Opportunities for Research on Evidence-based medicine, Accountable Care and Finance

Carl D. Stevens, M.D., MPH
CTSI CER Module, March 13, 2014
Learning objectives

• Understand recent research on the role of payment and other incentives on physician behavior

• Be familiar with proposed changes in the financing and organization of physician services that represent high-visibility opportunities for research

• Understand the challenges of designing research to study the impact of changes in finance and organization of care on costs, quality, and access

• Learn a fairly straightforward, proven method for doing valuable incentive research, regardless of your clinical focus or specialty
Why would you want to do research in these areas?

• Because as a health-services researcher, your mission is to change the world, not just describe it

• The work of our colleagues upstream on the translational continuum cannot reach or benefit patients unless we bridge the existing chasm between scientific knowledge and routine practice

• Public and private funding sources have increased interest in delivery system research, fairly uncrowded niche for career development awards

• You can count your successes in lives
Translational research: paradigms and problems

T1: Translation to Humans
T2: Translation to Patients
T3: Translation to Practice
T4: Translation to Populations
Evolution of customer discontent:

- 1970’s: dramatic increase in health care spending

- Late 1970’s: Wennberg – discovery of high rates of variation in medical practice

- Mid-1980’s: Brook and others find 30% overuse of major elective procedures. Current estimates nearly identical despite multiple strategies to tie care to science.
“T4” research on population-based health interventions: Urgent, current system performance unsustainable

The status quo is not an option. If we want better care, we need to pay for it. But how?
Problem statement: status quo highly resistant to change

- Relentless cost increases, 20-30% waste due to overuse, underuse and misuse
- Evidence evolves, practice patterns remain the same or steadily increase expenditures without corresponding improvements in value
- We are entering our fourth decade of searching for solutions that consistently link routine clinical practice to current scientific knowledge
- As a nation, we will now solve this problem. We will do so by manipulating financial incentives.
- Only remaining question is how to pay differently while achieving acceptable quality, access and equity
Research targets: Incentive-based strategies for changing care

- Precertification
- Physician profiling and report cards
- Pay for performance (P4P)
- Financial risk sharing:
  - Episodes, bundled payments
- Global capitation
- A new direction: clinically detailed, variable incentives based on multi-level estimates of appropriateness
Context: All cost and utilization research balances three “dragons”

- Cost
- Quality
- Access
Cost
Health Spending Per Capita and as a Share of GDP
Selected Developed Countries, 2011

- Other Private
- Out-of-Pocket
- Public

Korea: $2,198 (7.4%)
Spain: $3,072 (9.3%)
UK: $3,405 (9.4%)
Sweden: $3,925 (9.5%)
France: $4,118 (11.6%)
Germany: $4,495 (11.3%)
Canada: $4,522 (11.2%)
Switzerland: $5,643 (11.0%)
US: $8,508 (17.7%)

Note: US spending per capita as reported by OECD differs from figures reported elsewhere in this report.

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Cumulative Impact of Growth Rates, 1970–2009*

Times More Expensive Than in 1970

NHE Per Capita
Health spending in 2009 was more than 22 times 1970 levels.

Consumer Price Index
Consumer prices in 2009, as measured by the CPI, were 5.5 times 1970 levels.

*Selected rather than continuous years of data shown prior to 2007.

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Health Spending Per Capita
United States, 2001 to 2013, selected years

- 2001: $5,240
- 2003: $6,121
- 2005: $6,875
- 2007: $7,636
- 2009: $8,163
- 2011: $8,680
- 2013P: $9,214

Notes: Health Spending refers to National Health Expenditures. Projections (P) include the impact of the Affordable Care Act.

©2013 CALIFORNIA HEALTHCARE FOUNDATION
Health Spending
United States, 1961 to 2021, selected years

IN BILLIONS

Recent Detail

<table>
<thead>
<tr>
<th>Year</th>
<th>Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$2,298</td>
</tr>
<tr>
<td>2008</td>
<td>$2,407</td>
</tr>
<tr>
<td>2009</td>
<td>$2,501</td>
</tr>
<tr>
<td>2010</td>
<td>$2,600</td>
</tr>
<tr>
<td>2011</td>
<td>$2,701</td>
</tr>
</tbody>
</table>

$4,781

Notes: Health Spending refers to National Health Expenditures. Projections (P) include the impact of the Affordable Care Act.

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Major Programs as a Share of the Federal Budget
United States, 1971 to 2011

Notes: Spending shares computed as percent of federal outlays. All outlays reflect federal spending only (i.e., Medicaid outlays shown reflect federal portion). Annual changes in federal outlays: 2.8%, 9.3%, 17.9%, -1.7%, -4.1% for 2007, 2008, 2009, 2010, 2011 respectively, show the dramatic federal spending and then withdrawal due to the recession. This activity impacted the share of government spending consumed by Social Security, defense, and other ongoing programs.


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The Costs of Chronic Care

The intensity and cost of care provided to Medicare patients with chronic illnesses vary widely among academic medical centers.

<table>
<thead>
<tr>
<th>Five top-ranked academic medical centers</th>
<th>AVERAGE PER PATIENT:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medicare spending in the last two years of life</td>
<td>Hospital days in the last six months of life</td>
<td>Physician visits in the last six months of life</td>
<td></td>
</tr>
<tr>
<td>U.C.L.A. Medical Center</td>
<td>$93,842</td>
<td>18.5</td>
<td>52.8</td>
<td></td>
</tr>
<tr>
<td>Johns Hopkins Hospital</td>
<td>$85,729</td>
<td>16.5</td>
<td>28.9</td>
<td></td>
</tr>
<tr>
<td>Massachusetts General Hospital</td>
<td>$78,666</td>
<td>17.3</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td>Cleveland Clinic Foundation</td>
<td>$55,333</td>
<td>14.8</td>
<td>33.1</td>
<td></td>
</tr>
<tr>
<td>Mayo Clinic (St. Marys Hospital)</td>
<td>$53,432</td>
<td>12.0</td>
<td>23.9</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Dartmouth Atlas of Health Care*  
*Note: Data are for patients who died in 2001-5.*
Quality
Amenable mortality trends: one measure of what $2.5 trillion buys us in U.S.A.

- The statistic known as “mortality amenable to health care” or “amenable mortality” measures deaths from certain causes before age 75 that are potentially preventable with timely and effective health care.
- Researchers have used it to assess the performance of health systems of industrialized nations and to track changes over time.
- Previous studies have shown that the U.S. has failed to keep pace with rates of decline in amenable mortality in other countries. As of 2002–2003, the U.S. fell to last place out of 19 industrialized countries.
Mortality Amenable to Health Care by State.

Deaths* per 100,000 Population; 2004–2005
(a) left, Total population; (b) right, white-only population.
Source: Commonwealth Fund State Scorecard on Health System Performance, 2009.
SEATTLE — The health care board was in session, and Deryk Lamb was pleading for them to continue paying for the spinal injections he receives to dull the pain from a workplace injury.

Washington state’s program …provides a living laboratory of the complexities of applying evidence-based medicine … as a way to rein in health care costs.

The program denies coverage for procedures that have simply not been shown to work.

“It’s still pretty astounding that we have individuals who say we don’t want you to look at scientific evidence in deciding how to spend taxpayer dollars,” (State Program Administrator)
Fungal meningitis cases from epidural steroid injections

730 cases, 51 deaths
Spinal-fusion surgery is one of the most lucrative areas of medicine. An estimated half-million Americans had the operation this year, generating billions of dollars for hospitals and doctors. But there have been serious questions about how much the surgery actually helps patients with back pain and whether surgeons’ generous fees might motivate them to overuse the procedure. Those concerns are now heightened by a growing trend among some surgeons to profit in yet another way — by investing in companies that make screws and other hardware they install.
Estimated Annual Per Capita Age- and Sex-Adjusted Health Expenditures Among US Adults With and Without Spine Problems, MEPS 1997-2005

Costs keep going up…

Table 4. Self-reported Health Status and Disability Measures for Adults With Spine Problems, Age- and Sex-Adjusted, MEPS 1997-2005a

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. sampled (respondents)</td>
<td>3139</td>
<td>2152</td>
<td>1981</td>
<td>2011</td>
<td>2742</td>
<td>3452</td>
<td>2994</td>
<td>3188</td>
<td>3187</td>
</tr>
<tr>
<td>Estimated No. of adults in US population, millions</td>
<td>26.5</td>
<td>26.3</td>
<td>25.0</td>
<td>24.8</td>
<td>26.5</td>
<td>29.7</td>
<td>30.6</td>
<td>32.6</td>
<td>33.3</td>
</tr>
<tr>
<td>Summary score, meanb</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>44.8</td>
<td>44.9</td>
<td>44.7</td>
<td>44.7</td>
<td>44.7</td>
<td>44.6</td>
</tr>
<tr>
<td>PCS</td>
<td></td>
<td></td>
<td></td>
<td>(44.5-45.1)</td>
<td>(44.6-45.2)</td>
<td>(44.4-45.0)</td>
<td>(44.4-45.0)</td>
<td>(44.3-44.9)</td>
<td>(44.2-44.9)</td>
</tr>
<tr>
<td>MCS</td>
<td></td>
<td></td>
<td></td>
<td>49.2</td>
<td>49.1</td>
<td>49.1</td>
<td>49.1</td>
<td>49.1</td>
<td>49.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(48.9-49.5)</td>
<td>(48.8-49.4)</td>
<td>(48.8-49.4)</td>
<td>(48.8-49.4)</td>
<td>(48.8-49.4)</td>
<td>(48.8-49.4)</td>
</tr>
<tr>
<td>Any ADL, %</td>
<td>2.3</td>
<td>2.4</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.6</td>
<td>2.6</td>
<td>2.6</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>(2.0-2.6)</td>
<td>(2.1-2.7)</td>
<td>(2.2-2.8)</td>
<td>(2.2-2.8)</td>
<td>(2.2-2.7)</td>
<td>(2.3-2.8)</td>
<td>(2.3-2.8)</td>
<td>(2.3-2.9)</td>
<td>(2.4-3.0)</td>
</tr>
<tr>
<td>Any social limitations, %</td>
<td>9.6</td>
<td>10.0</td>
<td>10.2</td>
<td>10.3</td>
<td>10.4</td>
<td>10.7</td>
<td>10.8</td>
<td>11.0</td>
<td>11.2</td>
</tr>
<tr>
<td></td>
<td>(9.0-10.3)</td>
<td>(9.4-10.6)</td>
<td>(9.6-10.8)</td>
<td>(9.7-10.9)</td>
<td>(9.8-11.0)</td>
<td>(10.1-11.3)</td>
<td>(10.2-11.4)</td>
<td>(10.4-11.7)</td>
<td>(10.5-11.9)</td>
</tr>
<tr>
<td>Any work, school, or home limitation, %</td>
<td>16.2</td>
<td>16.7</td>
<td>17.0</td>
<td>17.2</td>
<td>17.2</td>
<td>17.7</td>
<td>17.9</td>
<td>18.2</td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td>(15.4-16.9)</td>
<td>(15.9-17.4)</td>
<td>(16.3-17.8)</td>
<td>(16.4-17.9)</td>
<td>(16.5-18.0)</td>
<td>(17.0-18.5)</td>
<td>(17.1-18.7)</td>
<td>(17.4-19.1)</td>
<td>(17.7-19.5)</td>
</tr>
<tr>
<td>Any limitation in physical functioning, %</td>
<td>20.7</td>
<td>21.5</td>
<td>22.0</td>
<td>22.3</td>
<td>22.5</td>
<td>23.3</td>
<td>23.6</td>
<td>24.2</td>
<td>24.7</td>
</tr>
<tr>
<td></td>
<td>(19.9-21.4)</td>
<td>(20.7-22.3)</td>
<td>(21.3-22.8)</td>
<td>(21.5-23.1)</td>
<td>(21.7-23.3)</td>
<td>(22.5-24.1)</td>
<td>(22.8-24.4)</td>
<td>(23.3-25.0)</td>
<td>(23.7-25.6)</td>
</tr>
</tbody>
</table>

Abbreviations: ADL, activities of daily living; CI, confidence interval; MCS, Mental Composite Summary; MEPS, Medical Expenditure Panel Survey; NA, not available; PCS, Physical Composite Summary.

a All estimates based on weighted sample using complex survey design methods.67
b PCS and MCS scores range from 0-100, with a higher score indicating better functioning.

While outcomes stay fairly constant…
August 30, 2010 — The rate of cesarean deliveries in the United States is continuing its upward trajectory, according to a new study released today. Now accounting for 30% of all deliveries, the rate of cesarean delivery has increased 50% from 1996 to 2007 and shows no signs of diminishing.

In 2007, the cesarean rate was the highest ever reported in the United States.

Figure 1. Cesarean delivery rates: United States, 1991–2007

Geographic clustering of diabetic lower extremity amputations in low income regions in California

Carl Stevens, MD, MPH
David Schriger, MD, MPH
Brian Raffetto, MD, MPH
Anna C. Davis, MPH
David Zingmond, MD, PhD
Dylan H. Roby, PhD
What we pay

Health Spending Per Capita and as a Share of GDP
Selected Developed Countries, 2011

What we get

Note: US spending per capita as reported by OECD differs from figures reported elsewhere in this report.
Special Article

The Oregon Experiment — Effects of Medicaid on Clinical Outcomes

Katherine Baicker, Ph.D., Sarah L. Taubman, Sc.D., Heidi L. Allen, Ph.D., Mira Bernstein, Ph.D., Jonathan H. Gruber, Ph.D., Joseph P. Newhouse, Ph.D., Eric C. Schneider, M.D., Bill J. Wright, Ph.D., Alan M. Zaslavsky, Ph.D., Amy N. Finkelstein, Ph.D., for the Oregon Health Study Group

N Engl J Med
Volume 368(18):1713-1722
May 2, 2013
Study Overview

• In 2008, a lottery was used to select low-income adults for Medicaid expansion in Oregon.
• In this comparison of persons who were selected and those who were not, Medicaid coverage was associated with a lower rate of depression but no significant improvements in physical health.
Table 3. Mean Values and Absolute Change in Health-Related Quality of Life and Happiness with Medicaid Coverage.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Value in Control Group</th>
<th>Change with Medicaid Coverage (95% CI)†</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health-related quality of life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health same or better vs. 1 yr earlier (%)</td>
<td>80.4</td>
<td>7.84 (1.45 to 14.23)</td>
<td>0.02</td>
</tr>
<tr>
<td>SF-8 subscale‡</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental-component score</td>
<td>44.4±11.4</td>
<td>1.95 (0.03 to 3.88)</td>
<td>0.05</td>
</tr>
<tr>
<td>Physical-component score</td>
<td>45.5±10.5</td>
<td>1.20 (−0.54 to 2.93)</td>
<td>0.18</td>
</tr>
<tr>
<td>No pain or very mild pain (%)</td>
<td>56.4</td>
<td>1.16 (−6.94 to 9.26)</td>
<td>0.78</td>
</tr>
<tr>
<td>Very happy or pretty happy (%)</td>
<td>74.9</td>
<td>1.18 (−5.85 to 8.21)</td>
<td>0.74</td>
</tr>
</tbody>
</table>

* Plus–minus values are weighted means ±SD. Where means are shown without standard deviations, they are weighted means. The effect of Medicaid coverage was estimated with the use of two-stage least-squares instrumental-variable regression. All regressions included indicators for the number of household members on the lottery list, and all standard errors were clustered on household. All analyses were weighted with the use of survey weights. The sample was all 12,229 survey respondents.

† For variables measured as percentages, the change is expressed as percentage points.

‡ Scores on the Medical Outcomes Study 8-Item Short-Form Health Survey (SF-8) range from 0 to 100, with higher subscale scores indicating better self-reported health-related quality of life. The scale is normalized to yield a mean of 50 and a standard deviation of 10 in the general U.S. population.
Table 5. Mean Values and Absolute Change in Health Care Utilization and Spending, Preventive Care, Access to and Quality of Care, and Smoking and Obesity with Medicaid Coverage.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Value in Control Group</th>
<th>Change with Medicaid Coverage (95% CI)†</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilization (no. of visits or medications)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current prescription drugs</td>
<td>1.8±2.8</td>
<td>0.66 (0.21 to 1.11)</td>
<td>0.004</td>
</tr>
<tr>
<td>Office visits in past 12 mo</td>
<td>5.5±11.6</td>
<td>2.70 (0.91 to 4.49)</td>
<td>0.003</td>
</tr>
<tr>
<td>Outpatient surgery in past 12 mo</td>
<td>0.1±0.4</td>
<td>0.03 (-0.03 to 0.09)</td>
<td>0.28</td>
</tr>
<tr>
<td>Emergency department visits in past 12 mo</td>
<td>1.0±2.0</td>
<td>0.09 (-0.23 to 0.42)</td>
<td>0.57</td>
</tr>
<tr>
<td>Hospital admissions in past 12 mo</td>
<td>0.2±0.6</td>
<td>0.07 (-0.03 to 0.17)</td>
<td>0.17</td>
</tr>
<tr>
<td>Estimate of annual health care spending ($)‡</td>
<td>3,257.3</td>
<td>1,171.63 (199.35 to 2,143.91)</td>
<td>0.018</td>
</tr>
<tr>
<td><strong>Preventive care in past 12 mo (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol-level screening</td>
<td>27.2</td>
<td>14.57 (7.09 to 22.04)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fecal occult-blood test in persons ≥50 yr</td>
<td>19.1</td>
<td>1.26 (-9.44 to 11.96)</td>
<td>0.82</td>
</tr>
<tr>
<td>Colonoscopy in persons ≥50 yr</td>
<td>10.4</td>
<td>4.19 (-4.25 to 12.62)</td>
<td>0.33</td>
</tr>
<tr>
<td>Flu shot in persons ≥50 yr</td>
<td>35.5</td>
<td>-5.74 (-19.31 to 7.83)</td>
<td>0.41</td>
</tr>
<tr>
<td>Papanicolaou smear in women</td>
<td>44.9</td>
<td>14.44 (2.64 to 26.24)</td>
<td>0.016</td>
</tr>
<tr>
<td>Mammography in women ≥50 yr</td>
<td>28.9</td>
<td>29.67 (11.96 to 47.37)</td>
<td>0.001</td>
</tr>
<tr>
<td>PSA test in men ≥50 yr</td>
<td>21.4</td>
<td>19.18 (1.14 to 37.21)</td>
<td>0.037</td>
</tr>
<tr>
<td><strong>Perceived access to and quality of care (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had a usual place of care</td>
<td>46.1</td>
<td>23.75 (15.44 to 32.06)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Received all needed care in past 12 mo</td>
<td>61.0</td>
<td>11.43 (3.62 to 19.24)</td>
<td>0.004</td>
</tr>
<tr>
<td>Care was of high quality, if received, in past 12 mo</td>
<td>78.4</td>
<td>9.85 (2.71 to 17.00)</td>
<td>0.007</td>
</tr>
<tr>
<td><strong>Smoking status and obesity (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>42.8</td>
<td>5.58 (-2.54 to 13.70)</td>
<td>0.18</td>
</tr>
<tr>
<td>Obese</td>
<td>41.5</td>
<td>0.39 (-7.89 to 8.67)</td>
<td>0.93</td>
</tr>
</tbody>
</table>

* Plus–minus values are weighted means ±SD. Where means are shown without standard deviations, they are weighted means. The effect of Medicaid coverage was estimated with the use of two-stage least-squares instrumental-variable regression. All regressions include indicators for the number of household members on the lottery list, and all standard errors were clustered on household. All analyses were weighted with the use of survey weights. The sample size was all 12,229 survey respondents. For some prevention measures, the sample was limited to the 3,374 survey respondents who were at least 50 years of age, the 1,864 female survey respondents who were at least 50 years of age, or the 1,509 male survey respondents who were at least 50 years of age. The sample for quality of care was limited to the 9,694 survey respondents who received care in the previous 12 months. PSA denotes prostate-specific antigen.

† For variables measured as percentages, the change is expressed as percentage points.

‡ Annual spending was calculated by multiplying the numbers of prescription drugs, office visits, visits to the emergency department, and hospital admissions by the estimated cost of each. See the Supplementary Appendix for details.
• This randomized, controlled study showed that Medicaid coverage generated no significant improvements in measured physical health outcomes in the first 2 years, but it did increase use of health care services, raise rates of diabetes detection and management, lower rates of depression, and reduce financial strain.
Research targets: Incentive-based strategies for changing care

- Precertification
- Physician profiling and report cards
- Pay for performance (P4P)
- Financial risk sharing:
  - Episodes, bundled payments
- Global capitation
- A new direction: clinically detailed, variable incentives based on multi-level estimates of appropriateness
Follow the dollar

The flow of funds through the U.S. health care system
Market participants:

Multiple customers and stakeholders

Provider group management

Practice partners

Regulators

Health Plans

Research projects can target any individual player or interactions
Key vocabulary

- “Services”: all the tests, treatments and other stuff we provide to patients

- No free services: they ALL get paid for.

- Guess who pays?
Flow of funds: Workspace for incentive research

- **Purchaser tier**: Government (Federal, State, Local) and Employer
- **Payer tier**: Public (Medicare, Medicaid) and Private (Insurers, Health Plans)
- **Provider tier**: Facility (Hospital, SNF), Professional (Specialists), Pharmacy, Other

Monthly payment for each covered member ("eligible life")

$ paid PER MEMBER PER MONTH = **PMPM**
Step I: Transfer of funds from our pockets to Purchaser tier

- We pay about 15% of what we make for care
- We give $$ to public and private Purchasers
  - Taxes: federal, state and local
  - Health insurance premiums
- We pay through deferred wages
  - Employer “contribution” = withhold from paycheck
Step II: Plans offer different models as options to purchasers

- “Conventional”: straight fee for service to any provider (a.k.a. “Indemnity”) *Historical interest only*
- Preferred Provider Organization (PPO): discounted FFS, contracted physician network, generally broad
- Health Maintenance Organization (HMO): restricted network, some risk sharing with providers (capitation)
  - Staff model HMO: owned facilities, employed physicians
- High-deductible, Health care savings account
Health Spending Distribution, by Category
United States, 2011

TOTAL SPENDING:
$2.7 TRILLION

- Hospital Care: 31%
- Personal Health Care: 84%
- Physician and Clinical Services: 20%
- Rx Drugs: 10%
- Other Professional Services: 4%
- Dental Services: 3%
- Other Medical Products: 3%
- Nursing Care Facilities: 3%
- Home Health Care: 3%
- Other Health Care: 5%
- Net Cost of Health Insurance: 6%
- Government Administration (1%)
- Public Health Activities: 3%
- Investment: 6%
- Other: 16%

Notes: Health Spending refers to National Health Expenditures. For additional detail on spending categories, see the Appendix. Further definitions available at www.cms.gov. Segments may not sum due to rounding. Source: Centers for Medicare and Medicaid Services (CMS), Office of the Actuary, National Health Expenditures, 2013 release.
RISK

• The legal or contractual obligation to pay for health services

• Begins with the worker, and moves down through the system

• Premium =>purchaser=>plan=>provider

• Who bears risk?
  – Individuals
  – Employer
  – Government, federal, state and county
  – Provider (i.e. hospital/physician/med group)
Flow of risk

Purchaser tier
- Government
  - Federal
  - State
  - Local
- Employer

Payer tier
- **Public**
  - Medicare
  - Medicaid
- **Private**
  - Insurers
  - Health Plans

Provider tier
- **Facility**
  - Hospital, SNF
- **Professional**
  - Specialists
- **Pharmacy**
- **Other**
The Risk Pie: How much is safe for doctors?

Based on $400 PMPM

$120 PMPM

$80 PMPM

$40 PMPM
Lee, TH, Mongan, JJ. Chaos and Organization in Health Care
So among options to use reimbursement to change care patterns, what works?

- Precertification?

Robinson JC: Reinvention of health insurance in the consumer era

The private health insurance industry in the United States has fundamentally changed its strategic focus, product design, and pricing policy as a result of the backlash against managed care. Rather than seek to influence the behavior of physicians through capitation and utilization review, the major health plans now seek to influence the behavior of patients through benefit designs that cover a broad range of services but with high co-payments, tiered network designs that cover a broad range of physicians but with variable coinsurance, … The contemporary product and pricing policies reflect a retreat by the insurance industry from previous efforts to transform the health care system and embody a delegation to individual consumers of responsibility for setting priorities and making financial tradeoffs.

JAMA. 2004 Apr 21;291(15):1880-6  PMID: 15100208
BACKGROUND: Insurance products with incentives for patients to choose physicians classified as offering lower-cost care on the basis of cost-profiling tools are increasingly common. However, no rigorous evaluation has been undertaken to determine whether these tools can accurately distinguish higher-cost physicians from lower-cost physicians.

We used commercial software to construct clinically homogeneous episodes of care (e.g., treatment of diabetes, heart attack, or urinary tract infection), assigned each episode to a physician, and created a summary profile of resource use (i.e., cost) for each physician on the basis of all assigned episodes.

RESULTS: Median reliabilities ranged from 0.05 for vascular surgery to 0.79 for gastroenterology and otolaryngology. Overall, 59% of physicians had cost-profile scores with reliabilities of less than 0.70, a commonly used marker of suboptimal reliability. Using our reliability results, we estimated that 22% of physicians would be misclassified in a two-tiered system.

Pay for performance (P4P)?

Houle SK et al, Does performance-based remuneration for individual health care practitioners affect patient care?: a systematic review:

PURPOSE: To evaluate the effect of P4P remuneration targeting individual health care providers.

DATA SOURCES: MEDLINE, EMBASE, Cochrane Library, OpenSIGLE, Canadian Evaluation Society Unpublished Literature Bank, New York Academy of Medicine Library Grey Literature

DATA SYNTHESIS: The literature search identified 4 randomized, controlled trials; 5 interrupted time series; 3 controlled before-after studies; 1 nonrandomized, controlled study; 15 uncontrolled before-after studies; and 2 uncontrolled cohort studies.

Two of the 4 randomized trials were negative, and the 2 statistically significant trials reported small incremental improvements in vaccination rates over usual care (absolute differences, 8.4 and 7.8 percentage points). Of the 5 interrupted time series, 2 did not detect any improvements in processes of care or clinical outcomes after P4P implementation,

Consensus is building that episode-based bundled payments can produce substantial Medicare savings, and the Center for Medicare & Medicaid Innovation's Bundled Payment Initiative endorses this concept. The program generates potential cost savings by reducing the historic cost of time-defined episodes of care, provided through a discount.

Although bundled payments can reduce waste primarily in the postacute care setting, concerns arise that, in an effort to maintain income levels that are necessary to cover fixed costs, providers may change their behaviors to increase the volume of episodes. Such actions would mitigate the savings that Medicare might have accrued …

Although bundled payments have some advantages …true cost-savings to Medicare will be realized only when the federal government addresses the use issue that underlies much of the waste inherent in the system and provides ample incentives to eliminate capacity and move toward capitation.

When people talk about the future of health care, Kaiser Permanente is often the model they have in mind.

The organization, with some $50 billion in annual revenue, owns 37 hospitals and employs 17,000 doctors, all on salary.

The days when doctors, hospitals and other providers are paid separately for each procedure will disappear eventually, health experts say. Instead, providers will have financial incentives to encourage them to keep people healthy, including lump sums to care for patients or provide comprehensive care for a specific condition.

“All of care is going to move down this path, and it has to,” Mr. Halvorson said. “Medical homes are doing it; the very best A. C.O’s are going to figure out how to do it.”
A new direction: clinically detailed, variable incentives based on multi-level estimates of appropriateness

- The Rand Appropriateness Method (RAM) offers a valid method for combing RCT and CER evidence with expert opinions to produce multi-level (1-9) estimates of medical necessity (medical benefit-medical risk, independent of cost).

- Since Bob Brook’s group at RAND/UCLA invented the method in 1986, it has been used to develop detailed guidelines for dozens of diagnostic tests and therapeutic procedures.

- The results have been applied as condition- or procedure-specific guidelines, but provide a robust infrastructure for incremental value based financial incentives on patients (copays) and providers (fee-for-service adjustment) the preserve choice while reducing waste and “nudging” value.
Medical Necessity

- Care is necessary when *medical* benefits sufficiently exceed *medical* risks that the procedure is worth doing and when withholding care is associated with less favorable outcomes, based on evidence.

- We would not want to undergo unnecessary treatments, even if they were “free.”
Potential applications of RAM in preserving choice while improving value:

Use the 1-9 necessity ratings to set co-pays for patients.

– A patient (without cancer risk) presents with 3 days of new severe sciatica
– Since the condition has 90% cure with conservative treatment, panel assigns a 3/9 rating, in other words, very low value or inappropriate.
– Patient then is offered the procedure with a 50% co-pay, and the provider 50% of Medical payment for the procedure
– Twelve weeks late, returns with persistent, despite a trial of NSAIDS and PT. That this point, patients co-pay might go down near-zero, and the facility and radiology would receive full funding for the procedures
– The same exact principle could be applied for adjusting FFS provider reimbursement. multi-level medical necessity ratings, and fee-for-service payment could adjust based on ratings of informed.

Notice that choice is preserved, but patients are gently “nudged” to attempt a trial of non-operative treatment. All parties benefit, as waste is reduced and practice variation is controlled around best practices,

The JAMA Network

Table 1. Expert Panel Members, Specialty, and Hospital Affiliation

<table>
<thead>
<tr>
<th>Name</th>
<th>Specialty</th>
<th>Country</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanios Bekai-Saab</td>
<td>Medical oncology</td>
<td>United States</td>
<td>Ohio State University</td>
</tr>
<tr>
<td>Ian Chau</td>
<td>Medical oncology</td>
<td>England</td>
<td>Royal Marsden Hospital</td>
</tr>
<tr>
<td>Neal Church</td>
<td>General surgery</td>
<td>Canada</td>
<td>University of Calgary</td>
</tr>
<tr>
<td>Daniel Coit</td>
<td>Surgical oncology</td>
<td>United States</td>
<td>Memorial Sloan-Kettering Cancer Centre</td>
</tr>
<tr>
<td>Christopher H. Crane</td>
<td>Radiation oncology</td>
<td>United States</td>
<td>MD Anderson Cancer Center</td>
</tr>
<tr>
<td>Craig Earle</td>
<td>Medical oncology</td>
<td>Canada</td>
<td>University of Toronto</td>
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<tr>
<td>Paul Mansfield</td>
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<td>MD Anderson Cancer Center</td>
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<tr>
<td>Norman Marcon</td>
<td>Gastroenterologist</td>
<td>Canada</td>
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<tr>
<td>Thomas Miner</td>
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<tr>
<td>Sung Hoon Noh</td>
<td>Surgical oncology</td>
<td>Korea</td>
<td>Yonsei University College of Medicine</td>
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<tr>
<td>Geoff Porter</td>
<td>Surgical oncology</td>
<td>Canada</td>
<td>Dalhousie University</td>
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<tr>
<td>Mitchell C. Posner</td>
<td>Surgical oncology</td>
<td>United States</td>
<td>University of Chicago</td>
</tr>
<tr>
<td>Vivek Prachand</td>
<td>Laparoscopic surgery</td>
<td>United States</td>
<td>University of Chicago</td>
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<tr>
<td>Takeshi Sano</td>
<td>Surgical oncology</td>
<td>Japan</td>
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<tr>
<td>Cornелиς van de Velde</td>
<td>Surgical oncology</td>
<td>the Netherlands</td>
<td>Leiden University Medical Centre</td>
</tr>
<tr>
<td>Sandra Wong</td>
<td>Surgical oncology</td>
<td>United States</td>
<td>University of Michigan Health System</td>
</tr>
</tbody>
</table>


Figure Legend:

Expert Panel Members, Specialty, and Hospital Affiliation
### Table 2. Gastrectomy Without Preoperative Therapy

<table>
<thead>
<tr>
<th>Stage</th>
<th>Proximal, No Major Symptoms</th>
<th>Proximal, Major Symptoms</th>
<th>Distal, No Major Symptoms</th>
<th>Distal, Major Symptoms</th>
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</thead>
<tbody>
<tr>
<td>cT1N0</td>
<td>Appropriate (7.5)</td>
<td>Appropriate (8.0)</td>
<td>Necessary (8.0)</td>
<td>Necessary (8.0)</td>
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<tr>
<td>cT2N0</td>
<td>Necessary (8.0)</td>
<td>Necessary (8.5)</td>
<td>Necessary (8.0)</td>
<td>Necessary (8.0)</td>
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<tr>
<td>cT1-2N1</td>
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<tr>
<td>cT1-2N2-3</td>
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<td>Appropriate (8.5)</td>
<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
</tr>
<tr>
<td>cT3-4N0</td>
<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
</tr>
<tr>
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<td>Appropriate (8.5)</td>
<td>Appropriate (8.5)</td>
<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
</tr>
<tr>
<td>cT3-4N2-3</td>
<td>Appropriate (8.0)</td>
<td>Appropriate (8.0)</td>
<td>Indeterminate (7.5)</td>
<td>Appropriate (8.0)</td>
</tr>
</tbody>
</table>

*a Results shown as final level of agreement (median appropriateness score on a scale of 1-9) or when applicable (median necessity score on a scale of 1-9). Bold results represent agreement on score.

**Figure Legend:**

Gastrectomy Without Preoperative Therapy

**: Table 2.**

<table>
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<th>Stage</th>
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</thead>
<tbody>
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<td>Necessary (8.0)</td>
<td>Necessary (8.0)</td>
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<td>Necessary (8.5)</td>
<td>Necessary (8.0)</td>
<td>Necessary (8.0)</td>
</tr>
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<td>Necessary (8.5)</td>
<td>Necessary (8.0)</td>
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<tr>
<td>cT1-2N2-3</td>
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<td>Appropriate (8.5)</td>
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<td>Necessary (8.0)</td>
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<tr>
<td>cT3-4N0</td>
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<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
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<td>Appropriate (8.5)</td>
<td>Necessary (8.0)</td>
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<tr>
<td>cT3-4N2-3</td>
<td>Appropriate (8.0)</td>
<td>Appropriate (8.0)</td>
<td>Indeterminate (7.5)</td>
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</tr>
</tbody>
</table>

*a Results shown as final level of agreement (median appropriateness score on a scale of 1-9) or when applicable (median necessity score on a scale of 1-9). Bold results represent agreement on score.
Table 5. Nonsurgical Management for Metastatic Gastric Carcinomaa

<table>
<thead>
<tr>
<th>Stage</th>
<th>Proximal, No Major Symptoms</th>
<th>Proximal, Major Symptoms</th>
<th>Distal, No Major Symptoms</th>
<th>Distal, Major Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1—positive cytology</td>
<td>Disagreement (6.5)</td>
<td>Disagreement (5.0)</td>
<td>Disagreement (5.5)</td>
<td>Indeterminate (5.0)</td>
</tr>
<tr>
<td>M1—peritoneal carcinomatosis</td>
<td>Indeterminate (7.0)</td>
<td>Indeterminate (5.5)</td>
<td>Indeterminate (7.0)</td>
<td>Indeterminate (6.0)</td>
</tr>
<tr>
<td>M1—solitary liver metastasis</td>
<td>Indeterminate (7.0)</td>
<td>Indeterminate (5.5)</td>
<td>Disagreement (7.0)</td>
<td>Disagreement (5.0)</td>
</tr>
<tr>
<td>M1—more than 1 liver metastasis or more than 1 site of metastasis</td>
<td>Appropriate (8.0)</td>
<td>Indeterminate (5.5)</td>
<td>Appropriate (8.0)</td>
<td>Indeterminate (6.0)</td>
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</tbody>
</table>

Figure Legend:
Nonsurgical Management for Metastatic Gastric Carcinomaa
“I am happy for you, young men and women of this generation. You will do great things. You will have great victories, and standing on our shoulders, you will see far, but you can share our sensations. To have lived through a revolution, to have seen a new birth of science, a new dispensation of health, reorganized medical schools, remodeled hospitals, a new outlook for humanity, is not given to every generation.”

*but it is given to yours: big-time!*

Sir William Osler
Enjoy surfing the waves of change

Questions?