Database & Methods Cyberseminar Series

Applying Comorbidity Measures Using VA and CMS (Medicare/Medicaid) Data

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RESEARCHERS' GUIDE TO VA DATA

We dedicate this lecture to the memory of our good friend and colleague, James F. Burgess, Jr., PhD, who died on June 26, 2017.

Jim was a senior investigator at HSR&D's Center for Healthcare Organization and Implementation Research (CHOIR) in Bedford and Boston, and a pillar of scholarship and mentorship in the VA. He made huge impacts at the Boston University School of Public Health and contributed to national and international communities of health services research scientists and educators.

To VIReC, Jim was a great friend—a long-time member of our Steering Committee, an advisor on many topics, and a regular presenter of this cyberseminar. He will truly be missed.

8/4/2017

Database & Methods Cyberseminar Series

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

Topics

- Application of VA and non-VA data to research and quality improvement questions

- Limitations of secondary data use

- Resources to support VA data use

FY '17 Database & Methods Schedule

First Monday of the month* │ 1:00pm-2:00pm ET

Visit our Education page for more information & registration links.
www.virec.research.va.gov

Date	Topic
10/3/16	Overview of VA Data & Research Uses
11/7/2016	Requesting Access to VA Data
12/5/2016	VA Healthcare Utilization
1/9/2017*	VA Medicare Data (VA/CMS)
2/6/2017	Measuring & Assessing Outpatient Care
3/6/2017	Mortality Ascertainment & Cause of Death
4/3/2017	Assessing Race & Ethnicity
6/5/2017	Pharmacy Data
7/10/2017	Chart Review Using National EHR Tools
8/7/2017	Applying Comorbidity Measures Using VA and CMS (Medicare/Medicaid) Data
9/11/2017	Using CDW Microbiology and Pharmacy Data in Outcomes Research

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Database & Methods Cyberseminar Series

Applying Comorbidity Measures Using VA and CMS (Medicare/Medicaid) Data

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Today's objectives

At the end of this session, the participant will be able to:

- Name 4 sources of comorbidity information in VA and CMS data

- Identify 3 common data elements used in measuring comorbidities

- Recognize important measurement issues encountered when using administrative data to assess comorbidities

- Avoid common pitfalls in combining VA and CMS (Medicare/Medicaid) data to assess comorbidities

Agenda

- Background on comorbidity measurement

- Finding comorbidity information in VA and CMS Data

- Using administrative data to assess comorbidities: Important measurement considerations

- Case study: Example of VA Study that used VA and/or Medicare data to construct comorbidities

- Summary

- Additional Resources

Poll Question #1: *What is your role in the VA ?*

- Research investigator/PI

- Data manager, analyst, or programmer

- Project coordinator

- Clinical or operations staff

- Other – please describe via the Q&A function

Agenda

- **Background on comorbidity measurement**

- Finding comorbidity information in VA and CMS Data

- Using administrative data to assess comorbidities: Important measurement considerations

- Case study: Example of VA Study that used VA and/or Medicare data to construct comorbidities

- Additional Resources

Definition: Comorbidity

- A concomitant but unrelated pathological or disease process[1]

- Several variations on this concept have emerged[2]

- Assuming focal condition, comorbidities are unrelated and specific, separate from health status

[1] American Heritage Medical Dictionary
[2] Valderas, JM, Starfield, B, Sibbald, B, et al., Defining Comorbidity: Implications for Understanding Health and Health Services. Ann Fam Med. 2009 July; 7(4): 357–363.

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Comorbidities

- Can be used to evaluate:
  - Clinical outcomes
  - Resource use (e.g., costs)
  - Quality of care
- "Risk adjustment" and "case mix" terms often used
- May be conceptualized/ operationalized as:
  - Predictor (of direct interest for impact)
  - Covariate/confounder (adjusting for factors not of focus)
  - Moderator (affects the impact of variables of focus)
  - Dependent variable (SOMETIMES is the focus)
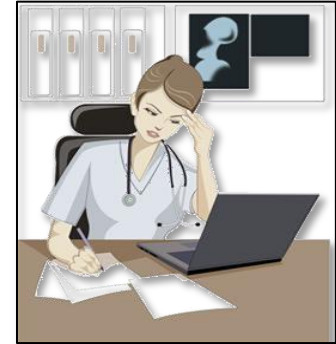
For each research question requiring information on comorbidities – Which Role?

- Comparative effectiveness studies

  - Is chemotherapy more effective than radiotherapy in the treatment of endometrial cancer?

- Healthcare disparities

  - Do comorbidities explain race/ethnic disparities in kidney transplants?

- Healthcare quality

  - Are VA patients more likely than those in FFS Medicare to receive recommended screening tests?

- Healthcare costs / Provider productivity

  - Who provides more cost-effective care for diabetes – endocrinologists, nephrologists or general internists?

Sources of Comorbidity Information in Administrative Data

- Workload (VA) or claims (Medicare, Medicaid) data for diagnosis and procedure codes

- Pharmacy data for medications specific to a disease/condition

- Lab data for laboratory results indicating a condition

- Other, e.g., program enrollment records

Agenda

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- Additional Resources

Administrative Data Sources for Comorbidity Information

- Diagnosis and Procedure Codes
  - VA workload data
    - Corporate Data Warehouse
    - Medical SAS Datasets
    - Non-VA Medical Care (formerly Fee Basis) Files
  - Medicare claims
    - Institutional Standard Analytic Files (SAFs)
    - Non-Institutional SAFs
    - Institutional Stay Level File (MedPAR)
  - Medicaid claims
    - Medicaid Analytic Extract (MAX) Files

Administrative Data Sources for Comorbidity Information (cont'd)

- Medications
  - Pharmacy data
    - e.g., oral hypoglycemics, insulin indicate diabetes
    - VA Pharmacy Benefit Management (PBM), Managerial Cost Accounting (MCA; formerly Decision Support System (DSS)), CDW Pharmacy BCMA and Outpatient data
    - Medicare Part D claims
    - Medicaid Prescription Drug claims
  - Laboratory Results
    - MCA Laboratory Results National Data Extract (NDE)
    - CDW LabChem data
    - e.g., elevated glycohemoglobin indicates diabetes
    - Not available in Medicare data
  - Other
    - e.g., condition-focused program enrollment

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Types of Diagnosis Codes

- ICD-9-CM/ICD-10-CM Diagnosis Codes[1]

  - International Classification of Diseases, Ninth Revision, Clinical Modification

  - Transition to ICD-10 in FY2015 VA data

  - Admitting code - patient's initial diagnosis at the time of admission

  - Primary/principal codes - conditions chiefly responsible for the visit/admission

  - Secondary codes - conditions affecting services provided

  - Line item code - diagnosis supporting procedure/service on the non-institutional claim

[1] **National Center for Health Statistics**

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Types of Procedure Codes

- ICD-9-CM/ICD-10-CM Procedure Codes

  - Used for inpatient services in VA, institutional inpatient Medicare claims, and inpatient and other services in Medicaid claims

- AMA Current Procedural Terminology (CPT®)[1]

  - Current Procedural Terminology

  - Used for outpatient services in VA

  - Used for inpatient and other services in Medicaid claims

[1] **AMA CPT Terminology**

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Types of Procedure Codes (cont'd)

HCPCS (Healthcare Common Procedure Coding System) Codes[1]

- Used in Medicare/Medicaid billing

- Level 1: CPT® codes (services & procedures)

- Level 2: Used to identify products, supplies, and services not included in the CPT codes (e.g., ambulance service & durable medical equipment)

[1] **Centers for Medicare & Medicaid Services- HCPCS Codes**

VA MedSAS Datasets: Diagnosis and Procedure Codes

	Principal Admitting Diagnosis Code	Primary Diagnosis Code	Secondary Diagnosis Codes	ICD-9/10 Procedure Codes	CPT Procedure Codes
Inpatient Main	X	X	X		
Inpatient Bedsection	X	X	X		
Inpatient Procedure	X	X		X	
Inpatient Surgery	X	X		X	
Outpatient Visit					
Outpatient Event		X	X		X
Inpatient Encounters		X	X	X	X

VA CDW Datasets: Diagnosis and Procedure Codes

Dataset	ICD-9/ICD-10 Diagnosis Code	ICD-9/ICD-10 Procedure Code	CPT Procedure Code
Inpatient Domain			
InpatientDiagnosis InpatientDischargeDiagnosis InpatientFeeDiagnosis PatientTransferDiagnosis PresentonAdmission SpecialtyTransferDiagnosis	X		
InpatientCDProcedure InpatientSurgicalProcedure		X	
InpatientCPTProcedure			X
Outpatient Workload Domain			
WorkloadVDiagnosis WorkloadVProcedureDiagnosis	X		
WorkloadVProcedure			X
Purchase Care Domain			
FeeInpatInvoiceCDDiagnosis FeeInpatInvoiceCDProcedure	X	X	
FeeServiceProvided	X		X

Non-VA Medical Care Files: Diagnosis and Procedure Codes

	Discharge Diagnosis Codes	Secondary Diagnosis Codes	ICD-9/10 Procedure Codes	CPT Procedure Codes
Inpatient	X	X	X	
Inpatient Ancillary	X *			X
Outpatient	X			X

*Beginning FY2009

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Medicare Data: Diagnosis and Procedure Codes

	Admitting Diagnosis Code	Primary Diagnosis Code	Secondary Diagnosis Codes	ICD-9/10 Procedure Codes	HCPCS Procedure Codes
MedPAR	X		X	X	
Inpatient	X		X	X	X
SNF	X		X	X	X
Outpatient		X	X		X
Hospice		X	X	X	X
Home Health		X	X		X
Carrier		X	X		X
DME		X	X		X

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Medicaid Data: Diagnosis and Procedure Codes

	Principal Diagnosis Code	Secondary Diagnosis Codes	ICD-9/10 Procedure Codes	CPT Procedure Codes	HCPCS Procedure Codes
Other Services	X	X	X*	X*	X*
Inpatient	X	X	X*	X*	X*
Long Term Care	X	X			

*Procedure coding system variable (ICD-9, CPT-4, or HCPCS) accompanies the procedure code variables

Pharmacy Data

Potential value in using pharmacy-based measure versus ICD-based measures

- When diagnosis information is not available

- Stable chronic conditions not occasioning a provider visit (e.g., hypertension, epilepsy)

- Conditions for which the treatment regimen is set and time-limited (e.g., TB)

Agenda

- Background on comorbidity measurement

- Finding comorbidity information in VA and CMS Data

- Using administrative data to assess comorbidities: Important measurement considerations

- Case study: Example of VA Study that used VA and/or Medicare data to construct comorbidities

- Additional Resources

Comorbidities vs. comorbidity burden or summary risk measure
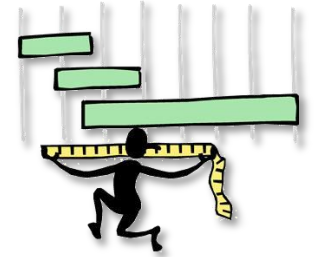
- Are specific conditions of interest?

- Summary measures

    - Provide one number—the score, simplifying the analysis

    - Allows for parsimony in statistical regression models

- Influences data that can be used and conditions to be identified

What conditions or condition groups to capture?

Depends on:

- Population

- Objective (e.g., case-mix adjustment)

- Outcome (e.g., mortality? post-stroke rehab? expenditures?)

- Data availability - inpatient, outpatient, or both

  - (see Klabunde 2000; Wang 2000)
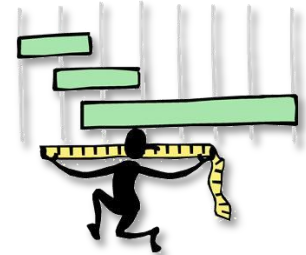
What conditions to capture?
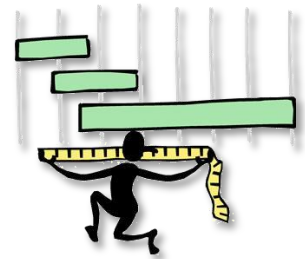
Identify clinician-assigned diagnoses.

- Avoid clinical laboratory, diagnostic imaging (radiology, x-ray), and other ancillary test/service events; DME/prosthetics; telephone encounters

- VA – MCA (formerly DSS) Primary Stop Codes, Berenson-Eggers Type of Service (BETOS) categories, Place of Service codes

- Medicare – DME File, Physician Specialty codes, Claim type code, BETOS, Place of Service codes

Exclude 'rule-out' diagnoses
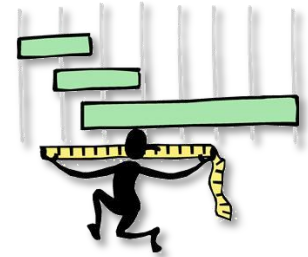
Operational definition: Any diagnosis that does not meet the following criteria[1]:

- Appears at least once on a record/claim for inpatient care, or

- Appears on at least two records/claims for outpatient care with visit/claim dates at least 30 days apart

- Most common approach, but could have reasons for doing things differently

[1] Klabunde CN, Harlan LC, Warren JL. Data sources for measuring comorbidity: a comparison of hospital records and Medicare claims for cancer patients. Med Care 2006; 44: 921-28

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Identifying Non-Clinician-Assigned Diagnoses

Examples of VA stop codes used to identify records for exclusion	
X-ray	105
Laboratory	108
Telephone	103, 147, 178 (and others)
Examples of Medicare Provider Specialty codes used to identify claims for exclusion	
Diagnostic radiology	30
Mammography screening center	45
Clinical laboratory	69

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Measurement time period
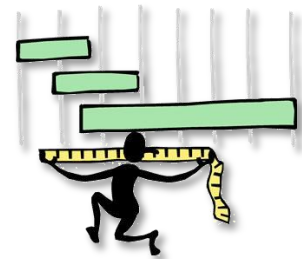
- Active diagnoses

- Temporal relationship between comorbidity measurement and outcome measurement

- Anchor
  - Date
  - Event

Special Challenges
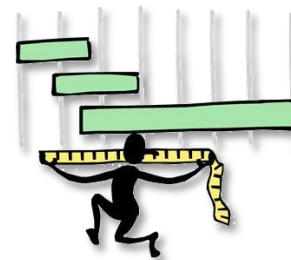
- Measuring functional status

- Measuring severity of disease

- Undiagnosed conditions

  - You need to have an encounter with a provider in order to have an identifiable diagnosis

Comorbidity measurement using administrative data

Electronic Health Record (EHR) -- data is tied to healthcare use:

- In VA: no healthcare encounter -> no record generated -> no diagnosis recorded

- Non-VA data sources, other than those in Non-VA Medical Care [formerly Fee Basis], may generate procedure and diagnosis codes not available in VA data

- More frequent use of healthcare -> more opportunities for diagnoses made and recorded

Analytic Strategies in Comorbidity Measurement Using Administrative Data[1]

- Ordinal

- Weighting

- Categorical
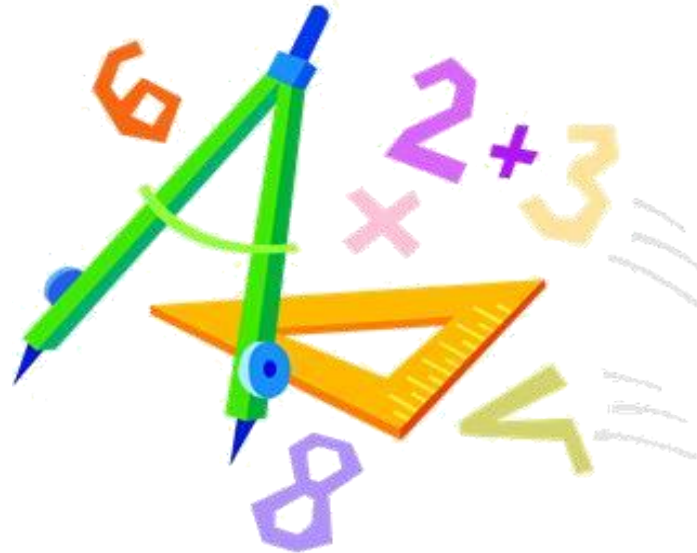
[1] Lash TL, Mor V, Wieland D, Ferrucci L, Satariano W, Silliman RA. Methodology, design, and analytic techniques to address measurement of comorbid disease. *J Gerontol A Biol Sci Med Sci.* 2007;62(3):281-285.

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Commonly Used Comorbidity Measures Using Administrative Data

- Charlson
  - Deyo-Charlson
  - Romano adaptation
- Quan (Charlson and Elixhauser methods – 2005 Medical Care)
- Elixhauser

- HCC/DCG
- RxRisk
- Nosos
- ACG
- Functional Comorbidity Index
- Others

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Charlson Comorbidity Index

- Developed to predict mortality

- 19 chronic conditions

- Each has a weight

- Score = sum of weights

- Extended/adapted by Deyo, Romano independently

Charlson vs. Elixhauser (Quan)

- ICD-9-CM and ICD-10 algorithms for Charlson and Elixhauser (Quan version) yielded similar results [1]

[1] Quan, H., Sundararajan, V., Halfon, P., Fong, A. Burnand, B., Luthi, J-C., Saunders, L. D., Beck, C. A., Feasby, T. E., and Ghali, W. A. . Coding algorithms for defining comorbidities in ICD-9-CM and ICD-10 administrative data. Medical Care (2005): 1130-1139

HCC/DCG Method

- Developed to predict costs

- 15,000 ICD-9 diagnosis codes put into

  - 185 buckets of homogeneous conditions

- Homogeneous condition categories (buckets) arranged hierarchically

  - Within single organ system

  - Patients falling into more than one bucket within an organ system assigned to one with highest resource use

- HCC/DCG risk scores calculated

Nosos and CMS V21 Measures

- VA developed tailored solution built off of DXCG (HCC) Risk Solutions model

- CMS V21 based on the CMS 189 HCC Prospective Risk Model

- Nosos[1] from Greek for "Chronic Disease" adds VA specific registry and other factors to the CMS V21 model and generates prospective/concurrent models

- Models with SAS datasets[2] and programs[3] available

[1]See: Todd Wagner, cyberseminar *Risk Adjustment for Cost Analyses: Development and Implementation of the V21 and Nosos Systems* February 18, 2015 HERC Health Economics Seminar

[2]SAS datasets available for FY2006-2014 at \\vhacdwapp15\RiskScores

[3]SAS Programs available on VINCI SAS Grid at /data/ops/OPES_CMSHCCV21/nososmacros

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Why Nosos?

- VA specific and validated improvements to base CMS V21 model

- Adds VA relevant demographics, including VA priority

- Employs VA Registries (e.g. Spinal Cord Injury, PTSD, Hepatitis C, Transplant, ESRD, Homeless)

- Uses 26 of the 29 PBM Drug Classes (the ones commonly used in VA)

- Employs 46 Rosen psychiatric condition categories

Pharmacy Data
VA Chronic Disease Score

- VA-based version of RxRisk

  - Includes 45 chronic disease categories identified through prescription data

See: Sloan KL, et al. Construction and characteristics of RxRisk-V: a VA-adapted pharmacy-based case-mix instrument. *Med Care* 2003; 41(6): 761-74

Combining VA and CMS Data to Measure Comorbidities

Main Pitfall: Not using both data sources

- Issues:
  - Differing incentives to record complete information
  - Differing dates-of-service issues may impact measurement time period
    - VA and Medicare inpatient care: exact diagnosis date usually not captured
    - Medicare: some services billed periodically, e.g., home health
  - Differing types of codes used

Importance of Complete Data

Incomplete health status information: Byrne, et al. 2006[1]

- Objective: Determine whether all diagnoses and total illness burden of patients who use both the VA and Medicare health care systems can be obtained from examination of data from only one of these systems

  - Calculated risk scores using VA only, Medicare only, and both VA and Medicare data

[1] Byrne MM, Kuebeler M, Pietz K, Petersen LA. Effect of using information from only one system for dually eligible health care users. Med Care. 2006;44(8):768-773

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Importance of Complete Data

- On average for a given patient who used both VA and Medicare services, more diagnoses were recorded in Medicare (~13–15) than in the VA system (~8) for dual users.

- On average only 2 diagnoses were common to both the VA and Medicare.

- Medicare data alone accounted for approximately 80% of individuals' total illness burden, and VA data alone captured one-third of the total illness burden (Medicare more severe).

- The ratio of RRSs when calculated using Medicare and VA separately was approximately 2.4.

Byrne et al.(2006)

Agenda

- Background on comorbidity measurement

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- Using administrative data to assess comorbidities: Important measurement considerations

- **Case study: Example of VA Study that used VA and/or Medicare data to construct comorbidities**

- Additional Resources

Research Example: Pugh MJ, Finley EP, Copeland LA, et al. Complex comorbidity clusters in OEF/OIF veterans: the polytrauma clinical triad and beyond. Med Care. 2014; 52(2):172-181.

Background: Extant research has not explored comorbidity clusters in OEF/OIF Veterans more broadly, particularly co-occurring chronic diseases.

Objective: To identify comorbidity clusters among diagnoses of deployment-specific and chronic conditions.

Sample: OEF/OIF Veterans who received care in the VHA in FY2008-2010.

Note: Comorbidity indicators used in latent class analysis (trying to group or categorize Veterans)

- Comorbidity data sources
  - VA MCA <DSS> NDEs
  - Inpatient and Outpatient
- Comorbidity measurement
  - Measurement period: FY2008-2009
  - Excluded diagnoses from ancillary care: laboratory, radiology, etc.
  - Used ICD-9-CM codes previously validated for use in administrative data (including Charlson, Elixhauser) to create dichotomous indicators for 32 conditions

Physical/mental health and post deployment conditions examined

- TBI
- Inner Ear
- Hearing
- Vision Problems
- Headache
- Low Back Pain
- Other Pain
- Sleep
- PTSD
- Depression
- Anxiety
- Bipolar Disorder
- Substance Abuse/Dependence

- Cardiac
- Hypertension
- Diabetes
- Obesity
- Osteoarthritis
- Burns
- Amputation
- Spinal Injury
- IBD
- PVD
- CVD

- Seizures
- Cognitive Impairment/Dementia
- Other neurological conditions
- Fatigue
- Schizophrenia
- Other Mental Health
- Rheumatoid Arthritis/Collagen Disease
- Cancer

Research Example: Pugh MJ, Finley EP, Copeland LA, et al. Complex comorbidity clusters in OEF/OIF veterans: the polytrauma clinical triad and beyond. Med Care. 2014; 52(2):172-181.

Results

- 6 Comorbidity clusters (Latent Class Analysis) were identified
  - PCT (Polytrauma Clinical Triad) + Chronic Disease
  - PCT alone
  - Mental Health + Substance Abuse
  - Sleep, Amputation, Chronic Disease
  - Pain, Moderate PTSD
  - Relatively Healthy

Limitation

- Data do not reflect non-VA care or diagnoses received in non-VA settings, probably very significant in this younger population.

Summary

- Selecting the right method always depends on the research questions and the conceptual role of comorbidities affecting your particular study

- There is no one-size-fits-all approach!!!

- You want to consider pros and cons of particular approaches you are considering carefully

Summary

- Make sure you understand the frailty and possible inconsistencies in coding from the data you use…

- So think about the data generating process of your data, does it come solely from the VA (so you have VA registries, e.g.) or are you combining with Medicare or Medicaid data? Why are you using the data you are using?

Session Outline

- Background on comorbidity measurement

- Finding comorbidity information in VA and CMS Data

- Using administrative data to assess comorbidities: Important measurement considerations

- Case study: Example of VA Study that used VA and/or Medicare data to construct comorbidities
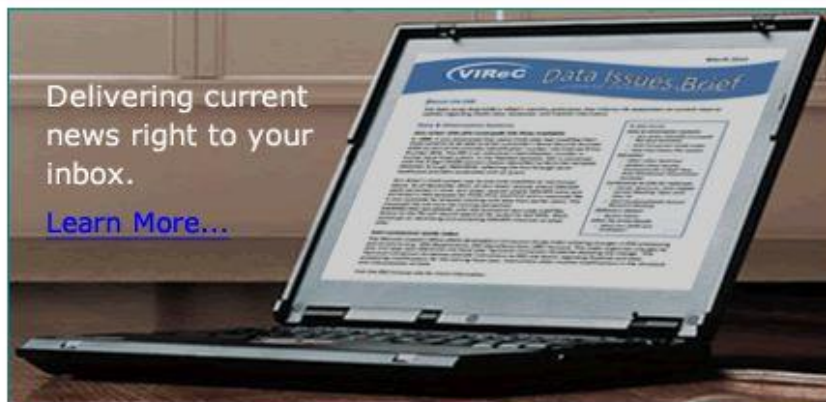
- **Additional Resources**

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Real SSN Data Request Process

VA REDCap Project

Data Tip of the Month

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CURRENT VA DATA NEWS
Data Issues Brief

EXPERIENCES FROM THE FIELD
Researcher's Notebook

⊛ New from VIReC

CDW Health Factor Factbook
Describes tables, columns, and values in the Health Factor Domain.

Geocoded Data
Discover which data sources contain geocoded data.

ICD-10 Implementation
Learn how the ICD-10 code set was implemented in datasets commonly used by VA researchers.

What's in the Literature?

💼 VIReC Resources

Learn about VA data:
⊞ Data Sources
⊞ Data Topics
⊞ Data Tools

Link to Comorbidity Resources

VA/CMS Data for Research Project: Data custodian for CMS and USRDS data for VA research.

Factbooks: Describe tables, columns, and values in select CDW Domains.

http://vaww.virec.research.va.gov/Comorbidity/Overview.htm

Measuring Comorbidity Using VA and Medicare Data

Overview

Measures of patient comorbidity are important in ev
multiple potential uses in research. For example, a
dependent variable, predictor, tool for partial risk a
criteria for a cohort selection. In general, comorbidit
quantify, and study the complexity of comorbidity di
research question or objective. Researchers can use
along with established comorbidity measures to asc
observational healthcare studies.

Data for Assessing Comorbidity

Many data sources contain data that can be used for assessing comorbidity, such as diagnosis and procedure codes, pharmacy and laboratory test data, etc. The following data sources have been used by VA researchers in comorbidity studies. Select a data source from the table below to learn more

Data Source
Corporate Data Warehouse
Medical SAS Datasets
Non-VA Medical Care

Methods for Measuring Comorbidity

Researchers should keep in mind that all measures have strengths and weaknesse
inherently are incomplete. The most appropriate comorbidity measure for a study w
on the research question, population of interest, data availability, and researcher's
comorbidity. Since these measures vary (a) in their definition of comorbid condition
populations and/or outcomes on which they have been validated; (c) the inclusion
exclusions of various disorders (and the weights assigned to them); and (d) other
parameters, it is important to evaluate the comorbidity measure under consideration
relevant literature. The following are examples of comorbidity measures.

+ Expand All

+ Charlson Comorbidity Index

+ Elixhauser Comorbidity Index

+ Quan Comorbidity Measure

+ HCC/DCG Comorbidity Measure

+ V21 and Nosos Risk Scores Program

+ RxRisk

What's in the Literature?
A Bibliography on Comorbidity Measurement

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Calculating a Comorbidity Index for
Risk Adjustment Using VA or Medicare Data

A VIReC Tutorial

Revised comorbidity tutorial
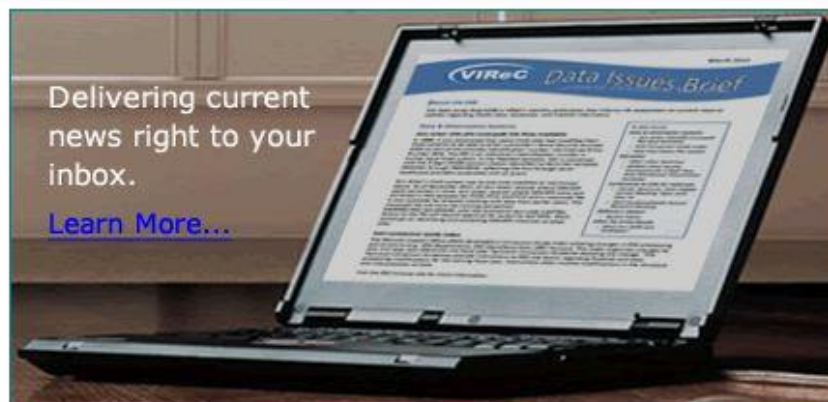
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💼 VIReC Resources

Learn about VA data:
⊞ Data Sources
⊞ Data Topics
⊞ Data Tools

Link to ICD-10 Resources

VA/CMS Data for Research Project: Data custodian for CMS and USRDS data for VA research.

Factbooks: Describe tables, columns, and values in select CDW Domains.

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http://vaww.virec.research.va.gov/ICD-10/Overview.htm

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ICD-10 Implementation

Overview

On October 1, 2015, VA implemented structural changes to include ICD-10 codes in the Veterans Health Information Systems & Technologies Architecture (VistA), which is the origin of data in many VA databases. VA datasets commonly used by the research community have been modified to accommodate these codes.

- Diagnostic and procedural variables within these sources will use the ICD-10 code set.
- ICD-9 codes will remain in datasets prior to October 1, 2015.
- Episodes of care completed before October 1, 2015, used ICD-9 codes.
- Episodes of care that began before and continued after October 1, 2015, used ICD-10 codes.

General Resources

⊞ Data Access
⊞ Data Sources
⊞ Data Tools
⊞ Data Topics
⊞ Products & Services
⊞ Special Projects

Impact on VA Datasets

Select a data source for more information on how ICD-10 was implemented.

[+ Expand All]

⊞ Corporate Data Warehouse (CDW)

⊞ Medical SAS Datasets

⊞ Non-VA Medical Care File

Mapping ICD-9 to ICD-10

- Centers for Medicare and Medicaid Services (CMS) provides General Equivalence Mappings (GEMS) and guidance, including GEM frequently asked questions.

- VIReC provides a SAS Program for Mapping ICD-9 to ICD-10. Follow the CMS GEMS guide for variables description.

Cyberseminars and Technical Report

Tutorial providing step-by-step guidance on constructing a comorbidity index

http://vaww.virec.research.va.gov/Tutorials/CALC-CCI/Tutorial-CALC-CCI-CY15.pdf (VA Intranet only)

Risk Adjustment for Cost Analyses: The Development and Implementation of a New System (HERC Cyberseminar)
http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=933

Risk Adjustment: Guide to the V21 and Nosos Risk Score Programs
http://www.herc.research.va.gov/include/page.asp?id=technical-report-risk-adjustment (HERC Website)

VIReC Options for Specific Questions

HSRData Listserv

- Community knowledge sharing

- ~1,200 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

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Next session:
September 11, 2017
1 pm Eastern

Database & Methods Cyberseminar Series

Using CDW Microbiology and Pharmacy Data in Outcomes Research

Charlesnika Evans, MPH, PhD
Research Health Scientist
Center of Innovation for Complex Chronic Care (CINCCH)
Hines VA

Makoto Jones, MD, MSCI
Center of Innovation, Informatics, Decision Enhancement, and Surveillance (IDEAS)
Salt Lake City VA

VIReC
RESEARCHERS' GUIDE TO VA DATA