2011 VIReC Database and Methods Cyber Seminar Series



2011 VIReC Database and Methods Cyber Seminar Series

Assessing VA Health Care Use: Inpatient

Session 13 August 1, 2011

Presented by: Denise M. Hynes, MPH, PhD, RN Director, VA Information Resource Center (VIReC)



Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- Where to go for more help



Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- Where to go for more help



How has healthcare utilization been measured in VA studies?

 Cully, J. A., Zimmer, M., Khan, M. M., & Petersen, L. A. (2008). Quality of depression care and its impact on health service use and mortality among veterans. *Psychiatr Serv., 59*, 1399-1405.

Quality of Depression Care and Its Impact on Health Service Use and Mortality Among Veterans

Jeffrey A. Cully, Ph.D. Meghan Zimmer, B.A. Myrna M. Khan, Ph.D., M.B.A. Laura A. Petersen, M.D., M.P.H.

<u>Objectics</u>: Little is known about the effects of quality of depression care on patient outcomes other than depression status. This study examined Veterans Health Administration (VHA) data over a six-year period to determine whether quality of depression care was related to patients' health service use and mortality. <u>Methods</u>: Using a national VHA database, the authors identified 2003,165 veterans with a new-onset depressive disorder and at least one filled preseription for an antidepressant medication between October 1, 1999, and September 30, 2005. Quality of depression care was assessed with antidepressant medication possession ratios and a dequacy of follow-up care (three or more depression-regression modeling was used to predict inpatients service use and all-cause mortality. <u>Revents</u>: Of the cohort 485' received an adequate supply of antidepressant medication and 31% had three or more follow-up visits during the 84-day profiling period. Rates of adequate medication supply dif not charge over the six-year period (p. 2003). Adequate followup depression care was associated with increased health service use and up care for depression received high quality care. Notably, adequate followup depression received high quality care. Notably, adequate followup care for depression received high quality care. Notably, adequate followup care for depression received high quality care. Notably, adequate followup care for depression received high quality care. Notably, adequate followup care for depression received high quality care. Notably, adequate followup care for depression received high quality care. Notably, adequate followup care for depression received high pathetare patient outcomes, including mortality, and that further efforts to improve quality appear warranted. *depression* rem as significantly appear batient outcomes, including mortality, and that further efforts to improve quality appear

peptition affects nearly 30% of veterans, making it one of the most common chronic conditions treated in the Veterans Health Administration (VHA) (1). Its

impact on patient and system-level outcomes is substantial and well documented in the literature. Depression doubles the risk of mortality (2–7) and is associated with poor emotional and

The authors are effiliated with the Houston Vetenus Africe (VA) Health Services Besearch and Development Centre of Excellence and the Michaelt & Deblacky VA Medical Center, Houston. Dr. Guilly is also affiliated with the Manninger Department of Psychiatry and Behavioral Sciences, Baylor College of Multicine, Houston, Dr. Peterson is also of Biotard with the Department of Medicine, Band Conservation dense to Dr. Cuilly at VAMC, 2002 Holesmbe Bied. (152), Houston, TX 77030 (e-mail: joilly@Dom.eta).

PSYCHEATRIC SERVICES + ps.psychiatryonline.org + December 2008 Vol. 59 No. 12

physical outcomes, as well as increased health service use and cost (8). Although clinical trials for depres-

Attriough charact trials for depression show that anticiperssum medications and psychotherapy are generally effective, less than half of patients with a depression diagnosis receive adequate treatment (=11). Numerors initiatives to improve the quality of depression care are either under way or have already been completed (12-44). As part of these efforts, the VHA, along with other health care administrations, has endorsed chaical practice guidelines for depression treatment and established procedures and methods to measure quality of depression care (15.16).

Guideline-adherent care impro depression-related outcomes (17 20), yet few studies have examined health service use, cost (21), and outcomes other than depression status (such as mortality and functional abilities). In studies that examined the relationship between quality of depression care and outcomes, anti depressant drug adherence was asso ciated with increased medication adherence for comorbid conditions ocroased modical and psychiatri hospitalizations, and reduced total medical costs (21,22). Recent evidence suggests that practice-based depression interventions in primar care significantly decrease mortality over a five-year period (2). However little evidence exists about whether depression care practices at the sys-tem level equate to changes in outcomes outside research-based inter ventions for patients.



5

How has healthcare utilization been measured in VA studies?

JOURNAL OF WOMEN'S HEALTH Volume 16, Number 8, 2007 © Mary Ann Liebert, Inc. DOI: 10.1089/jwh.2006.0205

Gender and Use of Care: Planning for Tomorrow's Veterans Health Administration

SUSAN M. FRAYNE, M.D., M.P.H., 12,3,4 WEI YU, Ph.D., 1,3,5 ELIZABETH M. YANO, Ph.D., 67 LAKSHMI ANANTH, MS.^{1,5} SAMINA IQBAL, M.J.^{2,4} ANN THRAILKILL, R.N.P., M.S.N., C.N.S.⁴ and CIARAN S. PHIBBS, Ph.D.^{1,3,5,8}

ABSTRACT

Background: Historically, men have been the predominant users of Veterans Health Administration (VHA) care. With more women entering the system, a systematic assessment of their healthcare use and costs of care is needed. We examined how utilization and costs of VHA care differ in women veterans compared with men veterans.

¹Center for Health Care Evaluation, VA Palo Alto Health Care System, Menlo Park, California, ²Division of General Internal Medicine, Stanford University School of Medicine, Palo Alto, California, ³Center for Health Policy and Center for Primary Care and Outcomes Research, Stanford University School of Medicine, Palo Alto, California, Women's Health Center, VA Palo Alto Health Care System, Palo Alto, California

³Health Economics Resource Center, VA Palo Alto Health Care System, Menio Park, California, ⁴VA Genater Los Angués HSRAGO Center for the Study of Health care Povidire Behavior. Sepulveda, California, ³Department of Health Secretion, UCLA Behovi of Padific Health, Los Anguése, California, ³Department of Health Research and Policy and Department of Pediatrics, Sentod Univestity School of Medicine, ³Department of Health Research and Policy and Department of Pediatrics, Sentod Univestity School of Medicine, ³Department of Health Research and Policy and Department of Pediatrics, Sentod Univestity School of Medicine, ³Department of Pediatrics, Sentod Univestity, ³Department of Pediatrics, Sentod Univestity, ³Department of Pediatrics, Palo Alto, California,

Palo Alto, California. Work for this paper was financially supported by Department of Veterans Affairs Health Services Research & De-velopment grants RCD 98-312 and SOR-RCN-9907 and by Department of Veterans Affairs' Office of Research & De-velopment Project CSP 01-35. The views expressed in this paper are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs. There were incomflicts of intersevences on the search of the following national and regional meetings: S. Exorem What do use income about scorem sevences benefits and before and? Invited officiency consenting at To-

S. Frayne, What do we know about women velerans' health and health care? Invited plenary presentation at To-ward a VA Women's Health Research Agenda: Setting Evidence-Based Research Priorities for Improving the Health and Care of Women Veterans, Alexandria, VA, November 2004.

and Care of Women Veterans, Alexandria, VA, November 2004. CS, Phibko, W, Yu, L. Annuth, S. Idpal, A. Thunikill, E. Yano, S. Frayne, Women in the Veterans Health Adminis-tration: Medical conditions, utilization and costs of care (poster presentation). AcademyHealth National Meeting, Boston MA, June 2005. C. Phibbs, S. Frayne, W. Yu, L. Annuth, S. Idpal, A. Thaikkil, E. Yano, Women in the Veterans Health Adminis-tration: Medical conditions, utilization and costs of care. Poster presentation at VA H5R&RO National Meeting, Wash-ington DC, February 2006. S. Frayne et al. Accounting for veteran status changes conclusions about gender disparities. Oral presentation, So: S. Ferayne et al. Accounting for veteran status changes conclusions about gender disparities. Oral presentation, So: S. Ferayne et al. Accounting for veteran status changes conclusions about gender disparities. Oral presentation, So: S. Ferayne et al. Accounting for veteran status changes conclusions about gender disparities. Oral presentation space cited of General Internal Medicine National Meeting, Los Angeles CA, April 27, 2006 (presentation abstracts pub-lished in Journal of General Internal Medicine).

assues an journm of uniternal information of the study; collection, management, analysis, and interpretation of the data; or preparation, review, or approval of the management, analysis, SMF, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis

1188

Frayne, S. M., Yu, W., Yano, E. M., Ananth, L., Iqbal, S., Thrailkill, A. et al. (2007). Gender and use of care: planning for tomorrow's Veterans Health Administration. J Womens Health (Larchmt.)., 16, 1188-1199.



How has healthcare utilization been measured in VA studies?

 Romano, P. S., Mull, H. J., Rivard, P. E., Zhao, S., Henderson, W. G., Loveland, S. et al. (2009). Validity of selected AHRQ patient safety indicators based on VA National Surgical Quality Improvement Program data. *Health Serv Res.*, 44, 182-204. No claim to original U.S. government works. \odot Health Research and Educational Trust DOI: 10.1111/j.1475-6773.2008.0090.5.x METHODS ARTICLE

Patient Safety

Validity of Selected AHRQ Patient Safety Indicators Based on VA National Surgical Quality Improvement Program Data

Patrick S. Romano, Hillary J. Mull, Peter E. Rivard, Shibei Zhao, William G. Henderson, Susan Loveland, Dennis Tsilimingras, Cindy L. Christiansen, and Amy K. Rosen

Objectives. To examine the criterion validity of the Agency for Health Care Research and Quality (AHRQ) Patient Safety Indicators (PSIs) using clinical data from the Veterans Health Administration (VA) National Surgical Quality Improvement Program (NSQIP). Data Sources. Fifty five thousand seven hundred and fifty two matched hospitalizations from 2001 VA inpatient surgical discharge data and NSQIP chart-abstracted data. Study Dosign. We examined the sensitivities, specificities, positive predictive values (PPVs), and positive likelihood ratios of five surgical PSIs that corresponded to NSQIP adverse events. We created and tested alternative definitions of each PSI.

Data Collection. FY01 inpatient discharge data were merged with 2001 NSQIP data abstracted from medical records for major noncardiac surgeries.

Principal Findings. Sensitivities were 19–56 percent for original PSI definitions; and 37–63 percent using alternative PSI definitions. PPVs were 22–74 percent and did not improve with modifications. Positive likelihood ratios were 65–524 using original definitions, and 64–744 using alternative definitions. "Postoperative respiratory failure" and "postoperative wound dehiscence" exhibited significant increases in sensitivity after modifications.

Conclusions. PSI sensitivities and PPVs were moderate. For three of the five PSIs, AHRQ has incorporated our alternative, higher sensitivity definitions into current PSI algorithms. Further validation should be considered before most of the PSIs evaluated herein are used to publicly compare or reward hospital performance.

Key Words. Patient safety indicators, criterion validity, administrative data, medical errors





How has healthcare utilization been measured in VA studies?

(this material may be protected by

The Effectiveness of Inpatient Rehabilitation in the Acute Postoperative Phase of Care After Transtibial or Transfemoral Amputation: Study of an Integrated Health Care **Delivery System**

Margaret G. Stineman, MD, Pui L. Kwong, MPH, Jibby E. Kurichi, MPH, Janet A. Prvu-Bettger, ScD, W. Bruce Vogel, PhD, Greg Maislin, MS, MA, Barbara E. Bates, MD, Dean M. Reker, PhD

ABSTRACT. Stineman MG, Kwong PL, Kurichi JE, Prvu-Betger JA, Vogel WB. Maislin G, Bates BE, Reker DM. The effectiveness of inpatient rehabilitation in the acute postoper-ative phase of care after transibilat or transfermeral amputation: udy of an integrated health care delivery system. Arch Phys Med Rehabil 2008:89:1863-72.

Objective: To compare outcomes between lower-extremity amputees who receive and do not receive acute postoperative inpatient

pages who receive and not receive acute postoperative impatient retrabilitation within a large integrated health care delivery system. Design: An observational study using multivariable propen-sity score risk adjustment to reduce treatment selection bins. Setting: Data compiled from 9 administrative databases from Veternas Affairs Medical Centers. Participants: A national cohort of veterans (N=2673) who multivariable in the observation of the setting of the setting

inderwent transtibial or transfermoral amputation between Oc-ober 1, 2002, and September 30, 2004.

ORIGINAL ARTICLE

tober 1, 2002, and September 30, 2004. Interventions: Not applicable. Main Outcome Measures: One-year cumulative survival, how discharge from the hospital, and prosthetic limb procure-band discharge from the hospital, and prosthetic limb procure-acter postoperative inpatient rehabilitation compared to those with no evidence of inpatient rehabilitation compared to those with no evidence of inpatient rehabilitation compared to those with no evidence of inpatient rehabilitation compared to those with no evidence of inpatient rehabilitation compared to those (Nev2-25.87% C1, 217-3.06). Prosthetic limb procurement (Nev2-25.87% C1, 217-3.06). Prosthetic limb procurement Conclusions: The receipt of rehabilitation in the acute post-operative inpatient provid was associated with a reareer likeli-

operative inpatient period was associated with a greater likeli-hood of 1-year survival and home discharge from the hospital.

From the Department of Physical Medicine and Rehabilitation (Stinenuer, Kw nith), Prou-Bettger) and Center for Clinical Epidemiology and Biostatistics (S mi, University of Pennsylvania, Philadelphia, PA: Veterana Affain Medical C mi, University of Pennsylvania, Philadelphia, PA: Veterana Media Medical Pendersky Statemann, Philadelphia, PA: Veterana Medical Depidemiology and Health F hany Medical College, Albany, NY (Bates); VAMC, Kansa

onal Center for Medical Rehabilitation Re-

0003-9993/08/8910-00520534.00/0 doi:10.1016/j.apmr.2008.03.013

Results support early postoperative inpatient rehabilitation fol-

Results support of the second seco Rehabilitation

STUDYING THE NEEDS and outcomes of people after In the United States, more than 60,000 major hower-extensivy amputations were recorded in VHA facilities between 1989 and 1984 and more than 83,000 in Medicare facilities between 1989 and 1997². Changes in both VHA and Medicare policies are astimulating diffic, from immign facilities for the set of the state of the set of are stimulating shifts from inpatient to outpatient service vithout empirical evidence either supporting or not supporting those services Despite the expected growth of the population of patient

Inc.e. services, and the services appending provide of the population of parlients with losses-externity unperturbation, their complex Innectional needs have been greatly understudied, and studies of rehabili-tation interventions after ampostation are urgently needed.² A search of the Cochman and Medline databases (November 2007) for studies related to either deyasseturing or anamiser amputation failed to identify any experimental or quasi-exper-imation interventions. One study² applied multivariable tech-niques to adjust for patients' propensity to receive rehabilita-tion. Results showed significantly higher likelihoods of com-munity discharge from nursing homes among patients who received rehabilitation across 5 diagnostic categories, but three were too few amputees to conduct the analysis for this sixth inpatient rehabilitation (across 5 diagnostic categories, but three were too few amputees to exclude with marky is for this sixth inpatient rehabilitation (across 5 diagnostic categories, but three suppatient chabilitation (across cosciliad with improved physical functioning among a cohort of 146 patients after traumatic amputation at a single trauma corter. This study (di not include dyavascular amputees. Previous studies of the effects of reha-bilitation after ampation have jargely been descriptive. bilitation after amputation have largely been descriptive.^{6,7} Although only prospective RCTs can assign a causal effect of treatment to outcome differences, issues of clinical equipoise and

> List of Abbreviations confidence interval inpatient rehabilitation facility odds ratio Patient Treatment File randomized controlled trial Veterans Affairs Medical Center

PTF

Veterans Health Administration

Arch Phys Med Rehabil Vol 89, October 2008

Stineman, M. G., Kwong, P. L., Kurichi, J. E., Prvu-Bettger, J. A., Vogel, W. B., Maislin, G. et al. (2008). The effectiveness of inpatient rehabilitation in the acute postoperative phase of care after transtibial or transfemoral amputation: study of an integrated health care delivery system. Arch Phys Med Rehabil., 89, 1863-1872.



Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- Where to go for more help



How has healthcare utilization been measured in VA studies?

Medical SAS (MedSAS) Inpatient and Outpatient Datasets

- Most comprehensive datasets for VA healthcare utilization information
- National VHA health care delivery data
- SAS datasets housed on mainframe computer at Austin Information Technology Center (AITC)
 - Divided into inpatient and outpatient datasets



- Datasets available on a quarterly basis
- In general, researchers are advised to use the annual, closed-out datasets

10

 Common element: patient identifier (scrambled SSN)



General Description

- Services provided to inpatients are recorded in the MedSAS Inpatient datasets and Inpatient Encounters Dataset.
- Also known as PTF (Patient Treatment File)
- Common dataset structure, generally stable over time
- Broken out by fiscal year of discharge date
 - Admission may have occurred in a previous fiscal year





Inpatient Data Flow

Data Progression from the VHA Medical Centers to the AITC to the Medical SAS®





Four datasets within each category of care

- For each care setting, NDS generates and maintains a set of "detail" SAS Datasets, each providing different types of information on patient stays:
 - Main
 - Summary of entire stay (episode of care) and demographic information
 - Bedsection
 - Data on a segment of the inpatient stay defined by the specialty of the physician who managed the patient's care
 - Procedures
 - Contains information on up to five procedures performed at a given time on a given day

- Surgery
 - Information on up to five surgeries



Four datasets within each category of care

File	Reference (Acute Dataset)	Dates
Main	РМуу	1970 - present
Bedsection	РВуу	1984 – present
Procedure	РРуу	1988 – present
Surgery	PSyy	1984 - present

Where yy= last 2-digits fiscal year



Data element examples

- Patient demographics
- Primary/secondary diagnoses
- Length of stay
- ICD-9 procedure codes
- Patient identifier (SCRSSN)
- Facility & VISN identifiers
- Admission & discharge date & time
- Discharge Type (e.g., Regular, Death-Autopsy, Nonbed Care)
- For a complete list:
 - <u>http://www.virec.research.va.gov/DataSourcesName/</u> <u>Medical-SAS-Datasets/MedSAS-Inpt-RUG/MedSAS-</u> <u>RUG-Inpt.htm</u>





Data Access Information

Data Steward:

- National Data Systems (NDS) (John Quinn, Director)
- Website/Where to go to find more:

– http://vaww.va.gov/nds/





Strengths of Medical SAS Datasets

- Centralized data source
- Large number of patients



- Unique identifier (SCRSSN: Scrambled Social Security Number) allows linking records across files/years
- Quality assessments/audits are conducted on datasets



Limitations of Medical SAS Datasets

- They don't capture all care paid for by VA
 - e.g., some contract care
- Coding may be more complete and accurate for some diagnoses or procedures than others, depending on VA needs and incentives
 - Some conditions may be under/over-reported in VA data compared to other settings





Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- Where to go for more help



Where do I find information about admissions and discharges?

All inpatient datasets include:

- admission date and time
- station # (facility)
- VISN
- principal diagnosis code
- discharge date and time
- discharge status (in Main dataset only)
- discharge type (e.g., Regular, Death-Autopsy, Non-bed Care)





Where can I find information on a patient's diagnosis?

- DXPRIME: Principal Diagnosis

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

– DXLSF: Primary diagnosis for Admission

- Diagnosis initially assigned at admission.
 - This could be different than the DXPRIME as the diagnosis could change after study/tests results come back.

21

Not coded by HIM



Where can I find information on a patient's diagnosis (cont.)?

- DXF2 DXF13: Secondary ICD-9-CM diagnosis codes for full hospital stay
 - MAIN data set only
- Diagnoses related to the Bed Section Stay
 DXLSB, DXB2-DXB5



Where do I find information about inpatient procedures?

- Inpatient procedure datasets contain:
 - Procedures <u>not</u> performed in an operating room
 - Dialysis type & number of dialysis treatments
- Inpatient surgery datasets contain:
 - Surgeries performed in operating room
- A "procedure" in one facility may be considered "surgery" in another facility. Check both datasets.





- How do I identify the specialty of the physician managing the patient's care?
 - Use BEDSECN to identify physician specialty
 - Found in Bedsection and Procedure datasets
 - Contains the treating specialty code
 - Most common acute bedsections
 - General (acute) medicine
 - High Intensity General Psychiatry
 - Medical ICU
 - General Surgery
 - Surgical ICU





- How is Bedsection defined?
 - Bed section is the treating specialty of the provider who manages the patients care during the full or a portion of the inpatient stay.
 - One inpatient stay may have as many as 25 bed section stays



- How do I identify care for a defined period of time?
 - Records are created at discharge for the full stay, even if the admission was in a prior year
 - Exception: Claims for Non-VA Care are included in the dataset for the fiscal year they were paid, not the year for which care was provided





How do I compute acute length of stay?

- Inpatient Main dataset includes LS, which includes acute and non acute information, for the entire episode of care
 - Since 2006, calculated as: LS=[(DISDAY – ADMITDAY) – (ABO + PASS)] w/minimum value of 1.



- Recalculate if any info missing
- For bed section LS, use bed section specific data
 - Date & time of transfer into & out of bed section (BSINDAY & BSOUTDAY)



Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient and outpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- Where to go for more help



Research Example I:

Validity of Selected AHRQ Patient Safety Indicators Based on VA National Surgical Quality Improvement Program Data Patrick S. Romano, et al. (2008 Sept) *Health Services Research*. 44(1): 182 - 204

No claim to original U.S. government works. © Health Research and Educational Trust DOI: 10.1111/j.1475-6773.2008.00905.x METHODS ARTICLE

Patient Safety

Validity of Selected AHRQ Patient Safety Indicators Based on VA National Surgical Quality Improvement Program Data

Patrick S. Romano, Hillary J. Mull, Peter E. Rivard, Shibei Zhao, William G. Henderson, Susan Loveland, Dennis Tsilimingras, Cindy L. Christiansen, and Amy K. Rosen

Objectives. To examine the criterion validity of the Agency for Health Care Research and Quality (AHRQ) Patient Safety Indicators (PSIs) using clinical data from the Veterans Health Administration (VA) National Surgical Quality Improvement Program (NSQIP). Data Sources. Fifty five thousand seven hundred and fifty two matched hospitalizations from 2001 VA inpatient surgical discharge data and NSQIP chart-abstracted data. Study Design. We examined the sensitivities, specificities, positive predictive values (PPVs), and positive likelihood ratios of five surgical PSIs that corresponded to NSQIP adverse events. We created and tested alternative definitions of each PSI. Data Collection. FY01 inpatient discharge data were merged with 2001 NSQIP data

Data Collection. FY01 inpatient discharge data were merged with 2001 NSQIP dat abstracted from medical records for major noncardiac surgeries.

Principal Findings. Sensitivities were 19–56 percent for original PSI definitions; and 37–63 percent using alternative PSI definitions. PPVs were 22–74 percent and did not improve with modifications. Positive likelihood ratios were 65–524 using original definitions, and 64–744 using alternative definitions. "Postoperative respiratory failure" and "postoperative wound dehiscence" exhibited significant increases in sensitivity after modifications.

Conclusions. PSI sensitivities and PPVs were moderate. For three of the five PSIs, AHRQ has incorporated our alternative, higher sensitivity definitions into current PSI algorithms. Further validation should be considered before most of the PSIs evaluated herein are used to publicly compare or reward hospital performance.

Key Words. Patient safety indicators, criterion validity, administrative data, medical errors

- **Study Objectives.** To examine the criterion validity of the AHRQ Patient Safety Indicators (PSIs) using VA National Surgical Quality Improvement Program (NSQIP).
- Study Design. Examined the sensitivities, specificities, positive predictive values (PPVs), and positive likelihood ratios of five surgical PSIs that corresponded to NSQIP adverse events.

Data Sources. 55,752 matched hospitalizations from <u>2001 VA inpatient</u> <u>MedSAS datasets</u>

and NSQIP chart-abstracted data for major noncardiac surgeries.



Research Example I: Validity of Selected AHRQ Patient Safety Indicators Based on VA National Surgical Quality Improvement Program Data Patrick S. Romano, et al. (2008 Sept) *Health Services Research*. 44(1): 182 - 204

Figure 1: Matching 2001 VA National Surgical Quality Improvement Program (NSQIP) Records to FY01 Veteran's Inpatient Data



Research Example II:

Diagnosis of pulmonary malignancy after hospitalization for pneumonia. Mortensen EM, et al (2010 Jan) *Am J Med*, 123(1):66-71.

- Objective: To assess the frequency of diagnosis of pulmonary malignancy, & identify risk factors for pulmonary malignancy following hospitalization for pneumonia.
- Study Design: Retrospective cohort study of VA inpatients during FY2002-7, age 65 years or older.

Data Sources:

- <u>VA Inpatient and Outpatient MedSAS</u> <u>datasets</u> (aka, National Patient Care Database)
- VA prescription data from the VA DSS-NDE & Pharmacy Benefits Management
- VA Vital Status file





Diagnosis of Pulmonary Malignancy after Hospitalization for Pneumonia

Eric M. Mortensen, MD, MSc,^{a,b} Laurel A. Copeland, PhD,^{a,c} Mary Jo Pugh, PhD,^{a,d} Michael J. Fine, MD, MSc,^{a,f} Brandy Nakashima, MA,^a Marcos I. Restrepo, MD, MSc,^{a,g} Rosa Malo de Molina, MD,^{a,g} Antonio Anzueto, MD^{a,g} "VERDICT Research Program and South Texas Veterans Health Care System, Audie L. Murphy Division, San Antonio; ^bDepartment of Medicine, "Department of Psychiatry, and "Department of Epidemiology and Biostatistics, University of Texas Health Science Center at San Antonio; ^vVA Center for Health Equity Research and Promotion, VA Pittsburgh Healthcare System, Pittsburgh, Pa; ^aDivision of General Internal Medicine, Department of Medicine, University of Pittsburgh, Pa; ^aDivision 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, 3760 (9.2%) patients were diagnosed with pulmonary maignancy 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 pior 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 includence of pulmonary malignancy.

CONCLUSION: A small, but clinically important, proportion of patients are diagnosed with pulmonary malignary: 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.

Published by Elsevier Inc. • The American Journal of Medicine (2010) 123, 66-71

KEYWORDS: Cancer; Incidence; Pneumonia

Funding: The project described was supported by Grant Number GOINRO(10285 from the National Institute of Numing Research. The content is solely the responsibility of the authors and does not necessarily prepresent the official views of the National Institute of Numing Research or the National Institutes of Health. This material is the result of work supported with resources and the use of facilities at the South Texas Veterans Health Care System. Dr Copeland is funded by Merit Review Instrument System Core of the National Institutes of Health Science Center at San Antonio. The funding agencies had no role in conducting the study, or role in the preparation, review, or approval of the manuscript.

0002-9343/\$ -see front matter Published by Elsevier Inc. doi:10.1016/j.amjmed.2009.08.009 Conflict of Interest: None of the authors have any conflicts of interests to disclose regarding this article. Authorship: All authors had free access to the data and were actively

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 Afhirs. Requests for reprints should be addressed to Eric Mortensen, MD, MSc, VERDICT Research Program, ALMD/UTHSCSA, 7400 Metron Minter Boulevard (11C6), San Antonio, TX 78229. E-mail address: mortensen@uthxsa.edu

Research Example II:

Diagnosis of pulmonary malignancy after hospitalization for pneumonia. Mortensen EM, et al (2010 Jan) *Am J Med*, 123(1):66-71.

Inclusion/exclusion criteria

- Were age 65 years or older on the <u>date of</u> <u>admission</u>
- Had at least one outpatient clinic visit in the year preceding the <u>index admission</u>
 - Received at least one active and filled outpatient medication within 90d of adm
- Hospitalized during FY 2002-7
- Had a previously validated <u>discharge diagnosis</u> of pneumonia/influenza (International Classification of Diseases, 9th Revision codes 480.0-483.99 or 485-487)



Research Example II:

Diagnosis of pulmonary malignancy after hospitalization for pneumonia. Mortensen EM, et al (2010 Jan) *Am J Med*, 123(1):66-71.

Variables	Posthospitalization w/Pulmonary Malignancy (N=3760)	No Pulmonary Malignancy (N=36,984)
Age (mean, SD)	76.5 (6.3)	77.8 (6.8)
Characteristics of Hospitalization-ICU	285 (8)	5471 (15)
Outcomes		
Mortality at 30d	48 (1)	5222 (14)
Mortality at 90d	267 (7)	8184 (22)
Length of Stay	6.21 (7.4)	8.1 (13.3)



Research Example III Mental illness-related disparities in length of stay: Algorithm choice influences results Frayne S, et al (2010/Nov) JRRD, 47 (8): 709-718



- Objective: Examined how algorithm choice affects conclusions about mental health condition (MHC)-related differences in LOS for VHA patients with diabetes.
- Study Design: Using a 2002 cohort of diabetes patients and tracked inpatient use in 2003.
- Data Sources:
 - Bedsection
 - Extended care
 - Observation
 - Census files for above

- Fee Basis
- Non VHA

Session Objectives

- How has healthcare utilization been measured in VA studies?
- Overview of Medical SAS inpatient and outpatient databases
- Finding information in the Inpatient Medical SAS databases
- Examples of VA studies that have measured VA healthcare utilization
- > Where to go for more help



VIReC Help

VI ReC Webpage

http://www.virec.research.va.gov

- Information on VA data sources and how to access data
- Documentation on some VA datasets, i.e., Medical SAS datasets:
 - <u>http://www.virec.research.va.gov/DataSourcesNa</u> <u>me/Medical-SAS-Datasets/SAS.htm</u>
 - Includes lists of variables and their dataset locations
 - Descriptions of each of the variables
 - Values for selected variables



VIReC Help (cont'd)

HSRData Listserv

- Join at VIReC Web site
- Discussion among > 550 data stewards, managers, and users
- Past messages in archive (on intranet)
- VIReC Help Desk
 - VIReC staff will answer your question and/or direct you to available resources on topics

- <u>VIReC@va.gov</u>
- (708) 202-2413



Suggested other resources: Medical SAS Datasets: Data Quality Information

- Quality assessments performed by the Office of Inspector General, the Medical Care Cost Recovery program, and special workgroups
- Data Quality, Information Assurance, Office of Information
 - http://vaww.vhaco.va.gov/dataquality/default.htm
- VHA Coding Council VHA Coding Handbook
 - http://vaww1.va.gov/health/him/VHACC/VA_HIM_P/ coding_council1.htm





- Cully, J. A., Zimmer, M., Khan, M. M., & Petersen, L. A. (2008). Quality of depression care and its impact on health service use and mortality among veterans. *Psychiatr Serv.*, 59, 1399-1405.
- Damush, T. M., Jia, H., Ried, L. D., Qin, H., Cameon, R., Plue, L. et al. (2008). Case-finding algorithm for post-stroke depression in the veterans health administration. Int J Geriatr Psychiatry., 23, 517-522.
- Fontana, A. & Rosenheck, R. (2008). Treatment-seeking veterans of Iraq and Afghanistan: comparison with veterans of previous wars. J Nerv Ment Dis., 196, 513-521.
- Frayne, S. M., Yu, W., Yano, E. M., Ananth, L., Iqbal, S., Thrailkill, A. et al. (2007). Gender and use of care: planning for tomorrow's Veterans Health Administration. J Womens Health (Larchmt.)., 16, 1188-1199.
- Frayne, S. M., Yano, E. M., Nguyen, V. Q., Yu, W., Ananth, L., Chiu, V. Y. et al. (2008). Gender disparities in Veterans Health Administration care: importance of accounting for veteran status. *Med Care.*, 46, 549-553.
- Fuller MA, Shermock KM, Secic M, Laich JS, Durkin MB. 2002. Service use and costs among VA patients with schizophrenia taking risperidone or olanzapine. Psychiatr Serv. 53(7):855-60.



- Kurichi, J. E., Stineman, M. G., Kwong, P. L., Bates, B. E., & Reker, D. M. (2007). Assessing and using comorbidity measures in elderly veterans with lower extremity amputations. *Gerontology.*, 53, 255-259.
- Kurichi, J. E., Small, D. S., Bates, B. E., Prvu-Bettger, J. A., Kwong, P. L., Vogel, W. B. et al. (2009). Possible Incremental Benefits of Specialized Rehabilitation Bed Units Among Veterans After Lower Extremity Amputation. *Med Care.*, %20..
- Lee, T. A., Pickard, A. S., Au, D. H., Bartle, B., & Weiss, K. B. (2008). Risk for death associated with medications for recently diagnosed chronic obstructive pulmonary disease. *Ann Intern Med.*, *149*, 380-390
- Logan, W. C., Jr., Sloane, R., Lyles, K. W., Goldstein, B., & Hoenig, H. M. (2008). Incidence of fractures in a cohort of veterans with chronic multiple sclerosis or traumatic spinal cord injury. *Arch Phys Med Rehabil.*, *89*, 237-243
- Miller, D. R., Gardner, J. A., Hendricks, A. M., Zhang, Q., & Fincke, B. G. (2007). Health care resource utilization and expenditures associated with the use of insulin glargine. *Clin Ther.*, 29, 478-487
- Mortensen EM, et al (2010 Jan) Diagnosis of pulmonary malignancy after hospitalization for pneumonia. *Am J Med*, 123(1):66-71
- Movahed, M. R., Hashemzadeh, M., & Jamal, M. (2007). Increased prevalence of ventricular fibrillation in patients with type 2 diabetes mellitus. *Heart Vessels.*, 22, 251-253
- Movahed, M. R., Hashemzadeh, M., & Jamal, M. M. (2007). Significant increase in the prevalence of non-rheumatic aortic valve disease in patients with type 2 diabetes mellitus. *Exp Clin Endocrinol Diabetes.*, *115*, 105-107.



- Murphy PA, Cowper DC, Seppala G, Stroupe KT, Hynes DM. 2002. Veterans Health Administration inpatient and outpatient care data: a rich resource of research data. <u>Effective Clinical Practice</u>. 5:e4.
- Payne SM, Lee A, Clark JA, Rogers WH, Miller DR, Skinner KM, Ren XS, Kazis LE. 2005. Utilization of medical services by Veterans Health Study (VHS) respondents. J Ambul Care Manage. Apr-Jun; 28(2): 125-40.
- Pugh, M. J., Rosen, A. K., Montez-Rath, M., Amuan, M. E., Fincke, B. G., Burk, M. et al. 2008. Potentially inappropriate prescribing for the elderly: effects of geriatric care at the patient and health care system level. *Med Care.*, 46, 167-173.
- Romano, P. S., Mull, H. J., Rivard, P. E., Zhao, S., Henderson, W. G., Loveland, S. et al. 2009. Validity of selected AHRQ patient safety indicators based on VA National Surgical Quality Improvement Program data. *Health Serv Res.*, 44, 182-204
- Savas, L. S., del Junco, D. J., Bastian, L. A., & Vernon, S. W. 2009. Mortality ascertainment of women veterans: a comparison of sources of vital status information, 1979-2002. *Med Care.*, 47, 125-128
- Singh, J. A. & Strand, V. 2009. Health care utilization in patients with spondyloarthropathies. *Rheumatology (Oxford).*, 48, 272-276
- Sonnenberg, A., Richardson, P. A., & Abraham, N. S. 2009. Hospitalizations for Inflammatory Bowel Disease Among US Military Veterans 1975-2006. *Dig.Dis Sci*



- Stineman, M. G., Kwong, P. L., Kurichi, J. E., Prvu-Bettger, J. A., Vogel, W. B., Maislin, G. et al. (2008). The effectiveness of inpatient rehabilitation in the acute postoperative phase of care after transtibial or transfemoral amputation: study of an integrated health care delivery system. Arch Phys Med Rehabil., 89, 1863-1872
- Stroupe KT, et al. 2006. Cost-Effectiveness of coronary artery bypass grafts versus percutaneous coronary intervention for revascularization of high-risk patients. Circulation. 114: 1251-57.
- Weeks, W. B. & West, A. N. (2007). Where do veterans health administration patients obtain heart, liver, and kidney transplants? *Mil Med.*, *172*, 1154-1159
- Weeks, W. B., West, A. N., Wallace, A. E., Lee, R. E., Goodman, D. C., Dimick, J. B. et al. (2007). Reducing avoidable deaths among veterans: directing private-sector surgical care to high-performance hospitals. Am J Public Health., 97, 2186-2192
- Weeks, W. B., West, A. N., Wallace, A. E., & Fisher, E. S. (2008). Comparing the characteristics, utilization, efficiency, and outcomes of VA and non-VA inpatient care provided to VA enrollees: a case study in New York. *Med Care.*, 46, 863-871
- West, A. N., Weeks, W. B., Wright, S. M., Wallace, A. E., & Fisher, E. S. (2008). When VA patients have non-VA hospitalizations, who pays for what services, and what are the research implications? A New York case study. *Med Care.*, 46, 872-877



