Digitizing Healthcare

WILSON ARIZA

LTC,USA,Retired

APRIL 26, 2016

Disclosure

- All statements made in this presentation are my own and do not represent the policies or recommendations of the Department of Defense or The U.S. Department of Veterans Affairs.

Discussion Topics

1. Electronic Medical Record
2. Telemedicine
3. Medical Simulation
4. Recent Projects
5. Way Ahead

Electronic Medical Record
Medical Information Management on the Battlefield:

From Battlefield to TDA Hospital

Legislation

"…every Soldier, Sailor, Airman and Marine will have a comprehensive, life-long medical record…"

Source: Special report of the Presidential Advisory Committee on Gulf War Veterans' Illness, 1997

"The Secretary of Defense shall establish a system to assess the medical condition of members of the armed forces…who are deployed."

Title 10; Section 1074f (1997): Medical tracking system for members deployed overseas

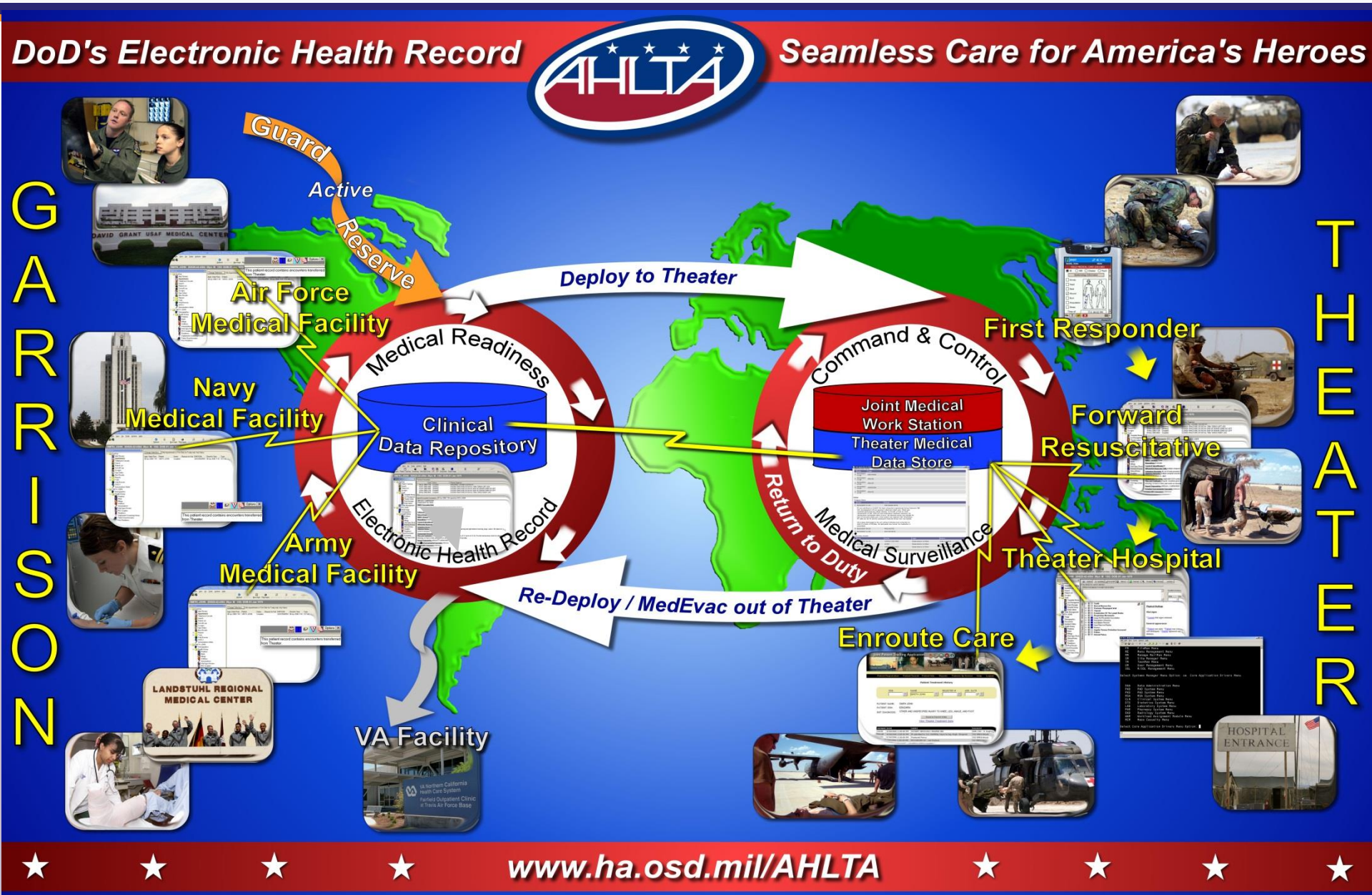
"When available, TMIP tools will be used to capture inpatient and outpatient encounters."

ASD(HA) memo; 2005; Expanded use of automated medical data collection and patient tracking applications

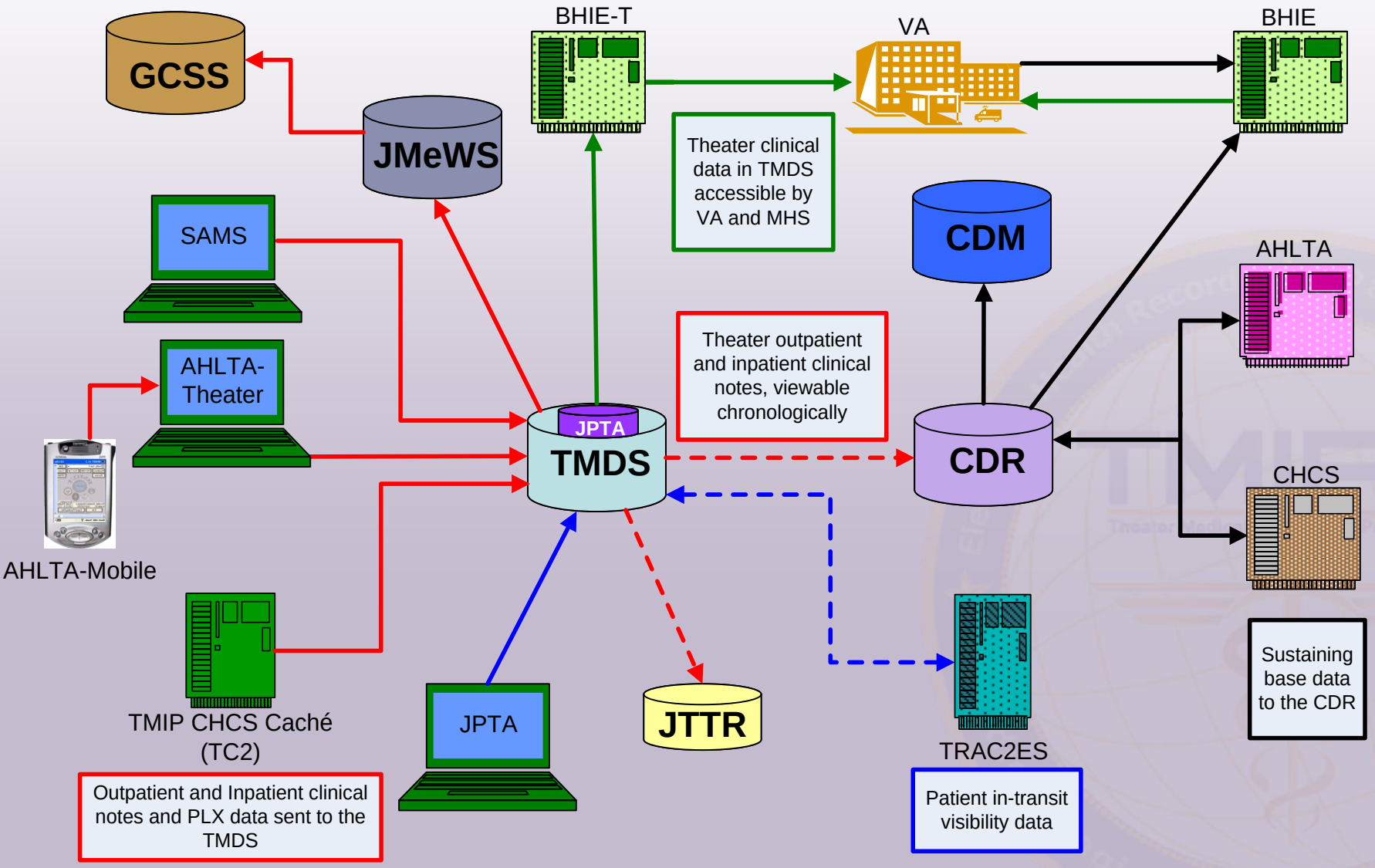
Historical Challenges

- No electronic record input from theater
- Limited visibility of medical logistics and blood status
- No visibility of patients within theater healthcare system
- Minimal or no telecommunications infrastructure
- No integration between theater and sustaining base applications
- No capability to electronically aggregate data for medical situational awareness and surveillance

Continuum of Care



Continuum of Care



Telehealth

- The use of telecommunications and information technology to provide access to health assessment, intervention, consultation, supervision, education, and information across distance (Nickelson, 1998, p. 527).

- The use of the telephone, e-mail, chat rooms, and other internet and satellite-based technologies to provide direct clinical services.

Technological Advances

First Wave Technologies

- Photocopy and fax machines
- Word processing
- Voice mail and answering machines
- Electronic claim submission

Second Wave Technologies

- Computerized test administration, scoring, and interpretation
- Providing clinical services via the telephone

Third Wave Technologies

- Virtual reality treatments of anxiety disorders
- Interactive televideo communication treatments

Telephone

- The most widely used form of Telehealth

- Referrals 91%
- Emergency care 79%
- Consultation and education 71%
- Individual Psychotherapy 69%
- Clinical supervision 58%

Keys to Attracting Millennial Patients

Issues

(The Telemedicine & Advanced Technology Research Center (TATRC), April 1999)

- Inability to guarantee confidentiality
  Informed consent procedures
  Use of encryption software
  Firewall protection for your computers
- Provision of services across state lines
- Local jurisdiction legal requirements
  (e.g., mandatory reporting requirements)
- Not knowing the true identity of client

TRICARE

- “U.S. Defense Dept: TRICARE Extends State-of-Art Web-based Counseling Program; Internet & Web Cam To Speak "Face-To-Face" 24/7

- Through the program, TRICARE health care beneficiaries use the Internet and a Web cam to speak "face-to-face" with mental-health counselors around the clock and from anywhere in the United States.”

TRICARE (cont.)

- “These services are available in the United States to active-duty service members, active-duty family members who are at least 18 years old, beneficiaries using TRICARE Reserve Select and beneficiaries covered under the Transitional Assistance Management Program, the release said.

  For some people, the online services aren't an appropriate level of care or video services aren't accessible. In that case, a licensed professional will refer the beneficiary to the right organization.”

Simulation-based medical teaching and learning

- Simulation-based medical education enables knowledge, skills and attitudes to be acquired for all healthcare professionals in a safe, educationally orientated and efficient manner.
- Simulation-based training initially began with life-like manikins and now encompasses an entire range of systems, from synthetic models through to high fidelity simulation suites. These models can also be used for training in new technologies, for the application of existing technologies to new environments and in prototype testing.

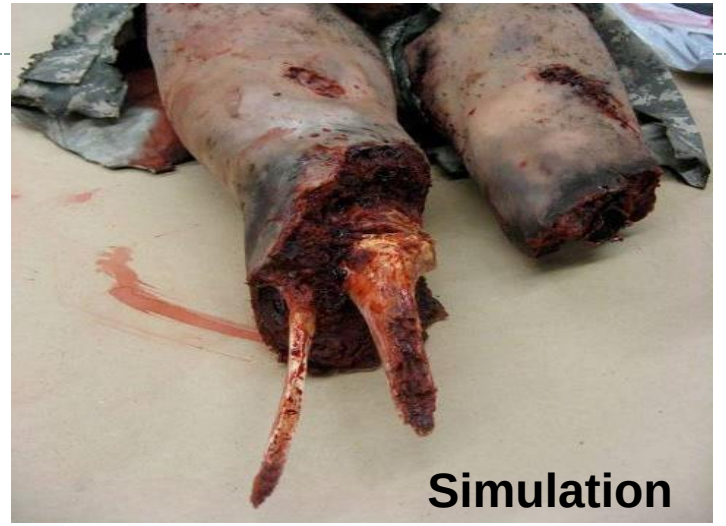
The Message

- Simulators are only a tool, and must be integrated into a comprehensive, proficiency based curriculum

- Only through stringent validation of simulators and their curricula will it be possible to have acceptance by the training and regulation bodies

- It is not “Build it and they will come …” but “… validate it and they will come.”

“Train as We Fight” Concept
Multiple Amputation Simulation



Simulation

Simulation

USA Today
Sep 13, 2009

Military considers revised medical training for troops

By Gregg Zoroya, USA TODAY

WASHINGTON — Troops trained in advanced trauma care could prevent up to 20% of combat deaths in Iraq and Afghanistan, the military's top medical board says.

The Defense Health Board said in a recommendation to the Pentagon last month that enhanced **Tactical Combat Casualty Care (TCCC) skills developed by military trauma specialists already have saved an estimated 1,000 lives in both wars.**

For example, preventable combat deaths — primarily cases where troops bleed to death — have been eliminated in an Army Special Forces unit and the 75th Ranger Regiment, both trained in these skills. Among other techniques, the training emphasizes aggressive control of blood loss with tourniquets. Cont…

Patient Safety – the Keystone

Medical simulation improves patient safety…

- By reducing errors during technically challenging procedures such as surgery and non-surgical interventions
- Technical errors are reduced by improved training with a focus on error identification
- Simulation technologies have a proven record in improving safety through decreased errors

"Experience is the name everyone gives to their mistakes."
- Oscar Wilde

SimLEARN History

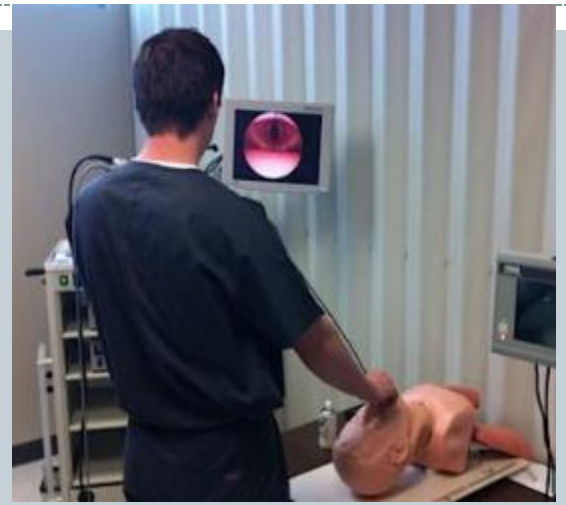
- In July, 2009, the Under Secretary for Health signed Executive Decision Memorandum approving establishment of a national simulation training and education program
- SimLEARN is a national simulation training, education and research program which will develop the strategic vision and system-wide plan for simulation process modeling, training, education and research for VHA
- National program includes the establishment of a National Center for conducting simulation-based training

SimLEARN's Vision & Mission

Mission: To improve Veteran health care outcomes by establishing VHA as a global leader in health care simulation-based training and research

Vision: To be VHA's national Center of Excellence that enhances Veteran health care quality through the use and dissemination of simulation technologies, education, and training to facilitate workforce development

Part Task Trainer



Virtual Simulation

High Fidelity Mannequin

THE WAY AHEAD

Virtual Medical Center

Team Training

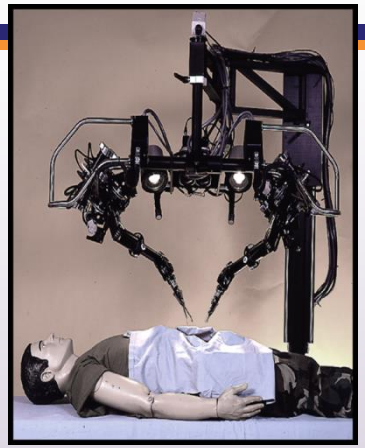
Doctors / Staff

Residents

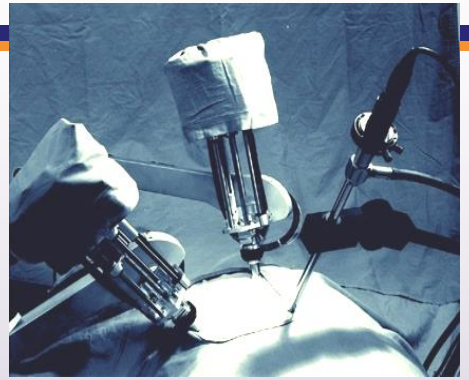
Continuity of Care

Emergency Room → Hand-off → **Operating Room** → Hand-off → **Intensive Care Unit**

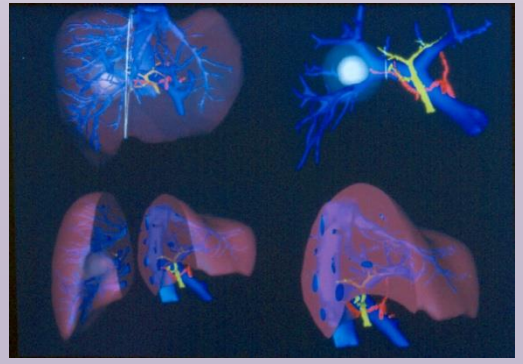
Total Integration of Surgical Care



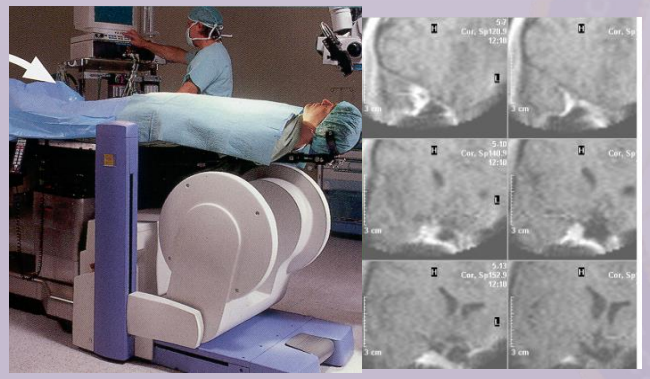
Remote Surgery



Minimally Invasive
& Open Surgery



Pre-operative planning
Surgical Rehearsal

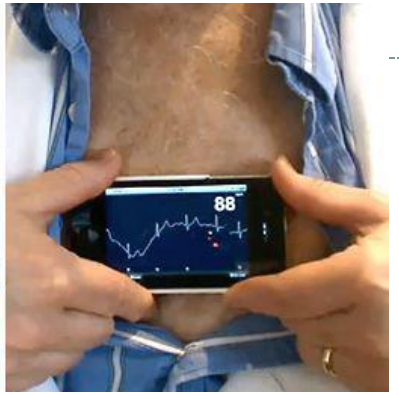


Intra-operative navigation

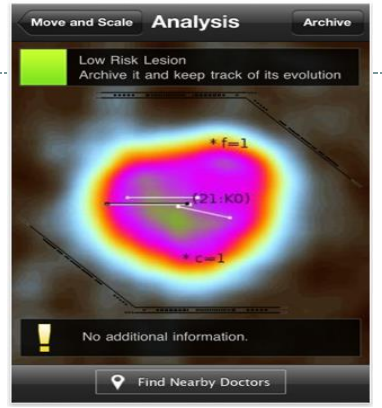
Simulation & Training
Pre-operative Warmup

The Future of Health Medicine 2040

Social Health Network



Mobile



Artificial Intelligence

Over the next 30 years there will be a shift from the medical home to home self-care and prevention to virtual self-care in cyberspace to prospective medicine and auto-care facilitated by nanobots.

In 2039 individuals will be the driver of their health care rather than recipients of it. Data of their health status and behaviors will be continuously, automatically captured by sensors and displayed on an electronic dashboard. Individuals will have the knowledge and assistance to control their health, but they will be accountable and responsible for their outcomes.

First generation RoboMedics will help assess casualties in sustained hostilities. Life Support for Trauma and Transport (LSTAT) high-tech trauma pods will support reversible metabolic hibernation without tissue damage.

The Future is Now!

Department of Veterans Affairs

- President Lincoln's 2nd Inaugural Address:

  "With malice toward none, with charity for all, with firmness in the right as God gives us to see the right, let us strive on to finish the work we are in, to bind up the nation's wounds, ***to care for him who shall have borne the battle and for his widow, and his orphan****, to do all which may achieve and cherish a just and lasting peace among ourselves and with all nations."*

- Established March 1989 succeeding Veterans Administration
- 2nd largest of the 15 Cabinet departments
- 3 major components:
  - **Veterans Health Administration**
  - **Veterans Benefits Administration**
  - **National Cemeteries Administration**