Database & Methods Cyberseminar Series

Session #9. *Working with EHR Data Using VistAWeb, VINCI ChartReview Tool, and Joint Legacy Viewer*

The objectives of this cyberseminar are to:

- Describe electronic health record (EHR) data and chart review methods
- Identify strategies and considerations for conducting chart review
- Discuss available tools to support electronic chart review activities (Joint Legacy Viewer, VistAWeb, and VINCI ChartReview Tool)
- Present research studies using EHR data and chart review methods

Session roadmap

- Introduce Function QUERI research study
- Strategies, considerations and methods for conducting chart review with EHR data
- Tools to support electronic chart review activities
- VINCI Chart Review Tool
- Where to go for more help

Poll Question #1

I am interested in chart review of VA electronic health record (EHR) data primarily due to my role as:

a. Research investigator

b. Research staff (project coordinator, data manager, programmer, research assistant)

c. Clinical staff

d. Operations staff

e. Other role

Poll Question #2

What is your previous experience using chart review for VA research?

a. Have never done chart review
b. Used paper charts
c. Used local electronic health record only (CPRS)
d. Used central chart review (VistAWeb, CAPRI or JLV)
e. Used some other platform for central chart review (please describe using the Q&A function)

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Optimizing Function and Independence QUERI

PI: Susan N. Hastings

STRIDE

- *Inpatient mobility program for hospitalized older Veterans*
- 8 VA sites
- Cluster randomized trial

iHI-FIVES

- *Caregiver support training program*
- 8 VA sites
- Cluster-randomized trial

Group PT

- *Group Physical Therapy for Knee Osteoarthritis*
- 1 site (Durham VA)
- Local QI

Wang, Allen, Van Houtven et al, Imp Sci 2018

Optimizing Function and Independence QUERI

PI: Hastings

- Function QUERI is designed to
  - Evaluate implementation of Group PT, STRIDE, and iHI-FIVES
  - Examine impact on
    - Independence: Veteran discharge from the hospital to skilled nursing facility, hospital length of stay, days at home
    - Function: Function and Disability Instrument, health-related quality of life, depression, mobility in community, Zarit caregiver burden

Function QUERI
Optimizing Function and Independence
Quality Enhancement Research Initiative

https://www.queri.research.va.gov/programs/function.cfm

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EHR Data

- Begin with idea of data need
  - Determine patient eligibility
  - Determine study outcomes related to independence
  - Determine service/utilization outcomes

- Then, how to access the EHR data?
  - Central data warehouse (CDW) vs chart review of individual records

EHR Data: What source?

- CDW (or other database)
  - National repository of VHA admin and clinical data
  - Relational database organized into data domains
  - Best for structured data, limited for unstructured/semi-structured data (text-type data)
- Chart Review
  - Capture data not available in CDW
  - Validate CDW data extraction strategies/algorithms
  - Assess selection of CDW data domains/tables
  - When real-time data is needed

Chart Review: Data not readily available in CDW

- Text-based data
  - Group PT (QI) – data in progress note text, such as reasons for class non-attendance
  - STRIDE
    - Patient eligibility criteria - found in text fields such as progress notes
    - Discharge to nursing home outcome measure
- Scanned records and images
  - iHI-FIVES – days at home outcome: non-VA care records

Example: STRIDE eligibility criteria

- Eligibility criteria for patient sample includes:

Age>60	CDW
Community dwelling prior to hospital admission	CDW + chart review + phone screen
On medical ward >2 days	CDW
No bedrest order	CDW
Has decision making capacity	Chart review
No suicide flag	Chart review
No diagnosis of dementia	CDW
Able to ambulate prior to visit	Phone screen

Function QUERI
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Quality Enhancement Research Initiative

Chart Review: Validate CDW data extraction

- Outcome assessment strategy
  - STRIDE outcome: discharge to skilled nursing facility
    - No CDW field captured disposition to non-VA facility
    - CDW consults table

- Patient eligibility criteria
  - STRIDE bedrest order example
    - CDW orders table

Function QUERI: STRIDE

Chart review validation of CDW data: bedrest order

1. CDW data pull
2. VistAWeb chart review
3. Assess results
4. Consultation with site
5. Refine CDW algorithm and parameters (no bedrest order for ≥2 days)
6. Re-assess results

Chart Review: Other reasons

- Assess selection of CDW data domains/tables
  - E.g., a completed consult or appointment
  - Function QUERI example: Group PT class appts
    - Cross-check of CDW domain selection
    - 30% undercount
- Data about complex aspects of care/clinician judgment
  - E.g, care coordination between providers
- When real-time data is needed
  - E.g., to check patient status before contacting

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Chart Review of EHR data: What tool?

- What level of data is needed? Where is the study population?
  - Local facility - CPRS
  - VISN or National level – central chart review
- How many sites are to be studied, and are there study staff at the site?
  - Local site, or a few non-local sites
    - Study staff there – CPRS
    - No study staff there – central chart review
  - Several sites – central chart review

Tools for electronic central chart review

VistAWeb

- Developed to facilitate sharing of individual patient data among patient's providers at other VAMCs
- Read-only access to patient data at all VA sites where received care, organized chronologically
- Scheduled to be decommissioned

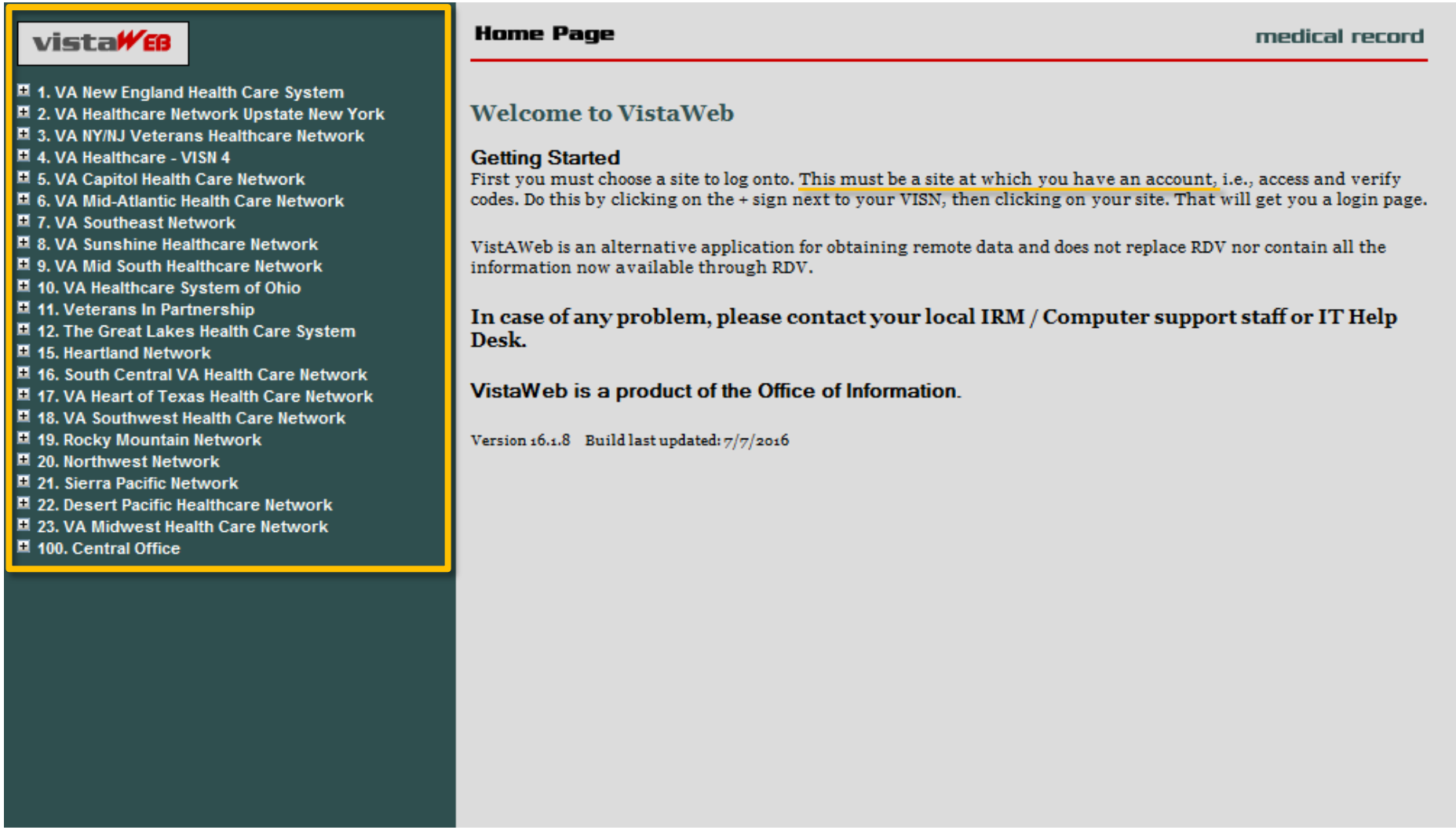
Joint Legacy Viewer (JLV)

- User-friendly interface (widgets)
- Can customize screen with widgets; sort, filter, save views; reports
- Better organized and integrated info
- Button for JLV from CPRS (used to be VistAWeb)
- Potential drawback – lag time at startup and toggling between widgets

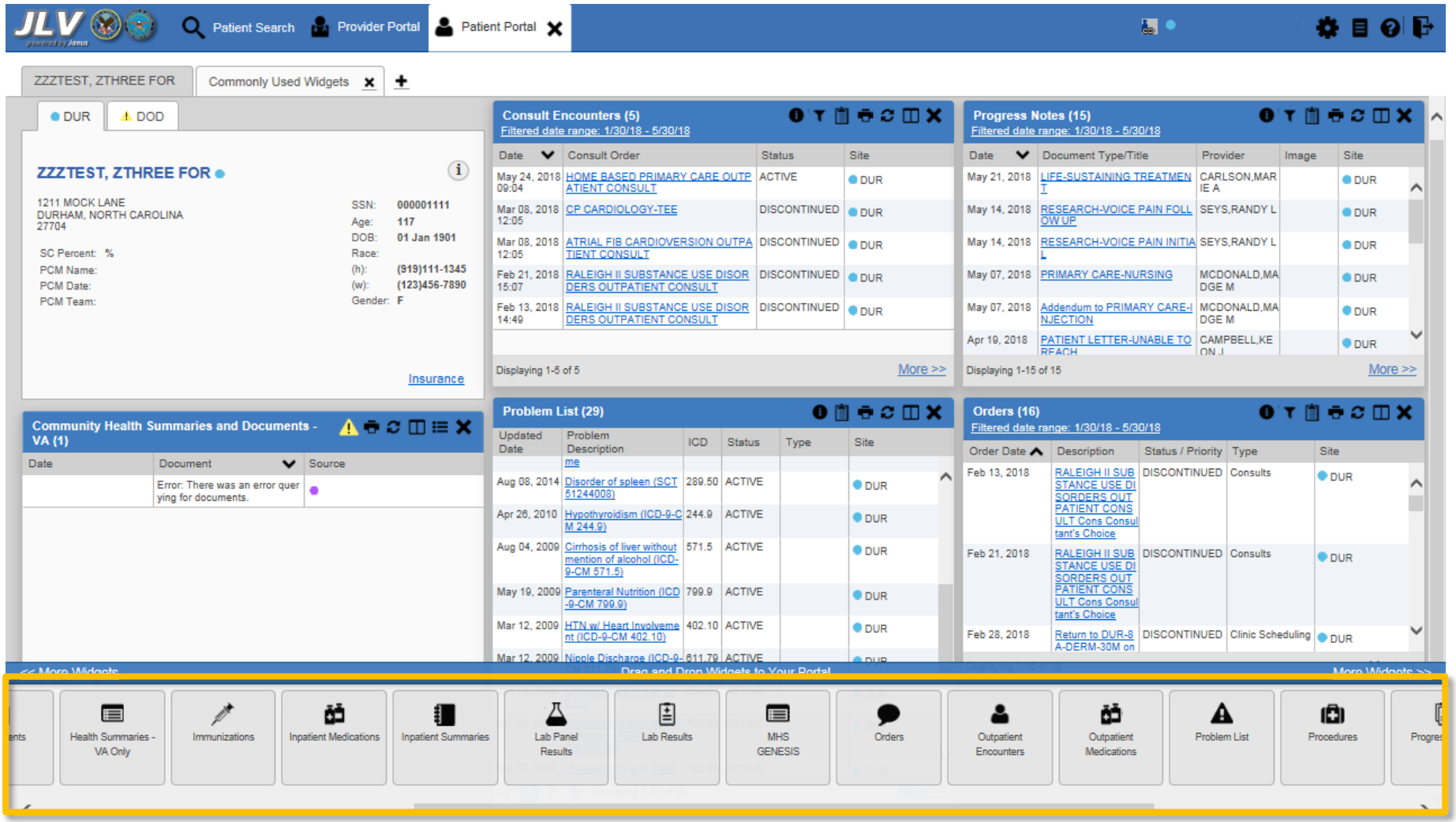
CAPRI

- Developed to facilitate coordination between Veteran Benefits and Veteran Health Administration

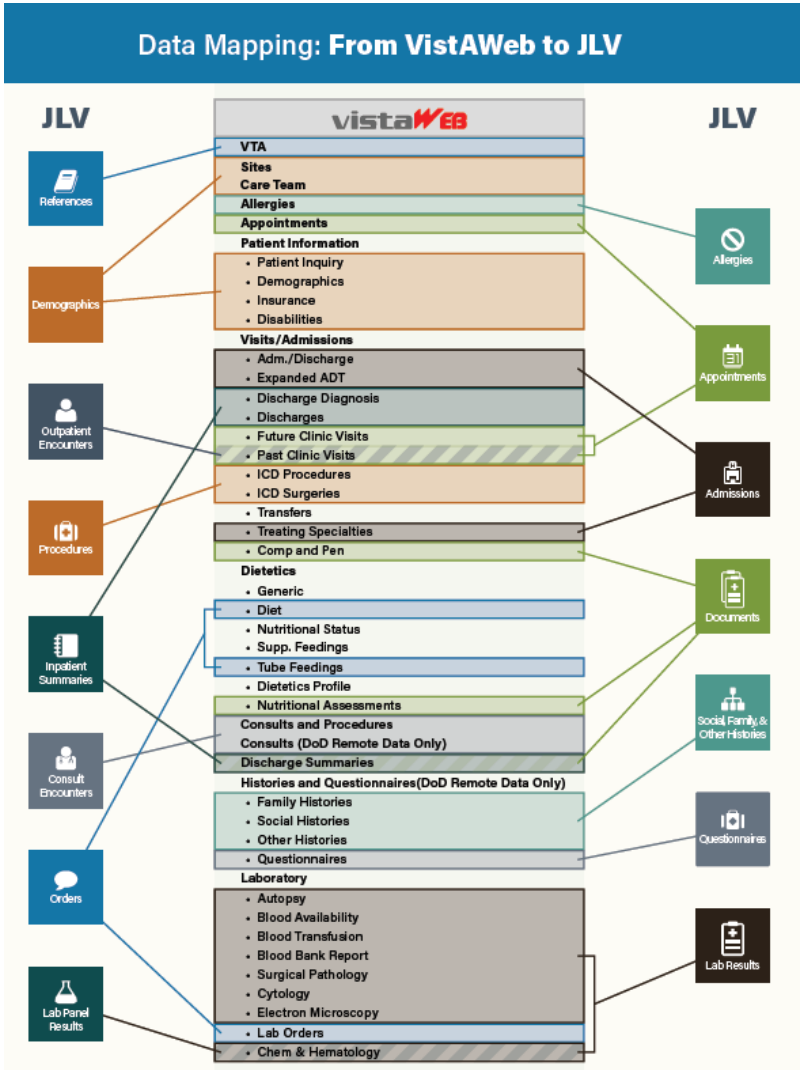
VistAWeb – login page



JLV – patient portal



VistAWeb – JLV mapping

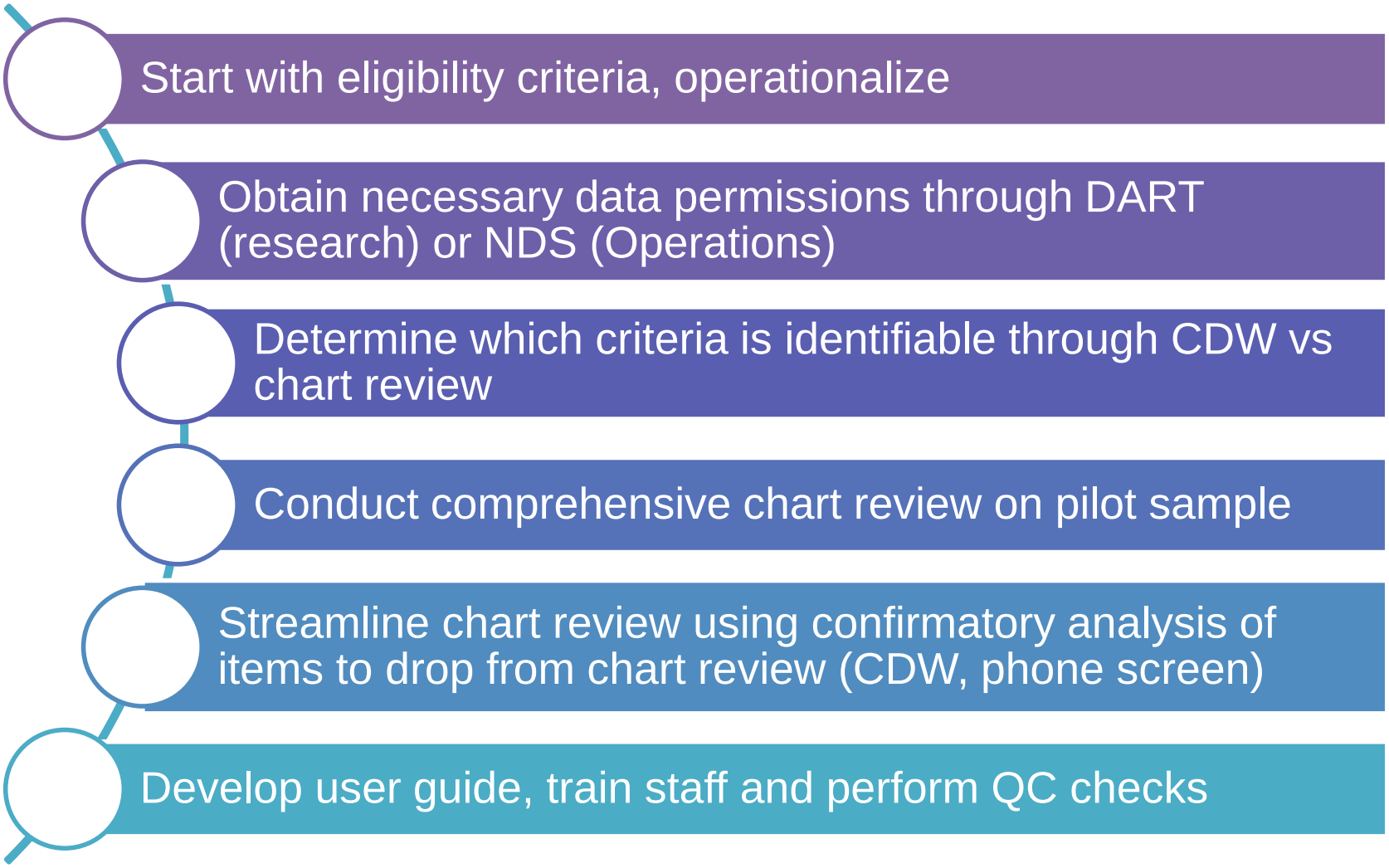


https://vaww.oed.portal.va.gov/pm/iehr/vista_evolution/JLV_

Accessing EHR Tools

- Research: Complete a DART request
  - Ensure data sources, locations, tools included in IRB protocol submission
  - Specify “national electronic health records” (and in HIPAA waiver, too)
- Operations/QI: Through NDS
  - Mention operational partner in project description
  - Request national vs site specific access
- More info and instructions on VHA Data Portal
  - http://vaww.vhadataportal.med.va.gov

Procedures for Screening Patients with Chart Review



Function QUERI: STRIDE Chart Review User Guide

Exclusion Criteria	VAMC #1	VAMC #2
Death	Select “Patient Information” tab, then select “patient inquiry”, scroll down to death information section	Select “Patient Information” tab, then select “patient inquiry”, scroll down to death information section
Index admission was transfer in from another hospital	Select “Visits and admissions” tab then select “transfers” to view recent transfers	Select “Visits and admissions” tab then select “transfers” to view recent transfers
Lacks decision-making capacity (past 1 yr)	Select “Progress notes’ tab, select and search the “Nursing admission assessment” note for a neurological assessment to find a statement about decision making capacity. If nothing is found; assume DMC is intact. (Note: Check the “Wandering Risk Assessment” within the nursing admission assessment note)	Select “Progress notes’ tab, select and search the “Emergency Department Nursing Note” for a neurological assessment to find a statement about DMC. OR Search for “NUR Admission Database”. If nothing is found; assume DMC is intact.
Current high-risk suicide flag	Select “Other notes” tab, then select “clinical warnings” section. Search section for high risk of suicide flag.	Select “Other notes” tab, then select “clinical warnings” section. Search section for high risk of suicide flag.
Outcome	VAMC #1	VAMC #2
Where was the patient discharged to?	Select “Discharge summaries” tab then search through most recent discharge note to find to “discharge location”	Select “Visits and admissions” tab then select “Discharges” to find relevant discharge date. Location will be found under “disposition place” section of note.

Lessons Learned

Function QUERI
Optimizing Function and Independence
Quality Enhancement Research Initiative

- Chart review is best way to collect complex clinical chart data
- Allot time at the beginning of study to determine best methods for EHR data extraction and validation of findings
- Detailed chart review user guide - key to standardize review and increase efficiency
- Central chart review may take a bit more time than CPRS
- Split up chart review duties if possible on team; good chunked task

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Poll Question #3

Have you ever used the VINCI ChartReview tool for research?

a. Umm what's the VINCI ChartReview tool?
b. I've heard of it, but I've never used it.
c. Yes, I have used it a few times.
d. Yes! I use it all the time.

Poll Question #4

What has been the largest barrier to conducting research in the VA?

a. Lack of knowledge of tools and resources
b. Access to data/ environment issues
c. Haven't had the need or chance to conduct research in the VA
d. No problems or barriers

Abstraction vs. Annotation

Abstraction

Summation of all parts (less granular)

High level capture

Can include information from annotation

Annotation

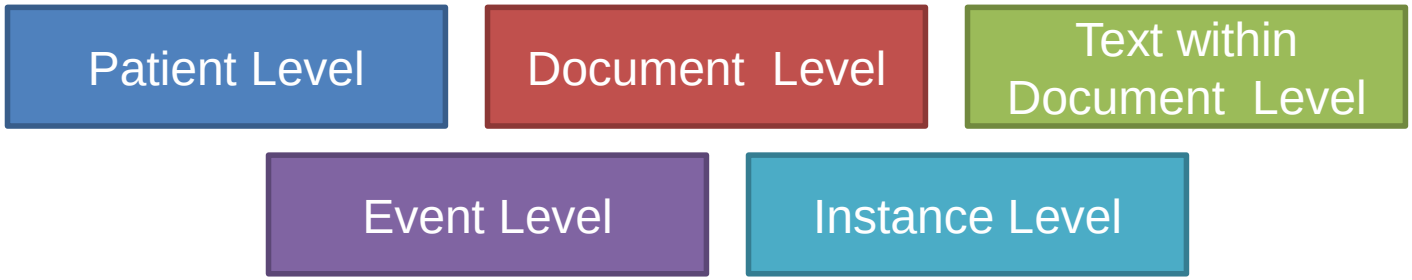
Detailed information (more granular)

Captured concept by concept

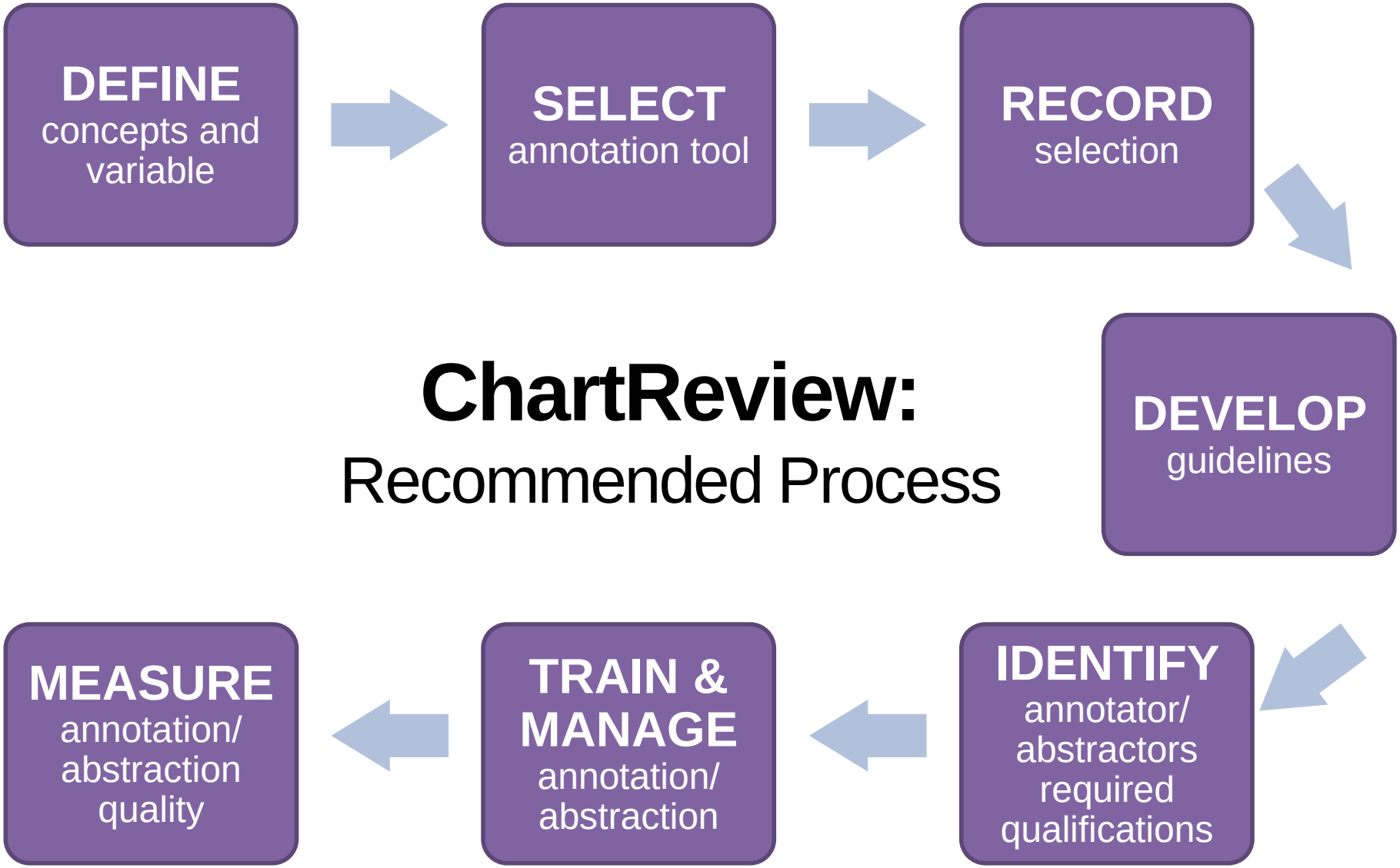
Can have associated additional information

ChartReview: Functionality

- Multiple Levels of Classification



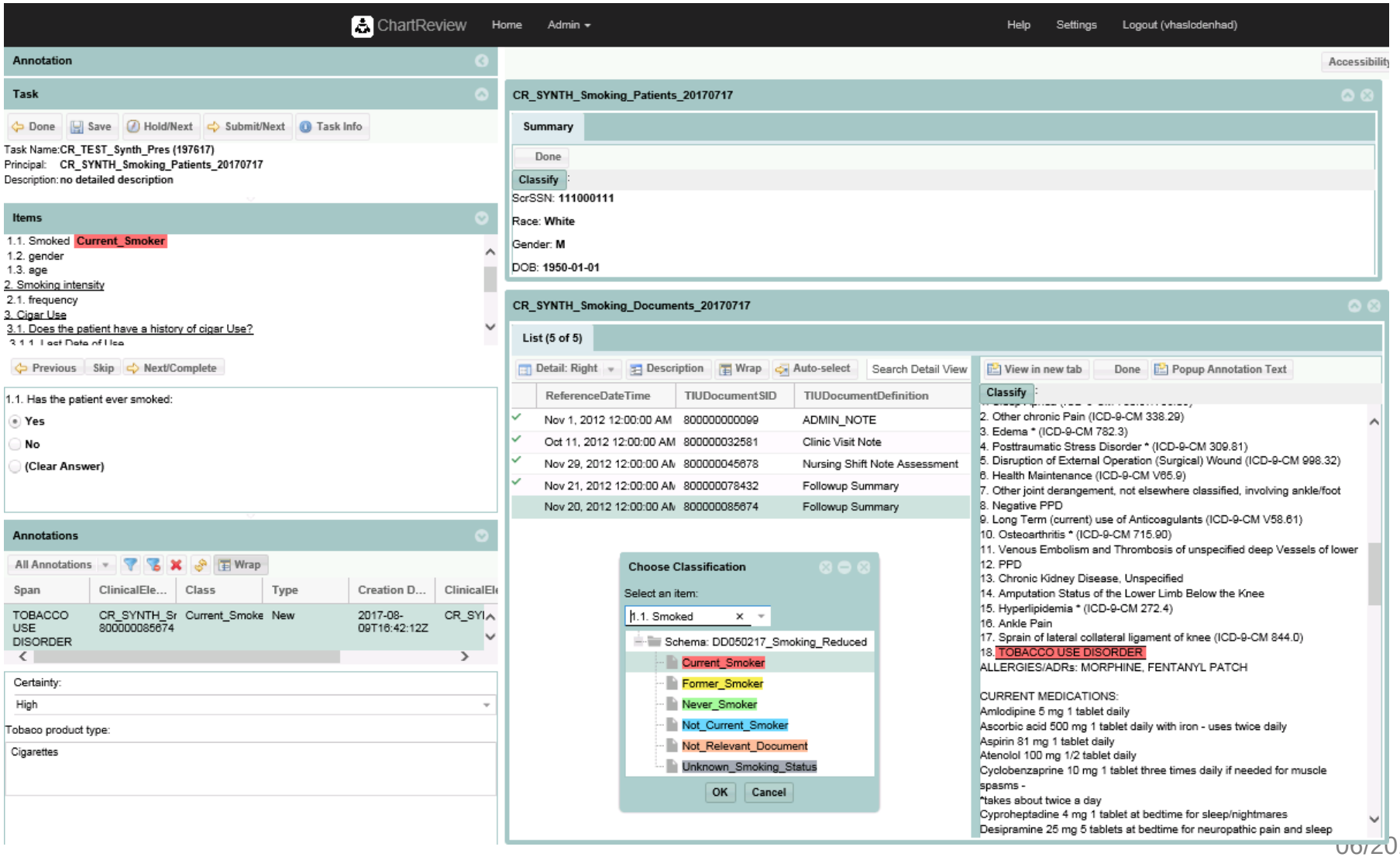
- Writes to database
- Reusable created elements and schemas
- Evaluation tool based abstraction and annotation
- Exportable reports
- Enhanced project management



ChartReview:
Recommended Process

- IRR (Inter-Rater Reliability)
- IAA (Inner Annotator Agreement)
- Kappa coefficient

ChartReview: User Interface



ChartReview: Projects Examples

Colonoscopy

Reviewed Colonoscopy and adenoma data across multiple documents per patient

Peripheral Artery Disease (PAD)

Analysis of multiple data sources to determine PAD, amputation, revascularization status

AQual (Alcohol Quality Measures)

multiyear study of the link between improvements in processes of care for alcohol misuse and improvements in outcomes

Travel History

Capture for NLP development mentions of travel and its correlation with Zika Virus, dengue virus, and chikungunya virus

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Additional Resources

VINCI Services

VINCI@va.gov

VINCIServices@va.gov

- Concierge
- Data Provisioning
- Compliance
- Feasibility
- Recruitment
- **Annotation/ChartReview**
- Natural Language Processing
- Analytics and Data Services
- Application Development

VIReC Options for Specific Questions

HSRData Listserv

- Community knowledge sharing
- ~1,300 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting http://vaww.virec.research.va.gov/Support/HSRData-L.htm (VA Intranet)

HelpDesk

- Individualized support

virec@va.gov

(708) 202-2413

VIReC RESEARCHERS' GUIDE TO VA DATA

Quick links for VA data resources

Quick Guide: Resources for Using VA Data
http://vaww.virec.research.va.gov/Toolkit/QG-Resources-for-Using-VA-Data.pdf (VA Intranet)

VIReC: http://vaww.virec.research.va.gov/Index.htm (VA Intranet)

VIReC Cyberseminars: http://www.virec.research.va.gov/Resources/Cyberseminars.asp

VHA Data Portal: http://vaww.vhadataportal.med.va.gov/Home.aspx (VA Intranet)

VINCI: http://vaww.vinci.med.va.gov/vincicentral/ (VA Intranet)

Health Economics Resource Center (HERC): http://vaww.herc.research.va.gov (VA Intranet)

CDW: https://vaww.cdw.va.gov/Pages/CDWHome.aspx (VA Intranet)

Archived cyberseminar: What can the HSR&D Resource Centers do for you?
http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=101

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Next session:
Monday, July 9th at 1pm ET

Database & Methods Cyberseminar Series

Phenotyping Physiologic Measurement of Lung Function in the VA EHR Using Automated Tools

Kathleen Akgün, MD, MS
VA Connecticut Healthcare System
Yale School of Medicine

VIReC
RESEARCHERS' GUIDE TO VA DATA