longitudinal health record
- EHR must overcome numerous challenges
- DOD EHR is comprised by a complex set of complimentary systems
- DOD Radiology heavily dependent on Teleradiology

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Questions

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