Inpatient, Outpatient, and Pharmacy Costs from DSS

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October 12, 2011
Outline

- **HERC Average Cost vs DSS cost data**
- **How DSS gets costs**
- **DSS National Data Extracts**
  - Inpatient data
  - Outpatient data
  - Intermediate product department data
  - Pharmacy data
- **Using DSS data for research**
  - HERC-created files (Station Level, Discharge with Subtotals)
  - Comparison with Medicare costs
  - Advantages of using DSS
  - Merging with clinical records, outliers, other issues
Overview of VA Cost Data Sets

- Two possible sources:
  - DSS cost
    - Activity-based, managerial cost accounting system
    - Contains complete cost information for all of VHA, VBA, and NCA
    - Implemented on a local level
  - HERC average cost
    - Assigns costs for each VA encounter based on diagnoses, length of stay, procedures
    - Directly comparable to Medicare and other payers
Poll

White board question
HERC Average Costs Datasets
HERC Average Cost Datasets

- HERC method of distributing costs to hospital stays and outpatient visits
- Created to merge easily with clinical files
- Acute medical surgical stays
  - Estimate of what stay would have cost in a Medicare hospital, based on a regression model
- Other inpatient care
  - Length of stay
- Outpatient care
  - Hypothetical Medicare payment based on procedure codes assigned to visit
HERC Average Cost Datasets Con’t

- Directly comparable to non-VA providers (Medicare)
- Costs identical for all encounters with same characteristics
- HERC has file with average cost for each person in each fiscal year
How Does DSS Provide VHA Cost Data?

VI STA workload, clinical, & financial data (FMS, PAID)

Time allocation
Relative values

DSS VISN Level Production Databases

National Data Extracts of DSS
DSS Determines Costs of Products

- Cost assigned to cost center
  - Staff labor mapping and financial data
- Cost of overhead distributed to direct care departments
- Products in each department tabulated
- Relative values assigned to products
- Unit cost of each product determined
DSS Assigns Cost to Encounters

$$\sum \text{Intermediate Product (IP)} \times \text{IP Cost} = \text{Total cost of encounter}$$
DSS National Data Extracts for VHA

- Inpatient (Treating Specialty, Discharge)
- Outpatient Encounter
- Intermediate Product Department
- Pharmacy
- Account Level Budget Cost Center
- Clinical
DSS Cost File: Inpatient Discharge File

- Care of patients discharged in fiscal year
- One record per discharge
- Includes cost incurred in prior fiscal years
- May exclude stays that began before DSS implementation at each facility
DSS Data Only in Discharge File

- Discharge day
- Total days of stay
- Discharge bedsection
# Discharge example

<table>
<thead>
<tr>
<th>Patient</th>
<th>ADMITDAY</th>
<th>DISDAY</th>
<th>FP</th>
<th>LOS</th>
<th>DBEDSECT</th>
<th>TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24SEP05</td>
<td>01OCT05</td>
<td>1</td>
<td>7</td>
<td>Gen Acute Med</td>
<td>9824.24</td>
</tr>
<tr>
<td>A</td>
<td>31OCT05</td>
<td>11NOV05</td>
<td>2</td>
<td>11</td>
<td>Gen Acute Med</td>
<td>4673.01</td>
</tr>
<tr>
<td>A</td>
<td>04AUG06</td>
<td>21SEP06</td>
<td>12</td>
<td>48</td>
<td>Rehab</td>
<td>81868.77</td>
</tr>
</tbody>
</table>
DSS Cost File: Inpatient Treating Specialty File

- Treating specialty
- One record per treating specialty per month
  - More than one record in a month if more than one treating specialty in a month
  - All care provided during fiscal year
  - Include stays not yet over
DSS Data Only in Treating Specialty File

- Treating specialty
- Census indicator
- Date of entry and exit from treating specialty
  - No discharge date
- Treating specialty length of stay
  - No total length of stay
### DSS Treating Specialty File Example

<table>
<thead>
<tr>
<th>Patient</th>
<th>TRTIN</th>
<th>TRTOOUT</th>
<th>TR SP</th>
<th>TR SP LOS</th>
<th>FP</th>
<th>TCST_TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>01OCT05</td>
<td>01OCT05</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>350.01</td>
</tr>
<tr>
<td>A</td>
<td>31OCT05</td>
<td>11NOV05</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>544.24</td>
</tr>
<tr>
<td>A</td>
<td>31OCT05</td>
<td>11NOV05</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>23787.22</td>
</tr>
</tbody>
</table>
DSS Data in Both Inpatient Files

- Admit day
- Admitting DRG
- Principal diagnosis
- Admitting diagnosis
Comparison of Record Structure

Discharge– 1 record in FY 04

March
General Medicine
ADMITDAY 3/15/04
TRTIN 3/15/04
TROUT 3/22/04
FP 6

March
Rehabilitation
ADMITDAY 3/15/04
TRTIN 3/22/04
TROUT 4/12/04
FP 6

April
Rehabilitation
ADMITDAY 3/15/04
TRTIN 3/22/04
TROUT 4/12/04
FP 7
Comparison of Record Structure
(Overlapping fiscal year)

Discharge- 1 record in FY 04 file

ADMITDAY 9/22/03

DI SDAY 10/8/03

Treating Specialty- 2 records

September
General Medicine

October
General Medicine

ADMITDAY 9/22/03
TRTIN 9/22/03
TRTOUT 9/30/03
FP 12 CENSUS=Y
In FY03 File

ADMITDAY 9/22/03
TRTIN 9/22/03
TRTOUT 10/8/03
FP 1 CENSUS=N
In FY04 File
DSS Cost Files: Outpatient Files

- One record per patient per day per clinic stop
  - NPCD events file allows more than 1 record per clinic stop per day
  - DSS includes care not in NPCD events file, e.g., prosthetics
- Primary DX and CPT codes
DSS Data Only in Outpatient Files

- Date of encounter
- DSS identifier (clinic stop)
  - DSS uses “pseudo stop” code for prosthetics, pharmacy, etc.
- Flag variables identifying data source
  - NPCD, pharmacy, prosthetics, Vast CBOC, etc.
## DSS OPAT Example

<table>
<thead>
<tr>
<th>Patient</th>
<th>VIZDAY</th>
<th>CLSTOP</th>
<th>OCST_TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>20051018</td>
<td>411</td>
<td>34.10</td>
</tr>
<tr>
<td>A</td>
<td>20051018</td>
<td>108</td>
<td>24.33</td>
</tr>
<tr>
<td>A</td>
<td>20051018</td>
<td>306</td>
<td>25.20</td>
</tr>
</tbody>
</table>
DSS Cost Variables in All Files

- Fixed direct
- Fixed indirect
- Variable
- Total
- Variable labor category 4 & 5
Additional Cost Variables in Inpatient Files

- Separate costs for lab, nursing, pharmacy, radiology, surgery, all other
  - Variable, fixed direct, fixed indirect, supply (where applicable)
DSS IPD Files

- IPD inpatient and outpatient files released 2005
- Multiple product departments per encounter
- Cost by type per product department
- Inpatient: monthly record per patient per inpatient product department
- Outpatient: one record per patient per outpatient product department
## IPD-TRT Example

<table>
<thead>
<tr>
<th>Patient</th>
<th>TRTIN</th>
<th>TRTOUT</th>
<th>IPD_NUM</th>
<th>IPD_TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>06-07-22</td>
<td>06-07-27</td>
<td>psychiatry MD bedday</td>
<td>471.11</td>
</tr>
<tr>
<td>A</td>
<td>06-07-22</td>
<td>06-07-27</td>
<td>psychology &amp; neuropsychology lab</td>
<td>1.08</td>
</tr>
<tr>
<td>A</td>
<td>06-07-22</td>
<td>06-07-27</td>
<td>occupational therapy</td>
<td>1985.01</td>
</tr>
</tbody>
</table>
DSS Pharmacy

- In the DSS Pharmacy Extract file
  - For outpatient records, there is one record
    - Per prescription or supply per person per day
  - For inpatient records, there is one record
    - Per person per day

- DSS sometimes groups two prescriptions into one record if they are for the same NDC and the same person on the same day
DSS Pharmacy Variables

- **Medication**: drug name, NDC, formulary indicators
- **Dispensing**: fill date, quantity dispensed, days supplied
- **Cost**: VA cost including direct labor, indirect costs of the pharmacy department, and supplies
- **Patient**: SCRSSN, date of birth, gender, age
- **Ordering provider**: provider ID, provider treating specialty
- **Note**: Clinical information on related visits/stays can be linked to Rx data using SCRSSN.
Pharmacy Copayments

- VA charges some copayments.
  - Depends on income, disability percentage
  - Rules & eligibility levels change year to year
  - Rules available on VA internet
- DSS does not show copayments; they show VA’s expense.
- MCCR files could show reimbursement from private insurance, if collected
Using DSS for Research
HERC-Created DSS Files

DSS Station Level Cost Data Set beginning 2002
- Annual costs and total utilization (inpatient days or outpatient visits) in HERC-designated service categories (13 inpatient categories, 12 outpatient categories)
- One record per service per station (STA3N) per fiscal year

HERC DSS Discharge Dataset with Subtotals
- DSS Discharge NDE only discharge bed section but not other treating specialties
- HERC DISCH file beginning FY 2007 functionally identical to the DSS DISCH NDE with additional fields for cost and length of stay subtotals for each inpatient category of care, e.g., acute medicine, psychiatry, nursing home, etc.
# Comparing DSS to Medicare Costs

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>DSS</th>
<th>Medicare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Services</td>
<td>Included in hospital costs (VL-4 &amp; VL-5)</td>
<td>Excluded from hospital costs</td>
</tr>
<tr>
<td>Indirect costs</td>
<td>Includes VA central office and national operation costs plus hospital admin costs</td>
<td>Only hospital admin costs</td>
</tr>
<tr>
<td>Capital costs</td>
<td>Financing costs excluded</td>
<td>Financing costs included</td>
</tr>
</tbody>
</table>
Advantages of Using DSS

- DSS costs estimate reflect facility differences in productivity, efficiencies, economies of scale, etc.
- DSS has pharmacy data.
- Non-VA provided purchase care is about 10% of care.
  - Examples: community hospitals, community nursing homes, private outpatient services.
- DSS is an activity-based method and is the official cost managerial accounting system for the entire Department of VA.
Costing Methods

More precise

Direct measurement
DSS

Pseudo-bill
Outpatient
HERC
AC Costs

Clinical cost function
Inpatient
HERC
Med/Surg

Average cost per visit
Inpt. Rehab, HERC
MH, LTC

Less precise
Ease of Merging DSS Cost Files with Utilization Files

**VA Utilization Data**

- PTF Main files
- NPCD Outpatient Files

**DSS Cost Data**

- Discharge
- Outpatient
- Treating specialty

Ease of Merging:
- PTF Main files → Discharge: easy
- NPCD Outpatient Files → Outpatient: moderate
- PTF Bed section files → Treating specialty: more difficult
Cost Outliers in DSS

- Users should look for cost estimates that are unexpectedly high given characteristics of care

- Mismatch of cost and utilization can result in unit costs that are very high cost, or negative

- DSS quality assurance efforts
  - Audit that costs in DSS agree with general ledger
  - Extreme high outliers are identified and corrected when DSS national data extracts (NDE) are built
DSS Resources
DSS Data Access

- See HERC guide on DSS
- DSS Program Office Web Site (VA Intranet DSS web site)
- SAS files available at Austin Center (AITC) for VA employees
- DSS Reports Web Site (VA Intranet VSSC web site)
  - Summaries of DSS data
  - Documentation of DSS and new DSS datasets
HERC DSS Guidebooks


- HERC's Station Level Cost Dataset FY2000 - FY2007
- HERC's DSS Discharge Dataset with Subtotals for Inpatient Categories of Care, Fiscal Year 2007
- Research Guide to the DSS Intermediate Product Department Files
DSS Pharmacy Resources

- DSS Pharmacy guidebook

- HERC Technical Report:
HERC Average Cost Guidebooks


- HERC’s Average Cost Datasets for VA Inpatient Care 1998 - 2008
- HERC's outpatient average cost dataset for VA care: fiscal year 2008 update
Next Classes

October 26, 2011
Sources of VA Care Costs and Providers
HERC staff

November 09, 2011
Estimating Cost for Non-VA Utilization in a Research Study
Todd Wagner