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)

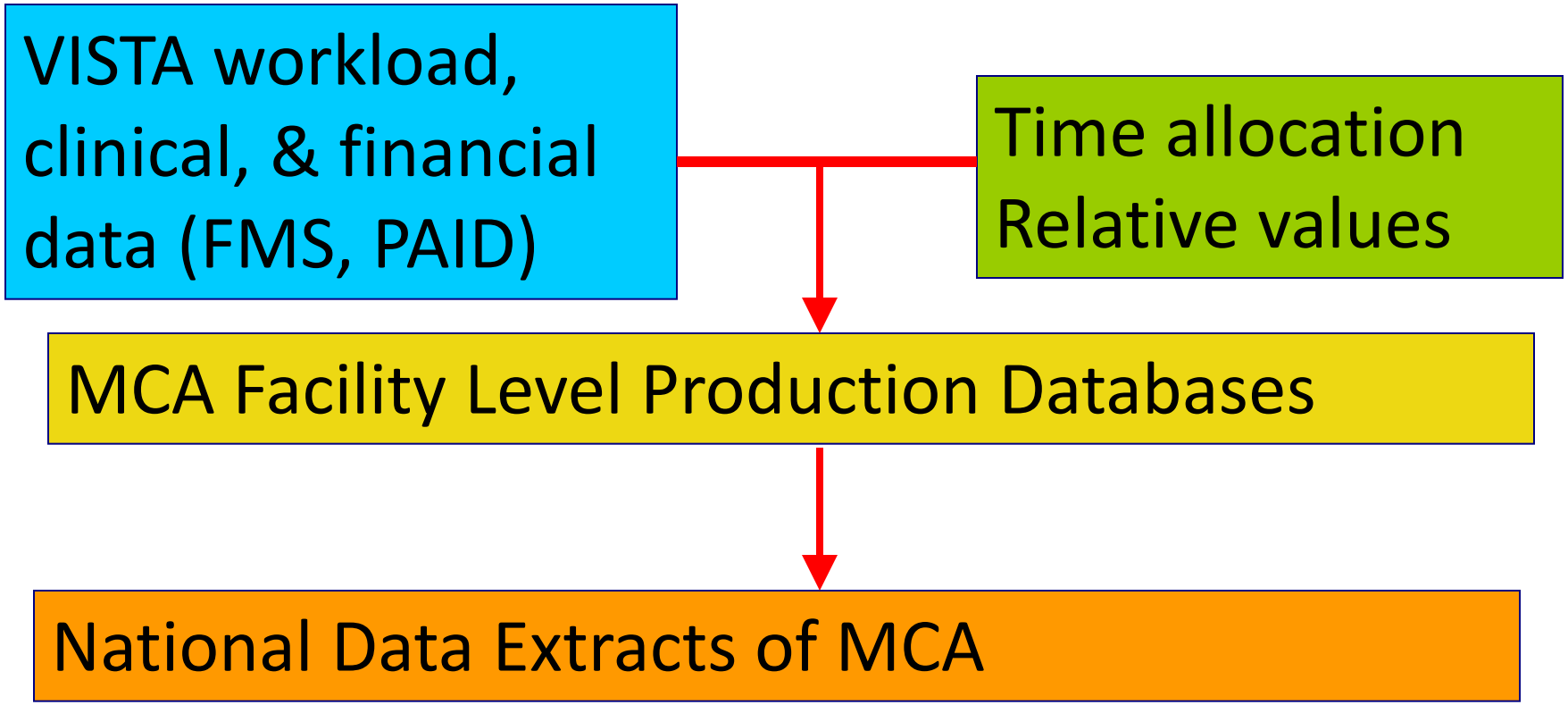
National approach
Experience based

- MCA data are based on an activity based costing methodology (bottom up)

Local approach
Activity based

MCA National Data Extracts

How Does MCA Provide VHA Cost Data?



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:

$$Cost_{\text{MD-20 Min Visit}} =$$

$$[\text{Total MD Primary Care Dept Costs}/\Sigma RVU_{\text{MD-PC}}]*RVU_{\text{MD-20 Min Visit}}$$

MCA Assigns Cost to Encounters

∑Intermediate Product (IP) used by patient

X IP Cost

= Total cost of encounter

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

Patient	ADMITDAY	DISDAY	FP	LOS	DBEDSECT	TOT
A	24SEP05	01OCT05	1	7	Gen Acute Med	9824.24
A	31OCT05	11NOV05	2	11	Gen Acute Med	4673.01
A	04AUG06	21SEP06	12	48	Rehab	81868.77

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

Patient	TRTIN	TRTOUT	TR SP	TR SP LOS	FP	TCST_TOT
A	01OCT05	01OCT05	15	1	1	350.01
A	31OCT05	11NOV05	15	1	1	544.24
A	31OCT05	11NOV05	15	10	2	23787.22

Same patient

2 records with same different admit/discharge dates

But different months (FP)

MCA Data in Both Inpatient Files

- Admit day
- Admitting diagnosis related group (DRG)
- Principal diagnosis
- Admitting diagnosis

MCA Cost Files: Outpatient Files

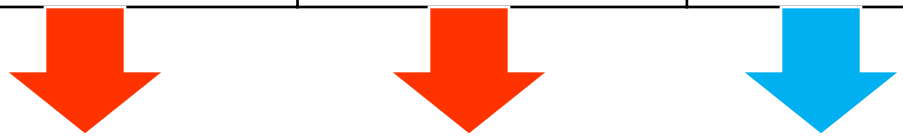
- One record per patient per day per clinic stop (identifier)
  - National Patient Care Database (NPCD) events file allows more than 1 record per clinic stop per day
  - MCA includes care not in NPCD events file, e.g., prosthetics
- Primary DX and CPT codes

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

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



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	Rehabilitation
Blind rehabilitation	Spinal cord injury
Psychiatry	Substance abuse
Intermediate medicine	Domiciliary
Psych. residential rehab.	Nursing home

HERC: Outpatient costs

- HERC 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

Chapko, M. K., Liu, C. F., Perkins, M., Li, Y. F., Fortney, J. C., & Maciejewski, M. L. (2008). Equivalence of two healthcare costing methods: bottom-up and top-down. *Health Economics.*

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, vhacdwrb01.vha.med.va.gov, database VINCI_HERC
- SAS datasets on \\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