Is More Really Better? The Association Between Healthcare and Health Outcomes in the U.S.

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Price-adjusted per capita Medicare expenditures, 2008
Key question

• Do regions or hospitals that spend more get better health outcomes as a result?
The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality, and Accessibility of Care

Elliott S. Fisher, MD, MPH; David E. Wennberg, MD, MPH; Thérèse A. Stukel, PhD; Daniel J. Gottlieb, MS; F.L. Lucas, PhD; and Etoile L. Pinder, MS

Background: The health implications of regional differences in Medicare spending are unknown.

Objective: To determine whether spending provide better care.

Design: Cohort study.

Setting: National study of Med

Patients: Patients hospitalized be fracture (n = 614 503), colorectal myocardial infarction (n = 159 393) (n = 18 150) drawn from the Medi

Results: Average baseline health status of cohort members was similar across regions of differing spending levels, but patients in

The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care

Elliott S. Fisher, MD, MPH; David E. Wennberg, MD, MPH; Thérèse A. Stukel, PhD; Daniel J. Gottlieb, MS; F.L. Lucas, PhD; and Etoile L. Pinder, MS

Background: The health implications of regional differences in Medicare spending are unknown.

Objective: To determine whether regions with higher Medicare spending achieve better survival, functional status, or satisfaction with care.

Design: Cohort study.

Setting: National study of Medicare beneficiaries.

Patients: Patients hospitalized between 1993 and 1995 for hip fracture (n = 614 503), colorectal cancer (n = 195 429), or acute horts), change in functional status (MCBS cohort), and satisfaction (MCBS cohort).

Results: Cohort members were similar in baseline health status, but those in regions with higher end-of-life spending received 60% more care. Each 10% increase in regional end-of-life spending was associated with the following relative risks for death: hip fracture cohort, 1.003 (95% CI, 0.999 to 1.006); colorectal cancer cohort, 1.012 (CI, 1.004 to 1.019); acute myocardial infarction cohort, 1.007 (CI, 1.001 to 1.014); and MCBS cohort, 1.01 (CI, 0.99 to 1.03). There were no differences in the rate of decline in functional status across spending levels and no consistent differ.
Of the 42 separate statistical tests:
23: “More is worse”
14: “Null hypothesis – no effect”
 5: “More is better”
Subsequent estimates all over the map

- More is not better: Yasaitis et al., 2009; Skinner et al., 2005; Glance et al., 2010; etc.

- More is better: Silber et al., 2010; Doyle, 2011; Doyle et al., 2012; Romley et al., 2011; Barnato et al., 2010
Why can’t we all just agree?

1. Different approaches to risk-adjustment and unmeasured confounding

2. We’re not estimating what we think we’re estimating
Is more better? (Green=yes, Red=no)

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Price-adjusted</th>
<th>HCC adjusted</th>
<th>Outcome Measure</th>
<th>Coefficient (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Medicare Enrollees</td>
<td>No</td>
<td>Yes</td>
<td>Mortality rate (per 100)</td>
<td>-.03 (p &lt; .01)</td>
</tr>
<tr>
<td>All Medicare Enrollees</td>
<td>Yes</td>
<td>Yes</td>
<td>Mortality rate (per 100)</td>
<td>.10 (p &lt; .01)</td>
</tr>
<tr>
<td>Heart Attack Patients*</td>
<td>Yes</td>
<td>No</td>
<td>1-Year Mortality</td>
<td>.033 (p &lt; .01)</td>
</tr>
<tr>
<td>Tourists with Heart Attacks*</td>
<td>Yes</td>
<td>No</td>
<td>1-Year Mortality</td>
<td>-.020 (p = .07)</td>
</tr>
<tr>
<td>Heart Attack Patients*</td>
<td>Yes</td>
<td>Yes</td>
<td>30-Day Mortality</td>
<td>-.044 (p &lt; .01)</td>
</tr>
</tbody>
</table>

* Colla, Chandra, Skinner, 2013 working paper
Why can’t we all just agree?

1. Different approaches to risk adjustment and unmeasured confounding

2. We’re not estimating what we think we’re estimating
One way to interpret a negative association between spending and health outcomes.
A difference approach: Wennberg et al. (2002) suggested three types of treatments.
Three types of health care treatments:
1. “effective care”
Three types of health care treatments
2. “Preference-sensitive care”
Three types of health care treatments:
3. “Supply-sensitive care”
In this case, a negative correlation -- even though health care doesn’t harm anyone

Negative correlation between spending and health outcomes!
Risk-Adjusted 1-Year Expenditures and Mortality post AMI: by Hospital

Note: Sample limited to hospitals with at least 200 AMI patients age 65+; 2007-09.
The key features of these (and any) outcome/spending data

Note: Sample limited to hospitals with at least 200 AMI patients age 65+; 2007-09.
1. Large variation in risk-adjusted expenditures

Note: Sample limited to hospitals with at least 200 AMI patients age 65+; 2007-09.
2. Large variation in risk-adjusted outcomes

Note: Sample limited to hospitals with at least 200 AMI patients age 65+; 2007-09.
3. This means: We should learn from low-cost high-quality providers

High use of effective care
Low use of supply-sensitive care
Preference-sensitive care not too high

Note: Sample limited to hospitals with at least 200 AMI patients age 65+; 2007-09.
Conclusions

✓ No stable association between spending and outcomes – outcomes depend on *how* the money is spent
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✓ Should identify effective systems (e.g., Salt Lake City, Seattle) & figure out how they do it
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✓ Scale up