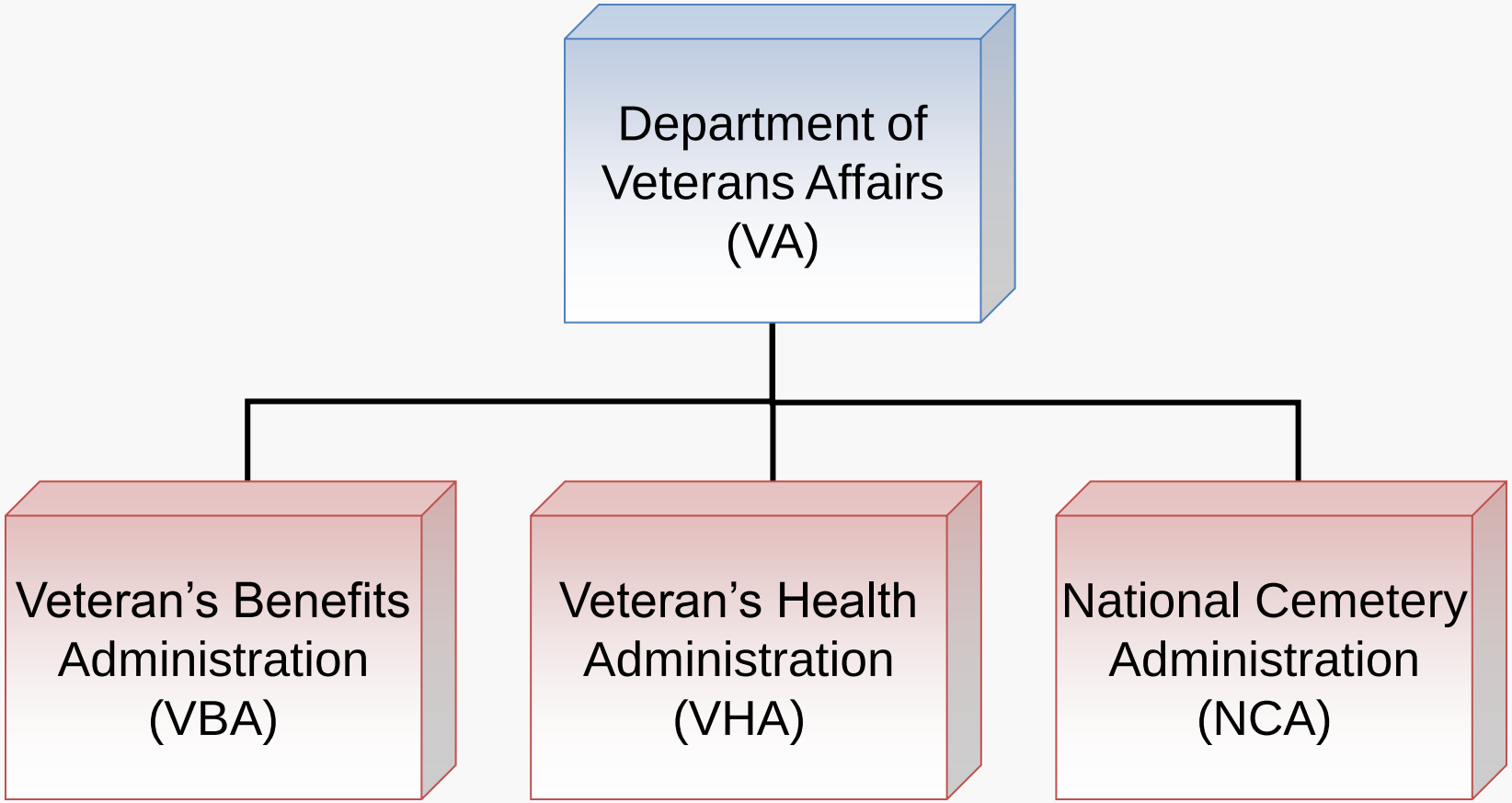
A Clinician's Perspective on Health IT at the VA

featuring

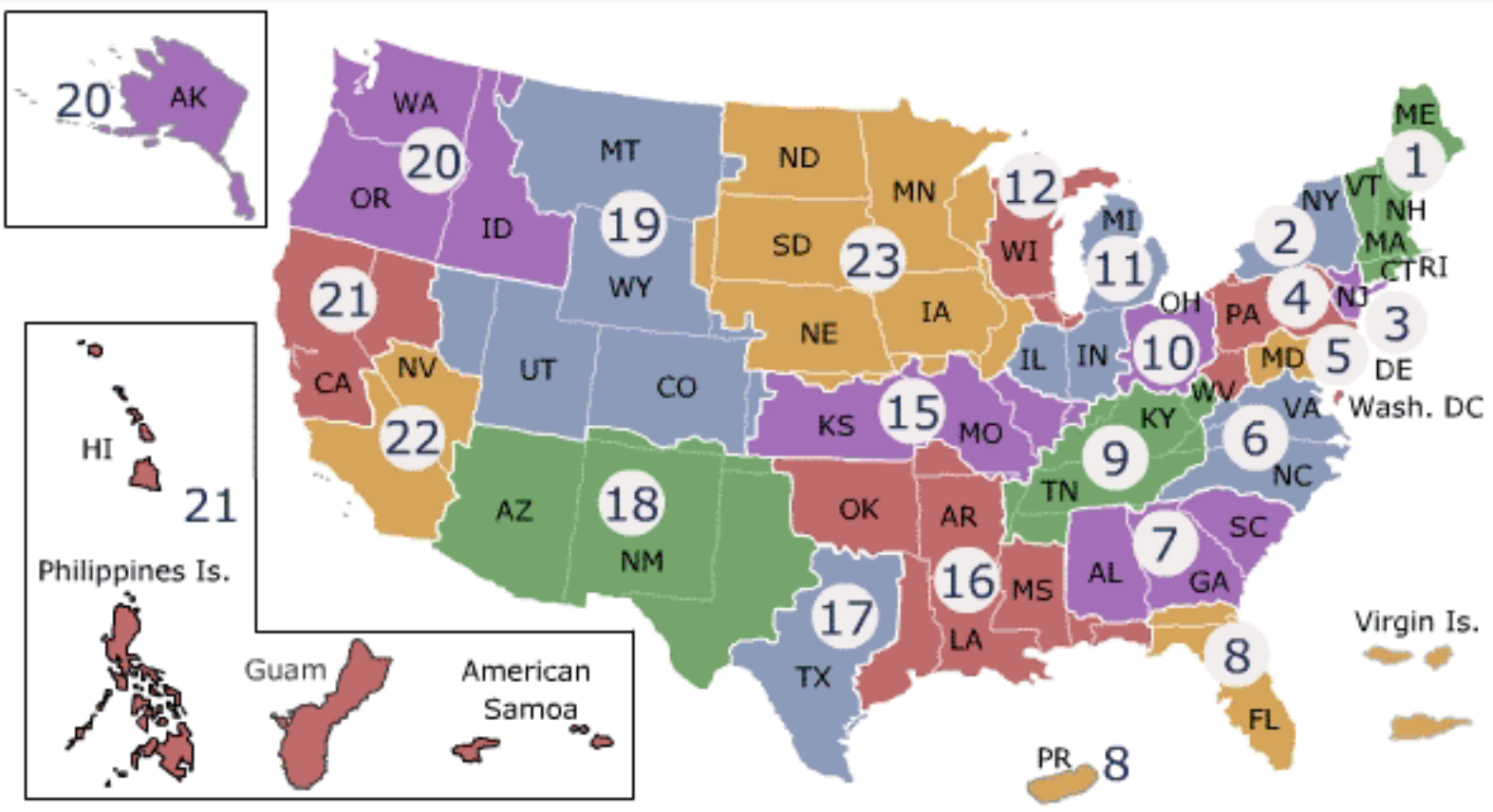
Eliot Siegel, M.D. Director, Baltimore Veterans Affairs Medical Center Radiology; Professor and Vice Chair, University of Maryland School of Medicine, Department of Diagnostic Radiology

VA Organization



Courtesy of Kevin Meldrum

Veterans Affairs - VHA



VHA Facilities

- 163 Hospitals
- 800 Clinics
- 135 Nursing Homes
- 43 Domiciliaries
- 180,000 Healthcare Professionals

- Serving 6 Million Veterans per Year

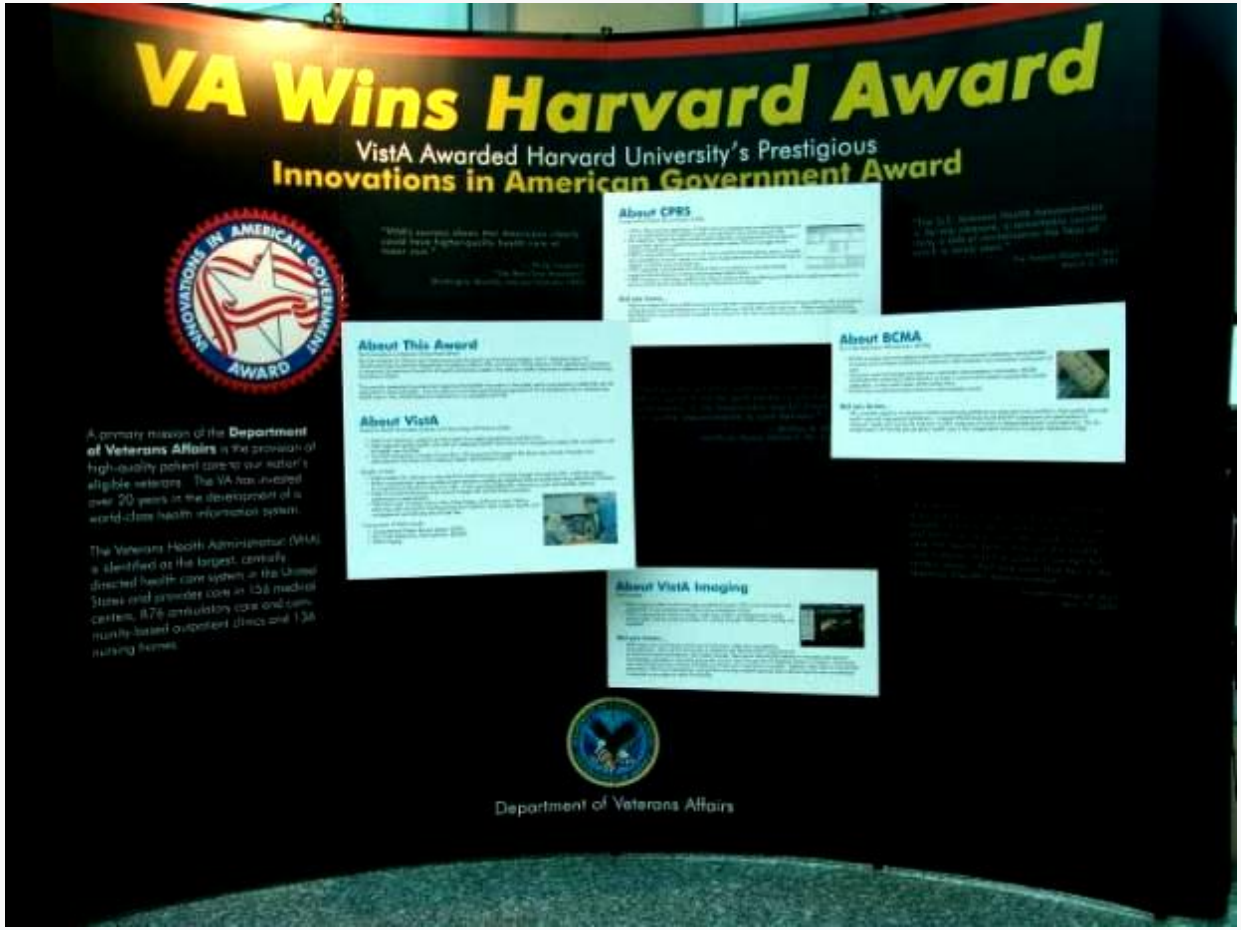
VHA Volume

- Hospital sizes vary from 100 to 1000 beds.
- Outpatient visits vary at each facility from 30,000 to 450,000 visits per year
- 46.5 million outpatient visits per year
- 564,000 inpatient admissions per year
- 167 million prescription-months filled

Courtesy of Kevin Meldrum

VistA:
In Every VA Medical Center For >15 years!

2006 – Innovation Award for VistA
VA's Electronic Health Record (EHR)



Achievements

- The VA's EMR been estimated to improve efficiency by 6% per year
- Pharmacy prescription accuracy has improved to 99.997%
- VA hospitals only 1/13 systems that have achieved HIMSS stage 7, the highest level of record integration
- Public domain software available through the freedom of information act directly from the VA's website or network of distributors

History of VistA

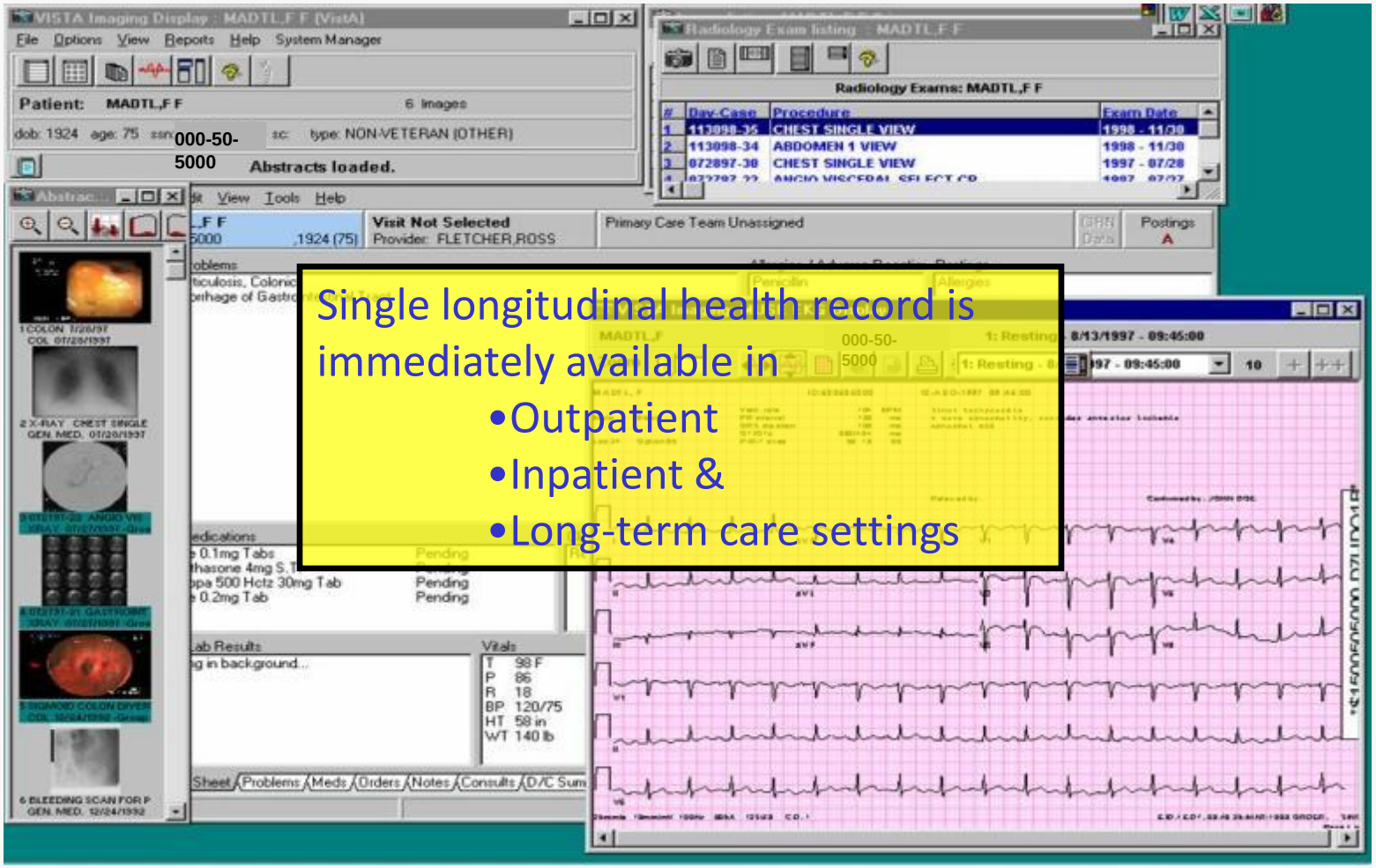
- 1977 – 1981 “The Underground”
- 1980s – Service Focused Software
- 1990s – Physician Focused Software
- 1997 – Release of Computerized Patient Record System (CPRS)
- www.hardhats.org

Courtesy of Kevin Meldrum

Database

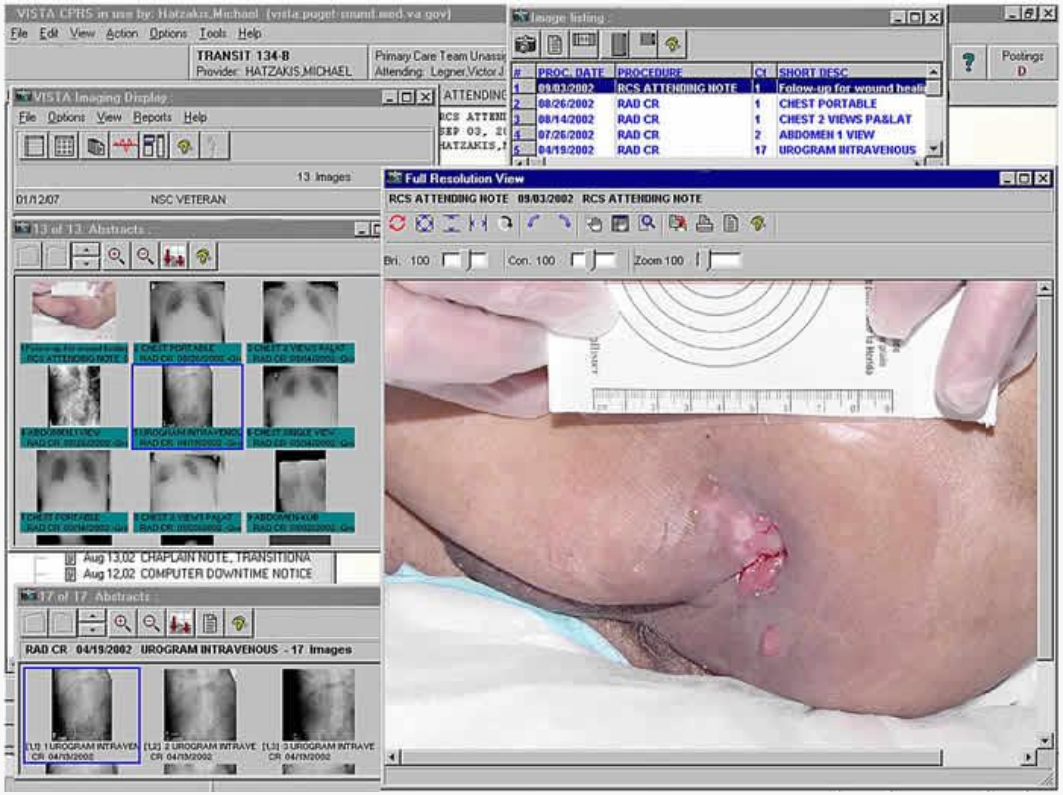
- Developed using M or MUMPS language/database
  - Runs on InterSystems Cache version of MUMPS
  - Open source engine called GT.M for Linux and Unix computers is available

VistA:
A Chart Metaphor Combining Text and Images

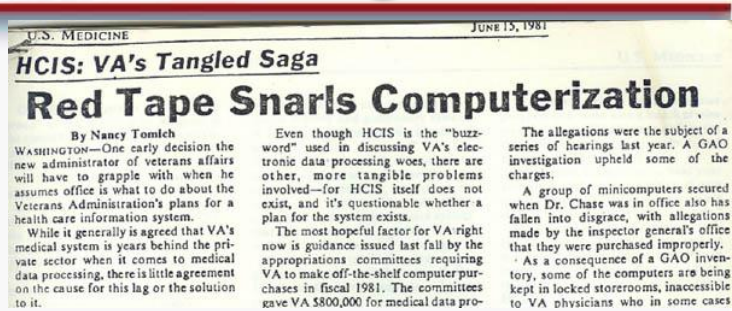


VistA Imaging

- Integrates images with the electronic medical record
- Can be used independently or integrated into VistA
- Includes
  - Radiology
  - EKG's
  - Pathology
  - GI lab
  - Dermatology
  - Wound Care
  - Scanned Documents



From A Few Sites To The Largest Health Care System In The U.S. Under One Management



U.S. MEDICINE — JUNE 15, 1981

HCIS: VA's Tangled Saga

Red Tape Snarls Computerization

By Nancy Tomich

WASHINGTON—One early decision the new administrator of veterans affairs will have to grapple with when he assumes office is what to do about the Veterans Administration's plans for a health care information system.

While it generally is agreed that VA's medical system is years behind the private sector when it comes to medical data processing, there is little agreement on the cause for this lag or the solution to it.

Even though HCIS is the "buzzword" used in discussing VA's electronic data processing woes, there are other, more tangible problems involved—for HCIS itself does not exist, and it's questionable whether a plan for the system exists.

The most hopeful factor for VA right now is guidance issued last fall by the appropriations committees requiring VA to make off-the-shelf computer purchases in fiscal 1981. The committees gave VA $800,000 for medical data pro-

The allegations were the subject of a series of hearings last year. A GAO investigation upheld some of the charges.

A group of minicomputers secured when Dr. Chase was in office also has fallen into disgrace, with allegations made by the inspector general's office that they were purchased improperly.

As a consequence of a GAO inventory, some of the computers are being kept in locked storerooms, inaccessible to VA physicians who in some cases

In The Beginning

NIST (Then NBS) was asked to turn the existing systems-technology strategy into a systems-architecture design

Dr. John Chase, the VA's Medical Director agreed to deploy the system at the VA Hospitals

Dr. Robert Kolodner (later the National Health Information Technology Coordinator) and George Timson were involved since 1977

- 1978 - Minicomputers sent to about 20 VA Medical Centers
- 1979 - "Underground Railroad" formed referred to as conspirators against the enemy

DHCP - Hospital Information System – 1981

Congressman Sunny Montgomery arranged for DHCP to be written into law as a program at the VA

- 1982 - Official deployment of core applications
- 1993 - Order Entry / Results Reporting

The four major adopters of VistA (VA, DoD, HIS, and the Finnish Consortium) each took VistA in a slightly different direction

The Finns actually were the first major adopter

VistA

Electronic Health Record (EHR) – The name was adopted in 1994 under Ken Kizer

- 1996-99 - CPRS ("Clinical Desktop")
- 2000 - Bar Code Medication Administration

- **2004 – My Health*e*Vet**
  (Personal Health Record – PHR)
- **2010 – Blue Button** (Data Download)

Bar Code Medication Administration (BCMA)

- **Virtually Eliminates Errors at the Point of Administration**

BCMA Assures the:

Right Medication

Right Dose

Right Patient

Right Provider

Right Time

Home Telehealth

VA Provides My HealtheVet: A Personal Health Record For Veterans

My HealtheVet is VA's online personal health record. It was designed for Veterans, active duty Servicemembers, their dependents and caregivers. My HealtheVet helps you partner with your health care team. It provides you opportunities and tools to make informed decisions and manage your health care

Specific features in My HealtheVet are available to you based on your account type. All users who have a Basic account are able to view their self-entered information. If you are a VA patient, you can upgrade your account to Advanced or Premium. For more information about account types and what you can view, visit My HealtheVet Account Types.

Among the newest features available to Veterans with a Premium Account include VA Notes. These are clinical notes that your health care team records during your appointments or hospital stays. Also available are your VA Immunization records, more detailed lab reports and a list of your current medical issues. These features are in addition to prescription refills, VA Appointments and Secure Messaging – all very popular with Veterans!

Already a Member?

Go to My HealtheVet Enter Here

Go to the main My HealtheVet home page to start managing your health care online.

Not Registered?

Register Today! Start Here

First Time Registration?

If you are already enrolled at a VA facility, be sure to check the 'VA Patient' option and include your full name, including middle name if applicable, your date of birth, SSN and gender.

Service Alerts

Blue Button Download My Data

Learn what the Blue Button can do for you

Labs, appointments, prescriptions, and other medical records are part of the Blue Button. Did you know that the DoD Military Service Information feature includes Military Occupational Specialty Codes, which can assist Veterans in linking military occupations with civilian jobs?

Learn More »

Veterans Crisis Line 1-800-273-8255 PRESS 1

eBenefits

Your VA & DoD Benefits. Online.

Register Now

www.ebenefits.va.gov

VA Conceived of and Provides: "Blue Button"

> "For the first time ever, veterans will be able to go to the VA website, click a simple Blue Button and download or print your personal health records so you have them and can share with your doctor outside of the VA." –President Barack Obama

JOIN THE MOVEMENT

- committed
- implemented

- Aetna
- Centers for Medicare and Medicaid Services
- CNSI
- Department of Defense
- Department of Veterans Affairs
- Gorge Health Connect, Inc.
- Humana Inc. and certain of its operating subsidiaries
- Iatric Systems
- KRM Associates, Inc.
- LifeMed ID, Inc.
- McKesson
- MediKeeper, Inc.
- MedRed LLC
- NaviNet, Inc.
- NoMoreClipboard.com
- OneCare
- PatientsLikeMe
- RelayHealth
- United Healthcare
- Vermont Blueprint for Health, Department of Vermont Health Access
- Walgreens

Download Your Own VA Medical Records

Think of all the times you've sat in the doctor's office, trying to remember what year you had surgery or the name of that hard-to-pronounce prescription you're taking. Or maybe you have difficulty keeping track of your appointments or how stable your blood sugar levels have been lately.

Stay on top of managing your health by using My HealtheVet's Blue Button feature. It allows you to view, print, or download and store information from your personal health record (PHR). Then everything is all in one place and viewable whenever you need.

Blue Button Download My Data

By organizing and accessing your medical records, the VA Blue Button helps you better manage your health care needs and communicate with your health care team. With the Blue Button, you can download your PHR and share it with your VA and non-VA providers. This helps them get the big picture of your health and inform them how you're doing in reaching your treatment goals. You can download your record either as a PDF, text file or customizable Blue Button file. You select the date range and the categories of information you wish to include. Print out information to file away at home, take a copy to your next appointment or send an electronic version of your self-entered information in a Secure Message to your VA health care team.

Start building your PHR by self-entering your personal information, such as your health history, emergency contacts and medications. You can monitor your vital signs and use the journals to track your diet and physical activity. Even if you're not a Veteran, you can take advantage of this convenient way to organize your information.

Then when you click the VA Blue Button, you can view all the data! If you're a Veteran who receives care from VA, you can set your preferences so that some VA and/or DoD records feed into your VA Blue Button copy of your PHR, such as your military service information. Your downloadable PHR can show you:

- Information for emergency contacts, health care teams and insurance providers
- Over-the-counter medications, allergies, military health history, medical events and lab tests
- Daily records in your diet and physical activity (exercise) journals
- Recorded Vitals & Readings (blood pressure, blood sugar, cholesterol, heart rate, body temperature, weight, pain level, etc.)

My HealtheVet users who are registered as a 'VA Patient' can also see:

- Military service information from your VA and/or DoD records
- Prescription history.

VA patients: you can make your PHR even more beneficial by upgrading to a Premium Account. This level gives you full access to My HealtheVet features, including Secure Messaging with your VA health care team. When you download your data with the VA Blue Button, you can also view information that VA/DoD has added into your health record, such as:

- VA Chemistry/Hematology/Microbiology Lab results – the results from your lab tests
- Information on your VA Appointments– the details of recent and future appointments at VA medical centers and/or CBOCs
- VA Immunizations – a history of the immunizations you have received through VA
- VA Problem List – a list of your active health conditions and symptoms
- VA Notes – the clinical notes that your health care team records during your appointments or hospital stays
- VA Admissions and Discharges including discharge summaries-a list of admissions and discharges plus the detailed summary documented by your health care provider when you were discharged from the hospital

To get this type of account you need to go through Authentication* to verify your identity and have your My HealtheVet profile information linked to VA/DoD records.

A number of smartphone apps are also available through a variety of non-VA sources. While VA doesn't endorse specific apps, there are now creative, secure and easy-to-use ways of viewing Blue Button data. Search for "Blue Button" in your smartphone apps library to learn more.

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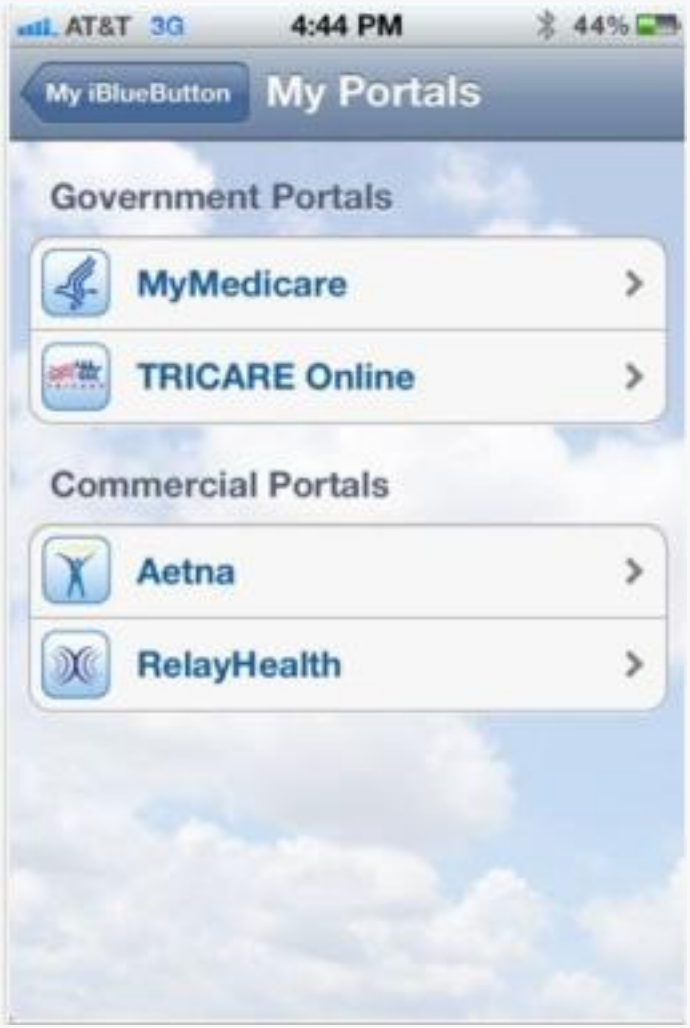
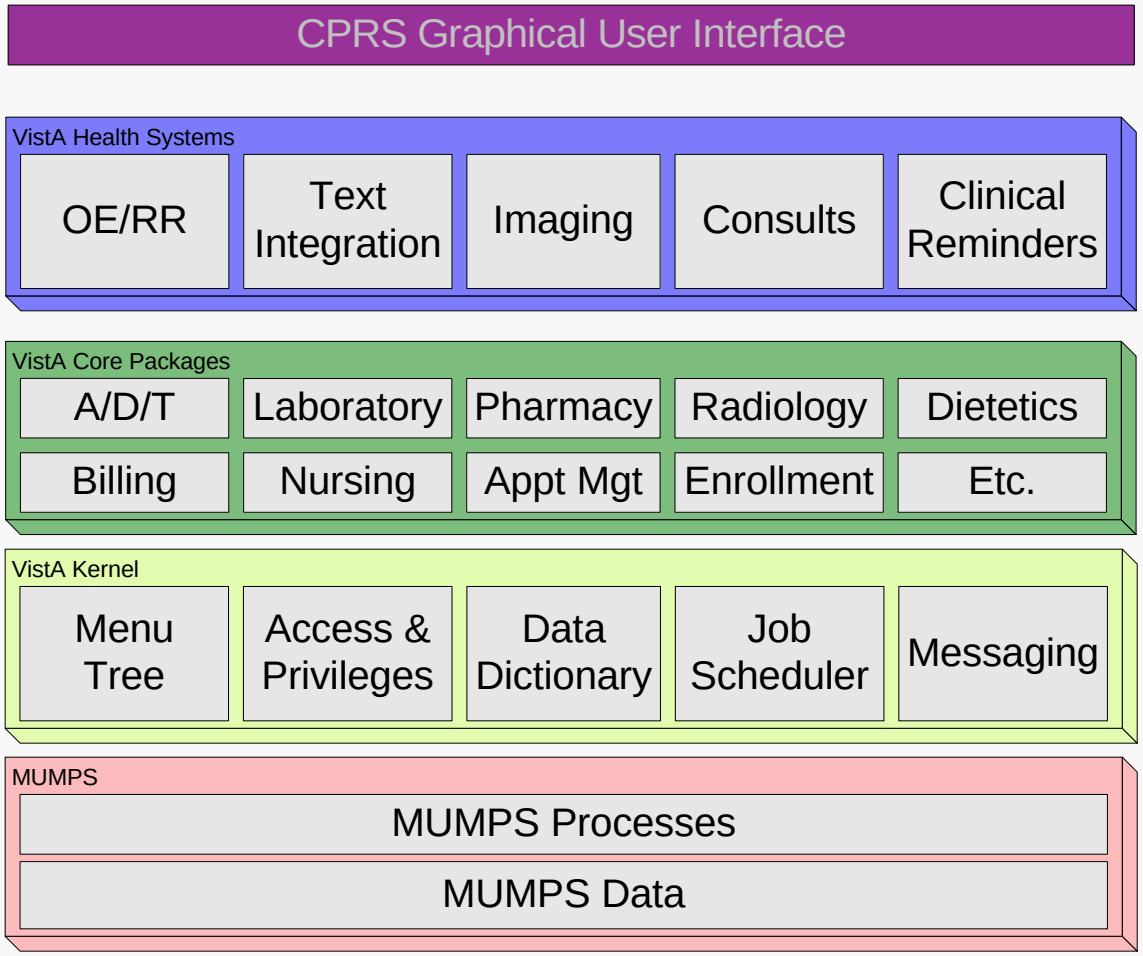
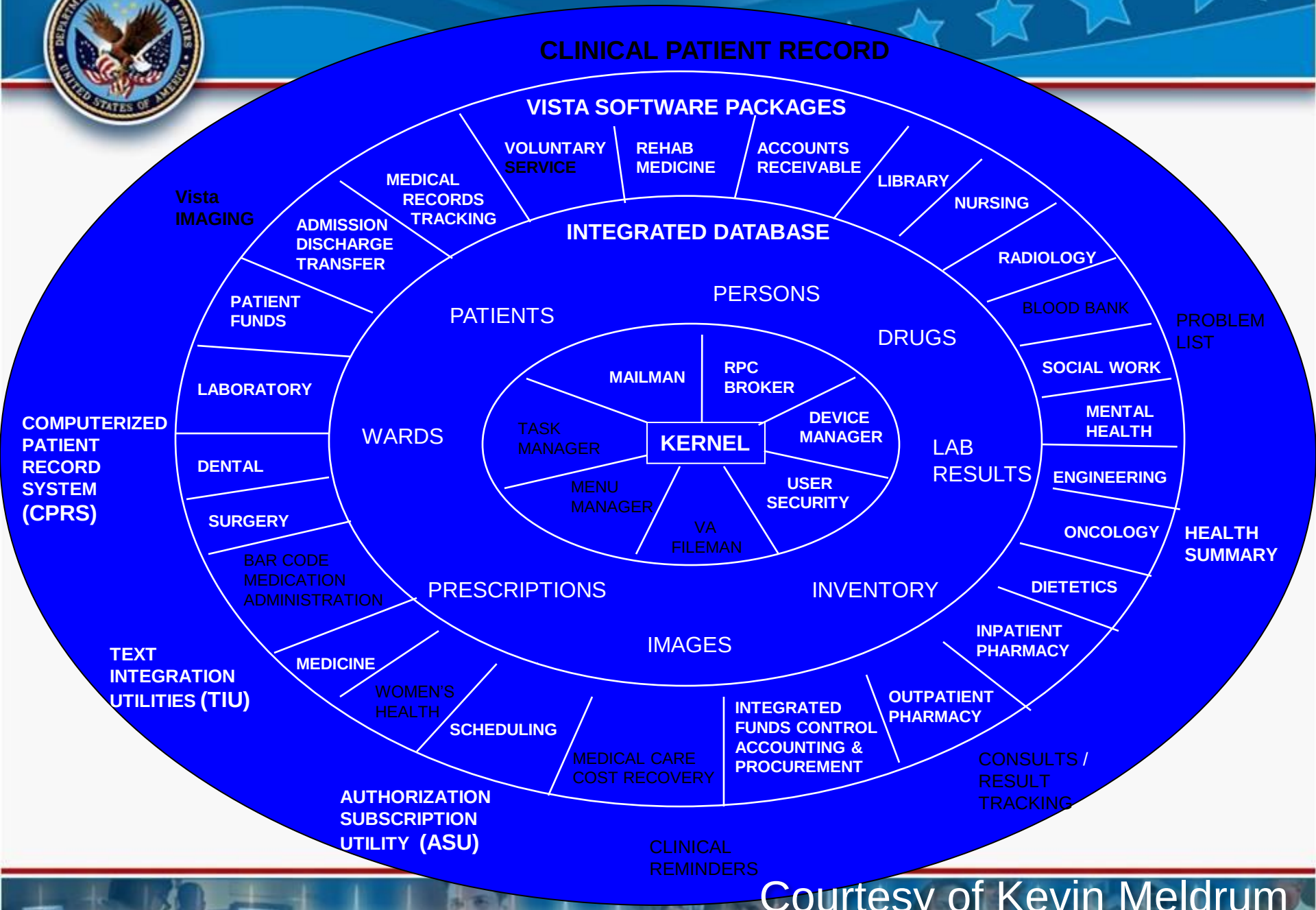
Blue Button Apps Competition



VISTA Layered Approach



Courtesy of Kevin Meldrum



Courtesy of Kevin Meldrum

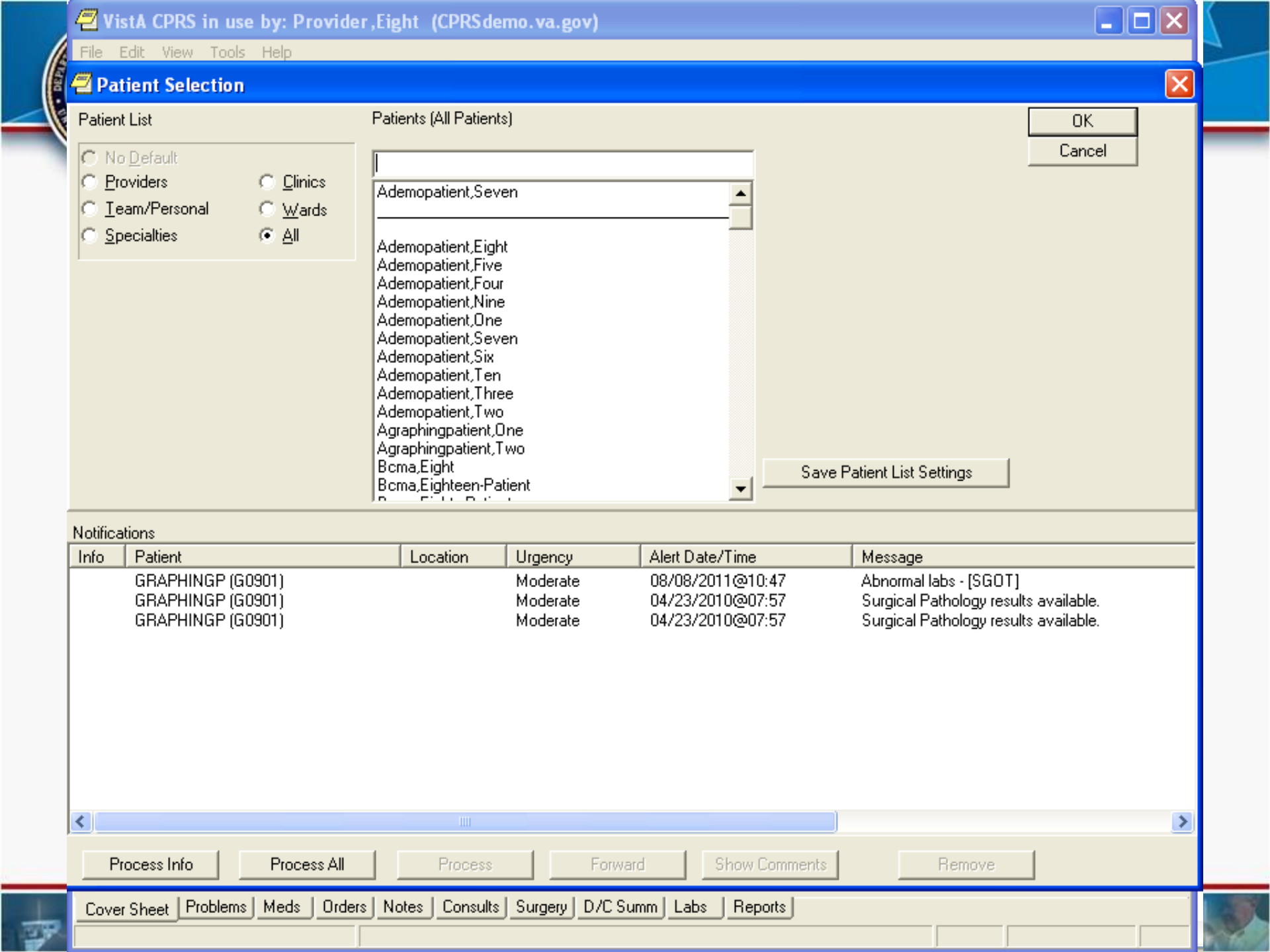
CPRS Demo

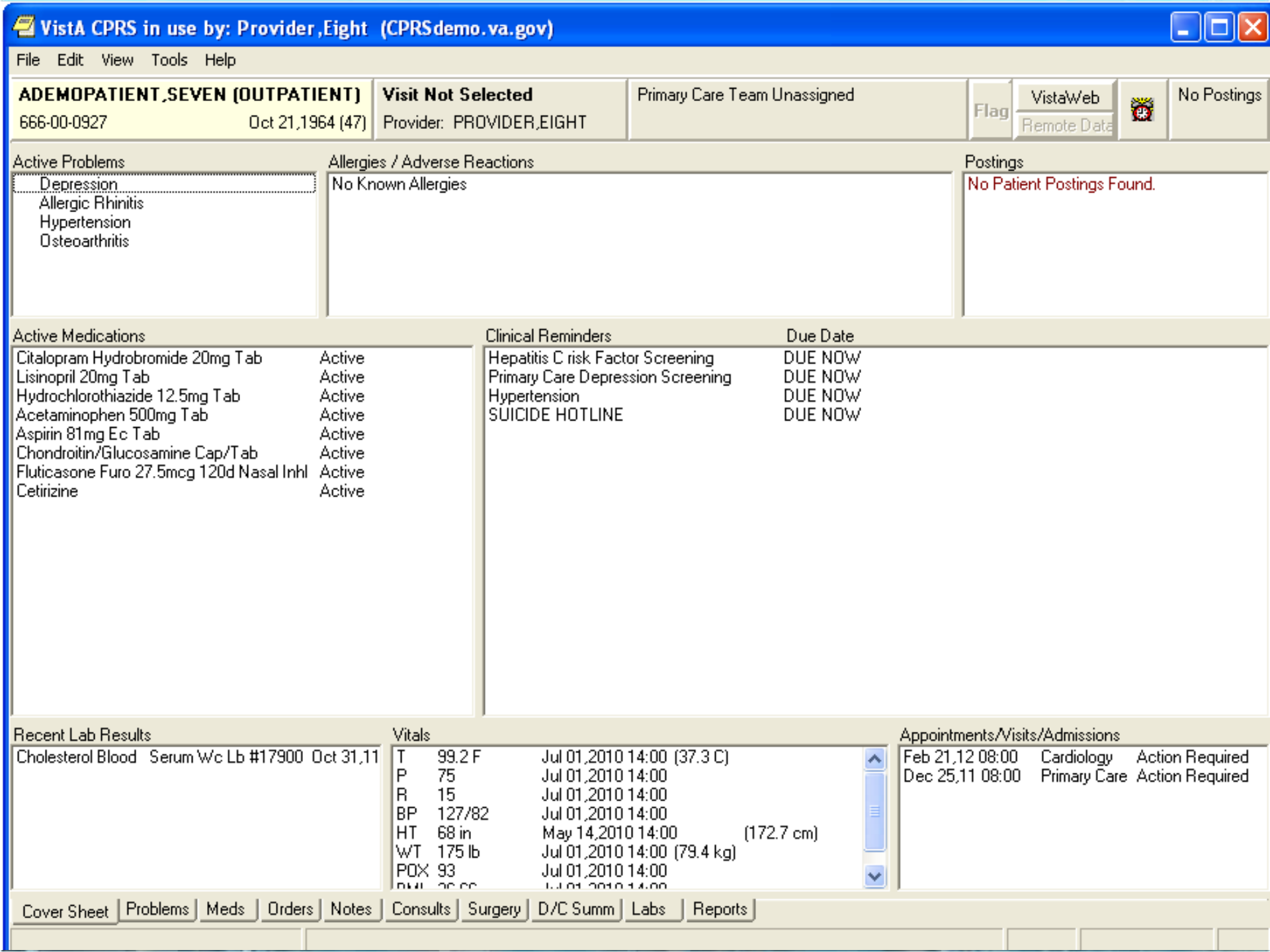
Try VA's VistA CPRS software today!

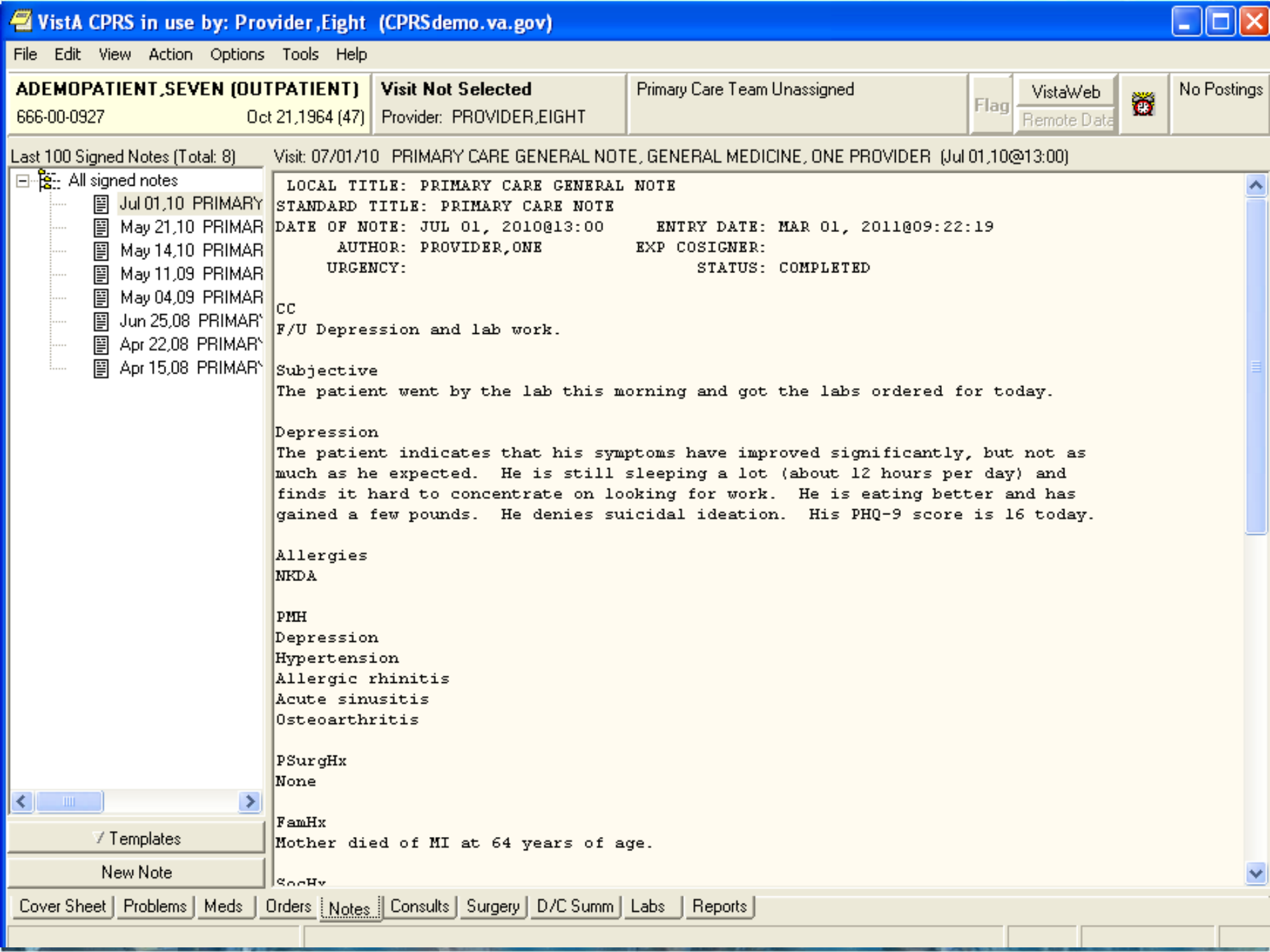
You can download VA's award winning electronic health record software CPRS (Computerized Patient Record System) by following the instructions for installing the client software below.

- **Download** the latest version of CPRS today and get access to new features including graphing functionality
- **Use** the software as if you were a provider by entering orders, entering documentation, retrieving reports (and graphs) and viewing alerts and notifications that help with decision support
- **Learn** first hand how VA's electronic health record system works

http://www.ehealth.va.gov/EHEALTH/CPRS_Demo.asp


VistA CPRS in use by: Provider,Eight (CPRSdemo.va.gov)
File Edit View Tools Help
Patient Selection
Patient List
No Default
Providers
Team/Personal
Specialties
Clinics
Wards
All
Patients (All Patients)
Ademopatient,Seven
Ademopatient,Eight
Ademopatient,Five
Ademopatient,Four
Ademopatient,Nine
Ademopatient,One
Ademopatient,Seven
Ademopatient,Six
Ademopatient,Ten
Ademopatient,Three
Ademopatient,Two
Agraphingpatient,One
Agraphingpatient,Two
Bcma,Eight
Bcma,Eighteen-Patient
OK
Cancel
Save Patient List Settings
Notifications
Info
Patient
Location
Urgency
Alert Date/Time
Message
GRAPHINGP (G0901)
Moderate
08/08/2011@10:47
Abnormal labs - [SGOT]
GRAPHINGP (G0901)
Moderate
04/23/2010@07:57
Surgical Pathology results available.
GRAPHINGP (G0901)
Moderate
04/23/2010@07:57
Surgical Pathology results available.
Process Info
Process All
Process
Forward
Show Comments
Remove
Cover Sheet
Problems
Meds
Orders
Notes
Consults
Surgery
D/C Summ
Labs
Reports


VistA CPRS in use by: Provider,Eight (CPRSdemo.va.gov)
File Edit View Tools Help
ADEMOPATIENT,SEVEN (OUTPATIENT)
666-00-0927 Oct 21,1964 (47)
Visit Not Selected
Provider: PROVIDER,EIGHT
Primary Care Team Unassigned
Flag
VistaWeb
Remote Data
No Postings
Active Problems
Depression
Allergic Rhinitis
Hypertension
Osteoarthritis
Allergies / Adverse Reactions
No Known Allergies
Postings
No Patient Postings Found.
Active Medications
Citalopram Hydrobromide 20mg Tab Active
Lisinopril 20mg Tab Active
Hydrochlorothiazide 12.5mg Tab Active
Acetaminophen 500mg Tab Active
Aspirin 81mg Ec Tab Active
Chondroitin/Glucosamine Cap/Tab Active
Fluticasone Furo 27.5mcg 120d Nasal Inhl Active
Cetirizine Active
Clinical Reminders Due Date
Hepatitis C risk Factor Screening DUE NOW
Primary Care Depression Screening DUE NOW
Hypertension DUE NOW
SUICIDE HOTLINE DUE NOW
Recent Lab Results
Cholesterol Blood Serum Wc Lb #17900 Oct 31,11
Vitals
T 99.2 F Jul 01,2010 14:00 (37.3 C)
P 75 Jul 01,2010 14:00
R 15 Jul 01,2010 14:00
BP 127/82 Jul 01,2010 14:00
HT 68 in May 14,2010 14:00 (172.7 cm)
WT 175 lb Jul 01,2010 14:00 (79.4 kg)
POX 93 Jul 01,2010 14:00
Appointments/Visits/Admissions
Feb 21,12 08:00 Cardiology Action Required
Dec 25,11 08:00 Primary Care Action Required
Cover Sheet
Problems
Meds
Orders
Notes
Consults
Surgery
D/C Summ
Labs
Reports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666-00-0927 Oct 21,1964 (47)
Visit Not Selected
Provider: PROVIDER,EIGHT
Primary Care Team Unassigned
Flag
VistaWeb
Remote Data
No Postings
Last 100 Signed Notes (Total: 8)
All signed notes
Jul 01,10 PRIMARY
May 21,10 PRIMAR
May 14,10 PRIMAR
May 11,09 PRIMAR
May 04,09 PRIMAR
Jun 25,08 PRIMAR
Apr 22,08 PRIMAR
Apr 15,08 PRIMAR
Templates
New Note
Visit: 07/01/10 PRIMARY CARE GENERAL NOTE, GENERAL MEDICINE, ONE PROVIDER (Jul 01,10@13:00)
LOCAL TITLE: PRIMARY CARE GENERAL NOTE
STANDARD TITLE: PRIMARY CARE NOTE
DATE OF NOTE: JUL 01, 2010@13:00 ENTRY DATE: MAR 01, 2011@09:22:19
AUTHOR: PROVIDER,ONE EXP COSIGNER:
URGENCY: STATUS: COMPLETED
CC
F/U Depression and lab work.
Subjective
The patient went by the lab this morning and got the labs ordered for today.
Depression
The patient indicates that his symptoms have improved significantly, but not as much as he expected. He is still sleeping a lot (about 12 hours per day) and finds it hard to concentrate on looking for work. He is eating better and has gained a few pounds. He denies suicidal ideation. His PHQ-9 score is 16 today.
Allergies
NKDA
PMH
Depression
Hypertension
Allergic rhinitis
Acute sinusitis
Osteoarthritis
PSurgHx
None
FamHx
Mother died of MI at 64 years of age.
SocHx
Cover Sheet
Problems
Meds
Orders
Notes
Consults
Surgery
D/C Summ
Labs
Reports

VistA CPRS in use by: Provider,Eight (CPRSdemo.va.gov)

File Edit View Tools Help

ADEMOPATIENT,SEVEN (OUTPATIENT) | **Visit Not Selected** | Primary Care Team Unassigned | Flag | VistaWeb | Remote Data | No Postings

666-00-0927 Oct 21,1964 (47) | Provider: PROVIDER,EIGHT

Lab Results

- Most Recent
- Cumulative
- All Tests by Dal
- Selected Tests
- Worksheet
- Graph
- Microbiology
- Anatomic Pathc
- Blood Bank
- Lab Status

Graph [From: Aug 25,2011 to Feb 24,2012]

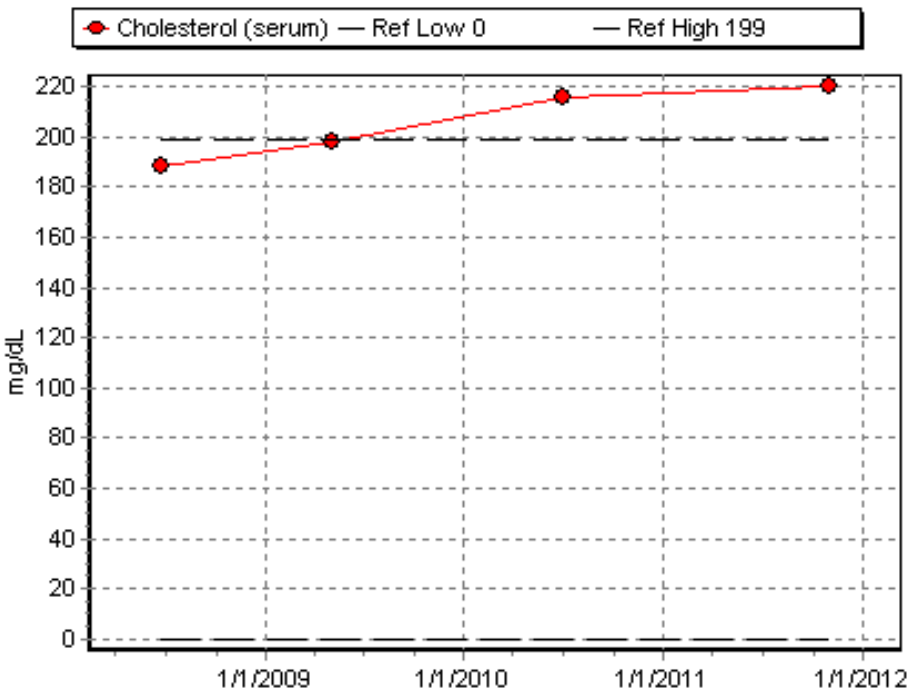
```
Graphing activated
```

CPRS Graphing - Patient: Ademopatient,Seven

Individual Graphs

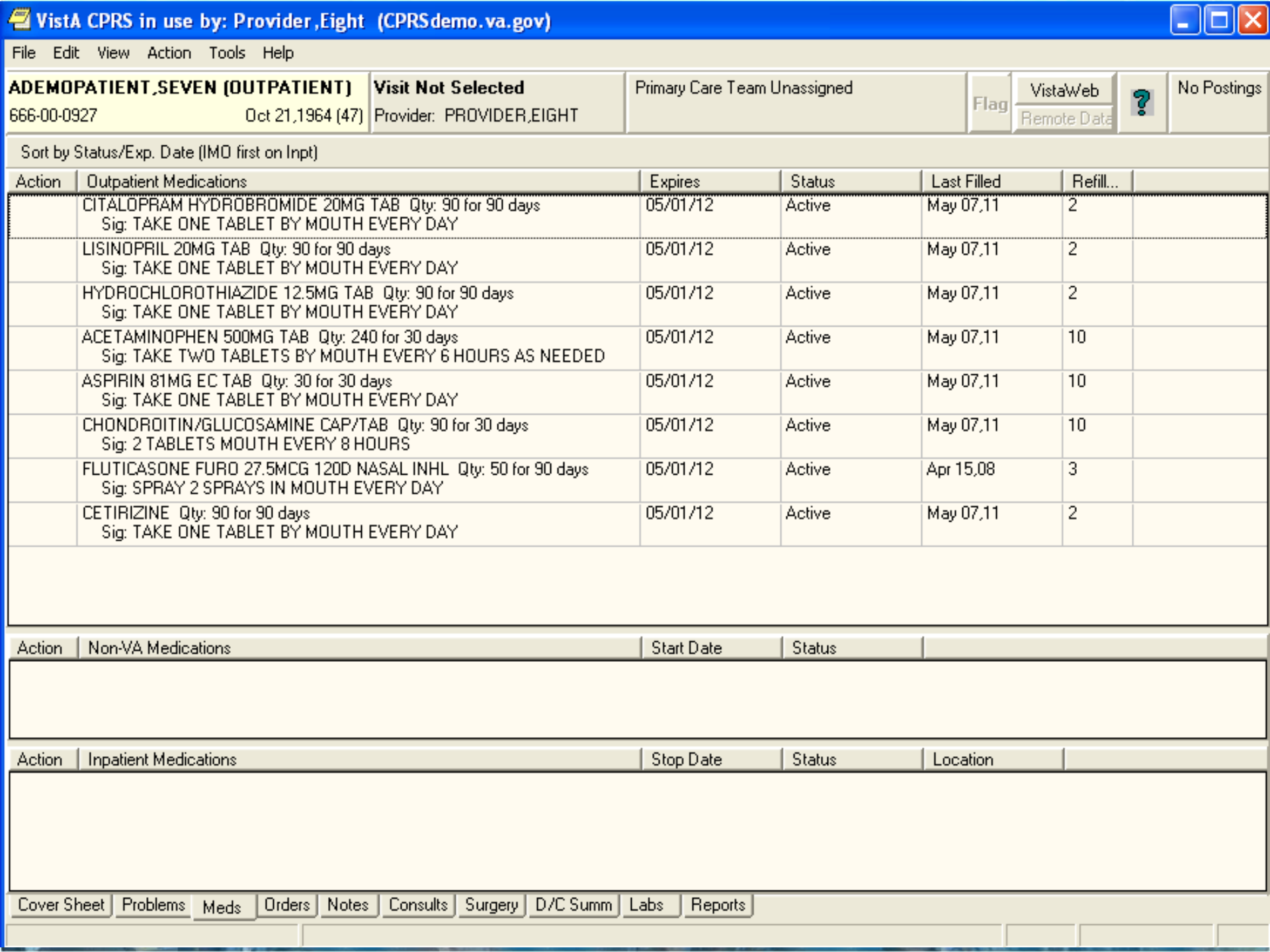
Items | Views

Item	Ty
Albumin	La
Alkaline Phosphat...	La
Baso	La
Calcium	La
Chloride	La
Cholesterol	La
Co2	La
Creatinine	La
Eosino	La
Glucose	La
Hct	La
Hdl	La
Hemoglobin A1c	La
Hgb	La
Ldl Cholesterol	La
Lymphs	La
Mch	La
Mchc	La



Date Range: All Results | Split Views | Select/Define... | Settings... | Close

Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports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Visit Not Selected
Provider: PROVIDER,EIGHT
Primary Care Team Unassigned
Flag
VistaWeb
Remote Data
No Postings
Sort by Status/Exp. Date (IMO first on Inpt)
Action | Outpatient Medications | Expires | Status | Last Filled | Refill...
CITALOPRAM HYDROBROMIDE 20MG TAB Qty: 90 for 90 days
Sig: TAKE ONE TABLET BY MOUTH EVERY DAY | 05/01/12 | Active | May 07,11 | 2
LISINOPRIL 20MG TAB Qty: 90 for 90 days
Sig: TAKE ONE TABLET BY MOUTH EVERY DAY | 05/01/12 | Active | May 07,11 | 2
HYDROCHLOROTHIAZIDE 12.5MG TAB Qty: 90 for 90 days
Sig: TAKE ONE TABLET BY MOUTH EVERY DAY | 05/01/12 | Active | May 07,11 | 2
ACETAMINOPHEN 500MG TAB Qty: 240 for 30 days
Sig: TAKE TWO TABLETS BY MOUTH EVERY 6 HOURS AS NEEDED | 05/01/12 | Active | May 07,11 | 10
ASPIRIN 81MG EC TAB Qty: 30 for 30 days
Sig: TAKE ONE TABLET BY MOUTH EVERY DAY | 05/01/12 | Active | May 07,11 | 10
CHONDROITIN/GLUCOSAMINE CAP/TAB Qty: 90 for 30 days
Sig: 2 TABLETS MOUTH EVERY 8 HOURS | 05/01/12 | Active | May 07,11 | 10
FLUTICASONE FURO 27.5MCG 120D NASAL INHL Qty: 50 for 90 days
Sig: SPRAY 2 SPRAYS IN MOUTH EVERY DAY | 05/01/12 | Active | Apr 15,08 | 3
CETIRIZINE Qty: 90 for 90 days
Sig: TAKE ONE TABLET BY MOUTH EVERY DAY | 05/01/12 | Active | May 07,11 | 2
Action | Non-VA Medications | Start Date | Status
Action | Inpatient Medications | Stop Date | Status | Location
Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports

Lessons Learned

User Involvement is ESSENTIAL

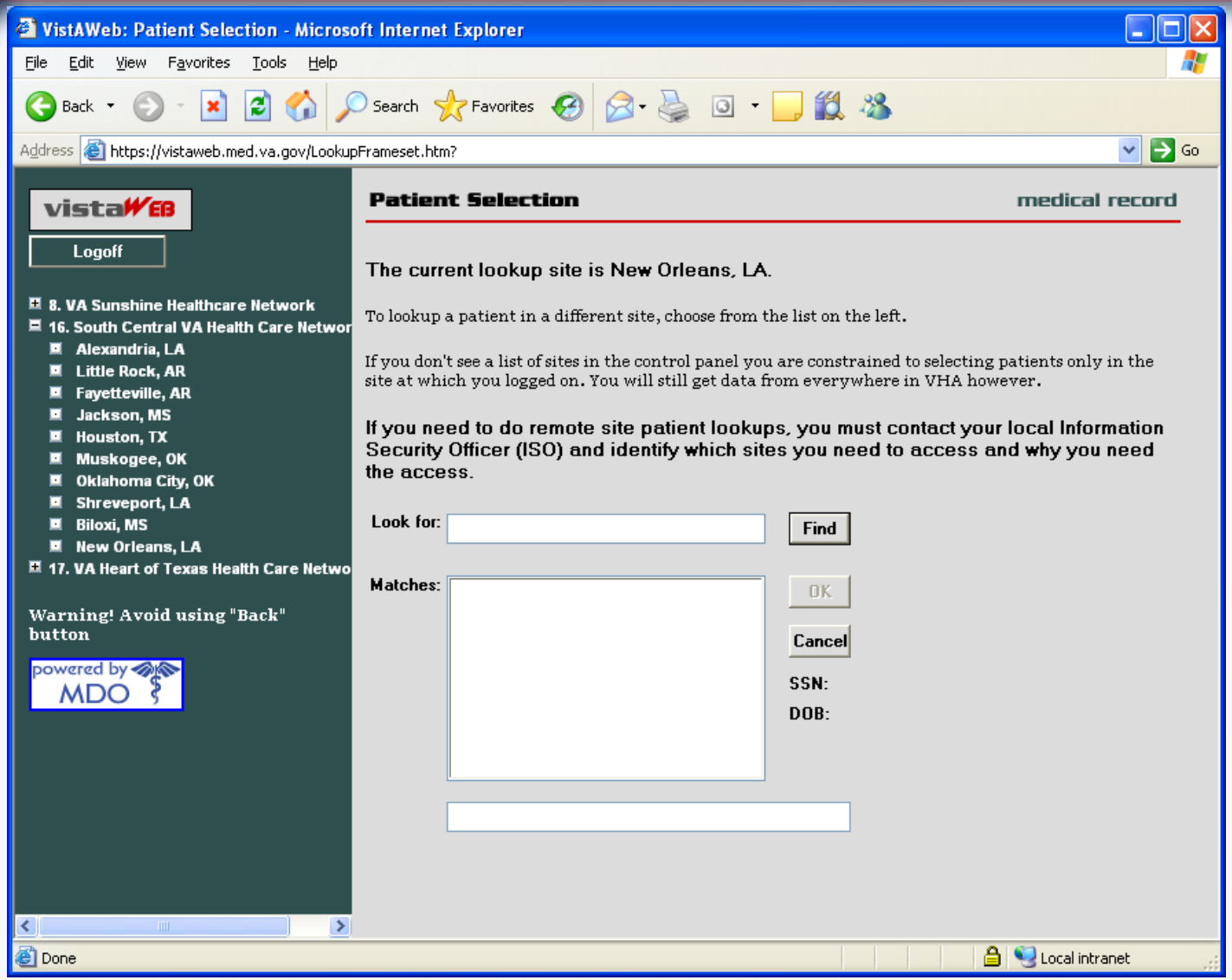
- Discover major innovations by front line users/developers
- Learn from the “Positive Deviants”
- Start with the Early Adopters
- Include users at all stages

Major Innovations from Local Users

Bar Code Medication Administration (BCMA)

- 1992 - the idea of Sue Kinnick, RN –
  a Nurse at the VA Medical Center in Topeka, Kansas
- VA wide by 2000
- Now going nationwide in U.S.
- How many lives saved and
  adverse outcomes avoided?

VISTA Web


VistAWeb: Patient Selection - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address https://vistaweb.med.va.gov/LookupFrameset.htm?
Go
vistaWEB
Logoff
8. VA Sunshine Healthcare Network
16. South Central VA Health Care Networ
Alexandria, LA
Little Rock, AR
Fayetteville, AR
Jackson, MS
Houston, TX
Muskogee, OK
Oklahoma City, OK
Shreveport, LA
Biloxi, MS
New Orleans, LA
17. VA Heart of Texas Health Care Netwo
Warning! Avoid using "Back" button
powered by MDO
Patient Selection
medical record
The current lookup site is New Orleans, LA.
To lookup a patient in a different site, choose from the list on the left.
If you don't see a list of sites in the control panel you are constrained to selecting patients only in the site at which you logged on. You will still get data from everywhere in VHA however.
If you need to do remote site patient lookups, you must contact your local Information Security Officer (ISO) and identify which sites you need to access and why you need the access.
Look for:
Find
Matches:
OK
Cancel
SSN:
DOB:
Done
Local intranet

VistAWeb Overview

- Intranet web application used to view remote patient information found in VistA, Department of Defense (DoD) and the Health Data Repository (HDR) databases.
- Alternative to CPRS Remote Data View (RDV)

- Queries the Health Data Repository (HDR)
  - access to patient clinical data residing in the HDR-Interim Messaging Solution (IMS) and HDR-Historical
  - Allergies, Vitals, Outpatient Pharmacy

- VistaWeb servers and software are maintained in Silver Spring, MD.

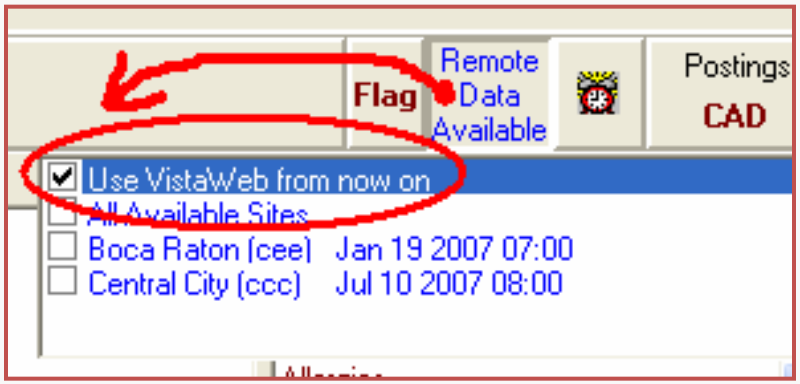
History

- Initially developed as “class III” (home grown) software in Ann Arbor (VISN 11)

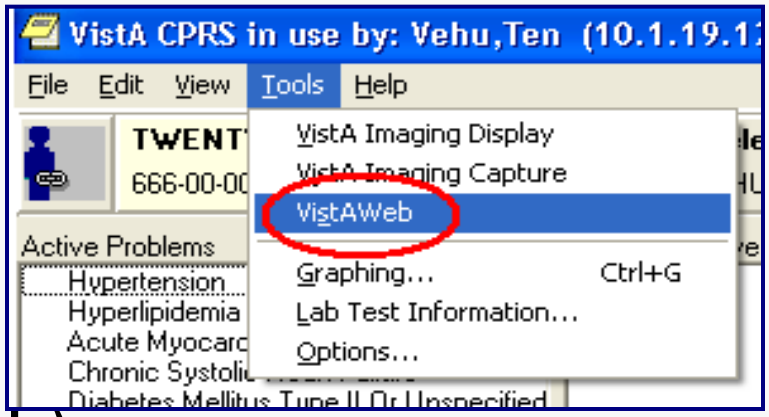
- Converted to nationally supported “class I” software and released in Spring of 2005

Ways to Access VistAWeb

- Remote Data Button in CPRS

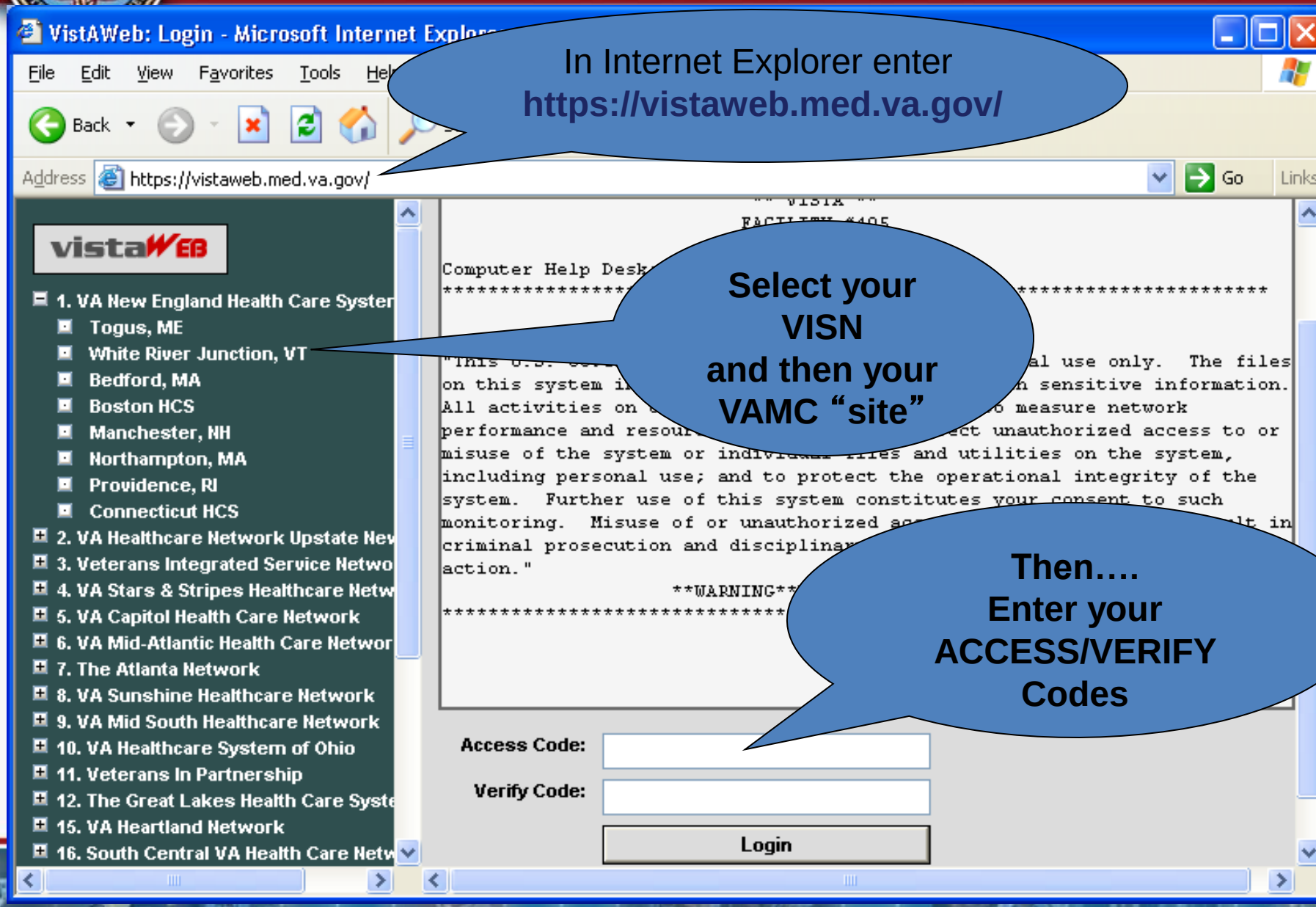


- CPRS Tools Menu

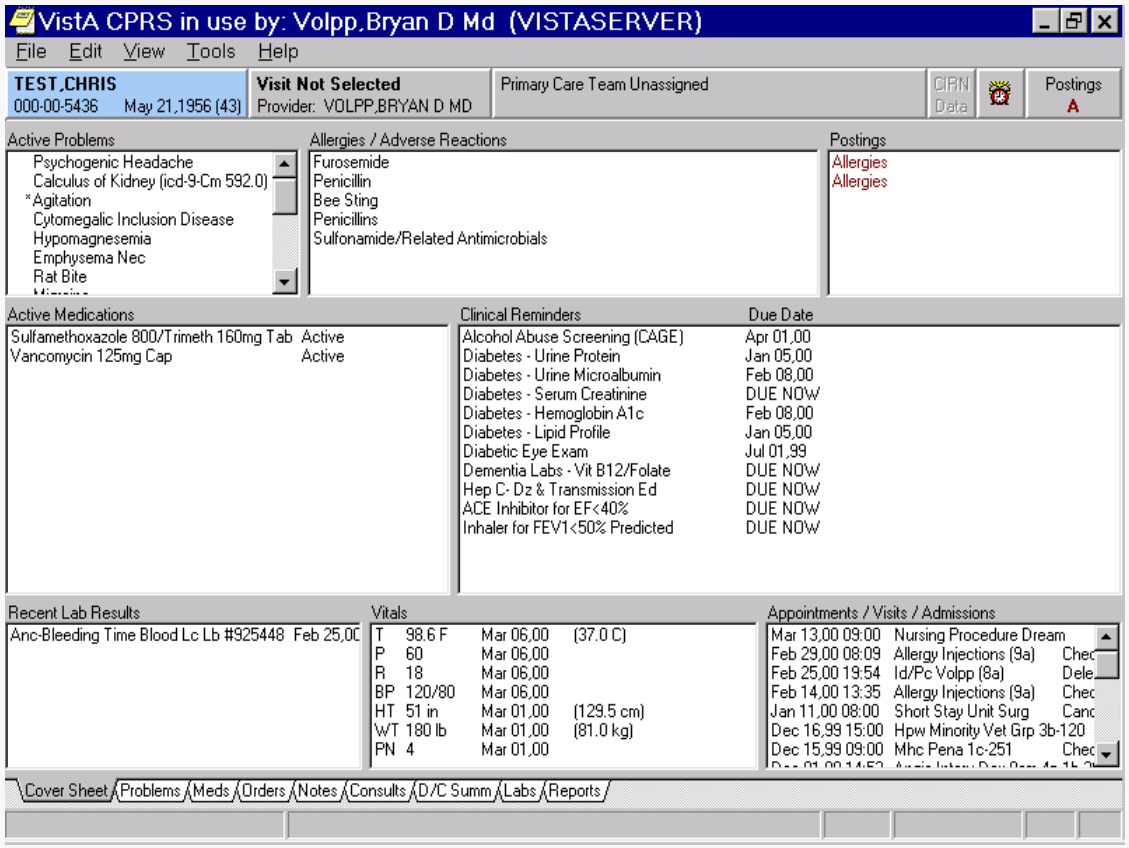


- Standalone webpage (URL)
  - example next slide

VistaWeb Access via website



1996 – Test Site for CPRS at the VA Medical Center in Seattle, WA

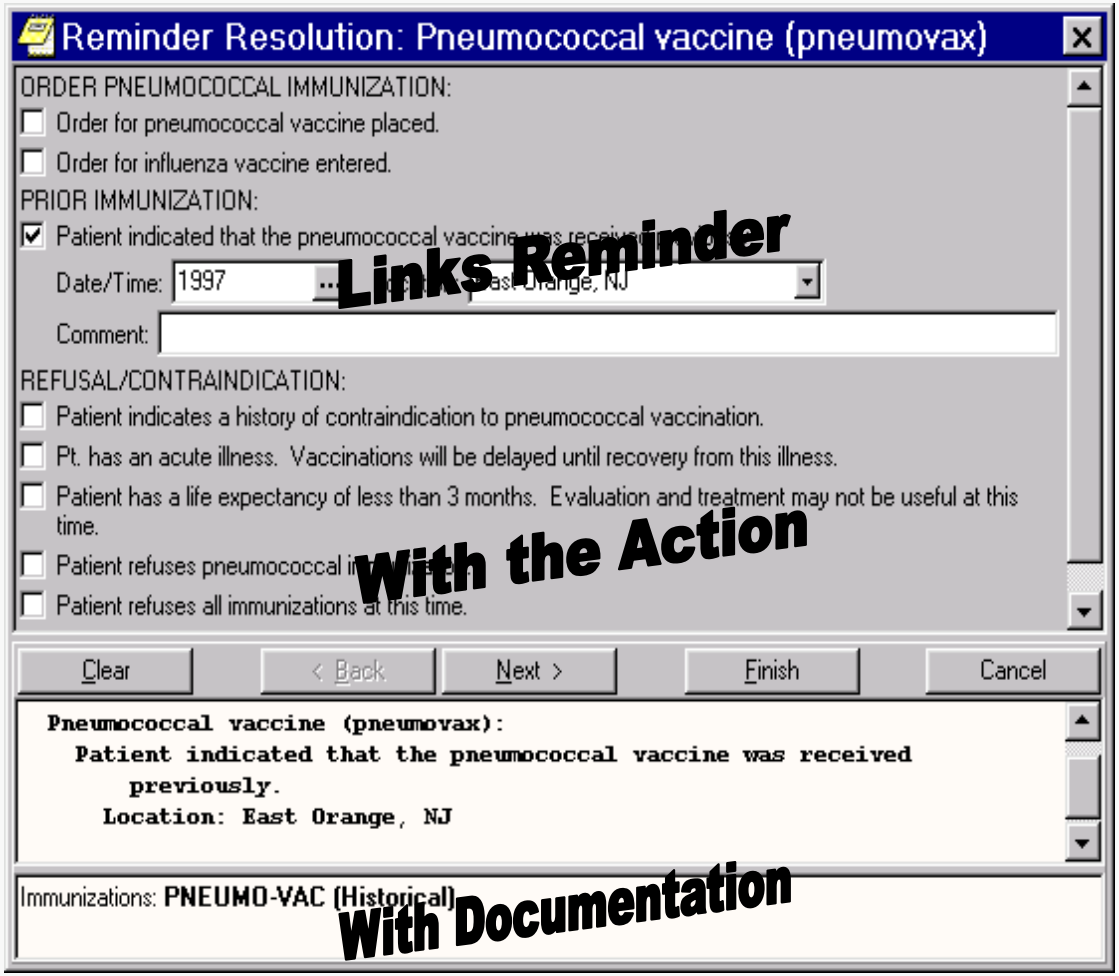


Importance of User Input and Integration into Workflow

VA's Clinicians:

"Have Clinical Decision Support alerts/reminders fit **OUR** workflow."

Clinical Reminders Dialogue Box



Transition in the 90's

- Major challenges included
  - Required physician entry of data but majority of physicians did not know how to type
  - Brought focus away from the patient and to the terminal/workstation and room design and ergonomics were such that this meant looking away from the patient

Major Challenges

- Performance was slow and became increasingly slow until much additional hardware was thrown at the system
- Training was a major challenge because of the limited hours available for physicians to be trained on the system
- Difficulty with the transition from paper to the electronic record; for a period of time needed to have information from both systems

- Additional versions came out quickly and it was difficult to keep up
- Lack of ability to provide feedback for specific issues except at a national level and prioritization was done nationally

- IT (IRM) became a vendor for PACS using VistA imaging and ended up competing with commercial systems and this made them slow to interface to commercial systems
  - System plays relatively poorly with third party systems
  - Would very much like to have an API to be able to have software find information within the system
- Database very unfriendly to perform searches for information

- Sign on process very slow and requires sign-in at workstation as a windows user and then sign in to CPRS which required separate processes and then another sign in to use the VistA imaging system
  - Users would not sign-out and this created security issues
  - Could take 5 minutes to sign in and sign out and major issue when going from room to room

- Despite national system no standards for how progress notes, radiology codes, and other things are coded and so difficult to share data
- Despite many efforts, difficult to transfer information from one VA hospital to another especially across VISN's and ability to share information between VA and DoD surprisingly constrained with no real ability to share images
- VA imaging was one of the last systems to utilize DICOM standard and was based on pathology TIFF solution

What Was Really Good About VA's VISTA

- CPRS Windows interface made access and searching for information easy and patient information was ubiquitously available throughout the enterprise
- Ability to plot laboratory data made it much easier to do trend analysis
- Chart metaphor made it easier for physicians, nurses, etc. to make transition from paper chart to EMR

- Images from all modalities including pathology, dermatology, ophthalmology, GI lab, OR, medical documents in addition to just radiology and nuclear medicine
- All healthcare providers were mandated to use VISTA and to do physician/provider order entry
  - Transcription was supported for a brief period of time for attending physicians only but this was eventually phased out
  - This was easier because the majority of progress notes in the VA were written by residents and fellows rather than VA attending physicians.

Intelligent System

- System does not incorporate intelligence I would like to see in 2013 system
  - Spell and grammar checker
  - System doesn't learn from my habits and acts as though it is meeting me for the first time each time
  - System doesn't allow me to search and list a subset of my patients

- System organized like paper chart with extremely limited search capability within a single patient and none across multiple patients
  - Can not search within a patient's record for information easily; later versions had primitive text search but was very difficult to find instances, say of rash in a patient

- Clinical alerts/reminders information overload with minimal intelligence with regard to presentation and ordering of these
- No good messaging system but instead requires users to sign onto VistA but physicians rotate in and out from University of Maryland

Issues

- Radiology package old terminal emulator and little done to enhance
- Alert fatigue, alerts not presented in intelligent manner
- System does not recognize or learn from me
- Not well integrated with third party software and difficult to add additional 3rd party software

- Look into core measures monitoring but seems limited and little in the way of decision support for diagnosis or treatment
- Sign in and sign out difficult
- Can't really search within or among different patient records to find similar patient

- Things such as pain not in the system
- Different ways progress notes, radiology studies, etc named across the system
- Designed like chart not optimized to be smart and searchable and intelligent and specific to needs of the user

Clinical Decision Support

- VISTA does a great job monitoring performance retrospectively:
  - Patients whose BP is within parameters
  - Counseling given for smoking cessation
  - Diabetics given tests for diabetic retinopathy
- However next generation systems should assist in diagnostic and treatment options in a real time fashion