Reducing variation in hospital spending

Scaling up collaborative quality improvement

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Geographic Variation in Health Care Spending: A Closer Look

Researchers have long documented variation in health care spending. Variation occurs across geographic areas and among providers, and even populations within a geographic area. Focus on geographic variation has intensified as policymakers struggle to identify strategies to contain costs. While the U.S. has regions with relatively high spending, there are also pockets of very low spending. Hottest and administrative officials are told reducing Medicare spending is highest spending areas of the U.S. to the rates observed in the lowest spending regions could generate significant savings for the health care system without harming quality of care.

There is less research exploring the underlying factors that drive variation and identifying effective strategies to measure.

Spending variation is influenced by many complex factors:

Chart 2: Drivers of Spending Variation

- Market Forces
  - Market structure/level of competition
  - Local payer rivalry
- Policy decisions
  - Vetting/prices
  - Disproportionate share payments
  - Graduate medical education and health professions training
- Population characteristics
  - Demographics
  - Health status
  - Insurance status
- Provider dynamics
  - Practice norms
  - Organization and ownership
- Local practice environments
  - Resource supply
  - Regulatory climate
  - Market structure
Hospital spending = N episodes x $\$\$ $ per episode

Number of admissions, operations, etc.
Hospital spending = N episodes \times $\$ per episode

- Payment rates
- Case mix
- Efficiency
- Quality
- Practice style
Price-adjusted hospital payments for CABG (2006 Medicare data)

Average Hospital Payments

- Lowest Cost Hospitals: $29,612
- Hospital 2: $31,809
- Hospital 3: $33,285
- Hospital 4: $34,963
- Highest Cost Hospitals: $39,212
Price-adjusted hospital payments for CABG (2006 Medicare data)
Strategies for improving hospital quality

• Selective contracting / COE programs
  – E.g., Leapfrog Group
  – Practical barriers, weak measures for identifying “excellent” hospitals

• Compliance with selected process measures
  – E.g., P4P based on SCIP measures
  – Little impact to date on outcomes

• Outcomes measurement & feedback
  – E.g., NSQIP, STS/ACC registry participation
  – Hospitals/physicians don’t learn how to improve
Collaborative quality improvement

- Basic idea: Physicians/hospitals collaborate with and learn from each other in improving outcomes
- Detailed clinical data re both process and outcomes
- Confidential feedback on risk-adjusted performance
- Empirical and non-empirical identification of best practices
- Continuous planning, development, implementation and evaluation of QI interventions
The Northern New England Cardiovascular Disease Study Group, 1987-
Scaling up collaborative QI in Michigan

• Partnership between BCBSM, Michigan hospitals, and clinician scientists
  – Pilot test with PCI in 1998, broad implementation 2005-6
• $20+ million annual investment from BCBSM
• 7 collaborative quality improvement programs
  – PCI /PVI, Cardiac, NSQIP, bariatrics, breast cancer, cardiac CT (trauma, joint replacement, and medical admissions to start 2010)
  – 50+ hospitals
  – 100,000+ pts / year
Basic features

• Hospitals paid for participating, **not their results**
  – % total BCBSM revenue
  – Payments exceed participation costs for most hospitals

• Expectations
  – Gather / submit data in timely fashion
  – Attend quarterly QI meetings
  – Implementation of QI interventions, site visits, etc.

• Performance data kept confidential

• Distinct from MHA/Keystone initiative
Michigan Surgical Quality Collaborative (MSQC)

- Covenant Medical Center
- Bay Regional Medical Center
- Genesys Regional Medical Center
- McLaren Regional Medical Center
- Hurley Medical Center
- St. Joseph Mercy Oakland
- Crittenton Hospital Medical Center
- St. Mary Mercy Hospital
- St. Joseph's Health Care
- Beaumont Hospital, Troy
- Beaumont Hospital, Royal Oak
- Providence Hospital
- Mount Clemens Regional Medical Center
- Sinai-Grace Hospital
- Henry Ford Hospital
- St. John Hospital And Medical Center
- Harper University Hospital
- Oakwood Hospital And Medical Center

Marquette General Hospital
Northern Michigan Hospital
Munson Medical Center
Mercy General Health Partners
Saint Mary's Health Care
Sparrow Hospital
Spectrum Health Hospitals
Ingham Regional Medical Center
Borgess Medical Center
Bronson Methodist Hospital
Foote Hospital
University Of Michigan Health System
St. Joseph Mercy Hospital
Bon Secours Hospital Cottage Health Services
Botsford Hospital
Henry Ford Wyandotte Hospital
Complications after gen/vasc surgery
Based on NSQIP measures

- Michigan
- US

5%
Deaths after bariatric surgery in Michigan

Deaths (%)

National benchmark

Patients (%)

P=0.006
Other results

• Cardiac surgery
  – Michigan as a whole receives highest rating (3-star) from STS (implies top 10\textsuperscript{th} of US hospitals)

• Interventional cardiology
  – Michigan consistently outperforms national ACC benchmarks on major outcomes

• Breast cancer, PVI, cardiac CT scanning
  – Too soon to judge
How does improvement occur?

• “Hawthorne effect” stuff inspired by performance feedback alone
  – Learning / reflection by physicians
  – Internal QI activities of hospitals
• Explicit QI activities of the coordinating centers
  – Dissemination of proven best practices
  – Identification of new ones
    • Empirical analysis
    • Benchmarking hospitals with superior outcomes
  – Non-punitive help for struggling hospitals
Back to hospital spending
Hospital spending = \( N \) episodes \( \times \) $$ per episode

- Payment rates
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Inferior vena cava (IVC) Filters

• Aim to prevent fatal pulmonary embolism after surgery
• Used commonly in bariatric surgery
• Effectiveness unclear
Total BCBSM payments with gastric bypass (2006)

- No filter: $32,008
- IVC filter: $45,559
Variation in the use of IVC filters before gastric bypass

<table>
<thead>
<tr>
<th>Hospital</th>
<th>IVC Filter Use (%)</th>
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<td>Low use hospitals</td>
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<td>High use hospitals</td>
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- High use hospitals: 15%, 20%, 25%, 30%, 35%
- Low use hospitals: 0%, 5%, 10%, 15%, 20%
Complications in gastric bypass patients with and without IVC filters

Birkmeyer NJO et al., *Ann Surg*, in press
Over half of deaths and permanent disability directly attributable to the filter itself

- Fatal pulmonary embolism despite filter
- IVC thrombosis and cardiovascular collapse
- Filter migration to the heart
Use of IVC filter in Michigan

Data first presented at quarterly meeting.

Net savings:

$3 million / yr

LBJ treatment

1st Qtr 07
2nd Qtr 07
3rd Qtr 07
4th Qtr 07
1st Qtr 08
2nd Qtr 08
3rd Qtr 08
4th Qtr 08
1st Qtr 09
2nd Qtr 09
Hospital spending = N episodes × $$ per episode

- Payment rates
- Case mix
- Efficiency

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Return on investment

- Payers
- Hospitals (assuming no payer subsidy)
  - Status quo
  - Under bundled payments
- But first some assumptions…
Average Cost of NSQIP Complications

*Dimick et al. JACS 2006; 202(6): 933-937
UMHS margins in patients with and without NSQIP complications

*Dimick et al. JACS 2006; 202(6): 933-937*
100,000
Annual number of gen/vasc surgical patients in Michigan

x 5%

5,000
Number complications averted each year

x

$7,500
Payer share of additional cost of complications

$37.5 m
Annual savings for Michigan payers
ROI from hospital perspective
(assuming no payer subsidy)
2,000
Annual number of gen/vasc surgical patients at average Michigan hospital

\[ \times 5\% \]

100
Number complications averted each year

\[ \times \]

$2,500
Lower margin in patients with complications each year

$250,000
Annual savings for hospital
Under episode-based bundled payments…
2,000
Annual number of gen/vasc surgical patients at average Michigan hospital

$10,000
Average additional cost of patients with complications

100
Number complications averted each year

$1.0 million
Annual savings for hospital
Summary

• Variation in costs / episode an important part of overall variation in hospital spending
  – Directly actionable
• Michigan experiment in collaborative QI suggests
  – Better outcomes for patients
  – Preserved professional autonomy for physicians
  – Strong ROI for hospitals
  – Reduced spending for payers and society