

Usability Present and Future

Current Practice and Future Plans for Usability Experience: "Industry Perspective" for the Department of Veterans Affairs

SHARPC AMIA Pre-SymposiumW. Paul Nichol, MDHealth InformaticsVHA Office of Informatics and Analytics

WAR HEALTH CARE Defining EXCELLENCE in the 21st Century

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ABOUT THE VETERANS HEALTH ADMINISTRATION (VHA)

- 6 million patients treated in 2010
- More than 1,600 sites of care, including:
 - 152 hospitals
 - 974 outpatient clinics
 - 133 community living centers
 - 288 Vet Centers (VAST Numbers as of 3rd quarter FY11)
- 244,000 employees; more than 20,000 physicians and 53,000 nurses
- More than 75 million outpatient visits in 2010
- Nearly 680,000 inpatient admissions in 2010
- Affiliations with more than 1,200 educational institutions
- More than 100,000 health care students receive clinical training from VA each year

ABOUT VHA

- Patient records: 23.4 million
- Clinical Documents: 1.74 billion + 1.1million per day
- Physician orders: 2.85 billion + 1.4 million per day
- Average "cover sheet pulls" per hour: 220,932

HISTORY OF COMPUTING IN VHA

| • | Pre – Graphical User Interface (GUI) Era; Departmental Systems | 1978 |
|---|--|------|
| • | Decentralized Hospital Computer Program (DHCP) | 1981 |
| • | Veterans Health Information Systems and Technology Architecture (VistA) | 1994 |
| • | Computerized Patient Record System (CPRS) | 1995 |
| • | CPRS GUI | 1997 |
| • | Remote Data Views | 2001 |
| • | Inter-facility Consults | 2002 |
| • | Department of Defense Federal Health Information Exchange (DoD-FHIE) | 2003 |
| • | My Health e Vet Personal Health Record (PHR) | 2003 |
| • | DoD-Bidirectional Health Information Exchange (BHIE), Non VA Med Entry | 2004 |
| • | VistAWeb | 2005 |
| • | Remote Image Views | 2006 |
| • | Remote order checks/ Remote Data Interoperability - Clinical/Health Data Repository (RDI-CHDR) | 2007 |
| • | Virtual Lifetime Electronic Record (VLER) Pilot | 2009 |

VistA / CPRS TODAY

Computerized Patient Record System

- *VistA* = Veterans Health Information Systems and Technology Architecture
 - 150+ separate business software applications that support day-to-day activities of health care



- **CPRS** = Computerized Patient Record System
 - Graphical User Interface to Multimedia Electronic Health Record
- Delivers an *integrated* record covering all aspects of patient care and treatment
- Immediately available real time, supports both continuity and longitudinal patient-centric care across continuum
- Includes electronic order entry and management, narrative notes entry, laboratory results display, consultation requests, alerts of abnormal results, and much more
- "Remote Data View" and "VistAWeb" allow clinicians to see health data from any other VA facility where the Veteran has received care

MULTIMEDIA ELECTRONIC MEDICAL RECORD

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CURRENT VistA/CPRS USABILITY CHALLENGES

- Electronic representation of paper chart
- Dated infrastructure and technological approach
- Challenges in rapid change
 - Clinical practice
 - Technology advances
 - User demands
- Personalized care orientation need integration of data from multiple sources, not just VA
- Clinical decision support enhancements

PRINCIPLES OF HEALTH INFORMATICS REDESIGN

Robert L. Jesse, MD, PhD, Principal Deputy Under Secretary for Health

- 1. If data is important enough that it is needed to manage the patient and/or the system, then it must be acquired as an integral part of the work process and not through retrospective data collection.
 - Data should be acquired in real-time, and in concert with the documentation of clinical activities.
- 2. Solutions must make the work easier and not impose undue burden or re-work.
 - Technology must facilitate the workflow, but not drive it.
- 3. Real-time visibility into the system must be available, and it must be transparent across the enterprise.
 - Manage all patient-health system interactions (e.g. location and times, waits and delays); manage patient-staff relationship (e.g. handoffs); manage all tests and procedures in realtime (from scheduling to completion with concurrent documentation)
- 4. To deliver evidence-based care we must have evidence-based management.
 - Clinical and Administrative processes support
- 5. To effectively manage the delivery of evidence-based care we must manage complexity
 - Data>Information>Knowledge>Wisdom

IMPROVING USABILITY: PRINCIPLES OF COGNITIVE SUPPORT

- Designing and developing an Electronic Health Record (EHR) that effectively provides cognitive and work process support requires an understanding of the key dimensions of cognition that require support in a busy, healthcare environment
 - Goal-based processing
 - Support for both planning and action (Decision-making)
 - Supporting an Accurate Situation Model of the patient
 - Support for establishing common ground across the team
 - Support for adaptive control of information environment

CORE EHR VALUES

- Single points of entry and recording
- Integrated information and context sensitive flexible displays
- Interdisciplinary and team based
- Customizable
- Intuitive and usable
- Technical quality
- Integrates evidence-based information
- Supports task management

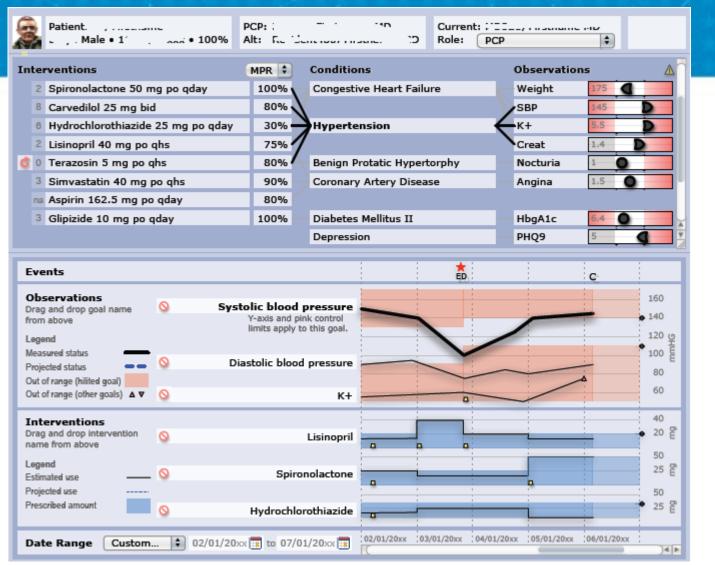
USABILITY: WHERE WE GO FROM HERE

- Understand workflow and re-engineering opportunities as components of usability requirements
- Agile development is needed
 - Usability is in the eye of the user
 - Cannot always anticipate the issues
 - Create the collaborative development environment to be more responsive to users
- Attention to infrastructure to support enhanced usability

USABILITY: WHERE WE GO FROM HERE cont.

- VA Major Transformation Initiative: Transforming Health Care Delivery through Health Informatics Initiative (hi²)
 - Provides a succession plan to transition CPRS to the next generation of browser-based EHR
 - Promotes agile development model involving clinical subject matter experts throughout the software development lifecycle
 - Develops the health informatics workforce and enhances organizational informatics literacy through competency, career and community development
- Interagency Electronic Health Record (iEHR)
 - Collaborative Initiative between the Department of Veterans Affairs and the Department of Defense
 - Will create an open standards-based environment for development

A CONCEPTUAL VIEW: MEDICATIONS





Contact Information

Paul Nichol Paul.Nichol@va.gov

VETERANS HEALTH ADMINISTRATION