

# 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
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# Poll: I have used

- MCA data
- HERC Average Cost data
- Both
- Neither

# **Poll: Is MCA (versus AC data) better for**

- A. Comparing health care costs of patients receiving two different interventions at multiple VAMCs.
  - B. Budget impact of total costs for patients enrolled in a primary care program in one VAMC.
  - C. Prescription drug costs for patients filling VA prescriptions.
  - D. Measure health care costs to compare frequency of inpatient admissions of patients between two VAMCs.
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# 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)



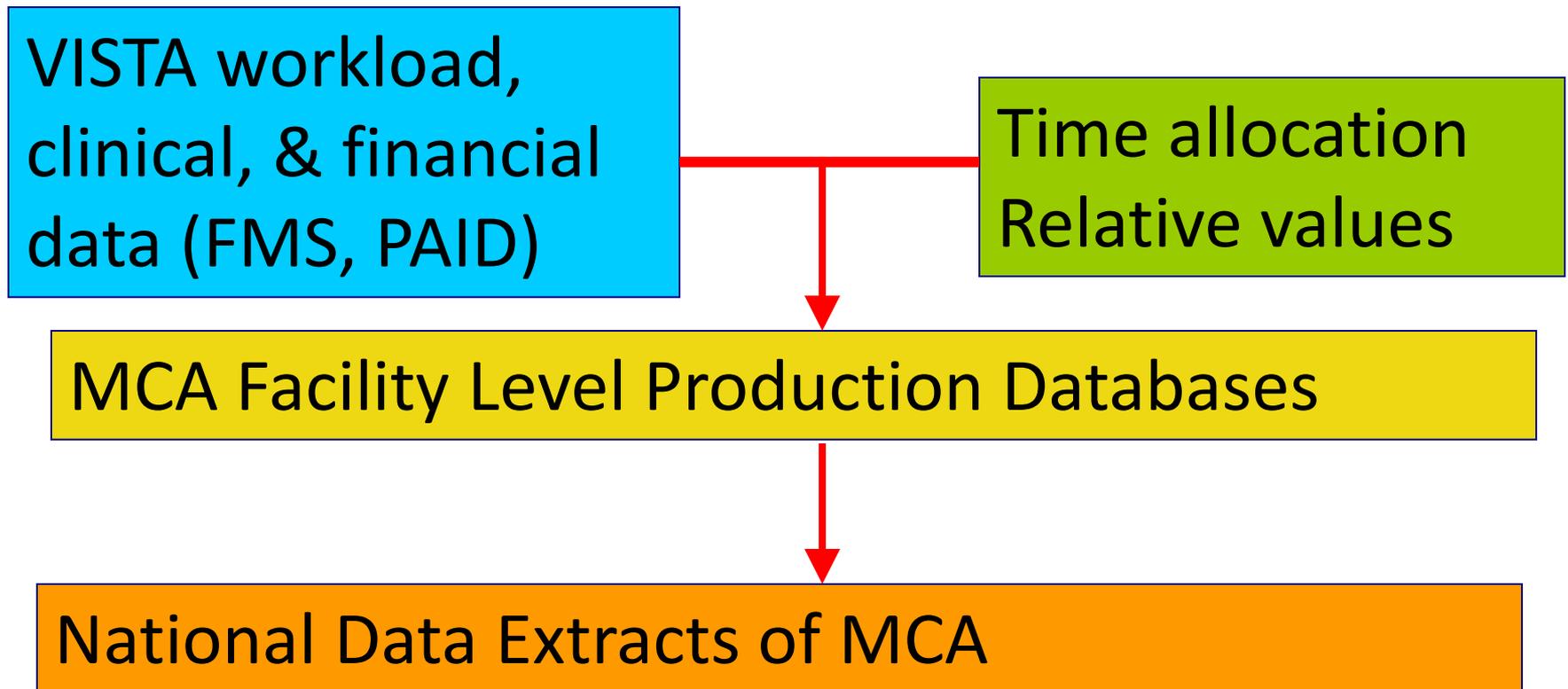
National approach  
Experience based



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
- Cost assigned to cost center (corresponding department)
  - 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

$$\text{Cost}_{\text{MD-20 Min Visit}} = \left[ \frac{\text{Total MD Primary-Care Department Costs}}{\sum \text{RVU}_{\text{MD-PC}}} \right] * \text{RVU}_{\text{MD-20 Min Visit}}$$

# MCA Assigns Cost to Encounters

$$\sum \text{Intermediate Product (IP) used by patient} \times \text{IP Cost} = \text{Total cost of encounter}$$

# 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

# 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

# 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
    - 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
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# 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

<b>Patient</b>	<b>VIZDAY</b>	<b>CLSTOP</b>	<b>OCST_TOT</b>
A	20051018	411	34.10
A	20051018	108	24.33
A	20051018	306	25.20

# 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

- 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 (MCCR) 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.
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# 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
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# 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)
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# 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 need 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, `vhacdwr01.vha.med.va.gov`, database `VINCI_HERC`
- SAS datasets on [\\vhacdwsasrds01\HERC](#)

# HERC MCA Guidebooks

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

- Research Guide to Decision Support System National Cost Extracts” to incorporate transition to CDW.
- 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/data/MCA.asp>

# Next Classes

02/10	Josephine Jacobs	Intro to Effectiveness, Patient Preferences, and Utilities
02/24	Jeremy Goldhaber- Fiebert	Modeling in Medical Decision Analysis