Use of Outpatient Care by Medicare-Eligible Veterans

Matthew Maciejewski, PhD
Center for Health Services Research in Primary Care
HERC Health Economics CyberSeminar
September 15, 2010
Dual Use, Continuity and Duplication of Services in VA & Medicare

- Funded by VA HSR&D, IIR 04-292
- Project team
  - Durham: Matt Maciejewski, PhD
  - Seattle: Chuan-Fen Liu, PhD; Michael Chapko, PhD; Chris Bryson, MD; Nancy Sharp, PhD; Mark Perkins
  - Little Rock: John Fortney, PhD
  - Boston: Jim Burgess, PhD
  - University of Chicago: Will Manning, PhD
Outline

- Background
- Study Objectives & Contribution
- Classification of primary care across VA and Medicare records
  - Goal: consistent classification of primary care
- Study Results
  - CBOC vs. VAMC
  - VA reliance
Policy Issue

- Veterans using Medicare and VA services increased significantly since mid-1990s
  - Likely to increase significantly in coming years, particularly for disability-eligible vets
- It appears that Medicare-eligible veterans use VA services strategically
  - Major inpatient procedures at non-VA hospitals, but those with prior VA stays went to VA hospitals
  - More preventive services outside VA
- Few prior studies examined choice & amount of outpatient care in a national sample
  (Petersen, HSR 2010)

Fleming, 1992; Borowsky & Cowper, 1994; Wright, 1997; 1999; Jones, 2000; Ashton, 2003; Shen, 2003; West & Weeks, 2007; Hynes, 2007; Carey 2008; Petersen 2010
Objectives

- Examine difference in use of VA and Medicare outpatient services among primary care patients in 2001-2004
  - Is lower VA use by CBOC patients offset by higher Medicare use?
  - Does VA reliance differ for age-eligible and disability-eligible veterans?
  - How has the distribution of VA reliance changed over time?
Contribution of the Study

- Examination of outpatient care use in VA and Medicare over time using national sample
  - Following cohort enables look at change over time
  - CBOC vs. VAMC patients
  - Disability-eligible vs. age-eligible patients
- Develop algorithm to make VA and Medicare claims comparable
- Apply novel analytic method for examining unusual distribution of VA reliance
Study Design

- Retrospective cohort

- Study period: FY2000 – 2004
  - Patient identification in FY2000
  - Follow-up period: FY2001 – FY2004

- Study sample (Maciejewski BMC HSR ’07)
  - Medicare eligible VA primary care patients from prior CBOC cost evaluation study
  - Random sample of primary care patients from 108 CBOCs and 72 VAMCs (all states but Alaska)

- Medicare & VA claims data
## Cohort Selection

<table>
<thead>
<tr>
<th>Initial Sample</th>
<th>Exclusions</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death prior or during FY 2000-2001</td>
<td>4,033</td>
<td></td>
</tr>
<tr>
<td>Not Medicare eligible or Part A or B only</td>
<td>33,360</td>
<td></td>
</tr>
<tr>
<td>Developed ESRD</td>
<td>422</td>
<td></td>
</tr>
<tr>
<td>Enrolled in an HMO</td>
<td>5,506</td>
<td></td>
</tr>
<tr>
<td>No VA primary care in FY00</td>
<td>7,525</td>
<td></td>
</tr>
<tr>
<td><strong>Working cohort</strong></td>
<td></td>
<td><strong>15,520</strong></td>
</tr>
<tr>
<td>Age eligible</td>
<td></td>
<td><strong>10,816</strong></td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
<td><strong>4,704</strong></td>
</tr>
</tbody>
</table>
Classification of VA and Medicare Outpatient Data by Care Type

Burgess, et al., Health Economics 2010 (in press)
Matching VA and Medicare Outpatient Services

- Central challenge of identifying primary care in VA and Medicare
  - Data generating process
    - Clinical data vs. billing records
  - Financial incentives
  - Medicare doesn’t have stop codes
- Goal: Classify VA and Medicare encounters as primary care or “other” in consistent way
# Context of Reconciling Patient Data in Two Systems

*Incentives & organizational structures differ in two systems*

<table>
<thead>
<tr>
<th>VA providers</th>
<th>Medicare providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed system</td>
<td>Fee-for-service</td>
</tr>
<tr>
<td>Employed by VA</td>
<td>Individual practices</td>
</tr>
<tr>
<td>Focus on treatment</td>
<td>Focus on billing payors</td>
</tr>
<tr>
<td>ICD-9 coding higher priority than CPT coding</td>
<td>CPT coding is priority</td>
</tr>
<tr>
<td>Physicians code CPTs</td>
<td>Coders are instrumental</td>
</tr>
<tr>
<td>Clinic stops used to define outpatient care types</td>
<td>UB-92 bill used to organize care</td>
</tr>
<tr>
<td></td>
<td>Primary care not explicit</td>
</tr>
</tbody>
</table>
Philosophies of Matching

- Try to make VA look like Medicare
  - Use CPTs and match as if VA data are billing data

- Try to make Medicare look like VA
  - Classify Medicare work into “Clinic Stops”

- Create a hybrid and transform both
  - Pick and choose from data advantages and disadvantages in each sector
Hybrid Approach

- Classify VA and Medicare outpatient encounters into “Visit Type” using variables common to both systems
  - Primary Care, Mental Health, Diagnostic, Specialty

- Combination of provider specialty and procedure (CPT-4) codes

- Goal: Identify primary care with face validity and consistency
Provider Specialty Types

- Primary care:
  - Physicians: family practice; internal medicine; sports medicine/family practice
  - Nurse practitioners: family practice; primary care; women’s health

- Specialty care
- Mental health
- Diagnostic care
## Classification of CPT Codes

<table>
<thead>
<tr>
<th>General Category</th>
<th>CPT code range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesia</td>
<td>00001 to 09999</td>
</tr>
<tr>
<td></td>
<td>99100 to 99150 *</td>
</tr>
<tr>
<td>Evaluation / Management (E&amp;M)</td>
<td>99201 to 99499</td>
</tr>
<tr>
<td>Medicine</td>
<td>90281 to 99602 *</td>
</tr>
<tr>
<td>Pathology/Laboratory</td>
<td>80000 to 89999</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>90800 to 90900 *</td>
</tr>
<tr>
<td>Radiology</td>
<td>70000 to 79999</td>
</tr>
<tr>
<td>Surgery</td>
<td>10000 to 69999</td>
</tr>
</tbody>
</table>

* Some codes classified into other categories
Classification Algorithm

Specialty care E&M codes or medicine CPT

Primary care provider + primary care E&M code

Psychiatric CPT codes, or Mental health provider + primary care E&M code

Specialty care provider, or Surgical or anesthesiology CPT code

Specialty Care
VA n=264,795 36.6%
Medicare n=439,771 59.5%

Primary Care
VA n=123,506 17.1%
Medicare n=103,032 13.9%

Mental Health Care
VA n=29,325 4.1%
Medicare n=20,078 2.7%

Specialty Care
VA n=29,997 4.1%
Medicare n=58,359 7.9%
Positive and Negative Predictive Value of ProvSpecialty & CPT compared to Stopcode

![Bar chart showing positive and negative predictive values for different categories.](chart.png)
Is Lower VA Use by CBOC Patients offset by Higher Medicare Use?

Liu, et al. Health Services Research in press
CBOCs and Prior Work

- Compared CBOC & VAMC patients in 2000-2004

- CBOC patients had…
  - Primary care: More visits, similar costs
  - Specialty, mental health, ancillary OP: Lower odds of use, fewer visits & lower costs among users
  - Inpatient: Lower odds of use, lower costs among users
  - *Lower total outpatient and total costs*

Chapko et al., Borowsky et al., Hedeen et al., Maciejewski et al., and Fortney et al., *Medical Care* 2002; Maciejewski et al., *BMC HSR* 2007; Liu *MCRR* 2007
Unanswered Question in Prior Work

- Only examined VA experience
  - Are lower outpatient use and lower total (OP+IP) expenditures offset by higher non-VA use?

- Story may change if Medicare use doesn’t parallel VA use
  - Veterans’ comorbidity burden under-estimated if Medicare diagnoses excluded
Variable Definitions

- VAMC/CBOC primary care user defined based on the majority of primary care visits in each year

- Primary care user status in each year
  - Dual users
  - VA-only
  - Medicare only
  - Non-user

- Outcome: VA, Medicare and total visits in 2001-2004
Data Analysis

- Generalized estimating equation (GEE)
  - Negative binomial distribution
  - Log link
  - Exchangeable correlation

- Adjusted for sampling weights from the original CBOC study

- Adjusted for covariates
## Patient Characteristics

<table>
<thead>
<tr>
<th>Baseline Characteristic (2000)</th>
<th>CBOC (n=8301)</th>
<th>VAMC (n=6452)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean/SD)**</td>
<td>70.5 (9.1)</td>
<td>69.6 (9.9)</td>
</tr>
<tr>
<td>Age &lt; 45 (%)**</td>
<td>1.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Age 45-54 (%)**</td>
<td>5.8</td>
<td>8.1</td>
</tr>
<tr>
<td>Age 55-64 (%)**</td>
<td>7.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Age 65+ (%)**</td>
<td>84.8</td>
<td>80.5</td>
</tr>
<tr>
<td>Female (%)**</td>
<td>2.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Race - White (%)**</td>
<td>91.4</td>
<td>84.4</td>
</tr>
<tr>
<td>Married (%)**</td>
<td>69.8</td>
<td>62.5</td>
</tr>
<tr>
<td>Percent Service Connected Disability (mean/SD)**</td>
<td>14.2 (27.1)</td>
<td>17.4 (30.5)</td>
</tr>
<tr>
<td>Medicaid Enrollee (%)**</td>
<td>4.6</td>
<td>5.8</td>
</tr>
<tr>
<td>Free care - disability (%)**</td>
<td>33.4</td>
<td>37.1</td>
</tr>
<tr>
<td>- low income (%)**</td>
<td>43.9</td>
<td>46.3</td>
</tr>
<tr>
<td>Distance to VA (mi) (mean/SD)</td>
<td>16.5 (18.2)</td>
<td>16.6 (17.2)</td>
</tr>
<tr>
<td>DCG FY00 (from VA and Medicare Dx) (mean/SD)</td>
<td>0.92 (0.67)</td>
<td>0.92 (0.67)</td>
</tr>
<tr>
<td>Per Capita Income in Zip Code (mean/SD)**</td>
<td>19763 (6117)</td>
<td>20263 (8877)</td>
</tr>
<tr>
<td>% High School Graduates in Zip Code**</td>
<td>80.0 (10.1)</td>
<td>79.2 (11.3)</td>
</tr>
<tr>
<td>Population per SQ. Mile in FIPS (mean/SD)**</td>
<td>628 (3320)</td>
<td>1423 (5517)</td>
</tr>
</tbody>
</table>
# Primary Care Use Patterns

- VA only was most common for both groups, especially for VAMC patients
- CBOC patients more likely to be Medicare only
- Significant use of Medicare for both groups, including dual use or Medicare only

<table>
<thead>
<tr>
<th>Year</th>
<th>Hospital</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>9.8%</td>
<td>59.1%</td>
</tr>
<tr>
<td>2002</td>
<td>12%</td>
<td>56.4%</td>
</tr>
<tr>
<td>2003</td>
<td>14%</td>
<td>52.1%</td>
</tr>
<tr>
<td>2004</td>
<td>14.4%</td>
<td>53.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Hospital</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>11.6%</td>
<td>49.5%</td>
</tr>
<tr>
<td>2002</td>
<td>13.8%</td>
<td>44.3%</td>
</tr>
<tr>
<td>2003</td>
<td>17.4%</td>
<td>38.7%</td>
</tr>
<tr>
<td>2004</td>
<td>17.9%</td>
<td>36.8%</td>
</tr>
</tbody>
</table>

- **Diagram:**
  - VA only
  - Medicare only
  - Dual use
  - No use
Primary Care Visits

- Compared to VAMC patients, CBOC patients had
  - fewer VA visits and more Medicare visits
  - fewer total visits
- VA visits decreased over time
- Adjusted analysis: CBOC patients had
  - 0.37 fewer VA visits per year
  - 0.14 more Medicare visits
  - 0.22 fewer total visits
Specialty Care Use Patterns

- Dual use was most common for both groups
- CBOC patients likely to be Medicare only users
- Medicare only users increased over time, while VA only users decreased over time
Specialty Care Visits

- VAMC patients had more VA visits
- CBOC patients had more Medicare visits
- Lower VA use of CBOC patients offset by more Medicare use

Adjusted analysis:
- CBOC patients had
  - 1.06 fewer VA visits per year
  - 1.43 more Medicare visits
  - No difference in total visits
Mental Health Use Patterns

- No use was most common for both groups, followed by VA only
- VAMC patients more likely to be VA only users
- Small proportion of no use or Medicare only for both groups
- Similar patterns across years
Mental Health Visits

- CBOCs patients had fewer VA and total mental health visits than VAMCs patients
- No difference in Medicare use
- Similar patterns across years
- Adjusted analysis: CBOC patients had
  - 0.16 fewer VA visits per year
  - 0.14 fewer total visits
  - No difference in Medicare visits
Summary

- Significant use of Medicare primary and specialty care for both VAMC and CBOC patients
  - CBOC patients had fewer total primary care visits
  - CBOC patients had similar number of total specialty visits
  - CBOC patients had fewer total mental health visits

- Lower VA use by CBOC patients was offset by Medicare services
  - Not fully offset for primary care
  - Fully offset for specialty care
How Does VA Reliance Change Over Time?

Work in Progress
Research Question

- What factors influence veterans’ use of primary care in VA and Medicare in 2001-2004?
  - Operationalize dual use by examining Medicare-eligible veterans’ reliance on VA for primary care services

- Reliance = \( \frac{\text{VA Primary Care Visits}}{\text{VA + Medicare Primary Care Visits}} \)
On Population Basis, Mean VA Reliance is High but Drops Over Time

Primary care visit copay introduced December 6, 2001

% of VA+Medicare Primary Care Visits to VA

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>72%</td>
</tr>
<tr>
<td>2002</td>
<td>68%</td>
</tr>
<tr>
<td>2003</td>
<td>64%</td>
</tr>
<tr>
<td>2004</td>
<td>63%</td>
</tr>
</tbody>
</table>
Distribution & Mean of VA Reliance Are Not Consistent

Mean VA Reliance for Specialty Care = 48%
**Data Analysis**

- Beta-binomial regression in Stata
- VA reliance has unique distribution
  - Mass of points at 1 (VA only users)
  - Mass of points at 0 (Medicare only users)

---

Figure 1b: Uadjusted VA Reliance: 2001

Summary

- Conventional wisdom (vets strategically use VA) may not hold
  - Most Medicare-eligible veterans who used VA primary care are dedicated to VA
  - Medicare-eligible veterans who get care via Medicare switch quickly
  - Small proportion appear to be “persistent” dual users

- Mean of VA reliance is misleading

- These results need updating to post-Part D
Limitations

- Not a random sample of VA primary care users
  - Original sample: Primary care users in large CBOCs & VAMCs in 2000
  - Doesn’t exactly match all Medicare-eligible veterans

- Imperfect classification of outpatient visits across VA and Medicare systems with hybrid algorithm
  - Need to refine to improve NPV & PPV of specialty care, mental health care

- No Medicaid data on non-elderly Medicare-eligible veterans

- May not generalize to post-Part D world
Overall Conclusions from Study

- A significant % of Medicare-eligible veterans who use primary care in VA also use primary care and specialty care in Medicare
  - Lower VA use by CBOC patients offset by Medicare use
  - Most mental health services obtained in VA
- Disability-eligible veterans use more services than age-eligible veterans, which is likely to mirror OEF/OIF veterans using both systems
- Most Medicare-eligible veterans are “VA only” or “Medicare only”, but population-average VA reliance (63-73%) suggests a large % of dual users
  - VA reliance is decreasing over time among PC users
Questions?