



## VIReC Database & Methods Cyberseminar Series

### Session 1

# Overview of VA Data, Information Systems, National Databases and Research Uses

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Acting Director, VA Information Resource Center*

October 7, 2019

# Meet VIREC (VA Information Resource Center)

## Mission

To advance VA capacity to use data effectively for research and quality improvement and to foster communication between data users and the VA healthcare community.

*Funded by VA Health Service Research & Development (HSR&D)*

## Activities

### DEVELOP

data knowledge and methods

Factbooks and User Guides  
Summary information  
Technical documentation  
Cyberseminars  
(hosted by CIDER)

### DISSEMINATE

resources for using data

Intranet website  
VHA Data Portal  
(collaboration with NDS & VINCI)  
HelpDesk 1:1 consultation  
HSRData Listserv

### IMPROVE

data access and availability

Advocate on national committees & workgroups  
Real SSN request reviews  
VA/CMS\* Data for Research  
VA REDCap\*\*



# Database & Methods Cyberseminar Series

*Informational seminars to help VA researchers access and use VA databases.*

## Topics

- VA data sources & data access systems
- Application of VA data to research and quality improvement questions
- Limitations of secondary data use
- Resources to support VA data use



## FY20 Database & Methods (DBM) Series

First Mondays\* | 1:00pm-2:00pm ET

\*Schedule shifts by one week in event of VA holiday.

Date	Topic
10/7/2019	Overview of VA Data, Information Systems, National Databases and Research Uses
11/4/2019	Requesting Approval for Access to VA Data
12/9/2019	Meet VIREC: The Researcher's Guide to VA Data

**For more information on upcoming and archived DBM sessions:**

<https://www.virec.research.va.gov/Cyberseminars/Database-Methods.asp>

### Additional topics TBA, including...

- VA Pharmacy Data
- Mortality Ascertainment & Cause of Death
- VA Medicare Data (VA/CMS)
- Race & Ethnicity Data
- Using Joint Legacy Viewer for Research
- Healthcare Utilization Data
- VA REDCap
- Focused Sessions on Uses of CDW Data

**Stay tuned for schedule updates!**

# Where can I download a copy of the slides?



## SAMPLE EMAIL

Dear Hira Khan,

This is a reminder that you're a panelist for "Pharmacoepidemiological Designs: Using CDW Lab Data and Drug Data for Effectiveness Research" which will begin in 4 Hours on:

Mon, May 7, 2018 1:00 PM - 2:00 PM EDT

Add to Calendar: [Outlook® Calendar](#) | [Google Calendar™](#) | [iCal®](#)

Please send your questions, comments and feedback to: [cyberseminar@va.gov](mailto:cyberseminar@va.gov)

Please download a copy of today's slides here:

[http://www.hsrd.research.va.gov/for\\_researchers/cyber\\_seminars/archives/2411-notes.pdf](http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/2411-notes.pdf)

Live captions for today's session are available here: <http://www.fedrcc.us//Enter.aspx?EventID=3634427&CustomerID=321>

# Poll #1: Your role as a data user

- What is your role in research and/or quality improvement?
  - Investigator, PI, Co-I
  - Data manager, analyst, or programmer
  - Project coordinator
  - Other – please describe via the Q&A function



## Poll #2: Your experience with VA data

How many years of experience do you have working with VA data?

- One year or less
- More than 1, less than 3 years
- At least 3, less than 7 years
- At least 7, less than 10 years
- 10 years or more



# Today's objective

*The purpose of this cyberseminar is to provide an introduction to VA data and resources for using it effectively.*



# Session roadmap

- Key concepts for the VA data environment
- Commonly used VA data sources
- Strengths & limitations of VA data
- Accessing & using VA data
- Resources supporting the use of VA data

# Key Concepts

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Understanding the VA data environment

## Activities that generate VA data

- Clinical care / Patient records - EHR
- Administrative / Operations activities
- Financial recordkeeping
- Veteran surveys & patient portals
- Patient care outside the VA system
- Program office and clinical care center quality improvement, evaluation, and reporting

# Types of Data

- Patient demographics & enrollment
- Healthcare encounters
  - Inpatient & outpatient
  - Laboratory
  - Pharmacy
- Patient Assessments & Screening Tools
- Facility & provider data
- Performance measures
- Financial
  - How \$ is allocated throughout VHA
  - Care provided outside VA, but paid for by VA
- Survey data
- Data from outside VA
  - CMS
  - DOD
  - NDI

# Veterans Health Information Systems & Technology Architecture (VistA)

- Integrated system of software applications
- Directly supports patient care at Veterans Health Administration (VHA) healthcare facilities
- Source of data for many VHA datasets or databases
- Electronic Health Record (CPRS) is the front-end for most clinical data collection



## Corporate Data Warehouse (CDW) Environment

- Set of servers architected and maintained by VA Business Intelligence Service Line (BISL)
- Platform for most of VHA's national data assets
- Includes CDW *database* (production and raw domains)
- Also hosts other databases, often derived from VistA but including additional elements generated by VA administrative and program offices
  - e.g., Managerial Cost Accounting Office (MCAO), Assistant Deputy Under Secretary for Health (ADUSH)

Learn more

[CDW Intro and Policies](#) (from BISL SharePoint)

# The Road to Cerner: Electronic Health Record Modernization (EHRM) and its Impact on Research

- VA is transitioning to a new, commercially developed EHR
- In March 2020 the first VAMC (Spokane) migrates to Cerner, rollout continues around the country until 2027
- As sites transition, data collected through the new Millennium EHR will be modeled differently than VistA
- New data structures, formats, and content
- Need to use Cerner-generated data alongside current VistA-generated data



ELECTRONIC HEALTH RECORD  
**MODERNIZATION**

## Planning for research EHR needs



- The Office of EHRM (OEHRM) Research Workgroup (RWG) is advocating for research needs and functional requirements from the Cerner system
- The RWG, ORD Strategic Initiative for EHR Synergy (OSIRES), VIREC, and other resource centers will be supporting researchers through the transition
- We will continue to keep the field informed as transition unfolds



# What can you do now?

## Learn about the Cerner EHR, solutions, capabilities, and information models.

- Instructions for accessing Cerner educational resources and wikis are available from the [EHRM and Research](#) site
- The [VA Puget Sound EHRM](#) SharePoint also has some great Cerner information
- Information and videos can be found on YouTube and Cerner user websites.

Direct your **questions, suggestions, and concerns** to [ResearchEHRM@va.gov](mailto:ResearchEHRM@va.gov).

Stay **informed** via [EHRM and Research](#) page of the Research Resource Guide (RRG). Resources, FAQs, and breaking updates will be added regularly.

# VA Data Sources

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National-level and centrally available

# Commonly used VA data sources



**Learn more (VA Intranet only)**

VHA Data Portal

<https://vaww.vhadataportal.med.va.gov/DataSources/DataSourcesOverview.aspx>

VIReC Intranet

<https://vaww.virec.research.va.gov/Intro/Working-with-VA-Data.htm>

# Popular data sources for research use



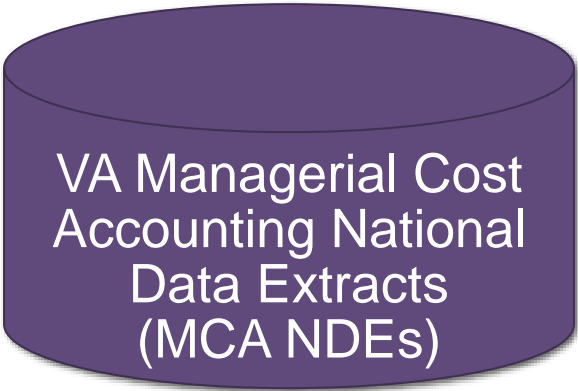
VA Corporate Data  
Warehouse  
Production Database  
(CDW)



VA Medical SAS  
(MedSAS)



VA Vital Status  
File (VSF)



VA Managerial Cost  
Accounting National  
Data Extracts  
(MCA NDEs)

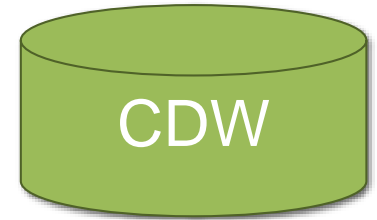


Pharmacy Benefits  
Management (PBM)  
+ other pharmacy data



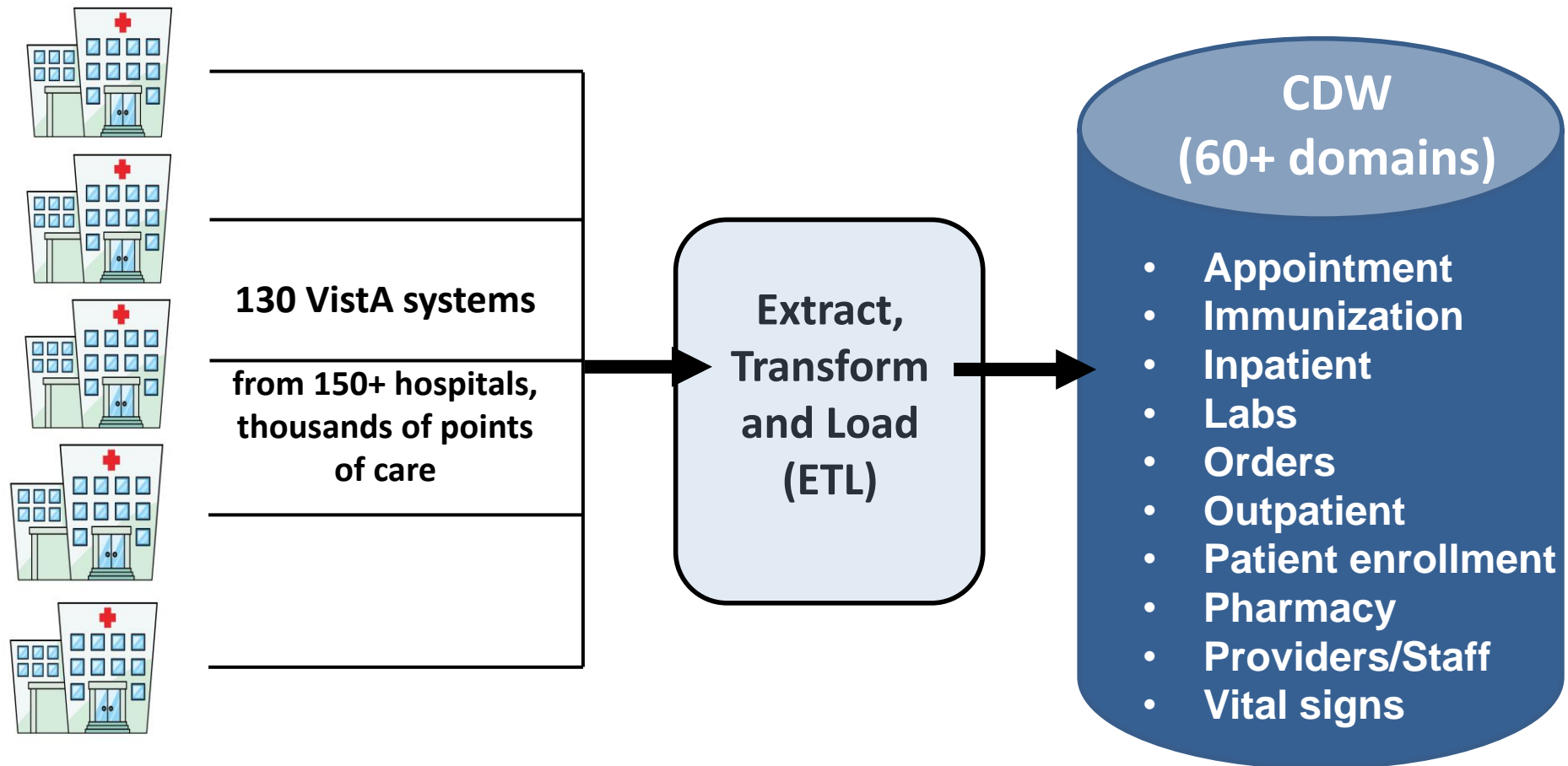
VA Centers for  
Medicare & Medicaid  
Data for Research  
(VA/CMS)

# CDW, the Database

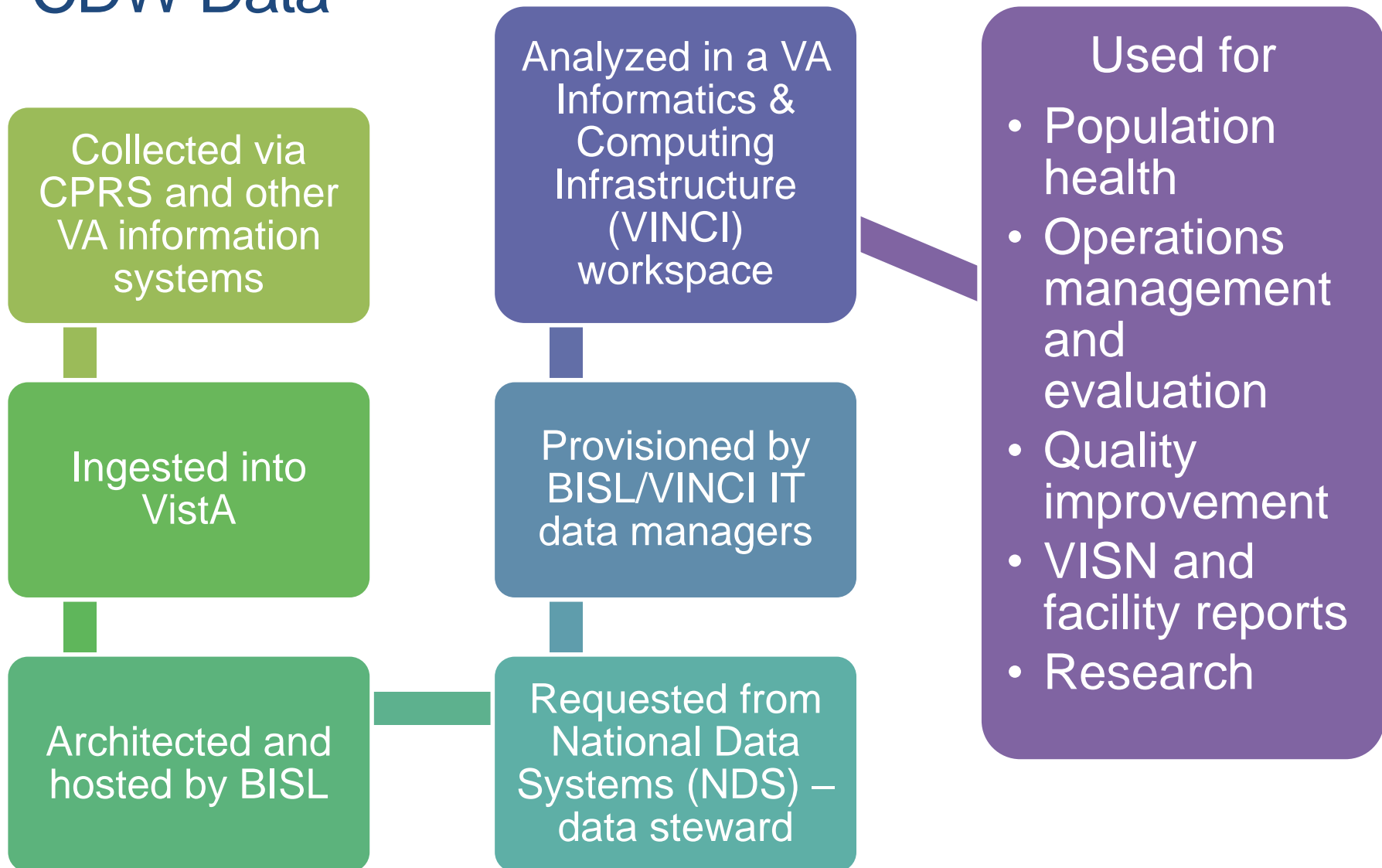


- Data in CDW database are selected from VistA data and reside in the CDW environment
- CDW is not a *dataset*, but a relational database (SQL) that contains many tables
- There are linking keys between the tables
- CDW tables are grouped together by topic, called “domains”
  - **Production** domains contain tables that have been structured by BSL to support re-joining of tables.
  - **Raw** domains are pre-production, containing tables that are direct extracts from the source system (e.g., VistA)

# Corporate Data Warehouse (CDW)



# CDW Data











# New to CDW? Start here.

<http://vaww.virec.research.va.gov/CDW/Documentation.htm>

## Getting Started with CDW

These cyberseminars are designed to help new CDW users with understanding the nature of relational data, becoming familiar with CDW structure and logic, finding documentation of CDW content, and knowing what to expect when first viewing CDW data in SQL Server Management Studio (SSMS) software.

Resources	Released	 Resource
CDW: A Conceptual Overview	Mar 2017	
CDW: Locating Its Documentation	Apr 2017	
Getting the Information You Need From CDW: SQL Starter Language	Jan 2015	
<b>NEW!</b> Querying CDW Metadata Views	May 2018	
Building Your Dataset in CDW: Joining Tables within a Domain	Jul 2015	
Getting CDW Back Together: Joining CDW Tables (Continued)	Oct 2016	
Data Management in SQL: Selected Intermediate SQL Skills	Oct 2016	

Email [virec@va.gov](mailto:virec@va.gov) to be notified of new CDW products and seminars.

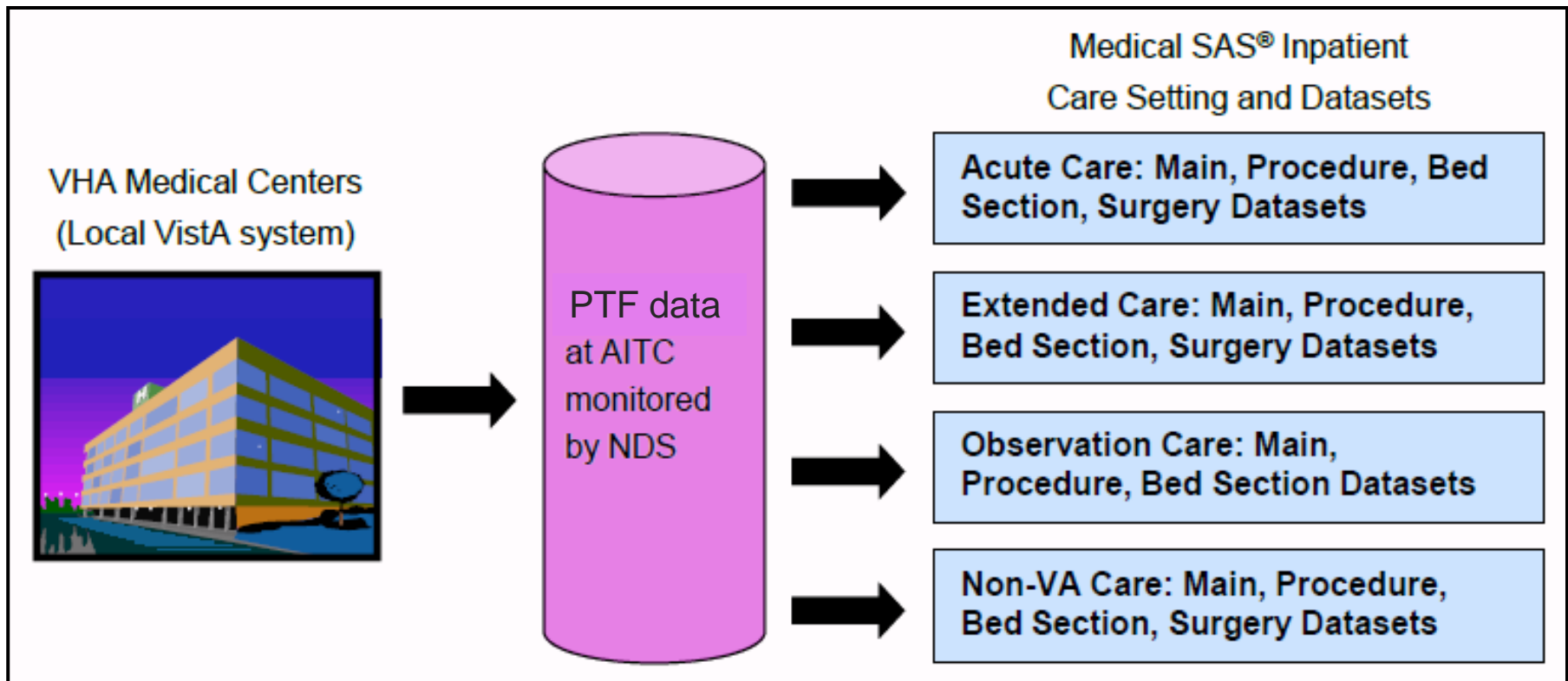


# Medical SAS (MedSAS) Files



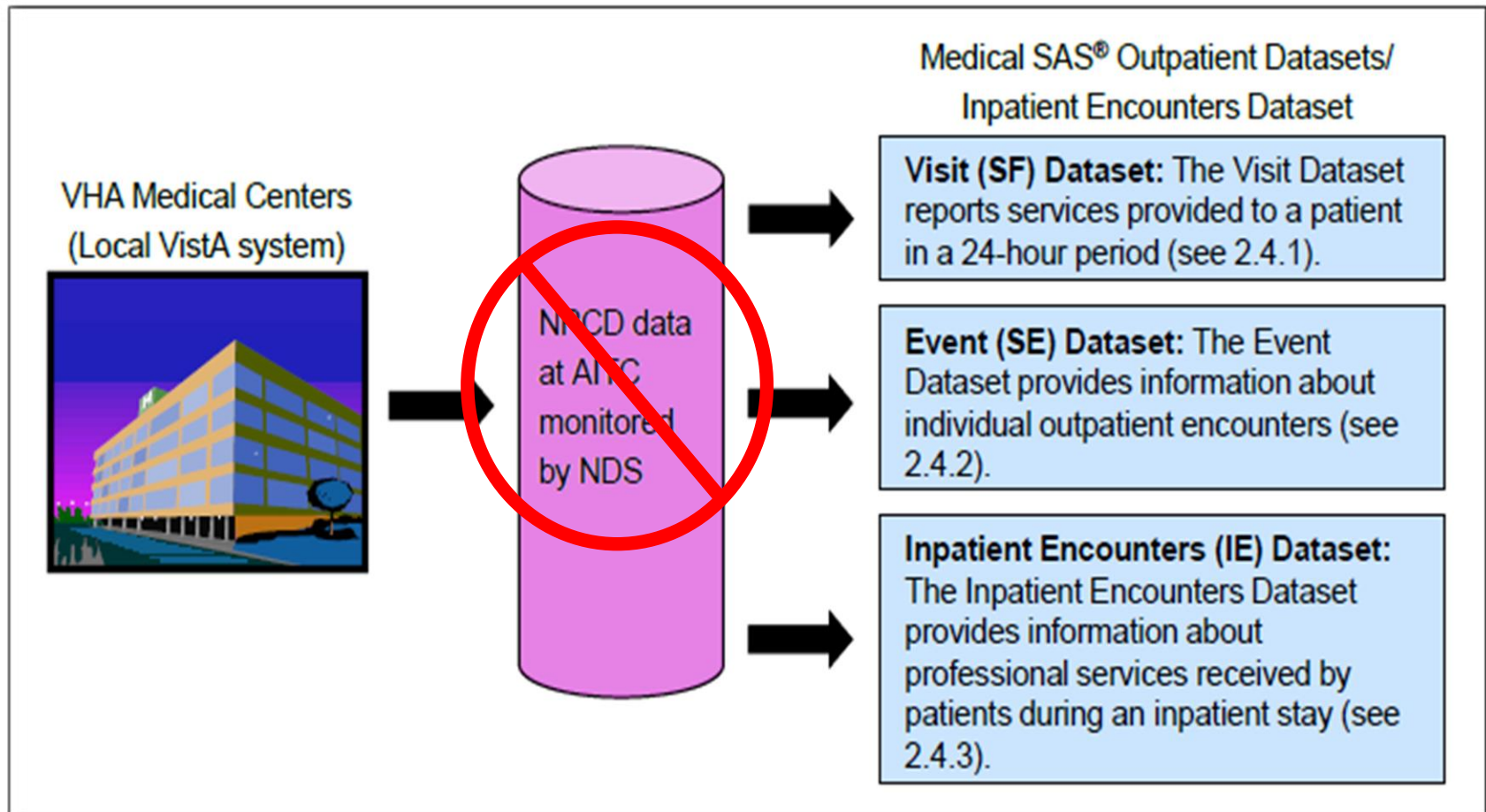
- Inpatient and outpatient healthcare utilization
- Data have been summarized and had business rules applied
- 18 datasets (files) by type of care and level of aggregation
  - Inpatient (acute care, extended care, observation care, non-VA care)
  - Outpatient (visit, event)
  - Inpatient Encounter
- Originally SAS datasets
- Currently available as SAS datasets & SQL tables

# MedSAS inpatient overview



Patient Treatment File (PTF)  
Austin Information Technology Center (AITC)  
National Data Systems (NDS)

# MedSAS outpatient overview



# MCA National Data Extracts (NDEs)



- MCA creates 28 National Data Extracts (NDEs),
  - See VHA Data Portal for full list
- Classified as Core, Clinical, Financial, Outpatient, Inpatient, and Other
- Four clinical NDEs most relevant to health services research
  - Lab tests & costs (LAB)
  - Lab test results (LAR)
  - Pharmacy prescriptions (PHA)
  - Radiology procedures (RAD)

# VA Vital Status File (VSF)



- Includes death and birth dates from multiple sources
  - VA Inpatient Data
  - Beneficiary Identification and Resource Locator System (BIRLS) Death File (from VBA)
  - Medicare Vital Status File
  - Social Security Administration Death Master File
- Applies algorithm to determine “best”
  - Death date
  - Birth date
  - Gender



## Pharmacy Data (PBM +)

### Pharmacy Benefits Management Database (PBM)

- FY99 →
- Dispensing details

### MCA Pharmacy NDE (MCAO)

- Clinical & patient info

### Four CDW Production Domains (Data Steward: NDS)

- Pharmacy Bar Code Medication Administration (BCMA) Domain (inpatient pharmacy)
- Pharmacy Outpatient Domain
- Pharmacy Patient Domain
- Non-VA Meds

# VA/CMS



- Data from the Centers for Medicare & Medicaid Services
- VHA sends list of Veterans' SSNs to CMS each year to obtain data
- Types of data include
  - Medicare & Medicaid enrollment and claims (billing) data
  - Medicare Current Beneficiary Survey (MCBS) data
  - Patient assessment data (e.g. patients in nursing homes)
  - United States Renal Data System (USRDS) data

## Other VA data sources from VistA with value added

### ADUSH Enrollment Files

- Monthly and annual static data about enrollment, eligibility for enrollment and patient zip code

### Planning Systems Support Group (PSSG) Geocoded Enrollee Files

- Static data containing enrollee address, latitude and longitude, rurality indicator, market, and submarket – drive time and distance to VA facilities

### Health Economics Resource Center (HERC) Cost Data

- Estimate of the expected cost of every VA health service provided

### VA Surgical Quality Improvement Program (VASQIP) Data

- Information about surgical procedures performed in an operating room that are deemed eligible for VASQIP assessment.

**Learn more on the VHA Data Portal (VA Intranet)**

<https://vaww.vhadataportal.med.va.gov/DataSources/DataSourcesOverview.aspx> 10/19



# Considerations for Using VA Data

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## Strengths - benefits

- Size/Volume - largest integrated healthcare system in US, with 20 years of data
  - FY15: 9 million Veterans, 699,100 inpatient admissions, 95 million outpatient visits\*
- Breadth/Scope of data – includes clinical data, assessment tools, etc.
- Timely – some data available in almost real time
- Can be linked to external data (i.e., CMS, NDI, DoD)
- Data created for VHA operations can also be used for research

## Challenges - limitations

- Data landscape can be complicated – multiple places to get similar data elements
- Results may not be generalizable to general population
  - Mostly male, lower SES, sicker than average, Veteran-prevalent conditions (PTSD, mental health, traumatic brain injury, limb loss)
- Not all Veterans enrolled in VHA
- Many Veterans also receive care outside VHA
- Some data elements not available, e.g., income, education

# Addressing specific topics using VA data

- VIREC Intranet “Data Topics” Pages

<https://vaww.virec.research.va.gov/Intro/Working-with-VA-Data.htm>

- Database & Methods cyberseminars

<https://www.virec.research.va.gov/Cyberseminars/Database-Methods.asp>

- Researcher’s Notebook Series (VA Intranet)

<https://vaww.virec.research.va.gov/Notebook/Overview.htm>

# Accessing and Using VA Data

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Permissions and tools

# Authority to access VA data for research

IRB or  
Exemption  
Subcommittee

Research  
category  
determination for  
human subjects  
protection

Data Privacy  
& Security

HIPAA Privacy  
Rule Compliance  
Data Security Risk  
Assessment

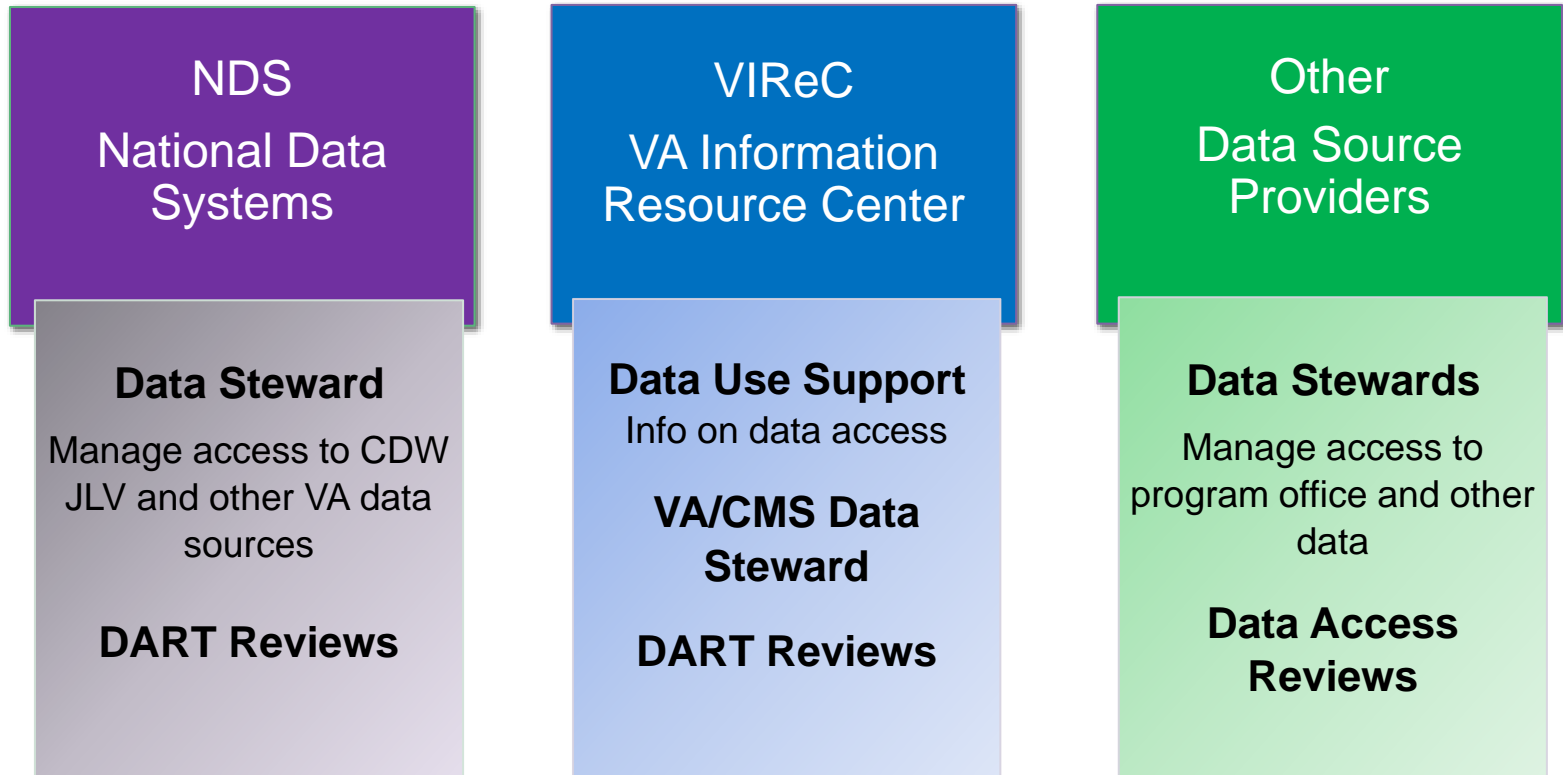
R&D  
Committee

Monitors research  
sub-committee  
activities  
  
New roles after  
Common Rule  
revisions

ACOS-R

Oversees  
research activities  
at facility  
  
Final approval to  
begin research

# VHA research data access governance





## Department of Veterans Affairs VHA Data Portal

[Data Sources](#)[Data Access](#)[Tools & Applications](#)[Resources](#)[Training](#)[Policy & Admin](#)[Support](#)[Data Access](#) ► [Data Access Overview](#)

### Quick View

VHA grants access to data and information systems based on how the data are going to be used.

## Requesting Data Access

### Overview

VHA grants access to data and information systems based on how the data will be used. Data access request processes and types of data access granted (e.g., direct access, data extracts, read-only views) depend on the data access category.

### How do I request data for research and operations purposes?

VHA maintains patient health information and other data used for a variety of purposes, such as program administration, healthcare quality improvement, program evaluation, and research. Select a category below for information about requesting data access or consult the [Research vs Operations Decision Tool](#) for additional guidance.

- [Operations Access](#): VHA employees and contractors require access to data and information systems for healthcare quality assessments, operational reporting, auditing, planning, forecasting, and general administrative duties.
- [Research Access](#): VHA researchers with VA approved research protocols require access to data and information systems to conduct research.
- [Preparatory to Research Access](#): VHA researchers preparing research proposals require access to data and information systems to determine the feasibility of a proposed study and to demonstrate its significance.

<http://vaww.vhadatportal.med.va.gov/DataAccess/DataAccessOverview.aspx>  
(VA Intranet)



## For more about VA Data Access

Join us here November 4

DBM #2: *Requesting Approval for  
Access to VA Data*

<https://www.hsrd.research.va.gov/cyberseminars/catalog-upcoming-session.cfm?UID=3695>

# VA Informatics and Computing Infrastructure



- Secure data environment
- High-speed processing platform
- Free data management and analytic tools
- VINCI services

VINCI Central Website

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



VA  
Informatics and  
Computing  
Infrastructure

## Welcome to the VINCI Workspace

Standard and Development Workspaces

VINCI Workspace.

### Announcements

(1 of 3) [TIU Data Unavailable](#)

TIU Data will be unavailable until further notice due to maintenance and updates!

[Standard Workspace](#) |


[Request a Workspace](#) | [Help](#)

### Important Instructions

Click **once** on any icon below to start the application.

When prompted to enter your login, please enter it in the form of **DomainName\Login**.

This site is only supported on the Internet Explorer browser with Java Script enabled.

If you are not able to see the application icons below, [click here](#)  to access the VINCI Standard Workspace Desktop to access all applications.

### Current folder: /



7-Zip File  
Manager



Adobe Reader  
XI



ArcGIS  
Explorer



ArcMap 10.5



ArcReader  
10.5



explorer



MATLAB  
R2017b



Microsoft  
Access 2010



Microsoft  
Excel 2010



Microsoft  
InfoPath  
Designer 2010



Microsoft  
InfoPath Filler  
2010



Microsoft  
PowerPoint  
2010



Microsoft  
Word 2010



Notepad++



NVivo 8



Protege 3.3.1



Protege 3.5



PSPP



putty



R x64 3.5.1



R x64 3.5.3



RStudio



SAS Universal  
Viewer



SQL Server  
Management  
Studio 17



StataMP 15  
(64-bit)



StatTransfer



windiff



X2Go



SAS 9.x



SAS Grid  
Tools

# CAPRI & JLV

*Read-only access to patient EHR*

## CAPRI\*

- Uses desktop computer software application
- Can see patient record one site at a time
- Includes search function
- Direct access to JLV

## Joint Legacy Viewer

- Replacing VistAWeb
- VA Intranet web portal
- Can see VA and DoD patient records for all care sites at once
- VistA Imaging available

\*Compensation and Pension Record Interchange



- Secure web application for research data collection developed by Vanderbilt University with NIH funding
- Primary data collection tool supports compliance with 21 CFR Part 11, FISMA, HIPAA
- Used world-wide and by many of our academic affiliates
- VA instance managed by VIREC and hosted by VINCI
- Flexible, free, and easy to use tool for VA users to field surveys and manage study data
- Only accessible from within VA network and not currently approved for PHI and PII storage

Visit VIREC's [REDCap page](#) for more information and supporting resources.

# Resources for Using VA Data

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[vaww.virec.research.va.gov](http://vaww.virec.research.va.gov)

VA network only  
News & new  
resources  
Resources for  
working with data

VA network only  
Collaborative with  
NDS & VINCI  
Data source &  
access information

[www.virec.research.va.gov](http://www.virec.research.va.gov)

Public-facing  
VIREC overview  
Publications &  
events  
Cyberseminars

## For more about VIREC Resources

Join us here December 9

DBM #3: *Meet VIREC*

<https://www.hsrd.research.va.gov/cyberseminars/catalog-upcoming-session.cfm?UID=3696>



# 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: <https://vaww.virec.research.va.gov/Index.htm> (VA Intranet)

VIReC Cyberseminars: <https://www.virec.research.va.gov/Resources/Cyberseminars.asp>

VHA Data Portal: <https://vaww.vhadatportal.med.va.gov/Home.aspx> (VA Intranet)

VINCI: \_\_\_\_\_ (VA Intranet)

Health Economics Resource Center (HERC): \_\_\_\_\_ (VA Intranet)

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

HSR&D Resource Centers [https://www.hsrdr.research.va.gov/centers/resource\\_centers.cfm](https://www.hsrdr.research.va.gov/centers/resource_centers.cfm)

# VIReC options for specific questions

## HSRData Listserv

- Online community knowledge sharing
- ~1,400 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting  
<https://vaww.virec.research.va.gov/Support/HSRData-L.htm> (VA Intranet)



## HelpDesk

- Individualized support



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

(708) 202-2413

# Take-aways

- VA has many data sources that can be used to address research & QI questions
- Data are complex and distributed
- Use resources VIREC and others offer to
  - help you navigate data sources
  - connect you with peers, experts & additional info

# Contact information

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708-202-2413

