

Inpatient and Outpatient Costs from DSS

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Outline

- Differences between HERC and Decision Support System (DSS) cost data
- How DSS gets costs
- DSS data files and file structure
- How to obtain costs of care for cohort of patients
- Specific issues in using DSS for research studies

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 and length of stay
 - Directly comparable to Medicare and other payers
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White board question

- What are you interested in using DSS cost data for?

HERC Average Costs Datasets

HERC Average Cost Datasets

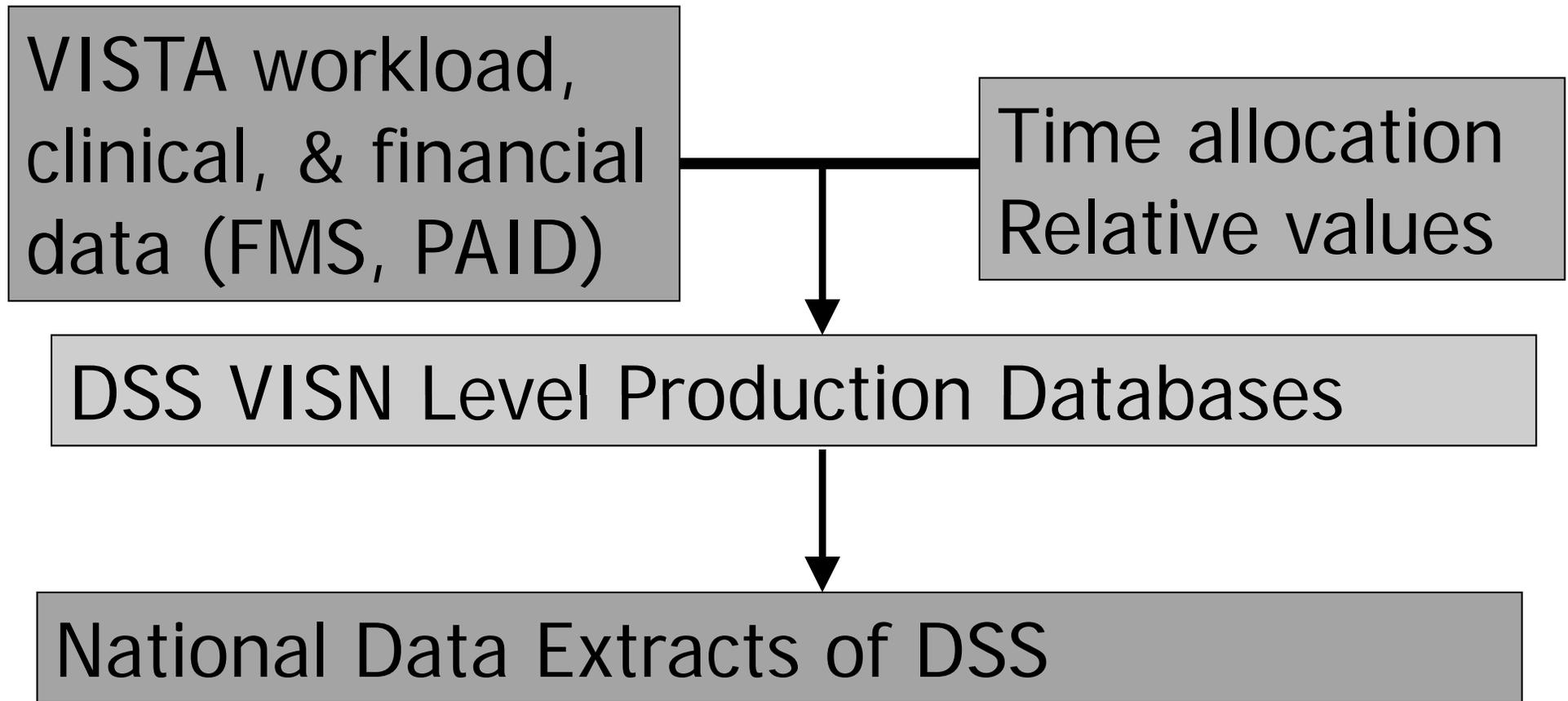
- HERC method of distributing costs to hospital stays and outpatient visits
- Created to merge easily with clinical files
- Acute medical surgical stays
 - Estimate of what stay would have cost in a Medicare hospital, based on a regression model
- Other inpatient care
 - Length of stay
- Outpatient care
 - 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 stays with same characteristics
- HERC has file with average cost for each person in each fiscal year

DSS National Data Extracts

How Does DSS Provide VHA Cost Data?



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
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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
 - HERC Station Level Cost Dataset
 - HERC DSS Discharge Dataset with Subtotals
 - Account Level Budget Cost Center
 - Pharmacy
 - 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 in 2001

DSS Data Only in Discharge File

- Discharge day
- Total days of stay
- Discharge bedsection

Discharge example

Patient	TRTIN	TRTOUT	TR SP	TR SP LOS	FP	TCST_TOT
A	05-10-01	05-10-01	15	1	1	35.01
A	05-10-31	05-11-11	15	1	1	544.24
A	05-10-31	05-11-11	15	10	2	23787.22

DSS Cost File: Inpatient Treating Specialty File

- Treating specialty
- One record per treating specialty per 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
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DSS Treating Specialty File Example

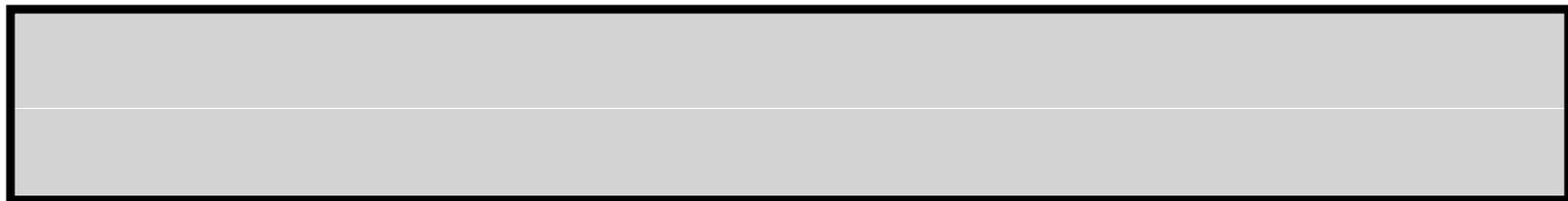
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DSS Data in Both Inpatient Files

- Admit day
- Admitting DRG
- Principal diagnosis
- Admitting diagnosis

Comparison of Record Structure

Discharge— 1 record in FY 04



ADMITDAY 3/15/04

DISDAY 4/12/04

Treating Specialty- 3 records



March
General Medicine

March
Rehabilitation

April
Rehabilitation

ADMITDAY 3/15/04

TRTIN 3/15/04

TRTOUT 3/22/04

FP 6

ADMITDAY 3/15/04

TRTIN 3/22/04

TRTOUT 4/12/04

FP 6

ADMITDAY 3/15/04

TRTIN 3/22/04

TRTOUT 4/12/04

FP 7

Comparison of Record Structure

(Overlapping fiscal year)

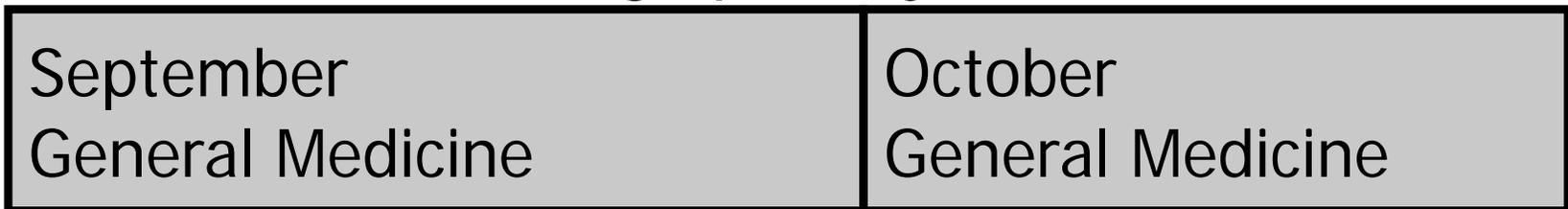
Discharge- 1 record in FY 04 file



ADMITDAY 9/22/03

DISDAY 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 primary CPT

DSS Data Only in Outpatient Files

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

DSS OPAT Example

Patient	VIZDAY	CLSTOP	OCST_TOT
A	20051018	411	34.10
A	20051018	108	24.33
A	20051018	306	25.20

DSS Cost Variables in All Files

- Fixed direct
- Fixed indirect
- Variable
- Grand 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 files released in 2005 with costs at product department level with separate inpatient and outpatient files
- Example of IPD-TRT records

Patient	TRTIN	TRTOUT	IPD_NUM	IPD_TOT
A	06-07-22	06-07-27	psychiatry MD bedday	471.11
A	06-07-22	06-07-27	psychology & neuropsychology lab	1.08
A	06-07-22	06-07-27	occupational therapy	1985.01

HERC-Created DSS Files

DSS Station Level Cost Data Set 2002-2007

- Annual costs and total utilization (inpatient days or outpatient visits) in HERC-designated service 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.

Using DSS to Find Costs for a Cohort

- Study to compare costs of care for two types of CABG surgery
- One is more labor intensive, more minutes in operating room
 - DSS accounts for time allocation, so difference in surgical costs
- Step 1: Identify patients with surgery 1 and surgery 2 with CPT codes in PTF file
- Step 2: Merge records from PTF with DISCH on SCRSSN, ADMITDAY, STA3N, DISDAY

Using DSS to Find Costs Con't

- Step 3: compare mean surgery total for surgery 1 and surgery 2 for surgical cost differences
 - Expect differences in surgery variable labor cat 4
- Step 4: compare mean grand total for surgery 1 and surgery 2 for overall hospitalization differences
 - LOS differences contribute more to costs
- Step 5: combine pharmacy, outpatient, inpatient costs over 2 year period to compare long-term costs

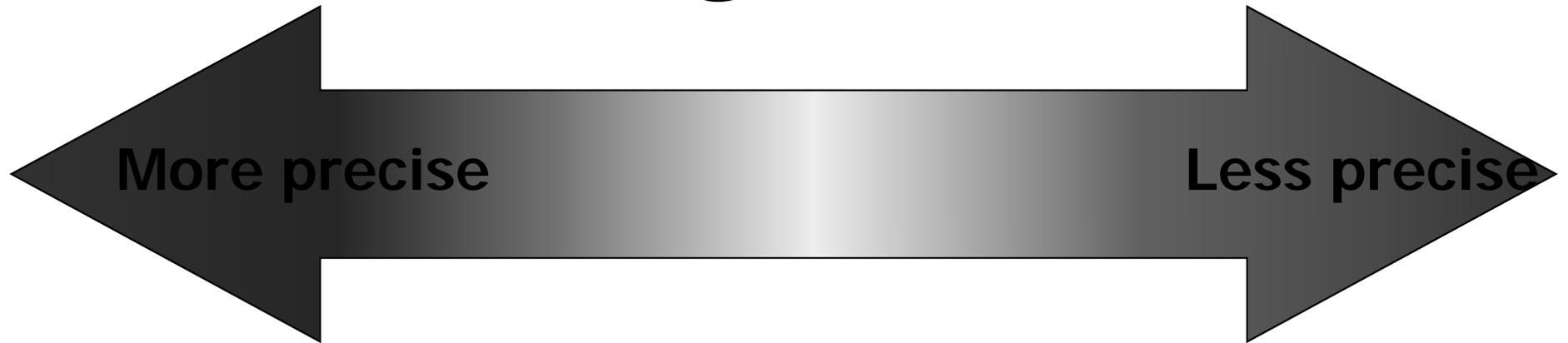
Comparing DSS to Medicare Costs

Cost Type	DSS	Medicare
Physician Services	Included in hospital costs (VL-4 & VL-5)	Excluded from hospital costs
Indirect costs	Includes VA central office and national operation costs plus hospital admin costs	Only hospital admin costs
Capital costs	Financing costs excluded	Financing costs included

Advantages of Using DSS

- DSS costs estimate reflect facility differences in productivity, efficiencies, economies of scale, etc
- DSS has pharmacy data
- VA purchases about 4% of care from non-VA providers
 - Community nursing home costs no longer in DSS outpatient file but in Fee Basis files
- DSS is activity-based method and potentially more accurate than other methods

Costing Methods



Direct measurement

DSS

Pseudo-bill

Outpatient
HERC
AC Costs

Clinical cost function

Inpatient
HERC
Med/Surg

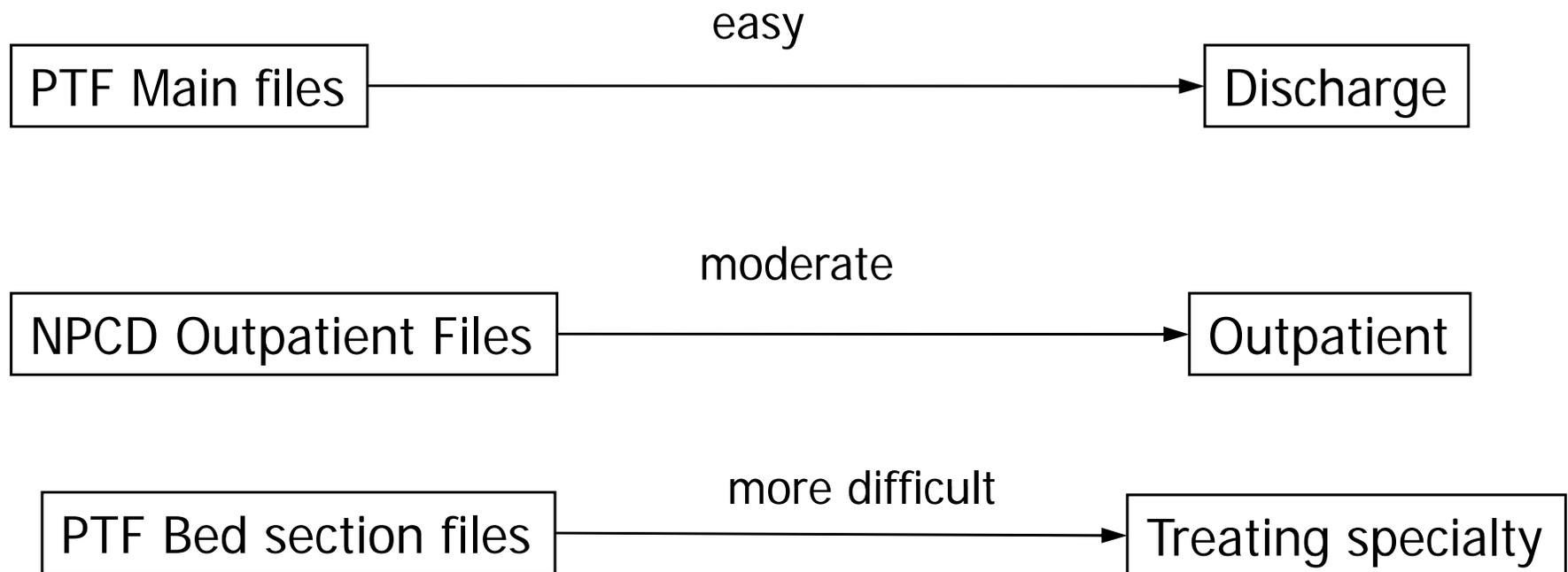
Average cost per visit

Inpt. Rehab, HERC
MH, LTC

Ease of Merging DSS Cost Files with Utilization Files

VA Utilization Data

DSS Cost Data



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 filtered out when DSS national data extracts (NDE) are built

Summary: DSS Vs HERC Average Costs

- HERC cost estimates
 - based on strong assumptions
 - reflect relative resource use in non-VA settings
- DSS cost estimates
 - reflect actual VA experience
 - have more variance
 - may be more prone to inappropriate outliers
- Both data sets rely on DSS distribution of costs to departments

DSS Data Access

- See HERC guide on DSS
- DSS Program Office Web Site:
<http://vaww.dss.med.va.gov/index.asp>
- SAS files available at Austin Center (AITC) for VA employees
- DSS Reports Web Site: https://vssc.med.va.gov/dss_reports/
 - Summaries of DSS data
 - Documentation of DSS and new DSS datasets

HERC DSS Guidebooks

<http://www.herc.research.va.gov/publications/guidebooks.asp>

- Research Guide to Decision Support System National Cost Extracts (updated 2008)
- 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

HERC Average Cost Guidebooks

<http://www.herc.research.va.gov/publications/guidebooks.asp>

- HERC's Average Cost Datasets for VA Inpatient Care 1998 - 2008
- HERC's outpatient average cost dataset for VA care: fiscal year 2008 update
- HERC's Annual Person Level Cost Dataset User Guide: Fiscal Years 1998-2008

Next Classes

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Pharmacy Costs

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March 10, 2010

Estimating Cost for Non-VA Utilization
in a Research Study

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