Using Cost Data from the Managerial Cost Accounting System (MCA) and HERC Average Costs

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Outline

■ MCA National Data Extracts
  – How MCA gets costs
  – Inpatient data
  – Outpatient data
  – Pharmacy data
  – Advantages of using MCA

■ HERC Average Costs
  – Methods for HERC-created files
  – Inpatient
  – Outpatient
  – Annual Summary

■ Using HERC or MCA

■ Data resources
Poll: I have used

- MCA data
- HERC Average Cost data
- Both
- Neither
Poll: Is MCA (versus AC data) better for?

A. Comparing patient costs of different interventions.

B. Budget impact of a primary care program in one VAMC.

C. Prescription drug costs for VA prescriptions.

D. Comparing efficiency between two VAMCs.
Top Down, Bottom Up

- HERC data uses relative value weights to estimate cost per encounter (top down)

- MCA data are based on an activity based costing methodology (bottom up)
MCA National Data Extracts
How Does MCA Provide VHA Cost Data?

VISTA workload, clinical, & financial data (FMS, PAID)

Time allocation
Relative values

MCA Facility Level Production Databases

National Data Extracts of MCA
MCA Determines Costs of Products

- Products are components of encounter
  - E.g. 20 min clinic visit, lab test, chest x-ray
- VAMC assigns costs to cost center (corresponding product dept)
  - VAMC staff labor mapping and financial data
  - Cost of overhead distributed to direct care depts
- Products in each department tabulated
- Relative values assigned to products
  - RVU’s for providers is time
MCA Determines Costs of Products

- Unit cost of each product determined:

$$\text{Cost}_{\text{MD-20 Min Visit}} = \left[ \frac{\text{Total MD Primary Care Dept Costs}}{\sum_{\text{MD-PC}} \text{RVU}_{\text{MD-PC}}} \right] \times \text{RVU}_{\text{MD-20 Min Visit}}$$
MCA Assigns Cost to Encounters

\[ \sum \text{Intermediate Product (IP)} \times \text{IP Cost} = \text{Total cost of encounter} \]

used by patient
MCA National Data Extracts

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

- Care of patients discharged in each fiscal year
- One record per discharge
- May include cost incurred in prior fiscal years
- 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>

3 different admit/discharge dates

Same patient
MCA 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
MCA 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
### MCA Treating Specialty File Example

<table>
<thead>
<tr>
<th>Patient</th>
<th>TRTIN</th>
<th>TRTOUT</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>

2 records with same different admit/discharge dates
But different months (FP)

Same patient
MCA Data in Both Inpatient Files

- Admit day
- Admitting diagnosis related group (DRG)
- Principal diagnosis
- Admitting diagnosis
MCA Cost Files: Outpatient Files

- One record per patient per day per clinic stop (identifier)
  - National Patient Care Database (NPCD) events file allows more than 1 record per clinic stop per day
  - MCA includes care not in NPCD events file, e.g., prosthetics
- Primary DX and CPT codes
MCA Data Only in Outpatient Files

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

- Same patient
- Same visit dates
- Different clinic stops
MCA Cost Variables in All Files

- Fixed direct
- Fixed indirect
- Variable direct
- Variable supply
- 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)
MCA Pharmacy File

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

- **Medication**: drug name, NDC, formulary indicators, VA drug class
- **Dispensing**: fill date, quantity dispensed, days supplied
- **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.
- **Cost**: VA cost including direct labor, indirect costs of the pharmacy department, and supplies
  - Total VA cost prescription = ACT_COST + DISPCOST
  - Costs can be negative, ex: return to pharmacy
Pharmacy Copayments

- VA charges some copayments.
  - Depends on income, disability percentage
  - Rules & eligibility levels change year to year
  - Rules available on VA internet
- MCA does not show copayments; they show VA’s expense.
- Medical Care Cost Recovery (MCRR) files could show reimbursement from private insurance, if collected
Cost Outliers in MCA

- 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.
- MCA quality assurance efforts
  - Monthly audits and reconciliations performed.
  - Extremely high outliers are identified when MCA national data extracts (NDE) are built.
Advantages of Using MCA

- MCA costs estimate reflect facility differences in productivity, efficiencies, economies of scale, etc.
- MCA has pharmacy data.
- MCA has state nursing home stays.
- MCA is an activity-based method and is the official managerial cost accounting system for the entire Department of VA.
HERC Average Costs Datasets
HERC Method

- 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: Medical/Surgical Stays

- Cost regression estimated using Medicare data
  - Length of stay
  - Days of intensive care
  - Diagnosis Related Group (MS-DRG)
    - Stay is assigned to one of DRG groups based on diagnosis and procedures
    - Medicare relative value weights for DRG
HERC: Medical/Surgical Stays

- Herc identifies acute medical surgical components of stays in the VA Patient Treatment File (PTF)
  - Consistent with non-VA hospital definition
  - Contiguous medical-surgical bed section segments
HERC: Medical/Surgical Stays

- HERC applies regression parameters to VA stays to estimate what stay would have cost in a Medicare hospital
- Estimates adjusted to reflect actual VA expenditures from MCA
HERC: Other Inpatient Stays

- Costs assumed to be proportional to length of stay
  - Rehabilitation
  - Blind rehabilitation
  - Spinal cord injury
  - Psychiatry
  - Substance abuse
  - Intermediate medicine
  - Domiciliary
  - Psychosocial residential rehabilitation
  - Long-Term Care
HERC: Inpatient Discharge Data

- Cost of each VA hospital discharge reported in Patient Treatment File (PTF)
  - Stays ending in discharge in Fiscal Year
  - Excludes stays that began before FY98

- Subtotals of days and costs in 10 categories:
  - Medicine and surgery
  - Blind rehabilitation
  - Psychiatry
  - Intermediate medicine
  - Psych. residential rehab.
  - Rehabilitation
  - Spinal cord injury
  - Substance abuse
  - Domiciliary
  - Nursing home
HERC: Outpatient costs

- HERO assigns hypothetical payment
  - based on Current Procedure Terminology (CPT) and HCPCS codes, up to 20 per visit
  - Physician reimbursement rates from Medicare and other payers
  - Facility reimbursement rates from Medicare
- Adjusted to reflect expenditures in the category of outpatient care, defined using clinic stop (MCA identifier)
HERC Cost File: Person-Level Annual Cost

- One person per record
- Total VA cost and costs of five inpatient and five outpatient categories, LOS for inpatient care
- Includes MCA outpatient pharmacy
- Stays that cross fiscal years are assigned cost in proportion to the days in fiscal year.
MCA or HERC
Which to Choose

- We are often asked which to use.
- Criteria
  - Is costing method consistent with study goals?
  - Precision and Accuracy
Is costing method consistent with study goals?

- Study to determine cost-effectiveness for U.S. health care system
  - HERC uses non-VA relative values
  - HERC costs more like costs typical of non-VA health care settings

- Study to determine efficiency of different VA providers
  - MCA costs reflect differences in productivity, efficiencies, economies of scale, etc.
  - Strong assumptions make HERC estimates inappropriate for this type of study
Precision and Accuracy

- **Precision**
  - Bottom up approaches, such as MCA can be very precise.
  - HERC data are less precise than MCA given costing method.
  - If you use MCA data, you want to control for geographic wage differentials.

- **Accuracy**
  - Bottom up approaches can lead to rare irregularities.

- **Recommendation:** use both; one as primary and one as sensitivity analysis.

Data Resources
MCA Data Access

- Access to MCA data should be requested through CDW/VINCI and National Data Systems (NDS).

- MCA Program Office Web Site (VA Intranet MCAO web site)

- All MCA files were removed from AITC in 2013, but FY2001-FY2012 MCA SAS ‘legacy’ files are on CDW/VINCI servers.

- MCA NDE SQL data are available in CDW from FY05 to current year.
  - Accessed through CDW Raw server ‘VHACDWA06.vha.med.va.gov’

- MCA data also available in VHA Managerial Cost Accounting (MCA) reports from MCA intranet site.
HERC Data Access

- Access to HERC data should be requested through CDW/VINCI and National Data Systems (NDS).
- All historical files 2001-2012 are available from AITC.
- SQL tables on CDW static server, vhacdwracb01.vha.med.va.gov, database VINCI_HERC
- SAS datasets on \vha\vhacdwsasrds01\HERC
HERC MCA Guidebooks

http://www.herc.research.va.gov/include/page.asp?id=guidebooks

- Research Guide to the Managerial Cost Accounting National Cost Extracts
- Guidebooks for HERC's datasets
MCA Pharmacy Resources

- VIReC’s Pharmacy Prescription Data Guide
  - VIReC research user guide on MCA and PBM pharmacy prescription data
    http://www.virec.research.va.gov

- HERC Technical Report:
  - Comparing Outpatient Cost Data in the MCA National Pharmacy Extract and the Pharmacy Benefits Management V3.0 Database
    http://www.herc.research.va.gov/include/page.asp?id=technical-reports
Next Classes

02/14  Jo Jacobs  Introduction to Effectiveness, Patient Preferences, and Utilities

02/28  Risha Gidwani  Estimating Transition Probabilities for a Model