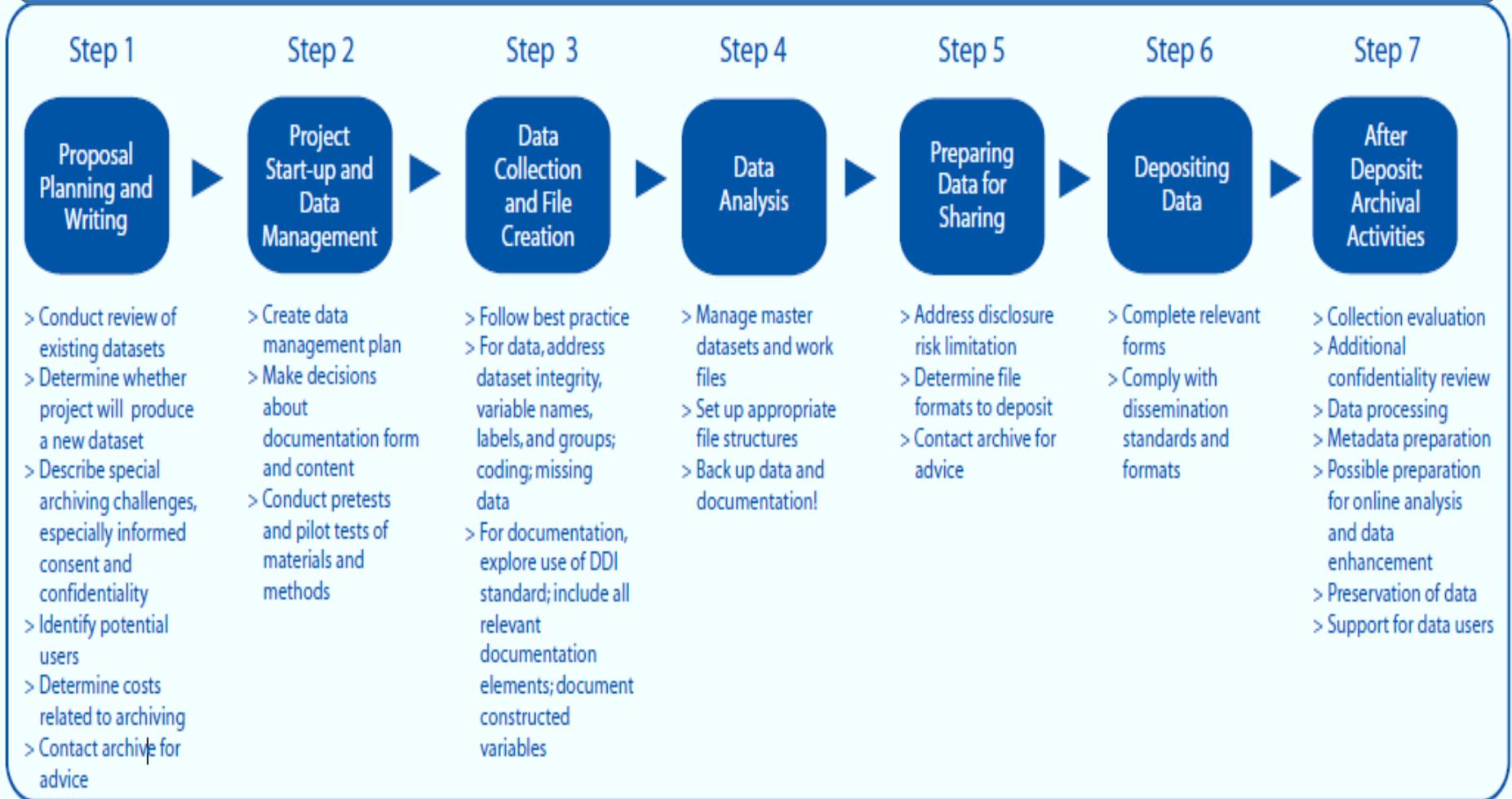


GDP 2014 Acknowledgements

- **Laurel Copeland, San Antonio VA**
- **Brian C. Sauer, Salt Lake City VA**
- **Kevin Stroupe, Hines VA**
- **Linda Williams, Indianapolis VA**
- **Denise Hynes, VIREC**
- **Arika Owens, VIREC**
- **Maria Souden, VIREC**

Research Life Cycle



Good Data Practices Series Overview

May 8

- *The Best Laid Plans: Plan Well, Plan Early* - Jennifer Garvin

May 15

- *"The Living Protocol:" Managing Documentation While Managing Data* - Matt Maciejewski

May 22

- *Controlled Chaos: Tracking Decisions During an Evolving Analysis* - Pete Groeneveld

May 29

- *Reduce, Reuse, Recycle: Planning for Data Sharing* - Linda Kok

Session 1

The Best Laid Plans: Plan Well, Plan Early

Jennifer Garvin, PhD

Salt Lake City VA Healthcare System

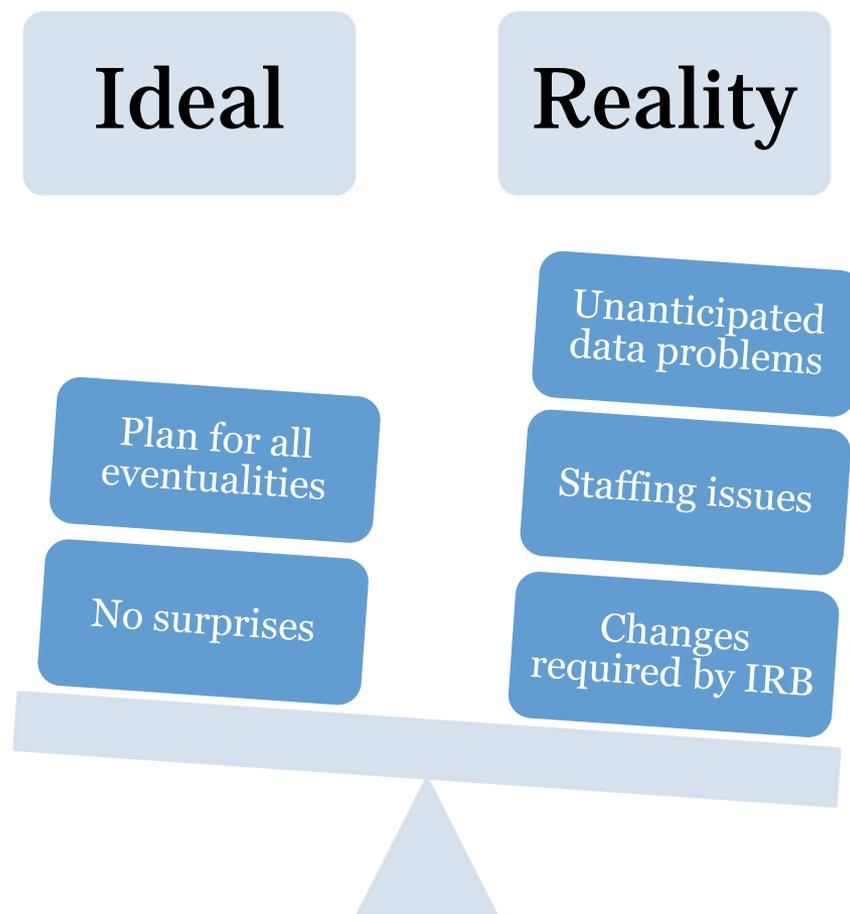


Good Data Practices 2014

Poll #2: Planning for data use

- When do you start planning for data use for your research?
 - During the proposal stage
 - After I get funding notice
 - When I prepare the IRB submission

Planning ahead- theory vs. practice



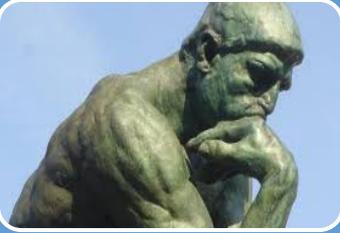
Data planning awareness

- **Today's goal: take away one new idea that can help you think through data planning earlier in the research process**
- **Develop a strategy for how to do better planning within the constraints of your environment and your projects**
- **Identify documents where you describe the data you need, what you want to do with it (including analysis) and what the data will be used for during and after the study**

Topics to be covered in today's session

- Benefits of early data planning
- Planning for data privacy & security
- Feasibility testing
- Planning for data re-use after the research
 - For all of the above some factors to consider:
 - data needs and required permissions, organizing data for research, where it will be stored, method of analysis of the data, documentation, plans for future use

Benefits of early data planning



Forces you to think clearly about data
Helps identify requirements



Provides a guide
Helps develop and refine the research protocol

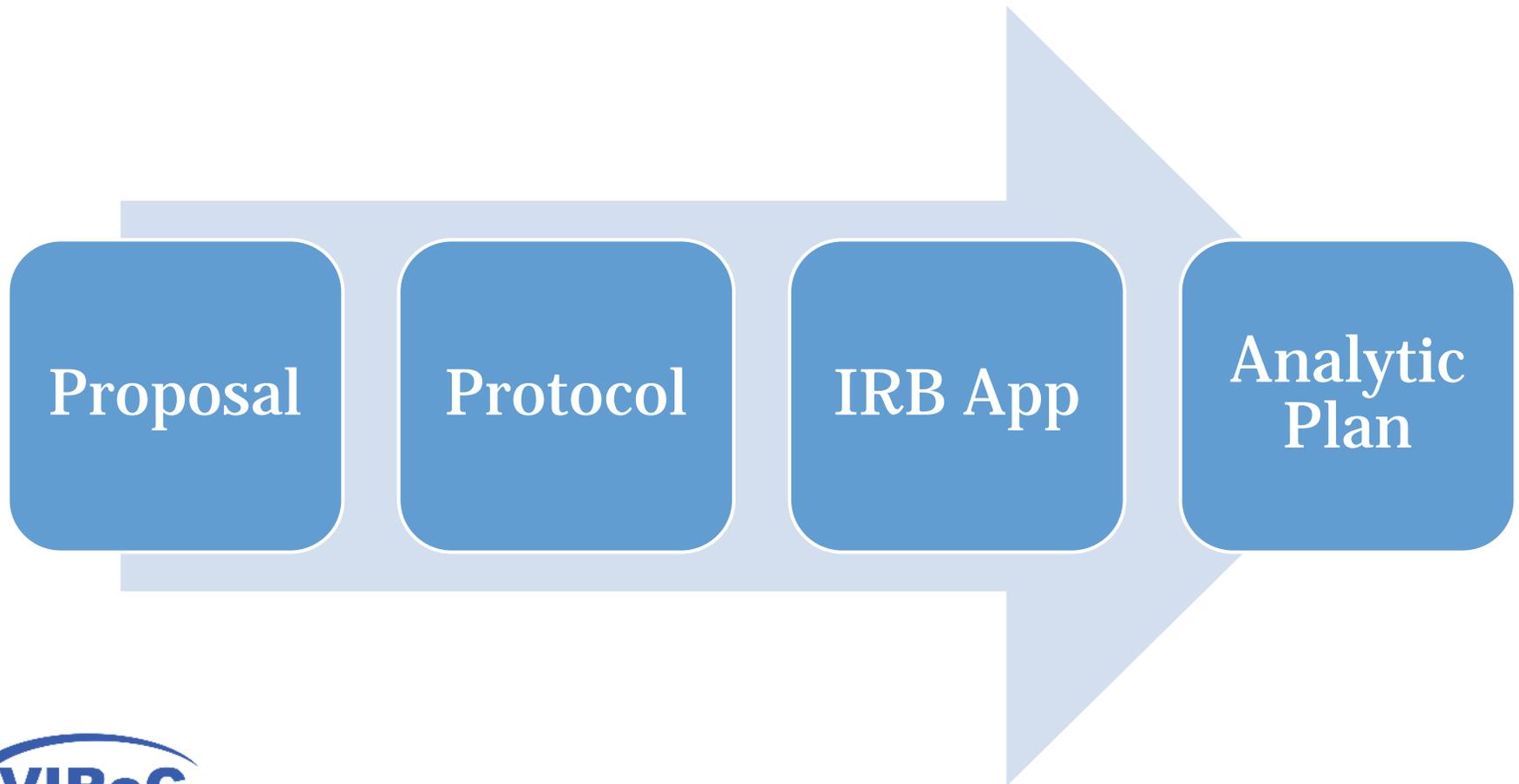


Starts data documentation process (data provenance)
Serves as a reference for your papers



Simplifies your life in the long run

Informing data planning



No “perfect” plan exists
- it depends



Case Study from VA INSPIRE SDP VA Stroke QUERI*

- Developed methods automating VA stroke indicators.
- Chart review QI data compared to automated results.
- Resulting dataset: 3074 ICD-9 identified stroke admissions; 2164 chart-validated stroke admissions.
- Individual data elements completed on all subjects—reason for ineligibility or for failing any indicator can be determined.

* Courtesy Linda S. Williams, MD, Research Coordinator, VA HSR&D Stroke QUERI Roudebush VAMC, Professor of Neurology, Indiana University, Indianapolis, IN

Considerations for data planning

- Will you need data directly from the subjects?
- If you need existing data, what will you need?
- What is the time period for needed data and have you explored if the data is available for that time period?
- How much data will be generated and is there server capacity and software capacity?
- Do you need to link data from different sources and if yes, how will this be done?
- What software will you need?
- What methods will you use to protect data privacy & security?
- Will you provide your data for re-use?

Case Study* - Lessons Learned

- **Standardize Chart Review and Develop Documentation**
- **Develop standard chart review manual and update with local examples as they are noted**
- **Standardize search features and terms (document what was done)**
- **Organize the process for access requests and designate one person from your study to submit and stay in communication via the DART process**

* Courtesy Linda S. Williams, MD, Research Coordinator, VA HSR&D Stroke QUERI Roudebush VAMC, Professor of Neurology, Indiana University, Indianapolis, IN

Factors that influence data needs

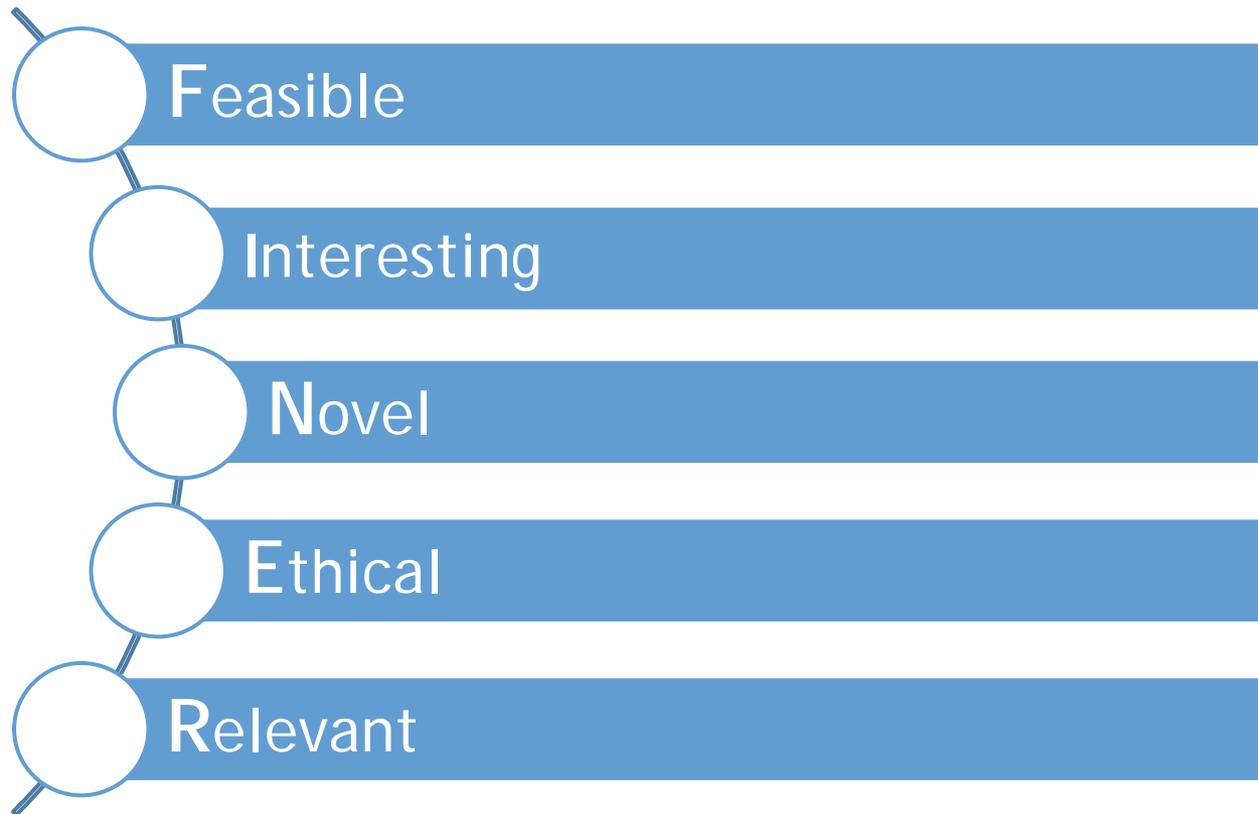
Research question

Study design

Available data

Feasibility testing

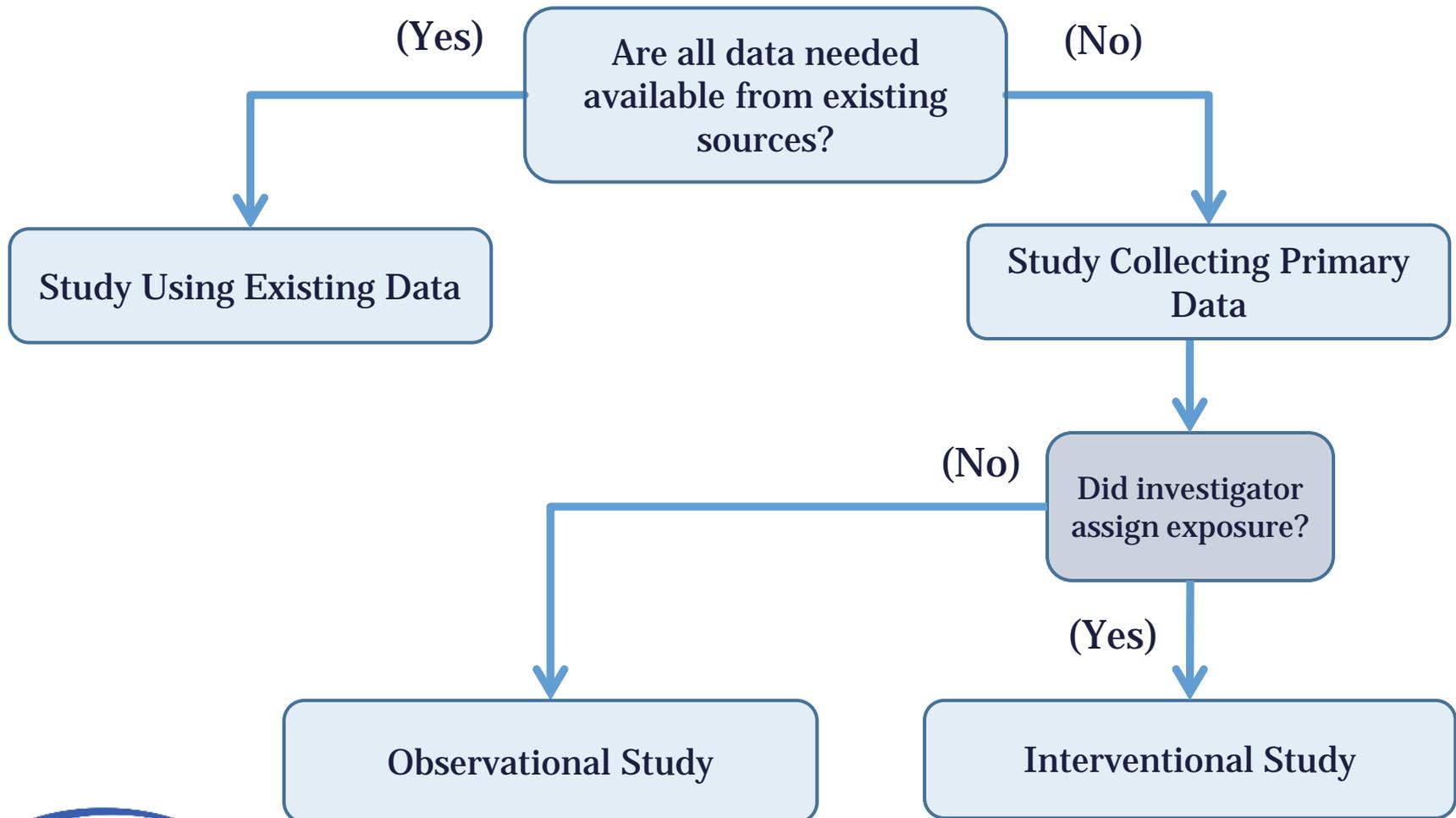
Good research question - "FINER" criteria



Good research question - data considerations



Study design & data considerations



Case study- planned
data needs...

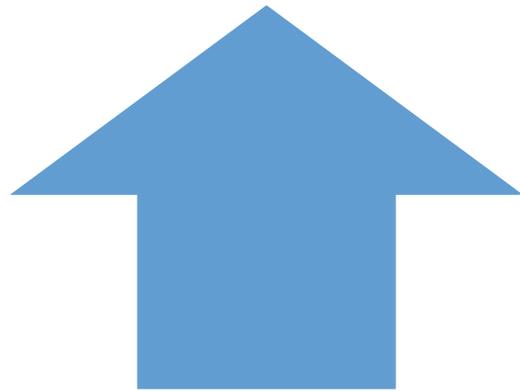


Research Question:

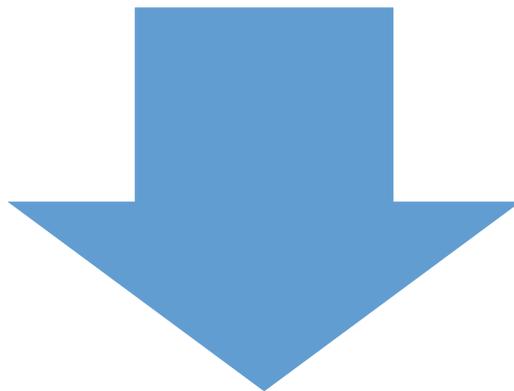
Can a pre-developed, off-the-shelf informatics tools accurately determine completion status of discharge instructions?

Compared results of automated method to both a manually developed reference standard and External Peer Review Process (EPRP) results.

Versus realized data needs



Document set obtained via a data request using ICD-9-CM codes for a principal diagnosis of CHF at the medical center = 152 inpatients.



Number of patients with EPRP data from the same time period with the same diagnosis of CHF = 98.

Data planning for research objectives varies with unique requirements

Primary
data
collection

Secondary
data sources
only

Mixed
methods

Data from
multiple
sources

Partner-
based
research

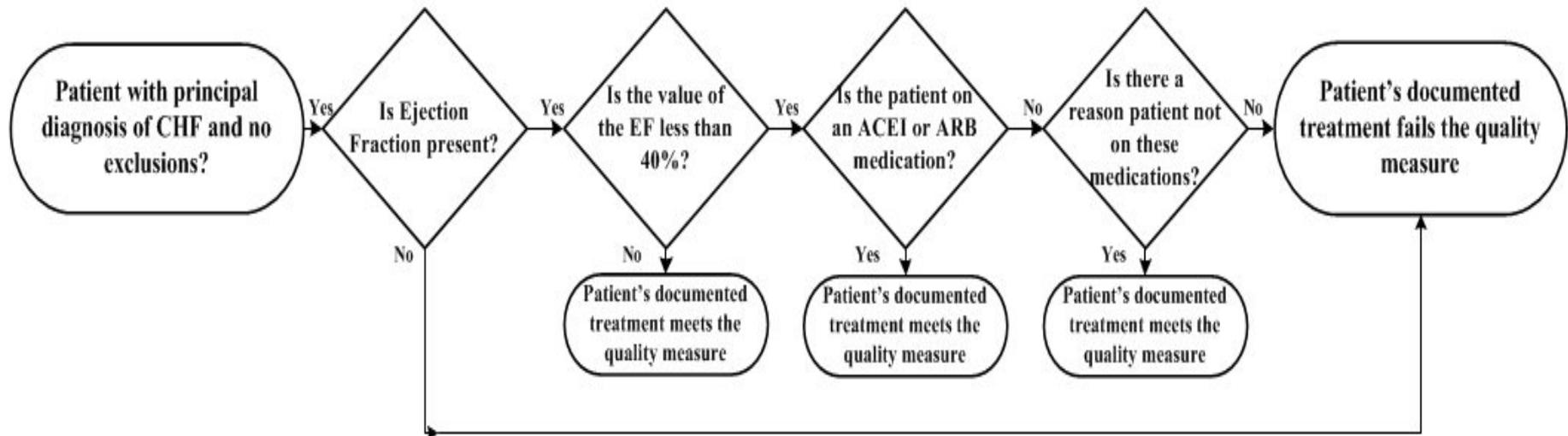
Case study- using lessons learned

- Automating Data Acquisition for Heart Failure (ADAHF)
 - Automate inpatient heart failure quality measure
 - Cohort identification with (EPRP) to TIU notes from each medical center

Diagram of Overall Classification and Sub-classifications

Classification Process for ADAHF

Did the Inpatient Treatment (as Documented) Meet the Performance/Quality Measure?



It also depends on...

- Software you will need
- Where you want to use the data
- And more...



Getting access to data in VINCI

- Obtain IRB , R&D, and VA NDS approval processes
- Determine the established VINCI folder for data acquisition, analysis and use of VINCI tools

Obtaining TIU notes and other data

- Identify the cohort of patients
- Determine standardized enterprise name of the documents
- Determine where stored in VISTA files
- Determine the frequency of data updating by visiting the CDW SharePoint site
- Once data/note are obtained, analyze the content for congruency to the data requested

And it depends on feasibility evaluation

Proposal addresses sample size estimates—
is there an adequate number of appropriate
subjects to test the hypothesis?

Is the required data and analytic expertise
actually available following funding?

Are the necessary tools available when
needed (e.g., NLP)?

Is the study still affordable and manageable
in scope based on current circumstances?

Best practices- examples

National Cardiovascular Data Registry

- Developing a data dictionary
- Standardizing the data collection process
- Data quality checks before incorporation into the database
- Documentation of changes to the data
- <https://www.ncdr.com/webncdr/pinnacle/>

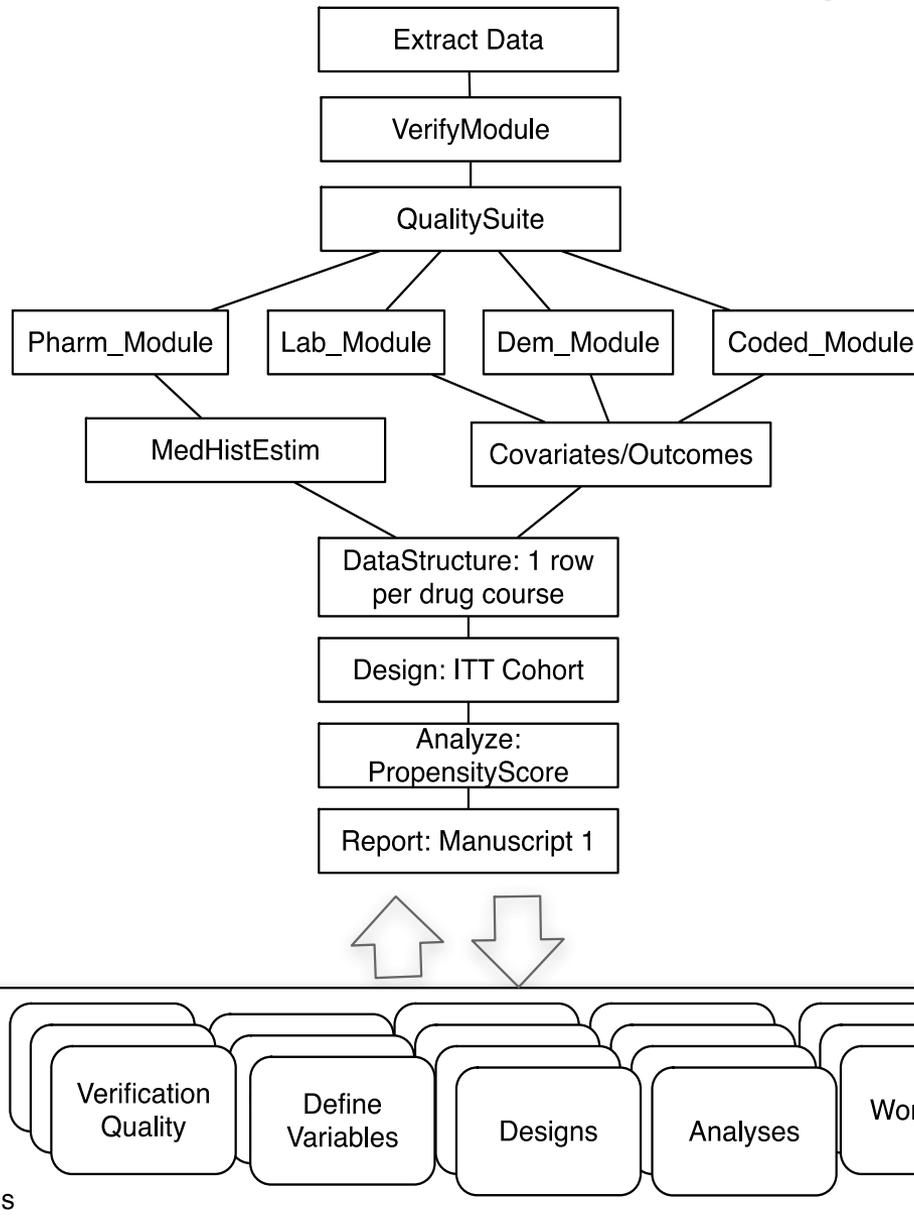
Observational Medical Outcomes Partnership (OMOP.org) Common data model*

- **Purpose:** standardize the format and content of the observational data, so standardized applications, tools and methods can be applied to them.
- **Tried and tested model with good documentation.**
 - <http://75.101.131.161/download/loadfile.php?docname=CDM%20Specification%20V4.0>
- **Used in large comparative effectiveness research networks (e.g., SAFTINet)**
 - <http://journals.lww.com/lww-medicalcare/pages/articleviewer.aspx?year=2012&issue=07001&article=00013&type=abstract>
 - <http://www.ncbi.nlm.nih.gov/pubmed/22037893>
- **Ensures that research methods can be systematically applied to produce meaningfully comparable results.**

OMOP- based Transparent ReUsable Software Tools (TRUST)- EpiTools *

- Veterans Affairs funded initiative.
- Analytic modules designed to be used in workflows that transform data, analyze data and generate publishable reports.

TRUST—EpiTools* Epidemiological Workflow



- **Data Verification and Quality**
- Verify completeness of extracted data
- Correct known problems with data (e.g., pill splitting or improbable values)
- **Analytic workflows**
- Transform data to operationalize study designs
- Analyze data and report findings
- Process Monitoring
- Prediction Modeling

* Courtesy of Brian C. Sauer, Ph.D., M.S., Brian.Sauer@hsc.utah.edu

Contact Information

Jennifer H. Garvin, PhD, MBA

- IDEAS 2.0 VA Salt Lake City Healthcare System
- Jennifer.garvin@va.gov
- 801-582-1565 ext. 4420

IDEAS 2.0's mission is to advance scientific discovery, implement novel interventions, promote cross-center collaboration, increase research capacity, and engage operational partners in order to improve the health of Veterans.

Additional data planning for IRB submission

(Linda Kok, VIREC)

Data privacy plan

- How you will protect the subjects' private health information and identity?
- Who will have access?
- How will access be limited?
- What special handling will be used for real & scrambled SSNs or text data?
- How will you handle data for special subjects?



Data security plan

- Where will the study data be stored & used?
- Will you need data from external sources – will that require sending real SSNs to the source?
- How will data transfers between study sites be handled?



Data sharing at project close

- Will study produce a new dataset that others may want to use?
- Will you establish a new VA research data repository or deposit your data in an existing repository?
- Primary data collection & HIPAA authorization language

Resources

VA INFORMATION RESOURCE CENTER (VIReC)

- VIReC Home
- VA/CMS Home
- About Us
- New Users of VA Data
- Data Transition to CDW
- News & Updates
- FAQs
- Acronyms
- HelpDesk



[Data Issues Brief, July 2013](#)

[Upcoming Cyber Seminar](#)

[Medical Care Journal: HIT in VHA Research](#)

[VIReC News & Updates](#)

[Data Transition to CDW](#)

At a Glance

[Introduction to VIReC and VA data](#): Learn about VIReC's role in VA research and how to navigate our website.

[Data Issues Brief](#): VIReC's monthly newsletter provides researchers current news and updates.

[HSRData-L Listserv](#): Join our virtual community of VA researchers who share knowledge and experiences about VA data and information systems.

[VA/CMS Data for Research Project](#): VIReC serves as the data custodian for Centers for Medicare and Medicaid Services (CMS) data for research use in the VA.

[Journal Supplements](#): VIReC collaborates with peer reviewed journals to publish supplements on relevant VA data and informatics research topics.

Requesting and Accessing Data

[Data Access Tools](#): Information on data access tools, including applications and analytic workspaces.

[Data Access and Request Guide](#): A complete list of access guidelines for the data sources most commonly used by VA researchers.

[Preparatory to Research](#): An overview of preparatory to research data use regulations, including access information.

[Data Access Request Tracker](#): Introduction to DART including, how to register and submit requests and resources for using the online application.

[DART Metrics](#): View the current processing report for DART requests available from NDS (see current DART metrics).

Resources for Researchers

[Data Sources and Data Topics](#): Select a specific data source or data topic described by VIReC.

[Research User Guides \(RUGs\)](#): Detailed descriptions of select VA data sources, including variable descriptions.

[Data Reports](#): A complete list of technical reports, data investigations, data quality updates, and QUERI reports.

[Summary Information](#): VIReC provides summary information such as Historical Variable Attributes and Variable Frequencies for select data sources.

[Publications](#): A complete list of peer reviewed articles and journal supplements published by VIReC.

Education

[VIReC Cyber Seminars](#): Expert discussion on key issues in clinical informatics and databases and methods for VA researchers.

[Toolkit for New Users](#): A starting point for new users of VA data and experienced researchers using new data sources.

[Tutorials](#): Step-by-step instruction on accessing and using select VA data and information systems.

[Presentations](#): Learn about topics relevant to VA research from experts in the field.



HEALTH ECONOMICS RESOURCE CENTER

HERC Home

News »

Resources »

Data »

Data Overview

Average Cost Data

Decision Support System (DSS)

Financial Management System (FMS)

PAID

Cost Distribution Report (CDR)

Fee Basis Files

Fixed Asset Package

VA Utilization Files

Database of VA

Facilities

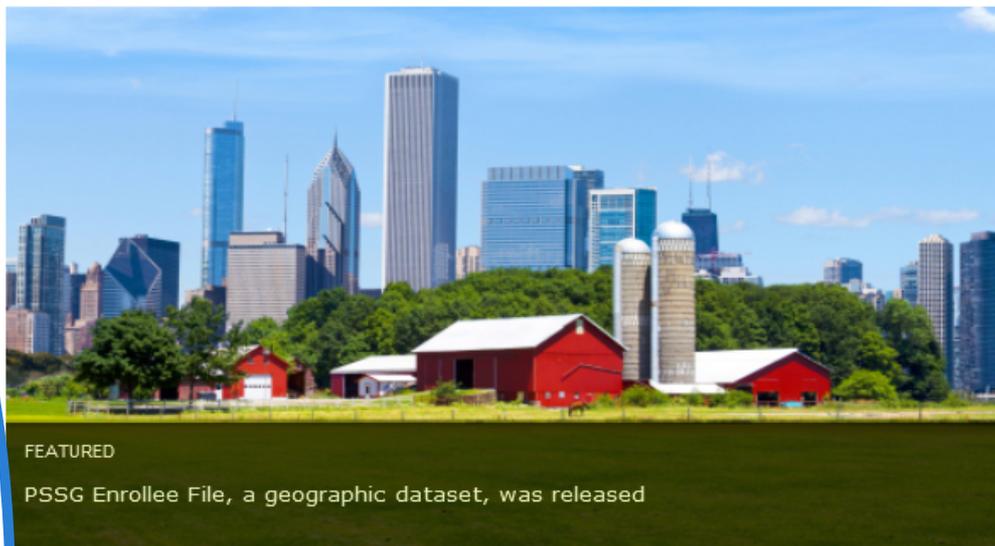
Pharmacy Benefits

Management Database

Datasets not at the VA

Tabulations

VA Labor Costs



FEATURED

PSSG Enrollee File, a geographic dataset, was released

News

August 15, 2013

"Guidebook for Research Use of PAID Data" has been updated.

August 8, 2013

A new HERC Bulletin (Vol 13, Iss 3) is now available.

July 25, 2013

PROC CONTENTS added for FY12 outpatient average cost data

MORE »

About Us

HERC is a national center located in Menlo Park, CA that assists VA researchers in assessing the cost-effectiveness of medical care, evaluating the efficiency of VA programs and providers, and conducting high-quality health economics research.

MORE »

CONSULTING SERVICE »

FREQUENTLY ASKED QUESTIONS »

Events

ECONOMETRICS CYBERCOURSE

OCT
2

Econometrics Course:
Introduction & Identification
Todd Wagner, Ph.D.
REGISTER »

CYBERSEMINARS

SEP
18

Posttraumatic Stress Disorder,
Military Sexual Trauma and
Preterm Birth – Evidence from
16,000 VA Pregnant
Jonathan Shaw, M.D.
REGISTER »

LEARN MORE »

Top FAQs

A1. What is cost-effectiveness analysis?

B6. How do VA costs compare to the cost of non-VA providers?

E2. What is retransformation bias, and how can it be corrected?

A3. How Do I Adjust for the Effects of Inflation?

B7. Comparison of VA and Medicare costs



Data Quality Program ▾

Business Product Management ▾

Data Stewardship ▾

Clinical Data Quality Coordination ▾

Healthcare Identity Management ▾

Data Quality Analysis ▶

Documents ▶

Contact Us

Business Product Management

Data Quality Analysis



The Business Product Management (BPM) Program ensures that business stakeholder data quality requirements are identified and communicated through appropriate processes and provides data quality analysis services. A primary role of this group is to serve as a liaison between business stakeholder groups, technical communities, and the Data Quality Program on issues related to data quality, including those involving healthcare identity management, clinical data quality, and data stewardship.



FEATURED RESOURCES

Documents

- [Data Quality Fact Sheet](#)
- [VHA Data Quality Program Overview](#)
- [Federal \(DAS\) Data Quality Framework](#)
- [Data Quality Dimensions](#)
- [VHA Data Quality Glossary](#)

Websites

- [Office of Informatics and Analytics](#)
- [Health Information Governance](#)
- [Corporate Data Warehouse](#)

Useful Links

- [Corporate Database Monograph](#)
- [VHA Forms and Directives](#)
- [Data Quality Program Goals](#)
- [Data Architecture Repository \(DAR\)](#)

MISSION

Manage and implement a data quality framework to improve and ensure comprehensive and accurate VHA data for clinicians, administrators, veterans, sharing partners, and business stakeholders.

DATA QUALITY PROGRAM FUNCTIONS

Data Governance

Help identify, establish and support the organizational bodies, rules, decision rights, and accountability required to manage VHA data assets and perform data functions.

Data Quality Issue Management

Manage and prioritize data quality issues, support the identification and execution of error resolution activities; and assess risks.

Policy, Requirements, and Guidance

Identify, develop and/or provide guidance, requirements, standards, policy and processes related to the quality of VHA data including its descriptive metadata.

Communication, Education, and Training

Provide and receive communication, education, and training to and from stakeholders and governance committees.

Data Quality Analysis

Perform systematic analysis of data to determine its ability to be used for its intended business purpose.

Data Quality Improvement

Identify, coordinate, and help to perform data quality improvement projects.

Certification, Compliance, and Audit

Identify review points, and participate in data quality-related certification, compliance, and audit activity. This includes testing and data validation against data quality metrics and requirements.

NEWSLETTER

Subscribe to the Data Quality [newsletter](#) and updates on best practice resources, and more.

SIGN UP

NEWS & UPDATES

CDW Possible Test Patient Flag Analysis

An analysis of test patients was conducted by the Data Quality Analysis team in the CDW. The analysis was undertaken to provide additional guidance on identifying test patients in the CDW. The document displays the result of the analysis and recommendations for modifying the CDW Possible Test Patient Flag.

[Read more...](#)

Reviewed/Updated: April 1, 2014

Applications

Data Access Request Tracker

Shortcuts

My Collaboration Sites
 VINCI Workspace
 VHA Data Portal
 HSR&D
 VIREC
 HSRData-L Listserv

Home



VA In

The mission of the VA is to ensure the security of all its IT systems. The vision of VINCI is to become VA researchers' preferred data source and data-processing environment.

Available Data

VINCI Data Services

Request Access to Data

VHA Data Management

Computing Infrastructure

Healthcare of Veterans by providing researchers access to analysis in a secure, high-performance computing

environment. The vision of VINCI is to become VA researchers' preferred data source and data-processing environment.



Learn About VINCI

[About](#) [VINCI Workspace](#) [Software](#) [Available Data](#)



I Want to Use VINCI

[Click here to request access to the VINCI Workspace](#)



I Am a Current User

[Support](#) [Training](#) [VINCI Guides](#) [SAS Guides](#) [FAQs](#)



Launch the VINCI Workspace

[Click here to UPLOAD files to your VINCI Workspace project folder](#)

[Click here to DOWNLOAD files from your VINCI Workspace project folder](#)

 Did you know?

Take the VINCI Customer Satisfaction survey of 5 quick questions now by [clicking here](#).

Announcements

(1 of 2) VINCI System Unavailable Intermittently Next Few Days

The VA in its quest to ensure the security of all its IT systems is running security scans over the next several days on VINCI's production systems. We do not have a fixed timeframe as they run until completion. Unfortunately, this means portions of our systems will likely experience periods where they are unavailable or performance may be substandard. While VINCI does not control the security scans, we are working with AITC to minimize the impact to our customers during these mandatory scans. We apologize for any inconvenience this may cause you and your team.

More data content resources

- [Corporate Data Warehouse \(CDW\) Metadata Report](#)
- [HSRData-L Listserv](#)
- [Patient Care Services \(PCS\)](#)
- [Pharmacy Benefits Management Services \(PBM\)](#)
- [VA Corporate Data Monograph](#)
- [VHA Data Portal](#)
- [VIReC HelpDesk](#)

Data access resources

- VHA Data Portal data access pages – details of request processes
- VIREC Database and Methods series, Research Access to Data – cyberseminar updated each year



Welcome to the VHA Data Portal!

The one-stop-shop for data users' needs.

The VHA Data Portal is a collaborative effort among the following program offices to provide a central gateway to information about VHA data:

- **VHA National Data Systems (NDS)**
- **VA Information Resource Center (VIREC)**
- **VA Informatics and Computing Infrastructure (VINCI)**
- **VHA Data Quality Program**

Our mission is to promote a knowledge-sharing culture that supports the needs of VHA data users. The portal integrates information from multiple sources into a common format and single location to promote a comprehensive knowledge base and to facilitate a positive end-user experience.



News

NDS Data Access Update

The new NDS Healthcare Operations form is here! The form streamlines the access request process for NDS Healthcare Operational requests. Visit the [Operations Access](#) page for more information and to view the new form.

VINCI Wants Your Feedback!

Please take the [VINCI Customer Satisfaction Survey](#) and provide us with your feedback about VINCI.

Upcoming Events

BISL Live Meeting Training of the Month

August 28: [Part 3 of 3 SAS Grid Analytics Advance](#)

September 25: [Part 3 of 3 SAS Grid Analytics Advance](#)

VIREC Cyber Seminars

September 17: [Using Patient-Facing Kiosks to Support Quality Improvement at Mental Health Clinics](#)

September 9-13: [Good Data Practices Mini-Series](#)

Popular Links

- 🔖 [Launch VINCI Workspace](#)
- 🔖 [VINCI Collaboration Sites](#)
- 🔖 [VIREC Intranet Site](#)
- 🔖 [CDW SharePoint Site](#)
- 🔖 [VHA Data Quality Program Intranet Site](#)
- 🔖 [Corporate Databases Monograph](#)
- 🔖 [HSRData-L Listserv](#)
- 🔖 [DART Overview and Forms](#)
- 🔖 [Launch DART Application](#)
- 🔖 [RAMP](#)
- 🔖 [DAD](#)

Other resources

- **MIT Libraries:**
 - <http://libraries.mit.edu/guides/subjects/data-management/plans.html>
- **UCLA Library:**
 - <http://guides.library.ucla.edu/content.php?pid=385860&sid=3182780&preview=200eac9a6bb823f4503d8413245daed7>

[Help Yourself : Subject Guides](#)Annual Research Meeting (ARM) - Events - AcademyHealth
<http://academyhealth.org/events/content.cfm?...>

Data Management and Publishing

[Home](#)[Why Manage Your Data?](#)[Data Planning Checklist](#)[What is Data?](#)[Evaluate Your Data Needs](#)[Funder and Journal Requirements](#)[Data Management Plans](#)[Writing an NSF Data Management Plan](#)[Documentation and Metadata](#)[File Formats](#)

Manage Your Data

The MIT Libraries supports the MIT community in the management and curation of research data by providing the following services:

Data Management Guide

This Data Management and Publishing Guide is a practical self-help guide to the management and curation of research data throughout its life cycle. It provides guidance on a range of topics, including [planning for data management](#), [documentation/metadata](#), [file formats](#), [data organization](#), [data security and backup](#), [citing data](#), [data integration](#), [funder requirements](#), [ethical and legal issues](#), and [sharing and archiving data](#).

Assistance with Creating Data Management Plans

Many [funders](#), such as the National Science Foundation, have requirements for data sharing and [data management plans](#). We can help you to put together such a plan, assess the data management needs of your particular project, and assist in identifying solutions for data management and archiving.

[Workshops](#)

UCLA Library Website

The screenshot shows a web browser window displaying the UCLA Library website. The page title is "Data Management for the Sciences" with tags: data curation, data management plan tool, data repository, dataup, merriitt, nsf data management. The page content includes a navigation menu with tabs for Overview, Managing Data, Creating a Data Management Plan, Funding Agency Requirements (selected), Data Deposit and Sharing, and Resources. The main content area is divided into several sections: NSF, NSF Resources, Links to Funding Agencies Guidelines, NIH, and NIH Public Access Resources. The NSF section discusses the strengthened data sharing policy in 2011. The NSF Resources section introduces the DMPTool. The Links to Funding Agencies Guidelines section lists various agencies and their data sharing policies. The NIH section discusses the NIH Public Access Policy. The NIH Public Access Resources section provides links to the NIH's Public Access Policy homepage and frequently asked questions.

Data Management for the Sciences Tags: data curation, data management plan tool, data repository, dataup, merriitt, nsf data management
A guide to best practices for management of research data, including links to data services from the University of California.
Last Updated: Aug 9, 2013 | URL: <http://guides.library.ucla.edu/data-management> | [Print Guide](#) | [RSS Updates](#) | [SHARE](#) | [f](#) | [t](#) | [e](#)

Overview | **Managing Data** | **Creating a Data Management Plan** | **Funding Agency Requirements** | **Data Deposit and Sharing** | **Resources**

Funding Agency Requirements | [Comments\(0\)](#) | [Print Page](#) | Search: | This Guide | [Search](#)

NSF
The NSF strengthened its data sharing policy in January 18, 2011, when it began requiring all grant proposals to include a two-page data management plan. Guidelines are available online. Specific NSF directorates, offices, divisions, programs, or other units may impose additional data management requirements.

NSF Resources

DMPTool
Guidance and Resources for your Data Management Plan
You can use the **Data Management Plan (DMP)** tool created by the California Digital Library (CDL) to create a data management plan that will satisfy NSF-directorate specific requirements. Read more about the tool both at CDL and on our [Creating a Data Management Plan](#) page.
If you'd like to write your own data management plan, unaided by the DMP tool, the MIT Libraries Data Management and Publishing group has compiled a set of questions that

Links to Funding Agencies Guidelines

- National Science Foundation: Dissemination and Sharing of Research Results
- National Institutes of Health: Data Sharing Policy
- Centers for Disease Control and Prevention Policy on Releasing and Sharing Data
- Department of Defense Principles and Operational Parameters of the DoD Scientific and Technical Information Program
- Environmental Protection Agency Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated
- NASA Earth Science Statement on Data & Information Policy
- National Institute of Standards and Technology (NIST) Guidelines, Information Quality Standards, and Administration Mechanism
- United States Department of Agriculture USDA Cooperative State Research, Education, and Service (CSREES)
- National Oceanic and Atmospheric Administration (NOAA) Data Submission Policies and Guidelines
- National Endowment for the Humanities (NEH): Data Management Guidelines
- Institute of Museum and Library Services (IMLS): Specifications for Projects that Develop Digital Products
- The Gordon and Betty Moore Foundation: Data Sharing and Plan

NIH
The NIH Public Access Policy ensures that the public has access to the published results of NIH funded research. It requires scientists to submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central upon acceptance for publication. To help advance science and improve human health, the Policy requires that these papers are accessible to the public on PubMed Central no later than 12 months after publication.
For more information on how to comply with the NIH Public Access policy, please see the [NIH Public Access Policy research guide](#).

NIH Public Access Resources

- [NIH's Public Access Policy homepage](#)
- [Frequently Asked Questions about the NIH Public Access Policy](#)

Next Week in GDP...

May 15

- *“The Living Protocol:” Managing Documentation While Managing Data* - Matt Maciejewski

Agenda

- Observation, Objective & Bottom Line
- Living Protocol
- Example: Managing secondary data
- Example: Managing linkage of primary & secondary data
- Summary: Value of documentation

Questions?

Bonus Slides

OMOP tools*

Tool	Application	Link
Common Data Model	Facilitates analysis of disparate data sources	http://omop.org/CDM
Standardized Terminologies	Generate meaningful & comparable results	http://omop.org/Vocabularies
Health Outcomes of Interest (HOI)	10 HOI definitions related to drug safety	http://omop.org/HOI
Observational Medical Dataset Simulator Generator 2 (OSIM 2)	Creates simulated data sets that conform to the OMOP CDM	http://omop.org/OSIM2
Observational Source Characteristics Analysis Report (OSCAR)	SAS program that generates descriptive statistics	http://omop.org/OSCAR
Natural History Analysis (NATHAN)	OSCAR's extension creating a standardized summary	http://omop.org/NATHAN
Regularized Identification of Cohorts (RICO)	Procedure standardizing patient cohort selection	http://omop.fnih.org/MethodsLibrary
Generalized Review of OSCAR Unified Checking (GROUCH)	Warns of implausible and suspicious data observed in OSCAR summary	http://omop.fnih.org/GROUCH
Analysis Methods	Library of methods and specifications	http://omop.fnih.org/MethodsLibrary

* Courtesy Ramkiran Gouripeddi, M.S., M.B.B.S. , ram.gouripeddi@utah.edu

Standardized Terminologies*

Condition	<ul style="list-style-type: none">• ICD-9-CM, SNOMED-CT, MedDRA, Read, Oxmis
Drug	<ul style="list-style-type: none">• RxNorm, NDF-RT, NDC, GPI, Multum, Multilex, VA_Product, FDB ETC, ATC, FDB indications, FDB contra-indications
Procedure	<ul style="list-style-type: none">• CPT-4, ICD-9-Procedure, HCPCS, SNOMED-CT
Observation	<ul style="list-style-type: none">• LOINC, SNOMED, UCUM
Demography	<ul style="list-style-type: none">• CDC Race, HL7 Sex, US Census Geographical Regions
Visit	<ul style="list-style-type: none">• CMS Place of Service Codes
Person Status	<ul style="list-style-type: none">• SNOMED