Assessing Inpatient and Outpatient VA Health Care Use

December 1, 2014
Presented by:
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VA Information Resource Center
Thanks to:

- VIReC colleagues
Poll #1: About you

What is your role in VA?

- Research investigator/PI
- Data manager/analyst
- Project coordinator
- Other – please describe via the Q&A function
Assessing Health Care Use in the VA

- Data about inpatient and outpatient events are available in a variety of sources
  - Veterans Health Information Systems and Technology Architecture (VistA)
  - Managerial Cost Accounting (MCA, formerly DSS) National Data Extracts
  - Corporate Data Warehouse (CDW)
  - Medical SAS datasets
By the end of this talk, you will:

- Understand what are the Medical SAS datasets
- See which Medical SAS datasets are created and where to obtain them
- Be able to find information in the Medical SAS datasets
- Know where to go for help regarding the Medical SAS datasets
Topics for Today

• Overview of Medical SAS datasets

• Inpatient datasets

• Outpatient datasets

• Examples of VA research that have used Medical SAS datasets

• Learning more about Medical SAS datasets
Poll #2:

• How would you rate your overall knowledge of the VA Medical SAS datasets?
  ▫ 1 (Never Used);
  ▫ 2;
  ▫ 3;
  ▫ 4;
  ▫ 5 (Used Frequently, Very familiar)
Overview of Medical SAS datasets
What are the MedSAS datasets?

- Comprehensive, administrative datasets for national VHA healthcare delivery

- Inpatient discharge and outpatient encounter information from the electronic health record

- Care given to patients at all VA facilities and some non-VA facilities paid for by VA
  - Contains very small percentage of non-Veterans who received care in a VA facility
Technical Details

• Data steward: National Data Systems

• Hosted on mainframe computer at the Austin Information Technology Center (AITC)

• Fiscal year files; also available on a quarterly basis
  ▫ Researchers advised to use annual, closed-out datasets

• Common element: patient identifier (scrambled SSN)
Inpatient datasets

Data flow
Organization
Measures
VA Data Flow to the Inpatient Datasets

Patient Treatment File (PTF)
Austin Information Technology Center (AITC)
National Data Systems (NDS)
Inpatient Care Setting Summary

<table>
<thead>
<tr>
<th>Setting</th>
<th>Information Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care</td>
<td>Stays for acute care at a medical center bed section lasting $\geq 24$ hours</td>
</tr>
<tr>
<td>Extended Care</td>
<td>Stays in VA community living centers, domiciliaries, and contracted care in CNHs</td>
</tr>
<tr>
<td>Observation Care</td>
<td>Hospital stays (generally lasting $&lt; 24$ hours) for monitoring, evaluation, or assessment</td>
</tr>
<tr>
<td>Non-VA Care</td>
<td>Care funded by the VA but provided in non-VA facilities</td>
</tr>
</tbody>
</table>
Inpatient Datasets Summary

<table>
<thead>
<tr>
<th>File</th>
<th>Information Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>Summary of entire stay (episode of care) and demographic information</td>
</tr>
<tr>
<td>Bed Section</td>
<td>Data for segment of stay defined by specialty of physician managing patient’s care</td>
</tr>
<tr>
<td>Procedure</td>
<td>Information on up to 5 procedures on a given day</td>
</tr>
<tr>
<td>Surgery*</td>
<td>Information on up to 5 surgeries on a given day</td>
</tr>
</tbody>
</table>

* Observation Care setting has no associated Surgery detail dataset.
Inpatient Datasets Naming Convention

- Acute Care

<table>
<thead>
<tr>
<th>File</th>
<th>Reference</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>PM</td>
<td>FY1984 – present</td>
</tr>
<tr>
<td>Bed Section</td>
<td>PB</td>
<td>FY1984 – present</td>
</tr>
<tr>
<td>Procedure</td>
<td>PP</td>
<td>FY1988 – present</td>
</tr>
<tr>
<td>Surgery</td>
<td>PS</td>
<td>FY1984 – present</td>
</tr>
</tbody>
</table>
Finding Information in Inpatient Datasets

- Inpatient datasets can be used to assess:
  - Admission and Discharge
  - Physician Specialty
  - Diagnoses
  - Procedures
  - Length of Stay
Assessing Admission and Discharge

- All inpatient datasets include:
  - Admission Date and Time
  - VISN and Station Number (facility)
  - Discharge Date and Time
  - Discharge Status
  - Discharge Type
Assessing Physician Specialty

- **BEDSECN** variable identifies specialty of physician managing patient’s care
  - Found in Bed Section and Procedure datasets
  - Contains treating specialty code
  - One inpatient stay may have many bed sections
Assessing Diagnoses

- **DXLSF**: Primary Diagnosis Responsible for Full LOS
  - Diagnosis initially assigned at admission
  - May be different than DXPRIME if diagnosis changes
  - Not coded by professional coders

- **DXPRIME**: Principal Admitting Diagnosis
  - Condition which determined to be chiefly responsible for the admission to the hospital
  - Codes assigned by professional coders
  - Leads to the calculation of the DRG
Assessing Diagnoses (cont’d)

- **DXF2 – DXF13***
  - Secondary diagnosis codes for full hospital stay
  - Main data sets only

- **DXLSB, DXB2-DXB5**
  - Diagnoses related to the Bed Section diagnosis and stay
  - Bed Section data sets only

* Number of secondary diagnoses code variables changed from 9 to 12 in FY2005
Assessing Procedures

- Procedure datasets contain:
  - Procedures not performed in an operating room
    - e.g., 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.
Diagnosis and Procedure Codes

- ICD-9-CM system of codes currently used in MedSAS datasets

- ICD-10 Transition:
  - Compliance date October 1, 2015
  - VHA continues to prepare software for ICD-10 implementation
Assessing 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

- Includes length of stay defined with:
  - Minimum of 1 day
Outpatient datasets

Data flow
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VA Data Flow to the Outpatient Datasets

National Patient Care Database (NP CD)
NPCD Retirement

- **End of FY2015**
  - MedSAS Outpatient data will no longer be produced

- **Users will transition to Corporate Data Warehouse (CDW)**
  - Data will contain same content as the MedSAS Outpatient datasets
  - Different format for FY2016

- **MedSAS data created through FY2015**
  - Existing MedSAS datasets will remain available
# Outpatient Datasets Summary

<table>
<thead>
<tr>
<th>File</th>
<th>Information Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit</td>
<td>Reports services provided to a patient in a 24-hour period at a single facility</td>
</tr>
<tr>
<td>Event</td>
<td>Provides information about individual outpatient encounters</td>
</tr>
<tr>
<td>Inpatient Encounters</td>
<td>Provides information about professional services received during inpatient stay</td>
</tr>
</tbody>
</table>
# Outpatient Datasets Naming Convention

<table>
<thead>
<tr>
<th>File</th>
<th>Reference</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit</td>
<td>SF</td>
<td>FY1991 – present</td>
</tr>
<tr>
<td>Event</td>
<td>SE</td>
<td>FY1997 – present</td>
</tr>
<tr>
<td>Inpatient Encounters</td>
<td>IE</td>
<td>FY2005 – present</td>
</tr>
</tbody>
</table>
Visit vs. Event File

Patient’s Outpatient Clinic Stops

During One Day at One Facility

Visit

Primary Care Clinic Stop

Ophthalmology Clinic Stop

Physical Therapy Clinic Stop

Event

Event

Event
Stop Codes

• Workgroups or clinics are identified using Stop Codes (also known as Clinic Stops and formerly DSS Identifiers)
  ▫ **Primary Stop Code (CL)**
    • Identifies production units or revenue centers responsible for outpatient care
  ▫ **Secondary (Credit) Stop Code (CLC)**
    • Further defines the team, service, funding
### Stop Code Examples

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>216203</td>
<td>Telephone Audiology Rehab Support Service</td>
</tr>
<tr>
<td>216204</td>
<td>Telephone Speech Rehab Support Service</td>
</tr>
<tr>
<td>216210</td>
<td>Spinal Cord Injury Telephone Support</td>
</tr>
</tbody>
</table>

**Notes:**

- CLC
- VIReC Researchers Guide to VA Data

12/2014
Outpatient Visit (SF) File

• One record per visit
  ▫ All events at a facility in a given day

• Demographic information

• Up to 15 primary stop codes

• Common Primary Stop Codes:
  ▫ Laboratory
  ▫ Primary care medicine
  ▫ Telephone primary care

• No diagnosis or procedure information
Outpatient Event (SE) File

• One primary stop code per record
  ▫ Can also include one secondary stop code per record
  ▫ More than half have no secondary stop code
  ▫ Only primary stop codes are required

• No limit on number of records per day

• Diagnosis & procedure information in one dataset
Inpatient Encounters (IE) File

- Professional service encounters during inpatient stay
  - Services not recorded as encounters in Outpatient Event file

- Shares same structure as the Outpatient Event file
  - Many records may be generated during one inpatient stay
  - Contains:
    - Primary and secondary stop codes
    - Diagnosis and procedure codes

- Common Primary Stop Codes:
  - Recreation therapy service
  - Respiratory therapy
  - Physical therapy
  - X-ray
Finding Information in Outpatient Datasets

- Outpatient datasets can be used to assess:
  - Diagnoses
  - Procedures
  - Provider Type
Assessing Diagnoses

- **Outpatient Event & Inpatient Encounters files:**
  - Up to 10 diagnoses per record
  - ICD-9-CM system of codes

- **DXLSF:**
  - Primary Diagnosis for Encounter

- **DXF2-DXF10:**
  - Secondary Diagnoses
Assessing Procedures

• Outpatient Event & Inpatient Encounters files:
  ▫ Up to 20 procedures per record
  ▫ CPT-4 system of codes

• CPT1-CPT20*:
  ▫ Services and procedures performed by a provider
  ▫ Repetition allowed

* Number of procedure code variables changed from 15 to 20 in FY2005
Assessing Provider Type

- **Outpatient Event & Inpatient Encounters files:**
  - Up to 10 provider types per record
  - CMS Provider Classification System

- **PROV1-PROV10:**
  - Provider types and areas of specialization
  - Providers not extracted in any particular order
    - PROV1 not necessarily the primary provider
Examples of VA research that have used Medical SAS datasets

**Objective:** To identify risk factors associated with recurrence of CDI among Veterans with SCI/D

**Study Design:** Retrospective cohort study with data from outpatient, inpatient, and extended care settings at 83 Department of Veterans Affairs facilities from 2002 to 2009

**Data Sources:** VA Inpatient and Outpatient MedSAS datasets, among others

**Healthcare Use Construct:** Length of stay
Research Example II:
Wang, Maciejewski, Patel, et al., *BMC Health Serv Res* 2013; 13:26

**Objective:** To assess the extent of chronic dialysis treatment utilization and differences in all-cause hospitalizations and mortality between veterans receiving dialysis from VA versus VA-outsourced providers

**Study Design:** Retrospective cohort of veterans in 2 VA regions who received chronic dialysis treatment financed by VA between January 2007 and December 2008

**Data Sources:** VA Inpatient and Outpatient MedSAS Datasets, Fee Basis Files, among others

**Healthcare Use Construct:** Chronic dialysis treatment
Exclusion criteria:

- Death within a 90 day period prior to the first treatment

Dialysis treatment:

1) Only acute dialysis or chronic dialysis exclusively as inpatients;
2) Any home-based dialysis; or
3) Received the majority of their outpatient dialysis treatments outside the two study regions

Research Example II:
Wang, Maciejewski, Patel, et al., BMC Health Serv Res 2013; 13:26
Research Example II:
Wang, Maciejewski, Patel, et al., *BMC Health Serv Res* 2013; 13:26

Table 2 Adjusted all-cause hospitalization 1-year after baseline

<table>
<thead>
<tr>
<th>Variables</th>
<th>Any Hospitalization (n=1,388)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialysis setting: Non-VA (ref: VA)</td>
<td></td>
<td>0.35*** (0.24, 0.51)</td>
</tr>
<tr>
<td>Dual</td>
<td></td>
<td>0.99 (0.70, 1.40)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>1.00 (0.99, 1.01)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>0.96 (0.36, 2.57)</td>
</tr>
<tr>
<td>Race: Non-White (ref: White)</td>
<td></td>
<td>0.90 (0.68, 1.18)</td>
</tr>
<tr>
<td>DCG risk score</td>
<td></td>
<td>1.22*** (1.17, 1.27)</td>
</tr>
<tr>
<td>Region: VISN B (ref: VISN A)</td>
<td></td>
<td>1.59** (1.18, 2.13)</td>
</tr>
</tbody>
</table>

* p< .05  **p< .01  ***p<.001
Research Example III:

**Objective:** To conduct stage-adjusted analyses of the utilization rates of breast-conserving surgery

**Study Design:** Retrospective cohort study of women Veterans diagnosed or receiving their initial treatment for breast cancer in 2000-2006 at VHA facilities

**Data Sources:** VA Inpatient and Outpatient MedSAS Datasets, VA Central Cancer Registry, among others

**Healthcare Use Construct:** Surgical procedures

Figure 1. The use of BCS and mastectomy in the Veterans Health Administration from 2000 to 2006.
Where to go for more help

Documentation

Other assistance
VIReC MedSAS Documentation
MedSAS Research User Guides (RUGs)

Research User Guides

ADUSH Enrollment Files

VIREC Research User Guide: VHA Assistant Deputy Under Secretary for Health (ADUSH) Enrollment Files, 2nd Edition
Released: September 2013
- Abstract
- Archive

MCA (formerly DSS) Clinical NDEs

Note: Although the Decision Support System (DSS) is now known as the Managerial Cost Accounting (MCA) System, these guides still use the DSS name.

NEW! Variable Descriptions SAS-SQL XWalk: VHA Managerial Cost Accounting System (MCAS) Clinical National Data Extracts
Released: September 2014
- Abstract
- Archive

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
- Archive

VIREC Research User Guide: Fiscal Year 2009 VHA Medical SAS® Outpatient Datasets & Inpatient Encounters Dataset
Released: April 2011
- Abstract
- Archive
VIReC Research User Guide:
Fiscal Year 2009 VHA Medical SAS® Inpatient Datasets
Information in the MedSAS RUGs

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.

<table>
<thead>
<tr>
<th>List of Variables and Their Dataset Locations</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABO</td>
<td>Number of days a patient was out of the hospital on pass during an inpatient stay</td>
</tr>
<tr>
<td>ADMITDAY</td>
<td>Date of admission of the inpatient stay</td>
</tr>
<tr>
<td>ADMITMO</td>
<td>Month of admission of the inpatient stay</td>
</tr>
<tr>
<td>ADMITYR</td>
<td>Year of admission of the inpatient stay</td>
</tr>
<tr>
<td>ADTIME</td>
<td>Time of admission of the inpatient stay</td>
</tr>
<tr>
<td>AFIX</td>
<td>Indication of whether admission was to a substation of the parent hospital</td>
</tr>
<tr>
<td>AG15Y</td>
<td>Categorical recoding of AGE (Age In Years) into 15 groupings</td>
</tr>
<tr>
<td>AG8R</td>
<td>Categorical recoding of AGE (Patient age in years at discharge) into 8 groupings</td>
</tr>
<tr>
<td>AG9R (Note 1)</td>
<td>Categorical recoding of AGE (patient age in years at the time of visit) into 9 groupings</td>
</tr>
</tbody>
</table>
VIReC Intranet

• **Resources**
  - **Documentation:**
    - Variable Frequencies
    - Historical Variable Attributes
    - Data Contents

• **Monthly *Data Issues Briefs* (DIBs)**

• **HelpDesk**
  - [virec@va.gov](mailto:virec@va.gov)
HSRData-L Listserv

• Join at VIReC’s Intranet Website

• Exchange of current information, ideas, questions, and answers about data and information systems issues affecting VA research

• Discussion among > 1,000 VA-only researchers, operations, data stewards, managers, and other users

• Searchable archive of past discussions
VHA Data Portal

- Intranet only
- Data Access
- Data Sources
- Resources
Contact Information

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VA Information Resource Center
Edward Hines, Jr. VA Hospital
virec@va.gov
708-202-2413
Questions?
Next session:
January 12, 2015

Measuring Veterans’ Medicare Health Services Use

Kristin de Groot, MPH