

## **Database & Methods Cyberseminar Series**

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**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**  
 Optimizing Function and Independence  
 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  $\geq 2$  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

**vistaWEB**

- ❏ 1. VA New England Health Care System
- ❏ 2. VA Healthcare Network Upstate New York
- ❏ 3. VA NY/NJ Veterans Healthcare Network
- ❏ 4. VA Healthcare - VISN 4
- ❏ 5. VA Capitol Health Care Network
- ❏ 6. VA Mid-Atlantic Health Care Network
- ❏ 7. VA Southeast Network
- ❏ 8. VA Sunshine Healthcare Network
- ❏ 9. VA Mid South Healthcare Network
- ❏ 10. VA Healthcare System of Ohio
- ❏ 11. Veterans In Partnership
- ❏ 12. The Great Lakes Health Care System
- ❏ 15. Heartland Network
- ❏ 16. South Central VA Health Care Network
- ❏ 17. VA Heart of Texas Health Care Network
- ❏ 18. VA Southwest Health Care Network
- ❏ 19. Rocky Mountain Network
- ❏ 20. Northwest Network
- ❏ 21. Sierra Pacific Network
- ❏ 22. Desert Pacific Healthcare Network
- ❏ 23. VA Midwest Health Care Network
- ❏ 100. Central Office

**Home Page**

medical record

## Welcome to VistaWeb

### Getting Started

First you must choose a site to log onto. This must be a site at which you have an account, i.e., access and verify codes. Do this by clicking on the + sign next to your VISN, then clicking on your site. That will get you a login page.

VistaWeb is an alternative application for obtaining remote data and does not replace RDV nor contain all the information now available through RDV.

**In case of any problem, please contact your local IRM / Computer support staff or IT Help Desk.**

**VistaWeb is a product of the Office of Information.**

Version 16.1.8 Build last updated: 7/7/2016

# JLV – patient portal

JLV powered by Janus

ZZZTEST, ZTHREE FOR Commonly Used Widgets

**ZZZTEST, ZTHREE FOR**

1211 MOCK LANE  
DURHAM, NORTH CAROLINA  
27704

SSN: 000001111  
Age: 117  
DOB: 01 Jan 1901  
Race:  
(h): (919)111-1345  
(w): (123)456-7890  
Gender: F

SC Percent: %  
PCM Name:  
PCM Date:  
PCM Team:

[Insurance](#)

**Consult Encounters (5)**  
Filtered date range: 1/30/18 - 5/30/18

Date	Consult Order	Status	Site
May 24, 2018 09:04	<a href="#">HOME BASED PRIMARY CARE OUTPATIENT CONSULT</a>	ACTIVE	DUR
Mar 08, 2018 12:05	<a href="#">CP CARDIOLOGY-TEE</a>	DISCONTINUED	DUR
Mar 08, 2018 12:05	<a href="#">ATRIAL FIB CARDIOVERSION OUTPATIENT CONSULT</a>	DISCONTINUED	DUR
Feb 21, 2018 15:07	<a href="#">RALEIGH II SUBSTANCE USE DISORDERS OUTPATIENT CONSULT</a>	DISCONTINUED	DUR
Feb 13, 2018 14:49	<a href="#">RALEIGH II SUBSTANCE USE DISORDERS OUTPATIENT CONSULT</a>	DISCONTINUED	DUR

Displaying 1-5 of 5 [More >>](#)

**Progress Notes (15)**  
Filtered date range: 1/30/18 - 5/30/18

Date	Document Type/Title	Provider	Image	Site
May 21, 2018	<a href="#">LIFE-SUSTAINING TREATMENT</a>	CARLSON, MARIE A		DUR
May 14, 2018	<a href="#">RESEARCH-VOICE PAIN FOLLOW UP</a>	SEYS, RANDY L		DUR
May 14, 2018	<a href="#">RESEARCH-VOICE PAIN INITIAL</a>	SEYS, RANDY L		DUR
May 07, 2018	<a href="#">PRIMARY CARE-NURSING</a>	MCDONALD, MADGE M		DUR
May 07, 2018	<a href="#">Addendum to PRIMARY CARE-INJECTION</a>	MCDONALD, MADGE M		DUR
Apr 19, 2018	<a href="#">PATIENT LETTER-UNABLE TO REACH</a>	CAMPBELL, KEON J		DUR

Displaying 1-15 of 15 [More >>](#)

**Community Health Summaries and Documents - VA (1)**

Date	Document	Source
	Error: There was an error querying for documents.	

**Problem List (29)**

Updated Date	Problem Description	ICD	Status	Type	Site
Aug 08, 2014	<a href="#">Disorder of spleen (SCT 81244008)</a>	289.50	ACTIVE		DUR
Apr 26, 2010	<a href="#">Hypothyroidism (ICD-9-CM 244.9)</a>	244.9	ACTIVE		DUR
Aug 04, 2009	<a href="#">Cirrhosis of liver without mention of alcohol (ICD-9-CM 571.5)</a>	571.5	ACTIVE		DUR
May 19, 2009	<a href="#">Parenteral Nutrition (ICD-9-CM 799.9)</a>	799.9	ACTIVE		DUR
Mar 12, 2009	<a href="#">HTN w/ Heart Involvement (ICD-9-CM 402.10)</a>	402.10	ACTIVE		DUR
Mar 12, 2009	<a href="#">Nipple Discharge (ICD-9- 811.79)</a>	811.79	ACTIVE		DUR

**Orders (16)**  
Filtered date range: 1/30/18 - 5/30/18

Order Date	Description	Status / Priority	Type	Site
Feb 13, 2018	<a href="#">RALEIGH II SUBSTANCE USE DISORDERS OUTPATIENT CONSULT Cons Consultant's Choice</a>	DISCONTINUED	Consults	DUR
Feb 21, 2018	<a href="#">RALEIGH II SUBSTANCE USE DISORDERS OUTPATIENT CONSULT Cons Consultant's Choice</a>	DISCONTINUED	Consults	DUR
Feb 28, 2018	<a href="#">Return to DUR-8 A-DERM-30M on</a>	DISCONTINUED	Clinic Scheduling	DUR

Drag and Drop Widgets to Your Portal

Health Summaries - VA Only

Immunizations

Inpatient Medications

Inpatient Summaries

Lab Panel Results

Lab Results

MHS GENESIS

Orders

Outpatient Encounters

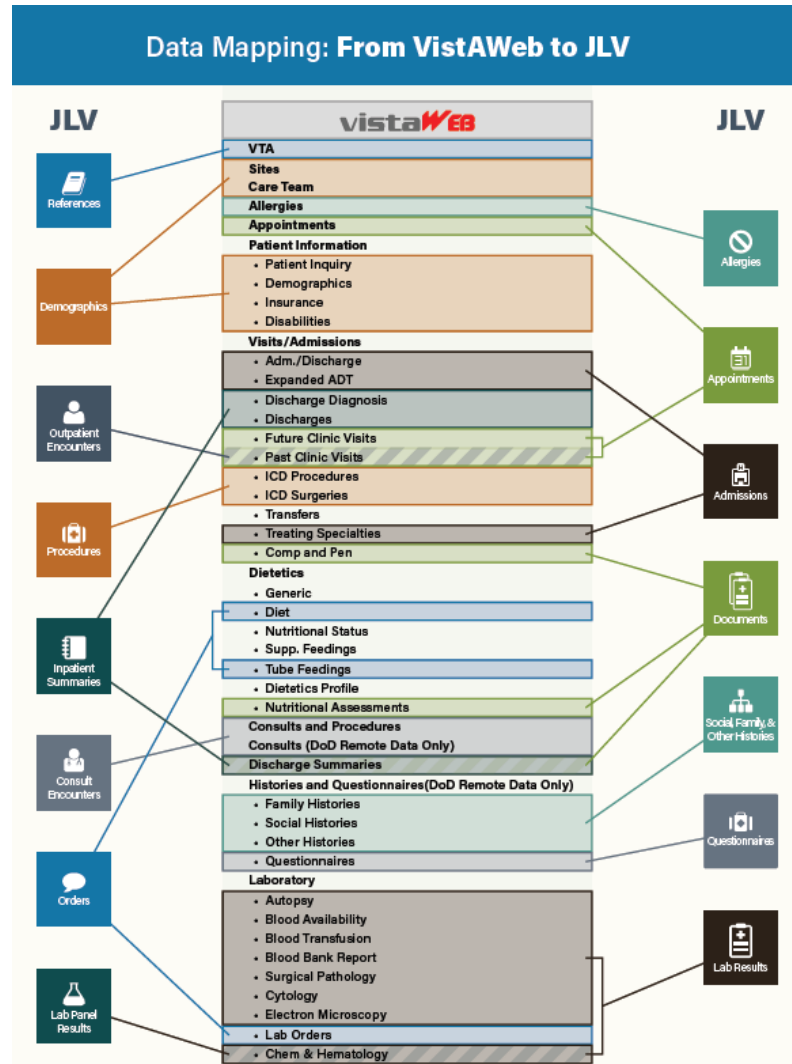
Outpatient Medications

Problem List

Procedures

Progress

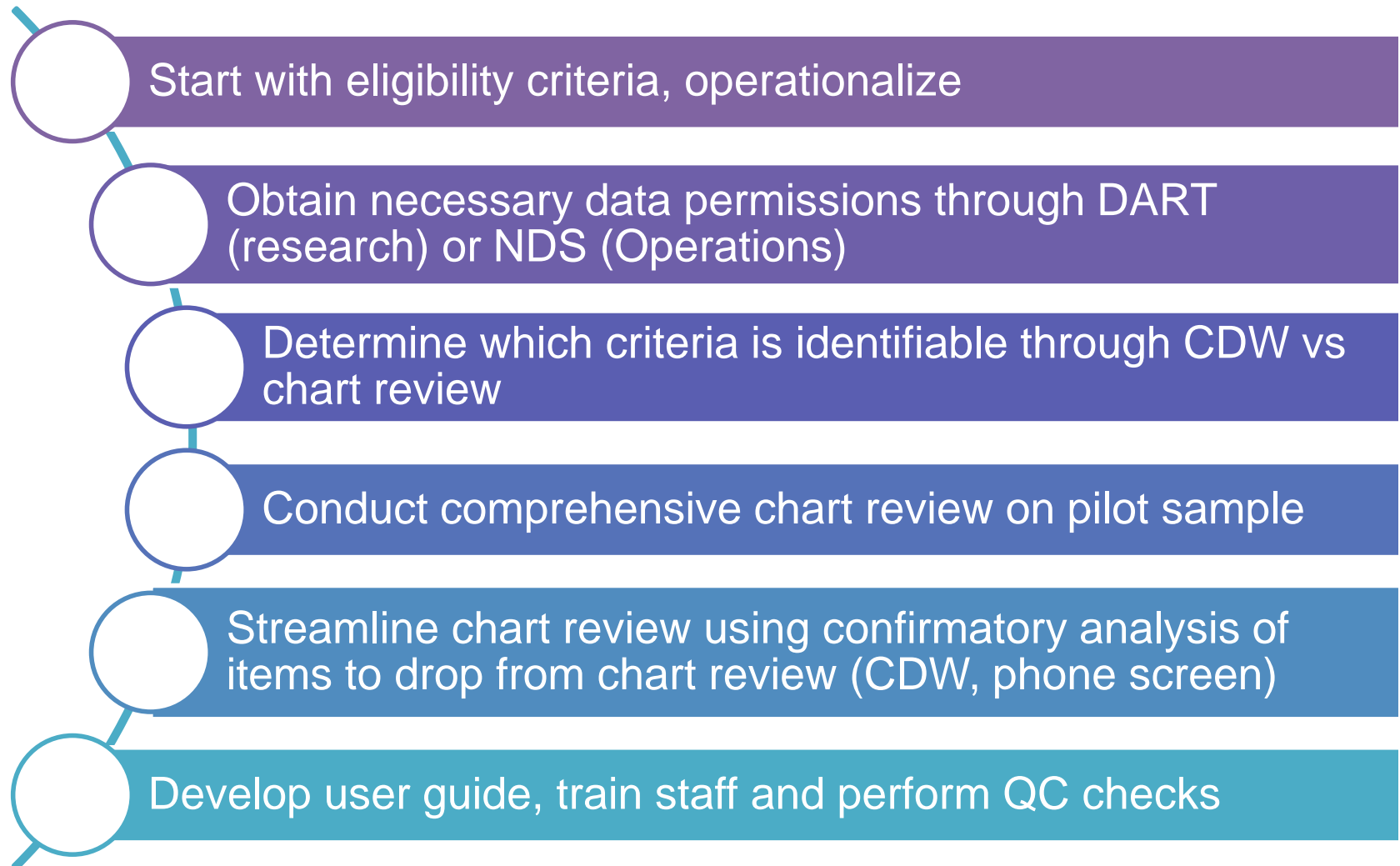
# VistAWeb – JLV mapping



# 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
<b>Death</b>	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
<b>Index admission was transfer in from another hospital</b>	Select "Visits and admissions" tab then select "transfers" to view recent transfers	Select "Visits and admissions" tab then select "transfers" to view recent transfers
<b>Lacks decision-making capacity (past 1 yr)</b>	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.
<b>Current high-risk suicide flag</b>	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
<b>Where was the patient discharged to?</b>	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

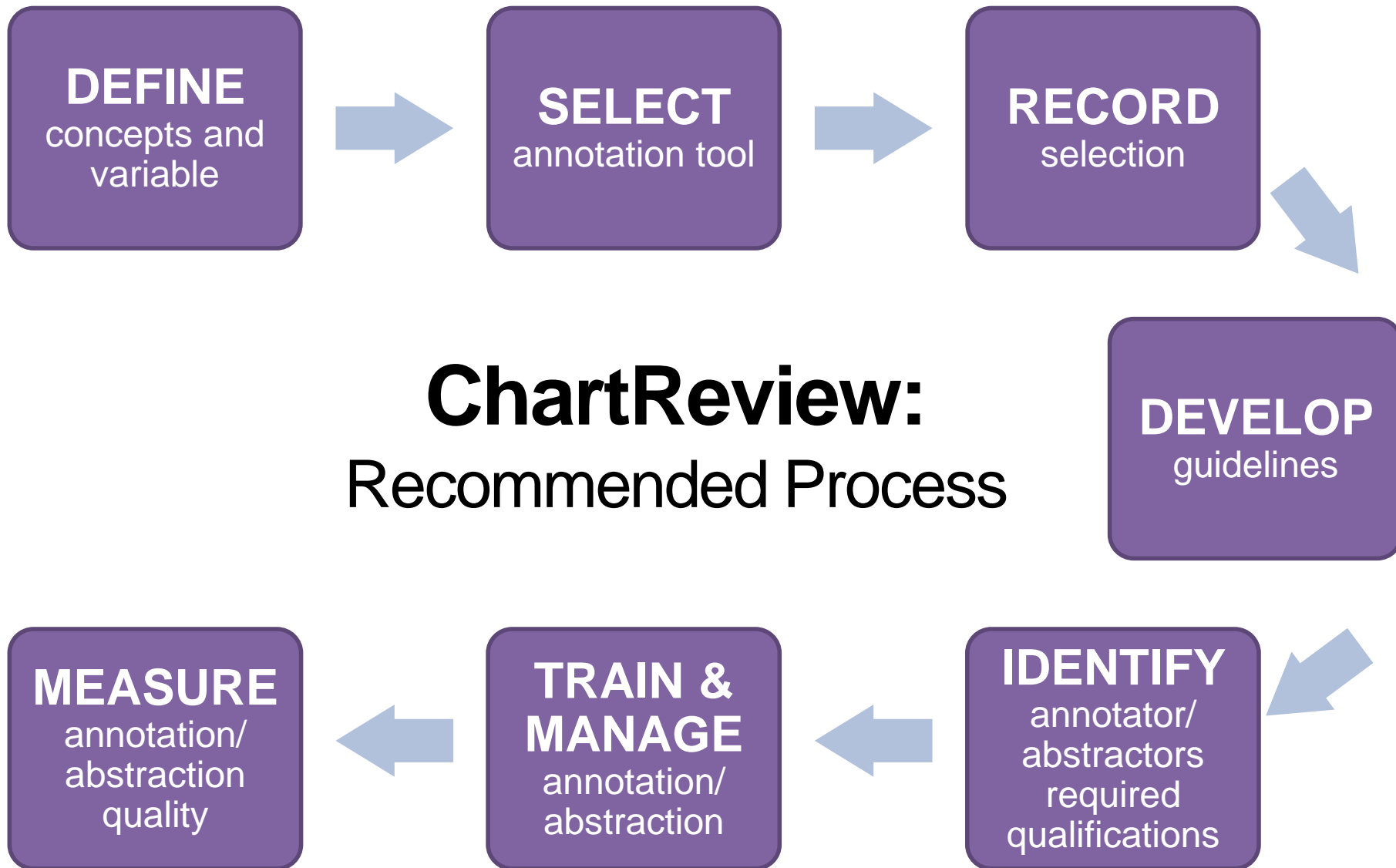
Can have associated  
additional information

# 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



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



# ChartReview: User Interface

**ChartReview** Home Admin ▾ Help Settings Logout (vhaslodenhad)

**Annotation** Accessibility

**Task**

Done Save Hold/Next Submit/Next Task Info

Task Name: CR\_TEST\_Synth\_Pres (197617)  
Principal: CR\_SYNTH\_Smoking\_Patients\_20170717  
Description: no detailed description

**Items**

1.1. Smoked **Current\_Smoker**  
1.2. gender  
1.3. age  
2. Smoking intensity  
2.1. frequency  
3. Cigar Use  
3.1. Does the patient have a history of cigar Use?  
3.1.1 Last Date of Use

Previous Skip Next/Complete

1.1. Has the patient ever smoked:  
 Yes  
 No  
 (Clear Answer)

**Annotations**

All Annotations [Filter] [Wrap]

Span	ClinicalEle...	Class	Type	Creation D...	ClinicalEl...
TOBACCO USE DISORDER	CR_SYNTH_Sr 800000085674	Current_Smoke	New	2017-08-09T16:42:12Z	CR_SYI...

Certainty: High

Tobacco product type: Cigarettes

**CR\_SYNTH\_Smoking\_Patients\_20170717**

**Summary**

Done

**Classify**

ScrSSN: 111000111  
Race: White  
Gender: M  
DOB: 1950-01-01

**CR\_SYNTH\_Smoking\_Documents\_20170717**

List (5 of 5)

Detail: Right Description Wrap Auto-select Search Detail View View in new tab Done Popup Annotation Text

	ReferenceDateTime	TIUDocumentSID	TIUDocumentDefinition
✓	Nov 1, 2012 12:00:00 AM	800000000099	ADMIN_NOTE
✓	Oct 11, 2012 12:00:00 AM	800000032581	Clinic Visit Note
✓	Nov 29, 2012 12:00:00 AM	800000045678	Nursing Shift Note Assessment
✓	Nov 21, 2012 12:00:00 AM	800000078432	Followup Summary
	Nov 20, 2012 12:00:00 AM	800000085674	Followup Summary

**Classify**

2. Other chronic Pain (ICD-9-CM 338.29)
3. Edema \* (ICD-9-CM 782.3)
4. Posttraumatic Stress Disorder \* (ICD-9-CM 309.81)
5. Disruption of External Operation (Surgical) Wound (ICD-9-CM 998.32)
6. Health Maintenance (ICD-9-CM V85.9)
7. Other joint derangement, not elsewhere classified, involving ankle/foot
8. Negative PPD
9. Long Term (current) use of Anticoagulants (ICD-9-CM V58.61)
10. Osteoarthritis \* (ICD-9-CM 715.90)
11. Venous Embolism and Thrombosis of unspecified deep Vessels of lower
12. PPD
13. Chronic Kidney Disease, Unspecified
14. Amputation Status of the Lower Limb Below the Knee
15. Hyperlipidemia \* (ICD-9-CM 272.4)
16. Ankle Pain
17. Sprain of lateral collateral ligament of knee (ICD-9-CM 844.0)
18. **TOBACCO USE DISORDER**

ALLERGIES/ADRS: MORPHINE, FENTANYL PATCH

**CURRENT MEDICATIONS:**  
Amlodipine 5 mg 1 tablet daily  
Ascorbic acid 500 mg 1 tablet daily with iron - uses twice daily  
Aspirin 81 mg 1 tablet daily  
Atenolol 100 mg 1/2 tablet daily  
Cyclobenzaprine 10 mg 1 tablet three times daily if needed for muscle spasms -  
\*takes about twice a day  
Cyproheptadine 4 mg 1 tablet at bedtime for sleep/nightmares  
Desipramine 25 mg 5 tablets at bedtime for neuropathic pain and sleep

**Choose Classification**

Select an item:

1.1. Smoked x

Schema: DD050217\_Smoking\_Reduced

- Current\_Smoker
- Former\_Smoker
- Never\_Smoker
- Not\_Current\_Smoker
- Not\_Relevant\_Document
- Unknown\_Smoking\_Status

OK Cancel

# 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

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# VINCI Services

[VINCI@va.gov](mailto:VINCI@va.gov)

[VINCIServices@va.gov](mailto: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](mailto:virec@va.gov)

(708) 202-2413

## 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.vhadatportal.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](http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=101)

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[virec@va.gov](mailto:virec@va.gov)

708-202-2413





**Next session:  
Monday, July 9<sup>th</sup> at 1pm ET**



## **Database & Methods Cyberseminar Series**

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*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*