

2012-2013 VIREC Database and Methods Cyber Seminar Series

Assessing Inpatient and Outpatient VA Healthcare Use

October 29, 2012

Presented by:

Denise M. Hynes, MPH, PhD, RN

October 29, 2012



1

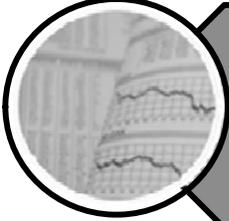
Audience Poll (Heidi to convert using poll function)

- **What particular aspects of healthcare use are you interested in measuring?**

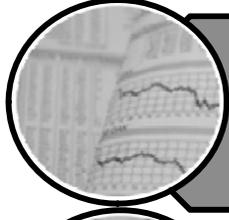
Topics for Today



How has healthcare utilization been measured in VA studies?



Overview of Medical SAS datasets



Finding information in the Medical SAS datasets



Examples of VA studies that have assessed healthcare use

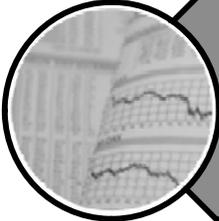


Where to go for more help

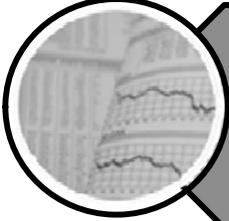
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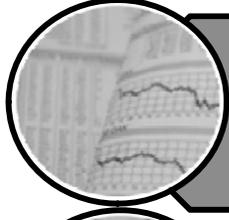
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Where to go for more help

October 29, 2012



Frayne, Berg, Holmes, et al., *J Rehabil Res Dev* 2010;47(8):709-718

Mental illness-related disparities in length of stay: Algorithm choice influences results

Susan M. Frayne, MD, MPH;^{1,2*} Eric Berg, MS;^{1,2} Tyson H. Holmes, PhD;⁴ Kanjal Laungani, BA;² Dan R. Berlowitz, MD, MPH;² Donald R. Miller, ScD;³ Leonard Pogach, MD, MBA;⁶ Valerie W. Jackson, MPH;^{1,2} Rudolf Moos, PhD^{1,2,4}

¹Center for Health Care Evaluation, Department of Veterans Affairs (VA) Palo Alto Health Care System, Palo Alto, CA; ²Division of General Internal Medicine, Stanford University, Palo Alto, CA; ³Center for Primary Care and Outcomes Research, Stanford University, Palo Alto, CA; ⁴Department of Psychiatry and Behavioral Sciences, Stanford University, Palo Alto, CA; ⁵Center for Health Quality, Outcomes, and Economic Research, Edith Nourse Rogers Memorial Veterans Hospital, Bedford, MA; and Boston University School of Public Health, Boston, MA; ⁶Center for Healthcare Knowledge Management, VA New Jersey Health Care System, East Orange, NJ; and University of Medicine and Dentistry of New Jersey-New Jersey Medical School, Newark, NJ

Abstract—Methodological challenges arise when one uses various Veterans Health Administration (VHA) data sources, each created for distinct purposes, to characterize length of stay (LOS). To illustrate this issue, we examined how algorithm choice affects conclusions about mental health condition (MHC)-related differences in LOS for VHA patients with diabetes nationally ($n = 784,321$). We assembled a record-level database of all fiscal year (FY) 2003 inpatient care. In 10 steps, we sequentially added instances of inpatient care from various VHA sources. We processed databases in three stages, truncating stays at the beginning and end of FY03 and consolidating overlapping stays. For patients with MHCs versus those without MHCs, mean LOS was 17.7 versus 13.6 days, respectively ($p < 0.001$), for the crudest algorithm and 37.2 versus 21.7 days, respectively ($p < 0.001$), for the most refined algorithm. Researchers can improve the quality of data applied to VHA systems redesign by applying methodological considerations raised by this study to inform LOS algorithm choice.

Key words: algorithms, databases, Department of Veterans Affairs, episode of care, healthcare disparities, health services research, human, length of stay, mental disorders, outcome and process assessment, patient discharge, physician's practice patterns, rehabilitation, reproducibility of results, veterans, veteran hospitals.

INTRODUCTION

Health services researchers often use administrative data for characterizing length of stay (LOS) to address a range of objectives. For example, they may examine how LOS (as a dependent variable) varies as a function of patient characteristics (e.g., age, race, insurance status, presence of comorbidity), processes of care (e.g., speed of emergency department response, types of medications administered or interventions applied, discharge protocols, etc.), or institutional characteristics (e.g., teaching hospital, mental health facility, etc.) [1-7]. Alternatively,

Abbreviations: DEPC = Diabetes Epidemiology Cohort, DSS = Decision Support System, EXT = extended care, FY = fiscal year, ICD-9 = International Classification of Diseases-9th Revision, LOS = length of stay, MHC = mental health condition, OBS = observation, ORX = outpatient file, VHA = Veterans Health Administration.

*Address all correspondence to Susan M. Frayne, MD, MPH, Center for Health Care Evaluation, 795 Willow Road (AF2-MPD), Palo Alto, CA 940 25; 650-493-5000, ext 23369; fax: 650-617-2690. Email: sfrayne@stanford.edu
DOI:10.1682/JRRD.2009.08.0112

Objective: Examined how algorithm choice affected conclusions about mental illness-related disparities in length of stay

Study Design: Using a 2002 cohort of patients, tracked inpatient use in 2003

Data Sources: VA Inpatient MedSAS datasets, among others



Chan, Cheadle, Reiber, et al., *Psychiatric Services* 2009;60(12):1612-1617

- **Objective:** Examined how healthcare utilization and costs for VA patients with depression varied with/without symptoms of PTSD
- **Study Design:** Cross-sectional study of participants from 10 VA primary care clinics from 6/03 to 6/04
- **Data Sources:** VA Inpatient and Outpatient MedSAS datasets, among others

Health Care Utilization and Its Costs for Depressed Veterans With and Without Comorbid PTSD Symptoms

Domin Chan, Ph.D., M.H.S.
Allen D. Cheadle, Ph.D.
Gayle Reiber, Ph.D., M.P.H.
Jürgen Unttzer, M.D., M.P.H.
Edmund F. Chaney, Ph.D.

Objective: This study examined health care utilization and costs of care among Veterans Affairs (VA) patients with depression and with or without symptoms of comorbid posttraumatic stress disorder (PTSD). **Methods:** Cross-sectional comparisons of health care utilization and costs were conducted with VA administrative data for a sample of veterans from a randomized trial of collaborative care depression treatment in ten VA primary care clinics across five states. Patients with depression or dysthymia were included in the study, and those who were acutely suicidal or had probable bipolar disorder were excluded. The sample of 606 patients was mainly male, white, and aged 55 or older. Health care utilization, costs, and medication data from VA administrative databases were analyzed over 12 months. **Results:** Patients with depression and PTSD (screen score ≥ 3) were more emotionally distressed, had more frequent mental health specialty visits (6.81 versus 1.68, $p < .001$), more total outpatient visits (25.16 versus 19.24, $p < .001$), and correspondingly higher outpatient mental health care costs over the previous 12 months compared with depressed patients without PTSD. Antidepressants were prescribed to a higher proportion of depressed patients with PTSD (61% versus 40%). **Conclusions:** Patients with PTSD and depression had greater utilization of specialty mental health treatments and antidepressant medications and higher mental health care costs in the previous 12 months than depressed patients without PTSD. As military personnel return from Iraq, both VA and non-VA health care providers need to plan for an increase in outpatient mental health services and costs, particularly among depressed veterans who also have PTSD. (*Psychiatric Services* 60:1612-1617, 2009)

Symptoms of depression often co-occur with symptoms of posttraumatic stress disorder (PTSD). Among veterans with PTSD, rates of comorbid major depression range from 29% to 68% (1-4). Among veterans with clinical depression, rates of comorbid PTSD are 36%-51% (5,6). Among depressed female veterans, rates of comorbid PTSD may be as high as 77% (7).

Persons with both depression and PTSD have high levels of symptomatic distress. They have more severe depressive symptoms, a more complicated and persistent history of mental illness (8,9), and higher rates of suicidal behavior than depressed patients without PTSD (10). Patients with both conditions experience greater role impairment and recover more slowly than those with PTSD alone (11). Depression and PTSD are independently associated with higher health care use and costs (12,13).

PTSD among veterans is a growing problem, and its care has significant consequences for staffing levels and budgets within the U.S. Department of Veterans Affairs (VA) mental health system. Depression has been consistently associated with higher health care costs and utilization in both veteran and general populations (12,14,15). Most studies have also shown that PTSD patients have higher medical and surgical inpatient and outpatient utilization for physical and mental health problems than non-PTSD patients (7,16-19). Depression and

Dr. Chan, Dr. Unttzer, and Dr. Chaney are affiliated with the Department of Psychiatry and Behavioral Sciences and Dr. Cheadle and Dr. Reiber are with the Department of Health Services, all at the University of Washington, Seattle. Dr. Reiber and Dr. Chaney are also with the Health Services Research and Development Center of Excellence, Veterans Affairs Puget Sound Health Care System, Seattle. Send correspondence to Dr. Chan, Department of Psychiatry and Behavioral Sciences, University of Washington, Box 356260, Seattle, WA 98195-7260 (e-mail: dchan@u.washington.edu). This study was presented at the American Public Health Association annual meeting, November 6, 2007, Washington, D.C.

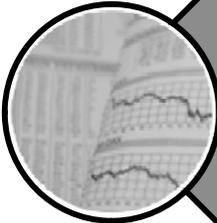
1612

PSYCHIATRIC SERVICES • ps.psychiatryonline.org • December 2009 • Vol. 60 • No. 12

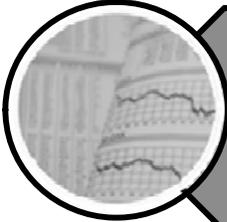
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Topics for Today



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Examples of VA studies that have assessed healthcare use



Where to go for more help

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Audience Poll

(Heidi to convert using poll function)

■ **How would you rate your overall knowledge of the VA MedSAS datasets?**

1 (Never Used);

2;

3;

4;

5 (Used Frequently, Very familiar)

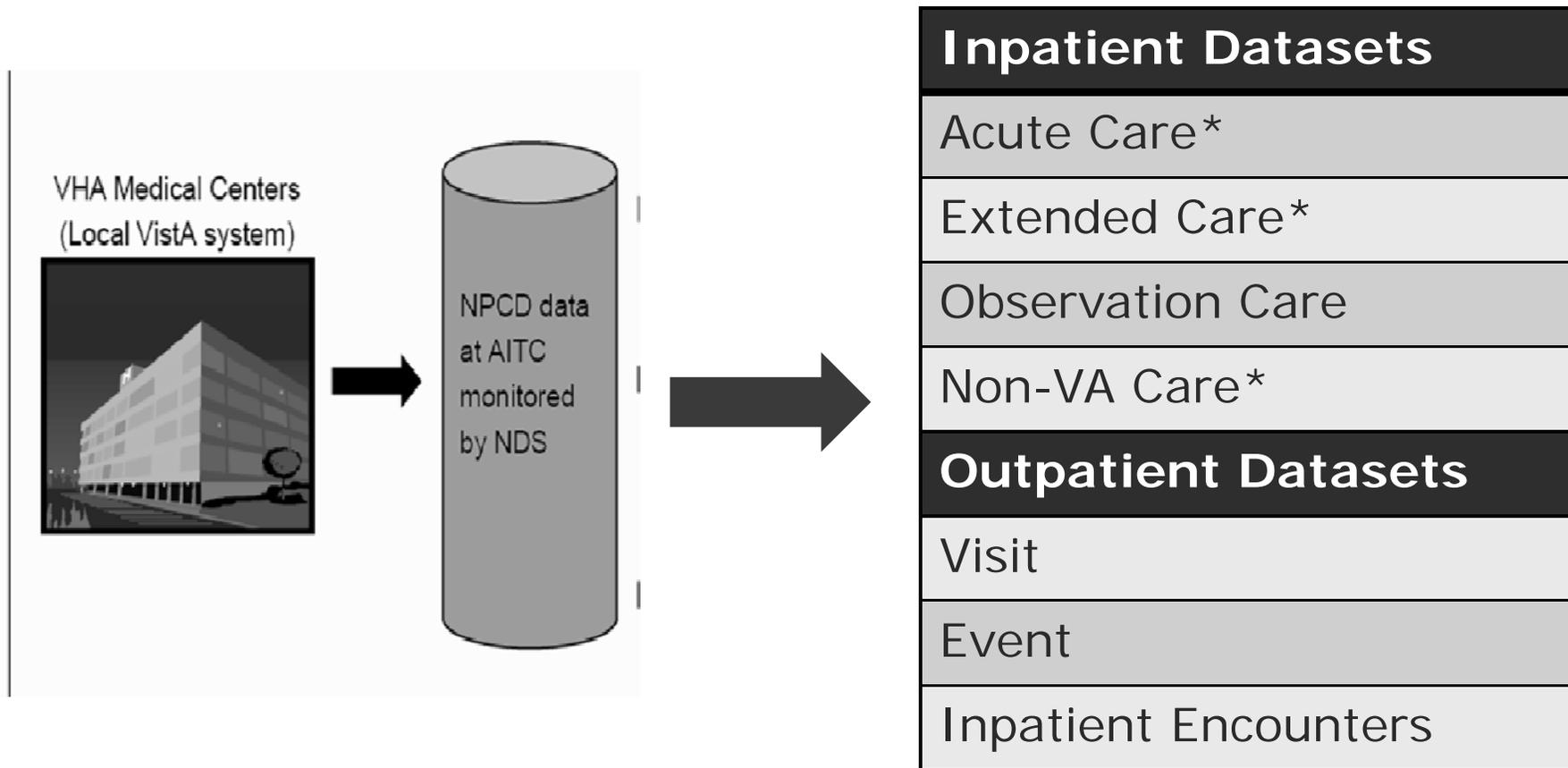
Overview of Medical SAS Datasets

- **Medical SAS (MedSAS) Inpatient and Outpatient Datasets**
 - Comprehensive datasets for national VHA healthcare delivery
 - Hosted on mainframe computer at Austin Information Technology Center (AITC)
 - Inpatient and outpatient datasets
 - After FY13 utilization data will only be available in SQL tables at the Corporate Data Warehouse

Overview of Medical SAS Datasets

- **Medical SAS (MedSAS) Inpatient and Outpatient Datasets**
 - Available on a quarterly basis
 - Researchers advised to use annual, closed-out datasets
 - Common element: patient identifier (scrambled SSN)
 - After FY13 utilization data will only be available in SQL tables at the Corporate Data Warehouse

VA Data Flow to the Medical SAS Datasets



***4 datasets within each category: Main, Bedsection, Procedure, Surgery**

VA Medical SAS Inpatient Datasets

4 datasets within each category of care

File	Information Provided
Main	Summary of entire stay (episode of care) and demographic information
Bedsection	Data for segment of stay defined by specialty of physician managing patient's care
Procedure	Information on up to 5 procedures on a given day
Surgery	Information on up to 5 surgeries

VA Medical SAS Inpatient Datasets: Acute Care

- **Datasets at AITC are named: MDPPRD.MDP.SAS.XXyy**
XX = the two letter reference code below; **yy** = two digit FY

File	Reference	Dates
Main	PM	1970 - present
Bedsection	PB	1984 – present
Procedure	PP	1988 - present
Surgery	PS	1984 - present

VA Medical SAS Outpatient Datasets

- Datasets at AITC are named: **MDPPRD.MDP.SAS.XXyy**
XX = the two letter reference code below; **yy** = two digit FY

File	Reference	Dates
Visit <ul style="list-style-type: none"> • <i>Reports services provided to a patient in a 24-hour period at a single facility</i> 	SF	1980 - present
Event <ul style="list-style-type: none"> • <i>Provides information about individual outpatient encounters</i> 	SE	1998 - present
Inpatient Encounters <ul style="list-style-type: none"> • <i>Provides information about professional services received during inpatient stay</i> 	IE	2005 - present

Visit vs. Event File

Patient's Outpatient Clinic Stops



During One Day at One Facility



Primary Care Clinic Stop



Ophthalmology Clinic Stop



Physical Therapy Clinic Stop

Visit

Event

Event

Event

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15

15

VA Medical SAS Outpatient Datasets

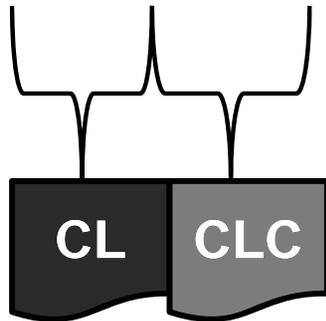
Clinic Stops

- **Clinics are identified using Clinic Stop Codes (equivalent to DSS Identifiers)**
 - **Primary Clinic Stop Code (CL)**
 - Identifies production units or revenue centers for outpatient care
 - **Secondary Clinic Stop Code (CLC)**
 - Further specifies team, service, funding

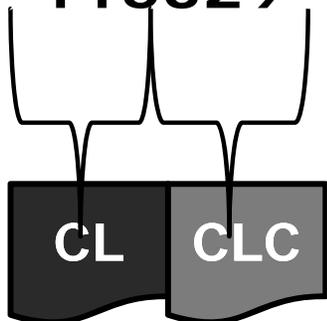
VA Medical SAS Outpatient Datasets

Clinic Stop Examples

- **323117** Primary Care/MED, Nursing
- **323185** Primary Care/MED, Phys Extnd NP (Nrs Prcnr)
- **323187** Primary Care/MED, Phys Extnd CNS (CIn RN Spc)
- **323710** Primary Care/MED, Flu/Pneumococcal Vaccination



- **116714** Respiratory Therapy Education
- **116329** Respiratory Therapy Procedures



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Outpatient Visit File (SF)

– On record per visit

– One VA facility per visit

– Up to 15 primary clinic stops per visit at the given facility

– No diagnosis or procedure information

Top 5 Primary Clinic Stops in FY2009 Visit File (from first 3 million records)

Primary Clinic Stop Code	Values	%
108	Laboratory	18
323	Primary Care/Med	17
502	Mental Health-IND	4
103	Telephone Triage	4
147	Telephone/Ancillary	3

Outpatient Event File (SE)

Top 5 *Secondary Clinic Stops* in FY2009 in Event File (from first 3 million records)

- One record per clinic stop
- One secondary clinic stop per record
- No limit on # records/day
- Combines diagnostic and procedural information in one dataset

Secondary Clinic Stop Code	Values	%
(None)		70
117	Nursing	7
125	Social Work SVC	3
185	Phys Extnd NP (NRS PRCNR)	3
160	Clinical Pharmacy	2

Outpatient Event (SE) File

- **ICD-9 Codes: Up to 10 diagnoses per record**
- **CPT-4 Codes:**
 - Until FY2004: 15 procedures, no repeats allowed
 - Since FY2005: 20 procedures, repetition allowed
- **Since FY2003, Encounter ID**
 - Links Event dataset with HERC Outpatient Average Cost Dataset

Inpatient Encounters File (IE)

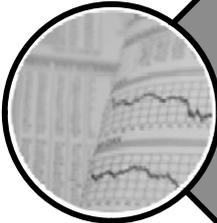
- Encounter in clinic during inpatient stay
- Excludes services in outpatient SE file
- Data available beginning FY2005

Top 5 Primary Clinic Stops in FY2009 Inpatient Encounters File (from first 3 million records)

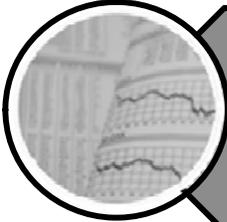
Primary Clinic Stop Code	Values	%
105	X-Ray	13
166	Chaplain-IND	9
202	Rec Therapy Services	8
205	Physical Therapy	8
116	Respiratory Therapy	6



Topics for Today



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Where to go for more help

Finding Information in the Medical SAS Datasets

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Data Transition to CDW
News & Updates
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Acronyms
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Delivering current news right to your inbox.
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Data Issues Brief, September 2012

Upcoming Cyber Seminar

Vista Resource Guide

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.

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

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 & complete list of technical reports, data](#)

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Finding Information in the Medical SAS Datasets

VIREC Research User Guides Index - Windows Internet Explorer

http://www.virec.research.va.gov/RUGs/RUGs-Index.htm

File Edit View Favorites Tools Help

VIREC Research User Guides Index

Note: Information in each Research User Guide is current and accurate for the fiscal years noted in the publication or as of the date released. While previous issues of these guides may be of use to researchers, it is important to remember archived information may no longer be accurate.

Research User Guides

ADUSH Enrollment File
VIREC Research User Guide: 1999-2006 VHA Assistant Deputy Under Secretary for Health (ADUSH) Monthly Enrollment File
Released: December 2006

Abstract

DSS Clinical NDEs
VIREC Research User Guide VHA DSS Clinical National Data Extracts 2nd Edition
Released: September 2009

Abstract
 Archive

Medical SAS Datasets
VIREC Research User Guide: Fiscal Year 2009 VHA Medical SAS® Inpatient Datasets
Released: February 2011

Abstract

VIREC Research User Guide: Fiscal Year 2009 VHA Medical SAS® Outpatient Datasets & Inpatient Encounters Dataset
Released: April 2011

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Finding Information in the Medical SAS Datasets

http://www.virec.research.va.gov/RUGs/RUG-MedSAS-IP-FY09-ER.pdf - Windows Internet Explorer

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Comment

Bookmarks

- 2.6 Changes in Dataset Variables since FY2006
- 2.7 Other Medical SAS® Inpatient Datasets
- 2.8 Resources
- Part 3. Dataset Variable Information
 - Contents | 3
 - 3.1 List of Variables and their Dataset Locations
 - 3.2 One-Page Variable Descriptions
 - Variable Name: ABO
 - Variable Name: ADMITDAY
 - Variable Name: ADMITMO
 - Variable Name: ADMITYR

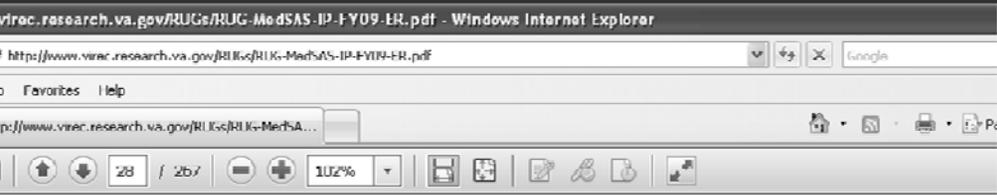
VIREC Research User Guide:
Fiscal Year 2009 VHA Medical SAS® Inpatient Datasets

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Finding Information in the Medical SAS Datasets



3.1 List of Variables and their Dataset Locations

This section lists variables and their dataset locations for the fiscal year (FY) 2009 VHA Medical SAS[®] Inpatient Acute Care Main, Bed Section, Procedure and Surgery datasets. An X in the frequency column indicates VIREC provides additional summary information for this variable in *VIREC Select Variable Frequencies: Medical SAS[®] Datasets* [18].

Table 5. FY09 VHA Medical SAS[®] Inpatient Variables and their Dataset Locations

Name	Definition	Main	Bed Section	Surgery	Procedure	Frequency
ABO	Number of days a patient was out of the hospital on pass during an inpatient stay	X				
ADMITDAY	Date of admission of the inpatient stay	X	X	X	X	
ADMITMO	Month of admission of the inpatient stay	X				
ADMITYR	Year of admission of the inpatient stay	X				
ADTIME	Time of admission of the inpatient stay	X	X	X	X	
AFIX	Indication of whether the admission was to a substation of the parent hospital	X				
AG15Y	Categorical recoding of AGE (Age in Years) into 15 groupings	X				X

Variable Name: **DXLSF**

Variable Name: DXLSF

Definition: Primary ICD-9-CM diagnostic code responsible for the patient's full length of stay in the hospital.

Remarks: DXLSF is the "primary" diagnosis, rather than the "principal" diagnosis (DXPRIME, the diagnosis determined to be the reason for admission) used in many other facilities (for a domiciliary, it is the diagnosis of "greatest clinical significance"). Until FY1981, ICD-8-A was used, and only the first four digits were defined except in special cases. Until FY1986, admitting diagnosis, DXAFULL, was also in the SAS[®] datasets. DXAFULL was eliminated since it was usually identical to primary diagnosis at discharge. In FY1997, the admitting diagnosis was reestablished as DXPRIME. Currently, DRG codes (see DRG) are based on DXPRIME. This is consistent with coding recommended by the Department of Health and Human Services (DHHS) through its SAS[®] dataset subcommittee definitions.

Data Type	Character
Print Format	None
Label	DX LOS-FULL STAY (ICD9) (6-digit) FY1999-FY2005 PRIMARY DX LOS - FULL STAY (ICD9) (6-DIGIT), FY06-to date

List of Variables and their Dataset Locations

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Finding Information in the Inpatient Medical SAS Datasets to assess Admission and Discharge

■ All inpatient datasets include:

- Admission date and time
- VISN and station number (facility)
- Discharge date and time
- Discharge status
- Discharge type



Finding Information in the Inpatient Medical SAS Datasets to assess Physician Specialty

- **BEDSECN** variable identifies specialty of physician managing patient's care
 - Found in Bedsection and Procedure datasets
 - Contains treating specialty code
 - One inpatient stay may have many bedsection stays



Finding Information in the Inpatient Medical SAS Datasets to assess Diagnoses

■ **DXLSF: Primary Diagnosis for Admission**

- Diagnosis initially assigned at admission
- May be different than DXPRIME if diagnosis changes after study/test results
- Not coded by HIM

■ **DXPRIME: Principal Diagnosis**

- Condition which, after study, is determined chiefly responsible for the admission to the hospital.
- Codes assigned by professional coders (HIM)
- Leads to the calculation of the DRG

Finding Information in the Inpatient Medical SAS Datasets to assess Diagnoses

■ DXF2 – DXF13*

- Secondary ICD-9-CM diagnosis codes for full hospital stay
- MAIN data set only

■ DXLSB, DXB2-DXB5

- Diagnoses related to the Bed Section stay

* Number of secondary diagnoses codes changed from 9 to 12 in FY2005

Finding Information in the Inpatient Medical SAS Datasets to assess Procedures

- Procedure datasets contain:
 - Procedures not performed in an operating room
 - Dialysis type & number of dialysis treatments
- Surgery datasets contain:
 - Surgeries performed in operating room
- A “procedure” in one facility may be considered “surgery” in another facility. Check both datasets.
- Inpatient MedSAS datasets use ICD-9 procedure codes



Finding Information in the Inpatient Medical SAS Datasets to assess Length of Stay

- **Records are created at discharge for the full stay, even if the admission was in a prior year**
 - **Exception:** Claims for Non-VA Care included in dataset for year paid, not for year of care
- **Inpatient dataset includes length of stay**
 - **LS** = $[(DISDAY - ADMITDAY) - (ABO + PASS)]$
w/minimum value of 1



Finding Information in the Outpatient Medical SAS Datasets to assess Diagnoses

- Outpatient Event (SE)

- 1997 to present

- Inpatient Encounters (IE)

- 2005 to present

- DXLSF

- Primary diagnosis

- DXF2-DXF10

- Secondary diagnoses

Top 5 DXLSF in FY2009 SE File (from first 3 million records)

DXLSF	Values	%
30981	Post traumatic stress disorder	5
4019	Essential Hypertension Unspecified	4
V6540	Other counseling NOS	4
25000	Diabetes Mellitus	4
V6549	Other specified counseling	3

Finding Information in the Outpatient Medical SAS Datasets to assess Procedures

**Top 5 CPT1 Codes in FY2009 SE File
(from first 3 million records)CPT**

– **Outpatient Event (SE)**

– **Inpatient Encounters (IE)**

– **CPT-4 Codes**

• **CPT1-CPT20***

CPT1	Values	%
99213	Moderate severity OP visit for established pt	5
98966	Telephone assessment by non-physician	4
99211	Minimal severity OP visit for established pt	4
85025	CBC	4
99214	High severity OP visit for established pt	3

*Number of CPT codes changed from 15 to 20 in FY2005

Finding Information in the Outpatient Medical SAS Datasets to assess Provider Types

– Physician specialty recorded using CMS provider class

- Prov1-
Prov10

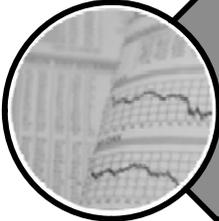
– Outpatient Event (SE)

– Inpatient Encounters (IE)

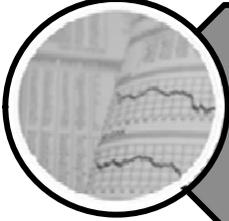
Top 5 Provider Types in FY2009 SE File (from first 3 million records)

Provider Types	Values	%
181000	Internal Medicine	15
070900	Registered Nurse	8
115500	Resident	4
010100	Clinical Social Worker	3
180700	Family Practice	3

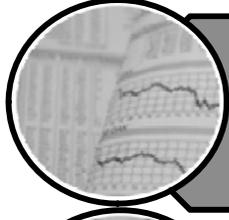
Topics for Today



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Examples of VA studies that have assessed healthcare use



Where to go for more help

Research Example I

Mortensen, Copeland, Pugh, et al., *Am J Medicine*
2010;123:66-71

- **Objective:** To assess frequency of diagnosis of pulmonary malignancy, following hospitalization for pneumonia
- **Study Design:** Retrospective cohort study of VA inpatients from FY2002-2007, age 65 years or older
- **Data Sources:** VA Inpatient and Outpatient MedSAS Datasets, among others

CLINICAL RESEARCH STUDY

THE AMERICAN
JOURNAL of
MEDICINE

Diagnosis of Pulmonary Malignancy after Hospitalization for Pneumonia

Eric M. Mortensen, MD, MSc,^{1,2} Laurel A. Copeland, PhD,^{3,4} Mary Jo Pugh, PhD,^{5,6} Michael J. Fine, MD, MSc,^{1,4} Brandy Nakashima, MA,⁸ Marcos I. Restrepo, MD, MSc,^{1,3} Rosa Malo de Molina, MD,^{1,5} Antonio Anzueto, MD^{1,3}

¹VERDICT Research Program and South Texas Veterans Health Care System, Audie L. Murphy Division, San Antonio; ²Department of Medicine, ³Department of Psychiatry, and ⁴Department of Epidemiology and Biostatistics, University of Texas Health Science Center at San Antonio; ⁵VA Center for Health Equity Research and Promotion, VA Pittsburgh Healthcare System, Pittsburgh, Pa; ⁶Division of General Internal Medicine, Department of Medicine, University of Pittsburgh, Pa; ⁷Division of Pulmonary/Critical Care Medicine, University of Texas Health Science Center at San Antonio.

ABSTRACT

BACKGROUND: Many physicians recommend that patients receive follow-up chest imaging after the diagnosis of pneumonia to ensure that a pulmonary malignancy is not missed. However, there is little research evidence to support this practice. Our aims were to assess the frequency of the diagnosis of pulmonary malignancy, and to identify risk factors for pulmonary malignancy following hospitalization for pneumonia.

METHODS: By excluding patients with a prior diagnosis of pulmonary malignancy, we examined the incidence of a new pulmonary malignancy diagnosis in inpatients aged ≥ 65 years with a discharge diagnosis of pneumonia in fiscal years 2002-2007, and at least 1 year of Department of Veterans Affairs outpatient care before the index admission.

RESULTS: Of 40,744 patients hospitalized with pneumonia, 3/60 (9.2%) patients were diagnosed with pulmonary malignancy after their index pneumonia admission. Median time to diagnosis was 297 days, with only 27% diagnosed within 90 days of admission. Factors significantly associated with a new diagnosis of pulmonary malignancy included history of chronic pulmonary disease, any prior malignancy, white race, being married, and tobacco use. Increasing age, Hispanic ethnicity, need for intensive care unit admission, and a history of congestive heart failure, stroke, dementia, or diabetes with complications were associated with a lower incidence of pulmonary malignancy.

CONCLUSION: A small, but clinically important, proportion of patients are diagnosed with pulmonary malignancy posthospitalization for pneumonia. Additional research is needed to examine whether previously undiagnosed pulmonary malignancies might be detected at admission, or soon after, for those hospitalized with pneumonia.

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KEYWORDS: Cancer, Incidence, Pneumonia

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Authorship: All authors had free access to the data and were actively involved in writing the manuscript.

The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs.

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Research Example I

Mortensen, Copeland, Pugh, et al., *Am J Medicine*
2010;123:66-71

■ Inclusion/exclusion criteria

- Were age 65 years or older on the date of admission
- Had at least one outpatient clinic visit in the year preceding the index admission
- Received at least one active and filled outpatient medication within 90 days of admission
- Hospitalized during FY 2002-2007
- Had a previously validated discharge diagnosis of pneumonia/influenza

Research Example I

Mortensen, Copeland, Pugh, et al., *Am J Medicine*
2010;123:66-71

Variables	Posthospitalization w/Pulmonary Malignancy (N=3760)	No Pulmonary Malignancy (N=36,984)	P- value
Hospitalization- ICU	285 (8)	5471 (15)	<.001
Hospitalization- mechanical ventilation	105 (3)	2627 (7)	<.001
Mortality at 30d	48 (1)	5222 (14)	<.001
Mortality at 90d	267 (7)	8184 (22)	<.001
Length of Stay	6.21 (7.4)	8.1 (13.3)	<.001

Research Example II:

Walter, Lindquist, Nugent, et al., *Ann Int Med*
2009;150:465-73

Annals of Internal Medicine

ARTICLE

Impact of Age and Comorbidity on Colorectal Cancer Screening Among Older Veterans

Louise C. Walter, MD; Kara Lindquist, MS; Sean Nugent, BA; Tammy Schell, MS; Si J. Lee, MD, MAS; Michelle A. Casatelli, BS; and Melissa R. Parin, PhD

Background: The Veterans Health Administration, the American Cancer Society, and the American Geriatrics Society recommend universal cancer screening for older adults unless they are unlikely to live 5 years or have significant comorbidity that would preclude treatment.

Objective: To determine whether colorectal cancer screening is targeted to healthy older patients and is avoided in older patients with severe comorbidity who have life expectancies of 5 years or less.

Design: Cohort study.

Setting: Veterans Affairs (VA) medical centers in Minneapolis, Minnesota; Durham, North Carolina; Portland, Oregon; and West Los Angeles, California, with linked national VA and Medicare administrative claims.

Patients: 27 000 patients 70 years or older who had an outpatient visit at 1 of 4 VA medical centers in 2001 or 2002 and were due for screening.

Measurements: The main outcome was receipt of fecal occult blood testing (FOBT), colonoscopy, sigmoidoscopy, or barium enema in 2001 or 2002, on the basis of national VA and Medicare claims. Charlson-Deyo comorbidity scores at the start of 2001 were used to stratify patients into 3 groups: ranging from no comorbidity (score of 0) to severe comorbidity (score ≥ 4), and 5-year mortality was determined for each group.

Results: 46% of patients were screened from 2001 through 2002. Only 47% of patients with no comorbidity were screened despite having life expectancies greater than 5 years (5-year mortality, 19%). Although the incidence of screening decreased with age and worsening comorbidity, it was still 41% for patients with severe comorbidity who had life expectancies less than 5 years (5-year mortality, 50%). The number of VA outpatient visits predicted screening independent of comorbidity, such that patients with severe comorbidity and 4 or more visits had screening rates similar to or higher than those of healthier patients with fewer visits.

Limitations: Some tests may have been performed for non-screening reasons. The generalizability of findings to persons who do not use the VA system is uncertain.

Conclusions: Advancing age was inversely associated with colorectal cancer screening, whereas comorbidity was a weaker predictor. More attention to comorbidity is needed to better target screening to older patients with substantial life expectancies and avoid screening older patients with limited life expectancies.

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For author affiliations, see end of text.

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Colorectal cancer screening guidelines recommend screening older adults who have substantial life expectancies according to age and comorbid conditions (1). For example, the U.S. Preventive Services Task Force recommends routine screening until age 75 years, whereas the Veterans Health Administration, the American Cancer Society, and the American Geriatrics Society (2-5) recommend colorectal cancer screening for older adults unless they are unlikely to live 5 years or have significant comorbid conditions that would preclude treatment. Targeting screening to healthy persons who are likely to live at least 5 years is recommended because randomized trials of fecal occult blood testing (FOBT) suggest that a difference in colorectal cancer mortality between screened and unscreened persons does not become noticeable until at least 5 years after screening (6-8).¹ Therefore, persons with a life expectancy of 5 years or less are not likely to benefit from screening but remain at risk for harms that may occur immediately, such as complications from procedures and the treatment of clinically unimportant disease (9, 10). However, it remains unclear whether screening is being targeted to healthy older persons with substantial life expectancies and avoided in older persons with significant

comorbidity, for whom the risks of screening outweigh the benefits.

Previous studies of associations among age, comorbidity, and receipt of cancer screening have found that age is a stronger determinant of screening than comorbidity. For example, whereas advancing age is consistently associated with lower screening rates, worsening comorbidity has had little effect on the use of screening mammography, Pap-smear tests, or prostate-specific antigen screening (11-13). Previous studies of the relationship between colorectal cancer screening and comorbidity have been limited by small sample size, short follow-up times, and focus on FOBT rather than all types of colorectal cancer screening

See also:

Print
Hillier, Nohis 466
Summary for Patients 1-42
Web-Only
Conversion of graphics into slides

7 April 2009 | Annals of Internal Medicine | Volume 150 • Number 7 | 465

- **Objective:** To determine whether colorectal cancer screening is targeted to healthy older patients
- **Study Design:** Retrospective cohort study of VA inpatients 70 years or older in 2001-2002 from 4 VA medical centers
- **Data Sources:** VA Inpatient and Outpatient MedSAS Datasets, among others



Research Example II:

Walter, Lindquist, Nugent, et al., *Ann Int Med*
2009;150:465-73

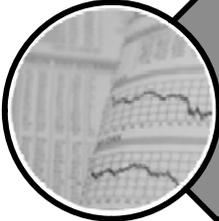
From Table 2:

**Two-Year Cumulative
Colorectal Cancer
Screening Incidence
Among Persons 70
Years or Older, by
Patient
Characteristic**

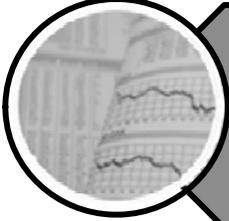
Table 2—Continued

Characteristic	Unadjusted Cumulative Incidence (95% CI), %*	Adjusted Cumulative Incidence (95% CI), %†
Number of VA outpatient visits (primary care, GE, or surgery), 2001–2002§		
0	23.7 (22.6–25.0)	23.1 (22.9–23.2)
1	45.5 (44.5–46.6)	44.1 (44.0–44.2)
3	52.5 (51.4–53.6)	52.3 (52.2–52.4)
≥4	55.1 (53.8–56.5)	57.5 (57.3–57.6)
Type of VA outpatient visit, 2001–2002		
Seen in primary care, GE, or surgery clinic	50.1 (50.0–50.3)	50.2 (50.2–50.3)
Never attended primary care, GE, or surgery clinic	23.7 (22.6–25.0)	23.1 (22.9–23.2)

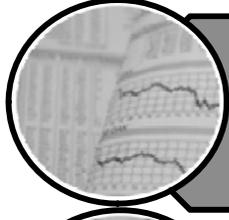
Topics for Today



How has healthcare utilization been measured in VA studies?



Overview of Medical SAS datasets



Finding information in the Medical SAS datasets



Examples of VA studies that have assessed healthcare use



Where to go for more help

Obtaining Help

■ VI ReC Website

– <http://www.virec.research.va.gov>

- Research User Guides (RUGs)
 - Variable-level information
- Technical Reports
- Web-site “Toolkit for New Users of VA Data”
- Monthly Data Issue Briefs

■ Help Desk

– virec@va.gov

– (708) 202-2413

Obtaining Help

■ HSRData Listserv

- Join at VIREC's Intranet Web site
- Exchange of current information, ideas, questions, and answers about data and informatics issues affecting VA research
- Discussion among close to 700 VA only researchers, data stewards, managers and other users
- Searchable archive of past discussions

Questions?

October 29, 2012



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Next session:

December 3, 2012

Measuring Veterans Health Services Use in
VA and Medicare (Part 1)

Denise M. Hynes, MPH, PhD, RN

