2009-2010 VIReC Database and Methods Cyber Seminar Series

VIReC
RESEARCHERS' GUIDE TO VA DATA

Assessing VA Health Care Use: Outpatient

Session 3

June 1, 2009

Presented by:
Kevin Stroupe, PhD

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Session Objectives

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

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How has outpatient healthcare utilization been measured in VA studies?: Colorectal cancer screening identified

- Walter, Lindquist, Nugent, et al. Impact of age and comorbidity on colorectal cancer screening among older veterans. *Ann Intern Med.* 2009;150:465-473.

- Colorectal Cancer Screening identified using procedure (CPT-4) codes

Annals of Internal Medicine | ARTICLE

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

Louise C. Walter, MD; Karla Lindquist, MS; Sean Nugent, BA; Tammy Schult, MS; Sei J. Lee, MD, MAS; Michele A. Casadei, BS; and Melissa R. Partin, PhD

Background: The Veterans Health Administration, the American Cancer Society, and the American Geriatrics Society recommend colorectal 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: 27 068 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, 55%). 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 nonscreening reasons. The generalizability of findings to persons who do not use the VA system is uncertain.

Conclusion: 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.

Primary Funding Source: VA Health Services Research and Development.

Ann Intern Med. 2009;150:465-473. www.annals.org
For author affiliations, see end of text.

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). 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, Papanicolaou smears, 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
Editors' Notes 466
Summary for Patients I-42
Web-Only
Conversion of graphics into slides

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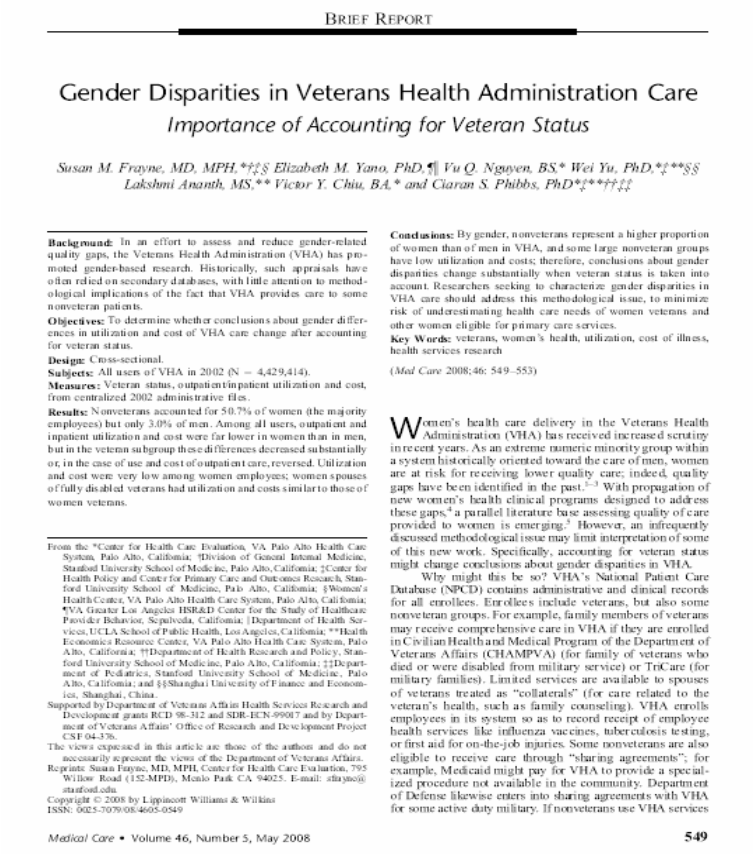
How has outpatient healthcare utilization been measured in VA studies?: Primary care ascertained



BRIEF REPORT

Gender Disparities in Veterans Health Administration Care

Importance of Accounting for Veteran Status

Susan M. Frayne, MD, MPH,†‡§ Elizabeth M. Yano, PhD,¶ Vu Q. Nguyen, BS* Wei Yu, PhD,*‡**§§ Lakshmi Ananth, MS,** Victor Y. Chiu, BA,* and Ciaran S. Phibbs, PhD*‡**††‡‡*

Background: In an effort to assess and reduce gender-related quality gaps, the Veterans Health Administration (VHA) has promoted gender-based research. Historically, such appraisals have often relied on secondary databases, with little attention to methodological implications of the fact that VHA provides care to some nonveteran patients.

Objectives: To determine whether conclusions about gender differences in utilization and cost of VHA care change after accounting for veteran status.

Design: Cross-sectional.

Subjects: All users of VHA in 2002 (N = 4,429,414).

Measures: Veteran status, outpatient/inpatient utilization and cost, from centralized 2002 administrative files.

Results: Nonveterans accounted for 50.7% of women (the majority employees) but only 3.0% of men. Among all users, outpatient and inpatient utilization and cost were far lower in women than in men, but in the veteran subgroup these differences decreased substantially or, in the case of use and cost of outpatient care, reversed. Utilization and cost were very low among women employees; women spouses of fully disabled veterans had utilization and costs similar to those of women veterans.

Conclusions: By gender, nonveterans represent a higher proportion of women than of men in VHA, and some large nonveteran groups have low utilization and costs; therefore, conclusions about gender disparities change substantially when veteran status is taken into account. Researchers seeking to characterize gender disparities in VHA care should address this methodological issue, to minimize risk of underestimating health care needs of women veterans and other women eligible for primary care services.

Key Words: veterans, women's health, utilization, cost of illness, health services research

(*Med Care* 2008;46: 549–553)

From the *Center for Health Care Evaluation, VA Palo Alto Health Care System, Palo Alto, California; †Division of General Internal Medicine, Stanford University School of Medicine, Palo Alto, California; ‡Center 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; ¶VA Greater Los Angeles HSR&D Center for the Study of Healthcare Provider Behavior, Sepulveda, California; ‖Department of Health Services, UCLA School of Public Health, Los Angeles, California; **Health Economics Resource Center, VA Palo Alto Health Care System, Palo Alto, California; ††Department of Health Research and Policy, Stanford University School of Medicine, Palo Alto, California; ‡‡Department of Pediatrics, Stanford University School of Medicine, Palo Alto, California; and §§Shanghai University of Finance and Economics, Shanghai, China.

Supported by Department of Veterans Affairs Health Services Research and Development grants RCD 98-312 and SDR-ICN-99017 and by Department of Veterans Affairs' Office of Research and Development Project CSF 04-376.

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

Reprints: Susan Frayne, MD, MPH, Center for Health Care Evaluation, 795 Willow Road (152-MPD), Menlo Park CA 94025. E-mail: sfrayne@stanford.edu.

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ISSN: 0025-7079/08/4605-0549

Women's health care delivery in the Veterans Health Administration (VHA) has received increased scrutiny in recent years. As an extreme numeric minority group within a system historically oriented toward the care of men, women are at risk for receiving lower quality care; indeed, quality gaps have been identified in the past.[1–3] With propagation of new women's health clinical programs designed to address these gaps,[4] a parallel literature base assessing quality of care provided to women is emerging.[5] However, an infrequently discussed methodological issue may limit interpretation of some of this new work. Specifically, accounting for veteran status might change conclusions about gender disparities in VHA.

Why might this be so? VHA's National Patient Care Database (NPCD) contains administrative and clinical records for all enrollees. Enrollees include veterans, but also some nonveteran groups. For example, family members of veterans may receive comprehensive care in VHA if they are enrolled in Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA) (for family of veterans who died or were disabled from military service) or TriCare (for military families). Limited services are available to spouses of veterans treated as "collaterals" (for care related to the veteran's health, such as family counseling). VHA enrolls employees in its system so as to record receipt of employee health services like influenza vaccines, tuberculosis testing, or first aid for on-the-job injuries. Some nonveterans are also eligible to receive care through "sharing agreements"; for example, Medicaid might pay for VHA to provide a specialized procedure not available in the community. Department of Defense likewise enters into sharing agreements with VHA for some active duty military. If nonveterans use VHA services

- Frayne, Yano, Nguyen, et al. Gender disparities in Veterans Health Administration care: importance of accounting for veteran status. *Med Care.* 2008;46:549-553.
- Clinic codes to ascertain visits to primary care

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How has outpatient healthcare utilization been measured in VA studies?: Outpatient specialist care identified

ORIGINAL INVESTIGATION

Survival Benefit of Nephrologic Care in Patients With Diabetes Mellitus and Chronic Kidney Disease

Chin-Lin Tseng, DrPH; Elizabeth F. O. Kern, MD, MS; Donald R. Miller, ScD; Anjali Tiwari, MBBS, MS; Miriam Maney, MA, CPHQ; Mangala Rajan, MBA; Leonard Pogach, MD, MBA

Background: The association of nephrologic care and survival in patients with diabetes mellitus and chronic kidney disease is unknown.

Methods: Using data from 1997 to 2000, we conducted a retrospective cohort study of Veterans Health Administration clinic users having diabetes mellitus and stage 3 or 4 chronic kidney disease. The baseline period was 12 months and median follow-up was 19.3 months. Degree of consistency of visits to a nephrologist, defined as the number of calendar quarters in which there was 1 visit or more (range, 0-4 quarters), and covariates were calculated from the baseline period. The outcome measure was dialysis-free death.

Results: Of 39 031 patients, 70.0%, 22.4%, and 7.6% had early stage 3, late stage 3, and stage 4 chronic kidney disease, respectively, and 3.1%, 9.5%, and 28.2%, respectively, visited a nephrologist. Dialysis-free mortality rates were 9.6, 14.1, and 19.4, respectively, per 100 person-years. More calendar quarters with visits to a nephrologist were associated with lower mortality: adjusted hazard ratios were 0.80 (95% confidence interval, 0.67-0.97), 0.68 (95% confidence interval, 0.55-0.86), and 0.45 (95% confidence interval, 0.32-0.63), respectively, when the groups having 2, 3, and 4 visits were compared with those who had no visits. One visit only was not associated with a difference in mortality when compared with no visits (adjusted hazard ratio, 1.02; 95% confidence interval, 0.89-1.16).

Conclusions: The consistency of outpatient nephrologic care was independently associated in a graded fashion with lower risk of deaths in patients with diabetes and moderately severe to severe chronic kidney disease. However, only a minority of patients had any visits to a nephrologist.

Arch Intern Med. 2008;168(1):55-62

Author Affiliations: Department of Veterans Affairs Center for Healthcare Knowledge Management, Department of Veterans Affairs New Jersey Health Care System, East Orange (Drs Tseng, Tiwari, and Pogach and Mss Maney and Rajan); University of Medicine & Dentistry of New Jersey Medical School, Newark (Drs Tseng, Tiwari, and Pogach); Louis Stokes Cleveland Department of Veterans Affairs Medical Center, and Department of Medicine, Case Western Reserve University, Cleveland, Ohio (Dr Kern); and Center for Health Quality, Outcomes and Economic Research, Bedford Veterans Affairs Medical Center, and Boston University School of Public Health, Massachusetts (Dr Miller).

CHRONIC KIDNEY DISEASE (CKD) affects 13% of the general adult US population having type 2 diabetes mellitus[1] and 31% of the Veterans Health Administration (VHA) patient population with diabetes mellitus.[2] Most patients with CKD die before initiation of renal replacement therapy, and the severity of CKD is independently associated with risk of death.[3,4]

Although postdialysis survival may be improved by earlier subspecialty nephrologic care,[5] it is not known whether nephrologic care in patients with moderate (early stage 3), moderately severe (late stage 3), or severe (stage 4) CKD is associated with lower mortality before the need for dialysis occurs. Consequently, the optimal timing for referral to a nephrologist during the course of CKD with diabetes is uncertain. Practice guidelines developed in 2002 by the National Kidney Foundation Disease Outcomes Quality Initiative (K/DOQI) recommend that patients should be referred to a nephrologist when glomerular filtration rate (GFR) is less than 30 mL/min/1.73 m^2 (onset of stage 4 CKD).[6] Referral is recommended to coordinate care for eventual renal replacement therapy and to manage comorbid conditions from progressive loss of renal function such as bone disease, hypertension, anemia, neuropathy, and malnutrition. Because these conditions may develop earlier, K/DOQI guidelines further advise that patients should consult with or be comanaged by a nephrologist before there is progression to stage 4 CKD.[6]

The purpose of this study was to test the hypothesis that nephrologic care of patients with diabetes and moderate to severe CKD is associated with dialysis-free survival. Using a national cohort of VHA patients with diabetes and stage 3 or 4

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- Tseng, Kern, Miller, et al. Survival benefit of nephrologic care in patients with diabetes mellitus and chronic kidney disease. *Arch Intern Med. 2008;168: 55-62.*
- Identified nephrology, endocrinology, and cardiology care based on clinic stop codes

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How has outpatient healthcare utilization been measured in VA studies?: Number of days of outpatient visits determined

Clinical Therapeutics/Volume 29, Number 3, 2007

Health Care Resource Utilization and Expenditures Associated with the Use of Insulin Glargine

Donald R. Miller, ScD[1,2]; John A. Gardner, PhD[2,3]; Ann M. Hendricks, PhD[2,3]; Quanwu Zhang, PhD[4]; and Benjamin G. Fincke, MD[1,2]

[1]*Center for Health Quality, Outcomes, and Economic Research, Veterans Affairs Medical Center, Bedford, Massachusetts;* [2]*Department of Health Policy and Management, Boston University School of Public Health, Boston, Massachusetts;* [3]*Health Care Financing and Economics, Veterans Affairs Boston Health Care System, Jamaica Plain, Massachusetts; and* [4]*sanofi-aventis USA, Bridgewater, New Jersey*

ABSTRACT

Background: Newer insulins, such as long-acting analogues, offer promise of better glycemic control, reduced risk for diabetes complications, and moderation of health care use and costs.

Objective: We studied initiation of insulin glargine to evaluate its association with subsequent health service utilization and estimated expenditures.

Methods: Patients of the Veterans Health Administration, US Department of Veterans Affairs (VA) who initiated insulin glargine (n = 5064) in 2001–2002 were compared with patients receiving other insulin (n = 69,944), matched on prescription month (index date). Inpatient and outpatient VA care in the 12 months after a patient's index date was evaluated using Tobit regression, controlling for prior utilization, demographic characteristics, comorbidities, glycosylated hemoglobin (HbA_{1c}) levels, and diabetes severity. National average utilization costs and medication acquisition costs were used to estimate the value of VA expenditures.

Results: Compared with other insulin users, insulin glargine initiators had higher HbA_{1c} values (8.72% vs 8.16%) prior to the index date, but greater subsequent HbA_{1c} reduction (–0.50% vs –0.22%). After adjustment for age, prior utilization, HbA_{1c} levels, and other factors, insulin glargine initiation was associated with 2.4 (95% CI, 1.1–3.7) fewer inpatient days for patients with any hospital admission (US $820 lower costs per initiator), 1.6 (1.2–1.9) more outpatient encounters ($279 higher costs per initiator), and $374 ($362–$387) higher costs for diabetes medications. The net difference was an average lower VA cost of $166 (–$290 to $622) per patient.

Conclusions: Insulin glargine use was associated with decreased inpatient days but increased outpatient care, and the value of the net change in utilization to VA offset the additional medication expenditures. Initiation of insulin glargine improves glycemic control and may reduce time in hospital without additional use of health resources. (*Clin Ther.* 2007;29:478–487) Copyright © 2007 Excerpta Medica, Inc.

Key words: diabetes, insulin, delivery of health care, health care costs.

INTRODUCTION

Exogenous insulin is an effective means for managing blood glucose in most patients with diabetes and for reducing the risks for diabetes complications.[1–6] Despite this, insulin is underutilized in part because it requires careful management and there are concerns over hypoglycemia and other tolerability issues.[6,7] New long-acting insulin analogues may remedy some of these concerns and offer the promise of more effective and tolerable glycemic control. One such agent is insulin glargine, a long-acting, recombinant human insulin analogue that is given once daily, provides 24-hour basal insulin coverage with no pronounced activity peak, and has an activity pattern resembling that of endogenous insulin.[8,9] The lower and more stable glucose levels associated with insulin glargine

Study findings were presented in poster form at the 65th Annual Meeting of the American Diabetes Association, San Diego, California, June 10–14, 2005; and the Centers for Disease Control and Prevention Diabetes and Obesity Conference, Denver, Colorado, May 16–19, 2006.

Accepted for publication January 30, 2007.

Express Track online publication March 9, 2007.
doi:10.1016/j.clinthera.2007.03.003
0149-2918/$32.00

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- Miller, Gardner, Hendricks, et al. Health care resource utilization and expenditures associated with the use of insulin glargine. *Clin Ther.* 2007;29: 478-487.
- Determined outpatient visits for patients who received glargine insulin and other types of insulin

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Audience Poll

- **Have you ever used VA Outpatient Data?**
  - Yes
  - No
- **How would you rate your overall knowledge of the database?**
  - 1 (Never Used)
  - 2
  - 3
  - 4
  - 5 (Used Frequently, Very familiar)

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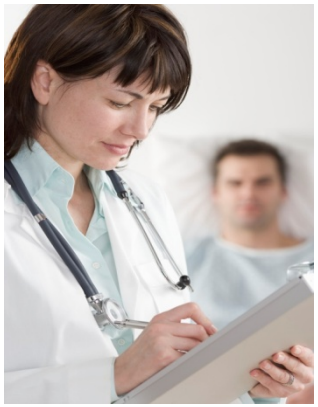
Two Groups of Medical SAS Datasets

- Inpatient Care SAS Datasets

- Outpatient Care SAS Datasets
  - Frequently referred to as
    - OPC (Outpatient Clinic File) or
    - NPCD (National Patient Care Database)
  - Records generated for each ambulatory care and ancillary service encounter recorded in VISTA



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Data Access Information

- **Data Steward:**
  - National Data Systems (NDS) (John Quinn)
- **Website / Where to go to find more:**
  - http://vaww.va.gov/nds/

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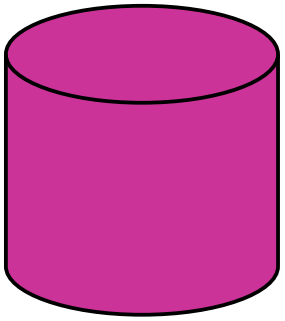
VA Outpatient Data Flow to the Medical SAS Datasets

Data Flow from the VHA Medical Centers to the Austin Information Technology Center (AITC) to the Medical SAS Outpatient Datasets

*VHA Medical Centers (local **VISTA** system)*



OPC

Visit Dataset – Clinic stop codes and patient demographics for all encounters

Event Dataset – Procedure codes, diagnosis codes and patient demographics for one encounter at one clinic

Inpatient Encounters Dataset – CPT codes, ICD-9 procedure codes, and provider ids

Medical SAS Outpatient Datasets

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	SF	1980 - present
Event	SE	1998 – present
Inpatient Encounters	IE	2005 - present
Diagnosis	SG	1997 – 2001
Procedure	SC	1990 - 2001

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Outpatient Visit File (SF)

- **Record =**

  One day's encounters for a patient at a clinic

- **One record per visit**
- **Up to 15 clinic stops per visit**
- **No diagnosis or procedure information**

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Outpatient Event (SE) File

- **Record =**

  Ambulatory encounter or clinic stop

- **Combines diagnostic and procedural info in one dataset**

- **No limit on number of encounters or clinic stops per day**

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Outpatient Event (SE) File

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

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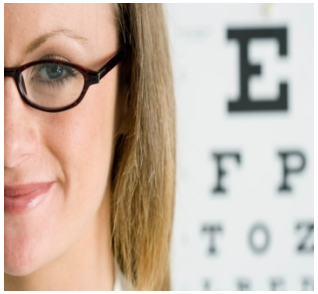
Visit vs. Event File

Patient's Outpatient Clinic Stops during One Day

Primary Care Clinic Stop



Ophthalmology Clinic Stop

Physical Therapy Clinic Stop

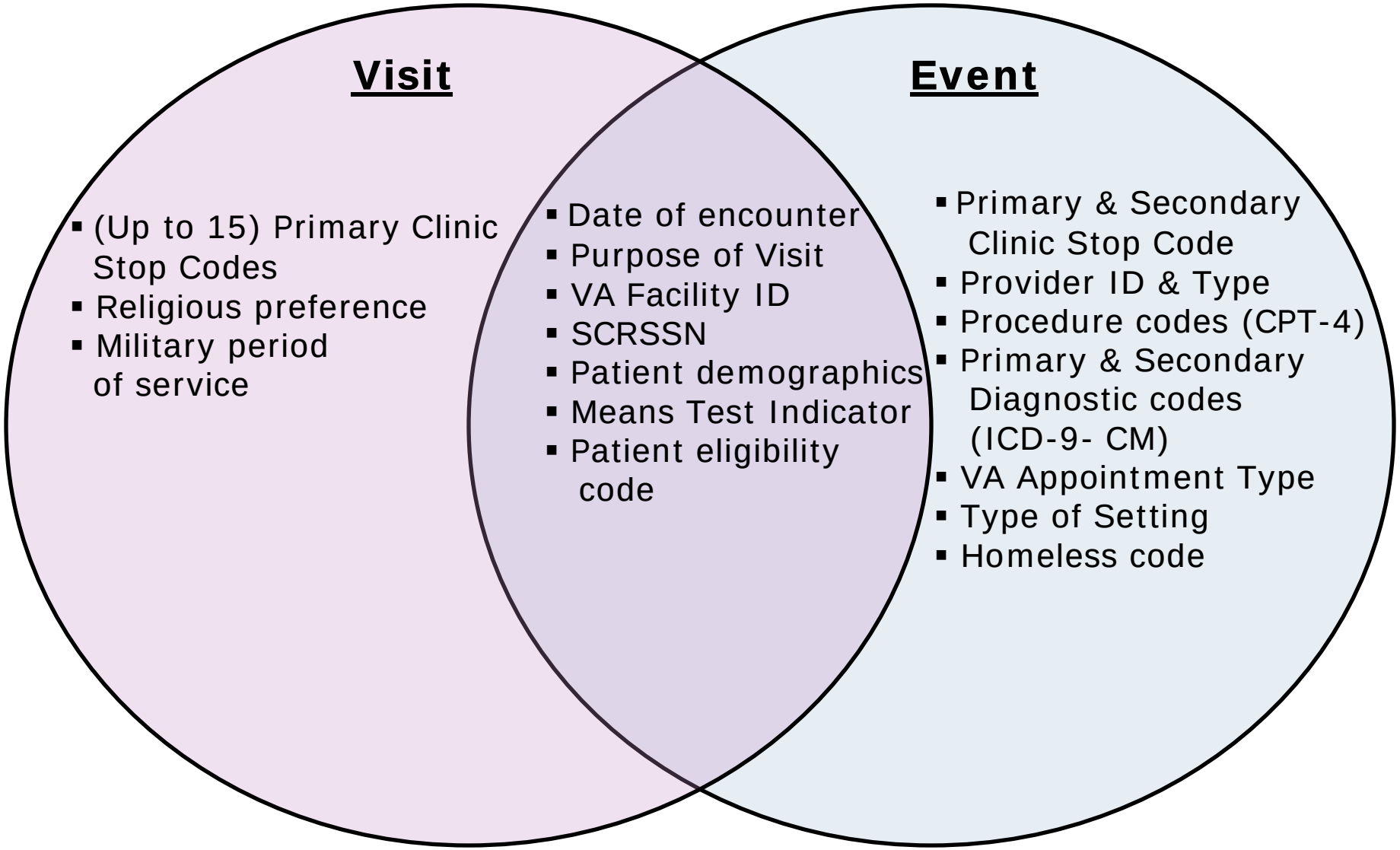
Visit

Event

Event

Event

Data Element Examples: Visit vs. Event File



Inpatient Encounters File

- **Patients in this file were seen in one of the VHA outpatient clinics while they had an inpatient status.**
- **Patients with <u>Inpatient Status</u> are receiving**
  - Acute care
  - Extended care
  - Observation care
  - Non-VA inpatient care

Inpatient Encounters File

- The Inpatient Encounters file excludes services that are included in the Outpatient Events files.
- Data are available beginning in FY2005.

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Inpatient Encounters File: Select Data Element Examples

- SCRSSN
- Date of outpatient encounter
- Date and Time of inpatient admission
- Patient Demographics
- Means Test Indicator
- Primary & Secondary Clinic Stop Code
- Provider ID & Type
- Procedure codes (CPT-4)
- Primary & Secondary ICD-9-CM Diagnostic codes
- Patient eligibility code

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VA Outpatient Diagnosis (SG) and Procedure (SC) Files

- **Outpatient Diagnosis Dataset (SG)**
  - Contains outpatient ICD-9-CM diagnosis information
- **Outpatient Procedure Dataset (SC)**
  - Contains CPT-4 outpatient procedure information
- **The VA Outpatient Diagnosis (SG) and Procedure (SC) Datasets were discontinued in FY2001.**
  - The information contained in these datasets were folded into the Event (SE) dataset

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Assessing Outpatient Healthcare Use:
Finding info in Outpatient Medical SAS Datasets

- **How do I identify Outpatient Clinics patients used?**
  - Clinics are identified using Clinic Stop Codes also called DSS Identifiers.

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Assessing Outpatient Healthcare Use:
Finding info in Oupatient Medical SAS Datasets

- **The clinic stop code variable is a 6-character identifier.**
  - First Three Characters: Primary Clinic Stop (CL)
    - Used to identify the production units or the revenue centers for outpatient care
  - Last Three Characters: Secondary Clinic Stop (CLC)
    - Facility specific modifiers

Examples: **116714** **Respiratory Therapy Education**

116329 **Respiratory Therapy Procedures**

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Assessing Outpatient Healthcare Use:
Finding info in Outpatient Medical SAS Datasets

- **Where do I find Emergency Department care?**
  - Data relevant to Emergency Department care are located in the Outpatient files.
    - Before 2007: Clinic Stop Code: 102101
    - 2007 to present: Clinic Stop Code: 103XXX

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Assessing Outpatient Healthcare Use:
Finding info in Outpatient Medical SAS Datasets

- **How do I determine Outpatient Diagnoses?**
  - Up to 10 diagnosis (ICD-9) codes per record
    - DXLSF = Primary Diagnosis for encounter
    - DXF2 – DXF10 = Secondary diagnoses
  - Located in:
    - **Outpatient Event (SE) Dataset**
      - Data available from 1997 to present
        - » only 15% of records in FY99 contained a DXF2
    - **Inpatient Encounters (IE) Dataset**
      - Data available from 2005 to present

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Assessing Outpatient Healthcare Use:
Finding info in Outpatient Medical SAS Datasets

- **How do I identify Outpatient Procedures?**
  - Outpatient services and procedures performed by a provider recorded with CPT-4 codes.
    - Variable Names: CPT1 – CPT20

  - Located in
    - **Outpatient Event (SE) Dataset**
    - **Inpatient Encounters (IE) Dataset**

* Inpatient procedures in the Medical SAS Inpatient Datasets are recorded with ICD-9 procedure codes.

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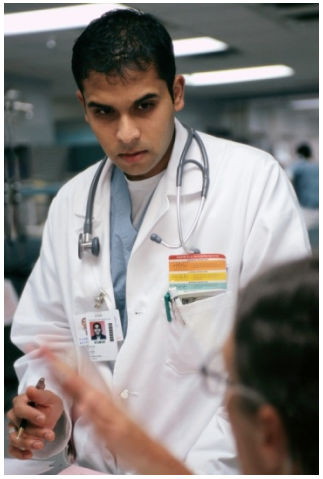
Assessing Outpatient Healthcare Use:
Finding info in Outpatient Medical SAS Datasets

- **How are provider types identified in the outpatient datasets?**
  - Physician Specialty recorded using CMS Provider Classification System.
    - Variable Name: PROV1–PROV10
  - Located in
    - **Outpatient Event (SE) Dataset**
    - **Inpatient Encounter (IE) Dataset**



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Provider Types (cont)

- **Examples:**
  - 100XXX Indicates a physician's assistant or advanced practice nurse
    - 100400 Nurse Anesthetist
    - 100600 Nurse Practitioner
  - 110XXX Indicates a physician
    - 110400 Anesthesiology
    - 110600 Cardiology
    - 110700 Dermatology

- **Please see VIReC's MedSAS Outpatient Research User Guide (Appendix A):**
  - http://vaww.virec.research.va.gov/References/RUG/RUG-Outpatient06ra.pdf

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Research Example I:

Hynes, Stroupe, Luo, et al. J Am Coll Surg. 2006;203:447–57
Laparoscopic vs Open Mesh Hernia Repair Trial

Cost Effectiveness of Laparoscopic Versus Open Mesh Hernia Operation: Results of a Department of Veterans Affairs Randomized Clinical Trial

Denise M Hynes, PhD, RN, Kevin T Stroupe, PhD, Ping Luo, PhD, Anita Giobbie-Hurder, MS, Domenic Reda, PhD, Margaret Kraft, PhD, RN, Kamal Itani, MD, FACS, Robert Fitzgibbons, MD, FACS, Olga Jonasson, MD, FACS, Leigh Neumayer, MD, FACS, for the Veterans Affairs Cooperative Studies Program 456 Investigators

BACKGROUND: Evidence comparing laparoscopic versus open hernia repair has varied with time and with changes in techniques used. Cost effectiveness is an important consideration when evidence for predominance of one surgical technique is lacking. Current cost estimates of hernia repair are not available.

STUDY DESIGN: This study is a cost effectiveness analysis within a randomized controlled trial comparing open (OPEN) versus laparoscopic (LAP) hernia repair using mesh at 14 Department of Veterans Affairs medical centers, with 2-year followup for each patient. Between January 1999 and November 2001, 2,164 men with inguinal hernia were randomized and 1,983 had an operation; 1,395 patients (708 OPEN and 687 LAP) with outpatient hernia operations were included in the cost effectiveness analysis. Outcomes included surgical and postoperative costs, quality adjusted life years (QALY), and incremental cost per QALY gained or the incremental cost effectiveness ratio (ICER).

RESULTS: Over 2 years, LAP cost an average of $638 more than OPEN. QALYs at 2 years were similar, resulting in $45,899 per QALY gained (95% CI: −$669,045, $722,457). The probability that LAP is cost effective at the $50,000 per QALY level (slightly more costly but more effective), was 51%. For unilateral primary and unilateral recurrent hernia repair, the probabilities that LAP is cost effective at the $50,000 per QALY level were 64% and 81%, respectively. For bilateral hernia repair, OPEN was less costly and more effective.

CONCLUSIONS: Overall, laparoscopic hernia repair is not cost effective compared with open repair. For patients with unilateral (primary or recurrent) hernia, laparoscopic repair is a cost effective treatment option. (J Am Coll Surg 2006;203:447–457. © 2006 by the American College of Surgeons)

We have previously reported results of a multicenter, randomized Department of Veterans Affairs Cooperative Study showing that patients receiving a laparoscopic repair of an inguinal hernia had less initial pain and returned to normal activities somewhat sooner than open repair patients.[1] These findings are consistent with reports from other randomized clinical trials.[2,3] Open repair patients, however, had fewer complications and lower hernia recurrence rates at 2 years.[1]

Competing Interests Declared: None.
This study was funded by the Cooperative Studies Program of the Department of Veterans Affairs Office of Research and Development (CSP#456).
Parts of the results from this manuscript (selected results from the Table and the acceptability curve Figure) were presented at the Academy Health meeting, Seattle, WA, June 2006.

Received January 13, 2006; Revised April 27, 2006; Accepted May 10, 2006.
From the Cooperative Studies Program Coordinating Center (Hynes, Stroupe, Luo, Giobbie-Hurder, Reda), Midwest Center for Health Services and Policy Research (Hynes, Stroupe), and the VA Information Resource Center (Hynes, Stroupe), Edward Hines Jr, Department of General Internal Medicine, Feinberg School of Medicine, VA Hospital, Hines, IL; Department of Medicine, Stritch School of Medicine (Hynes), Niehoff School of Nursing (Hynes, Kraft), Loyola University, Chicago, Maywood, IL; Northwestern University, Chicago, IL (Stroupe); Department of Biostatistics, School of Public Health, University of Illinois Chicago, Chicago, IL (Reda); Department of Surgery, Boston VA Healthcare System and Department of Surgery, Boston University, Boston, MA (Itani); Department of Surgery, Creighton University, Omaha, NE (Fitzgibbons); Department of Surgery, University of Illinois College of Medicine, Chicago, IL (Jonasson); Department of Surgery, VA Salt Lake City Healthcare System and the Department of Surgery, University of Utah, Salt Lake City, UT (Neumayer).
Correspondence address: Denise M Hynes, PhD, RN, Edward Hines Jr VA Hospital, VA Information Resource Center, Building 1, Room C303, PO Box 5000 (151-V), Hines, IL 60141.

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Published by Elsevier Inc.

ISSN 1072-7515/06/$32.00
doi:10.1016/j.jamcollsurg.2006.05.019

- **VA Cooperative Studies Program conducted an RCT of Laparoscopic (Lap) vs Open**
- **We reported the cost effectiveness results of**
  - 1,395 patients:
    - 687 Lap vs 708 Open
  - At 2 years of follow up
- **Outcomes included**
  - Surgical and postoperative utilization and costs
  - Quality adjusted life years (QALY)

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Research Example I:

Hynes, Stroupe, Luo, et al. J Am Coll Surg. 2006;203:447–57

- **The Laparoscopic (Lap) vs. Open hernia repair trial recruited patients from Jan. 1999 – Nov. 2001 and followed patients for 2 years.**

- **At 2 years of follow up**,
  - Patients who received Lap repairs cost an average of $638 more than Open repair patients (P>0.05).
  - Quality adjusted life years (QALYs) were similar: Lap: 1.62 vs Open: 1.60, P=0.31
  - Resulting in a cost effectiveness ratio of $45,899 per QALY gained from Lap vs Open hernia repair.

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Research Example I:
Hynes, Stroupe, Luo, et al. J Am Coll Surg. 2006;203:447–57
Methods:
Data Sources - Utilization

- **Data on hospital stays and outpatient visits in VA were from the Medical SAS Datasets**
  - Inpatient files:
    - Acute, Extended Care, and Observation Files
  - Outpatient files:
    - Outpatient Visit Files
- **Outpatient care was reported as**
  - The number of outpatient visits:
    - Days of outpatient care received
  - The number of events:
    - Based on the number of clinic stop codes per visit

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Research Example I:

Hynes, Stroupe, Luo, et al. J Am Coll Surg. 2006;203:447–57

Results

Table 2. Use of Health Services at 90 Days and 2 Years after Operation

Health use*	LAP (n = 687)	OPEN (n = 708)	p Value†
90-d followup after operation			
Hospital days, mean (SD), d	0.4 (3.8)	0.3 (2.6)	0.08
Outpatient visit stops, mean (SD)	7.7 (12.2)	6.5 (10.2)	0.06
Outpatient visit days, mean (SD)	4.9 (7.0)	4.2 (4.9)	0.05
Prescriptions filled, mean (SD)	5.5 (6.9)	5.2 (6.2)	0.58
90-d to 2-y followup			
Hospital days, mean (SD), d	3.4 (22.6)	2.6 (12.2)	0.45
Outpatient visit stops, mean (SD)	33.7 (47.6)	31.3 (43.7)	0.26
Outpatient visit days, mean (SD)	20.9 (30.6)	19.6 (27.9)	0.25
Prescription filled, mean (SD)	34.6 (40.5)	34.9 (38.7)	0.49

*For outpatient health use, there could be multiple visit stops for each visit day. So both visit stops and visit days for patients are summarized here.
†The p values are reported based on Wilcoxon rank-sum test.
LAP, laparoscopic hernia repair; OPEN, open hernia repair.

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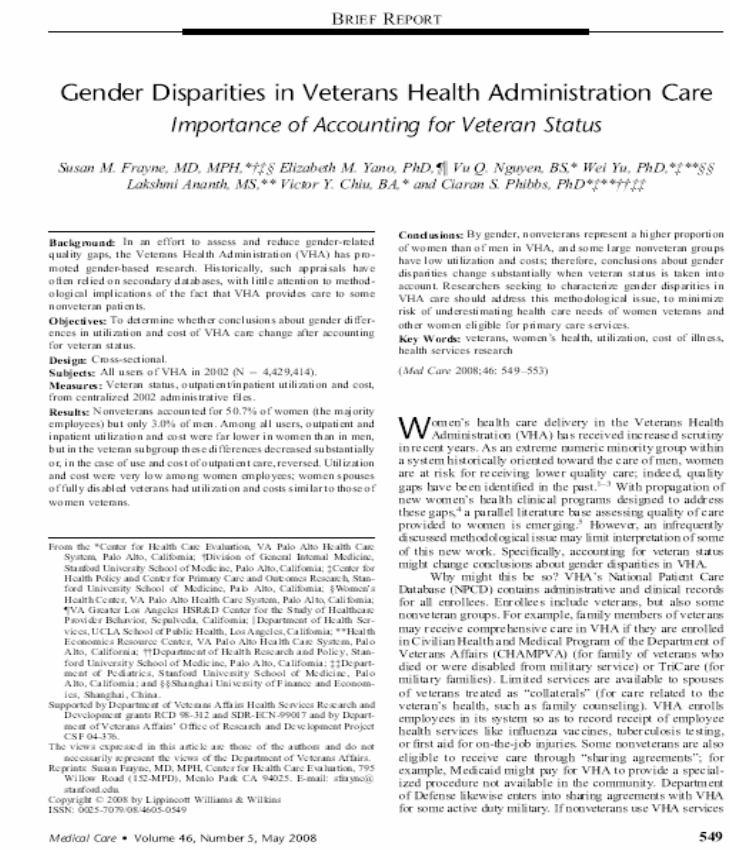
Research Example II:

Frayne, Yano, Nguyen, et al. Med Care. 2008;46:549-553.



BRIEF REPORT

Gender Disparities in Veterans Health Administration Care

Importance of Accounting for Veteran Status

Susan M. Frayne, MD, MPH,†‡§ Elizabeth M. Yano, PhD,¶ Vu Q. Nguyen, BS,* Wei Yu, PhD,*‡**§§ Lakshmi Ananth, MS,** Victor Y. Chiu, BA,* and Ciaran S. Phibbs, PhD*‡**††‡‡*

Background: In an effort to assess and reduce gender-related quality gaps, the Veterans Health Administration (VHA) has promoted gender-based research. Historically, such appraisals have often relied on secondary databases, with little attention to methodological implications of the fact that VHA provides care to some nonveteran patients.

Objectives: To determine whether conclusions about gender differences in utilization and cost of VHA care change after accounting for veteran status.

Design: Cross-sectional.

Subjects: All users of VHA in 2002 (N = 4,429,414).

Measures: Veteran status, outpatient/inpatient utilization and cost, from centralized 2002 administrative files.

Results: Nonveterans accounted for 50.7% of women (the majority employees) but only 3.0% of men. Among all users, outpatient and inpatient utilization and cost were far lower in women than in men, but in the veteran subgroup these differences decreased substantially or, in the case of use and cost of outpatient care, reversed. Utilization and cost were very low among women employees; women spouses of fully disabled veterans had utilization and costs similar to those of women veterans.

Conclusions: By gender, nonveterans represent a higher proportion of women than of men in VHA, and some large nonveteran groups have low utilization and costs; therefore, conclusions about gender disparities change substantially when veteran status is taken into account. Researchers seeking to characterize gender disparities in VHA care should address this methodological issue, to minimize risk of underestimating health care needs of women veterans and other women eligible for primary care services.

Key Words: veterans, women's health, utilization, cost of illness, health services research

(*Med Care* 2008;46: 549–553)

From the *Center for Health Care Evaluation, VA Palo Alto Health Care System, Palo Alto, California; †Division of General Internal Medicine, Stanford University School of Medicine, Palo Alto, California; ‡Center 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; ¶VA Greater Los Angeles HSR&D Center for the Study of Healthcare Provider Behavior, Sepulveda, California; ‖Department of Health Services, UCLA School of Public Health, Los Angeles, California; **Health Economics Resource Center, VA Palo Alto Health Care System, Palo Alto, California; ††Department of Health Research and Policy, Stanford University School of Medicine, Palo Alto, California; ‡‡Department of Pediatrics, Stanford University School of Medicine, Palo Alto, California; and §§Shanghai University of Finance and Economics, Shanghai, China.

Supported by Department of Veterans Affairs Health Services Research and Development grants RCD 98-312 and SDR-ECN-99017 and by Department of Veterans Affairs' Office of Research and Development Project CSF 04-376.

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

Reprints: Susan Frayne, MD, MPH, Center for Health Care Evaluation, 795 Willow Road (152-MPD), Menlo Park CA 94025. E-mail: sfrayne@stanford.edu.

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ISSN: 0025-7079/08/4605-0549

Women's health care delivery in the Veterans Health Administration (VHA) has received increased scrutiny in recent years. As an extreme numeric minority group within a system historically oriented toward the care of men, women are at risk for receiving lower quality care; indeed, quality gaps have been identified in the past.[1–3] With propagation of new women's health clinical programs designed to address these gaps,[4] a parallel literature base assessing quality of care provided to women is emerging.[5] However, an infrequently discussed methodological issue may limit interpretation of some of this new work. Specifically, accounting for veteran status might change conclusions about gender disparities in VHA.

Why might this be so? VHA's National Patient Care Database (NPCD) contains administrative and clinical records for all enrollees. Enrollees include veterans, but also some nonveteran groups. For example, family members of veterans may receive comprehensive care in VHA if they are enrolled in Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA) (for family of veterans who died or were disabled from military service) or TriCare (for military families). Limited services are available to spouses of veterans treated as "collaterals" (for care related to the veteran's health, such as family counseling). VHA enrolls employees in its system so as to record receipt of employee health services like influenza vaccines, tuberculosis testing, or first aid for on-the-job injuries. Some nonveterans are also eligible to receive care through "sharing agreements"; for example, Medicaid might pay for VHA to provide a specialized procedure not available in the community. Department of Defense likewise enters into sharing agreements with VHA for some active duty military. If nonveterans use VHA services

- **This study determined whether gender differences in utilization and cost of VHA care change after accounting for veteran vs. non-veteran status.**

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Research Example II:

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- **This study conducted a cross sectional analysis of all VHA users in 2002.**
- **There were 4,429,414 VHA users**
  - 4,122,381 veterans
    - 178,849 women
    - 3,943,532 men
  - 307,033 nonveterans
    - 183,722 women (50.7% of female VHA users)
    - 123,311 men (3.0% of male VHA users)
- **Because some nonveteran groups have low utilization and costs, conclusions about gender disparities change substantially when veteran status is taken into account.**

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Research Example II:

Frayne, Yano, Nguyen, et al. Med Care. 2008;46:549-553.

Methods:
Data Sources - Utilization

- **Data on inpatient and outpatient utilization were from the Medical SAS Datasets**
  - Outpatient primary care was determined from VA clinic stop codes
- **Healthcare costs were determined from HERC Patient-Level Dataset**
- **VA eligibility was determined from eligibility code in outpatient data**
  - Non-veteran eligibility categories included: CHAMPVA, TriCare, Employee, Collateral, Sharing

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Research Example II:

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Results

TABLE 1. Age, Health Status and Primary Care Use in Fiscal Year 2002 for Women Versus Men, Among All Veterans Health Administration (VHA) Users and Among Veterans Only

	All VHA Users		Veterans	
	Women	Men	Women	Men
N	362,571	4,066,843	178,849	3,943,532
Age, yr, mean (SD)	49.0 (15.9)	63.0 (14.3)	50.1 (17.0)	63.6 (13.9)
Any medical condition*, %	47.2	77.2	73.7	79.1
Any mental health condition*, %	22.1	29.2	38.0	29.9
No. of VHA primary care visits in FY02, %				
None	50.4	17.7	16.2	15.7
1–2	25.6	46.5	42.1	47.5
3+	24.0	35.8	41.8	36.8

*Identified in Fiscal Year 2002 (FY02) data.

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Research Example II:

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Results

TABLE 2. Health Status, Utilization, and Cost of Care in Fiscal Year 2002 for Non-Veteran Women Veterans Health Administration Users, by Eligibility Type

	CHAMPVA	TriCare	Employee	Collateral	Sharing	Others
N	15,156	10,452	106,006	19,769	25,210	7129
Age, years, mean (SD)	52.7 (9.1)	47.0 (14.2)	45.7 (12.8)	63.1 (13.5)	42.7 (15.9)	50.9 (19.1)
Health status						
Any medical condition, %	83.5	61.3	12.6	5.0	17.8	22.3
Any mental health condition, %	42.6	14.8	1.1	6.0	4.9	6.7
Utilization						
Outpatient visits, no., mean (SD)	15.62 (15.33)	7.70 (10.43)	3.37 (3.77)	2.28 (4.69)	4.14 (8.01)	3.47 (6.41)
Length of stay, days, mean (SD)	0.54 (4.91)	0.15 (1.57)	0.00 (0.15)	0.00 (0.13)	0.15 (2.24)	0.09 (2.40)
Cost						
Total outpatient, $, mean (SD)	2357 (2874)	890 (1692)	183 (320)	210 (552)	530 (1,787)	517 (1101)
Total inpatient, $, mean (SD)	785 (5528)	256 (3045)	4 (191)	7 (271)	230 (2,990)	119 (2564)

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Session Objectives

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

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VIReC Help

- **VIReC 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:
    - http://www.virec.research.va.gov/DataSourcesName/Medical-SAS-Datasets/SASdocumentation.htm
    - http://vaww.virec.research.va.gov/References/RUG/RUG-Outpatient06ra.pdf
      - Includes lists of variables and their dataset locations
      - Descriptions of each of the variables
      - Values for selected variables

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VIReC Help (cont'd)

- **HSRData Listserv**
  - Join at the VIReC Web site
  - Discussion among >500 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
  - VIReC@va.gov
  - (708) 202-2413

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Questions?

Next Seminar

- **July 6, 2009**
  - Measuring Outpatient Pharmacy Use in the VA using VA Pharmacy Data
  - Todd Lee, PhD

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