

# Improving Health Care Quality and Values: Local Challenges and Local Opportunities

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At both the state and national level, sustainable, long-term health-care reform has three goals: extending health insurance to the currently uninsured, improving the quality of care, and ensuring that costs reflect the value of the care that patients receive. The question is whether these goals are both compatible and achievable. Policies that use local benchmarks to improve quality and hold down costs may be an effective and feasible way to achieve these goals.

## Background: Coverage, Cost, and Quality

Extending insurance coverage, as Massachusetts has done in the last three years, is no guarantee of high value care.<sup>1</sup> An exclusive focus on the uninsured may be predicated on the idea that the insured are receiving high quality care, equating higher spending and higher quality. Yet, the likelihood of getting high quality care may have more to do with geography than insurance status or spending.

A substantial body of research – which originates in large part from the work of John Wennberg and colleagues in the *Dartmouth Atlas of Health Care*<sup>2</sup> – has shown large disparities in the quality and cost of care delivered across the U.S., even among people

covered by the same insurance program (Medicare). Moreover, the research has found that places where care costs the most, such as greater Boston, are not always the places where patients receive the highest quality care. Rather, as Figure 1 shows, there is a negative relationship between Medicare spending and the quality of care received by Medicare beneficiaries.<sup>3</sup> It is not clear what drives this relationship, but the areas with higher spending and lower quality also have a physician workforce comprised of more specialists rather than generalists. It is also possible that specialization in high-tech “intensive” medicine may crowd out the delivery of lower-tech medicine.

These national statistics play out in the Boston area as well. Figures 2a and 2b show the rising health care costs of Medicare beneficiaries in Boston and surrounding areas. Costs for Medicare beneficiaries in Boston are high and rising, and, although spending levels are persistently higher than in neighboring regions, most are experiencing similar trends. There is evidence that Medicare and non-Medicare patients are treated similarly within hospitals.<sup>4</sup> Like many high-intensity utilization areas, hospitals in Boston are providing life-saving

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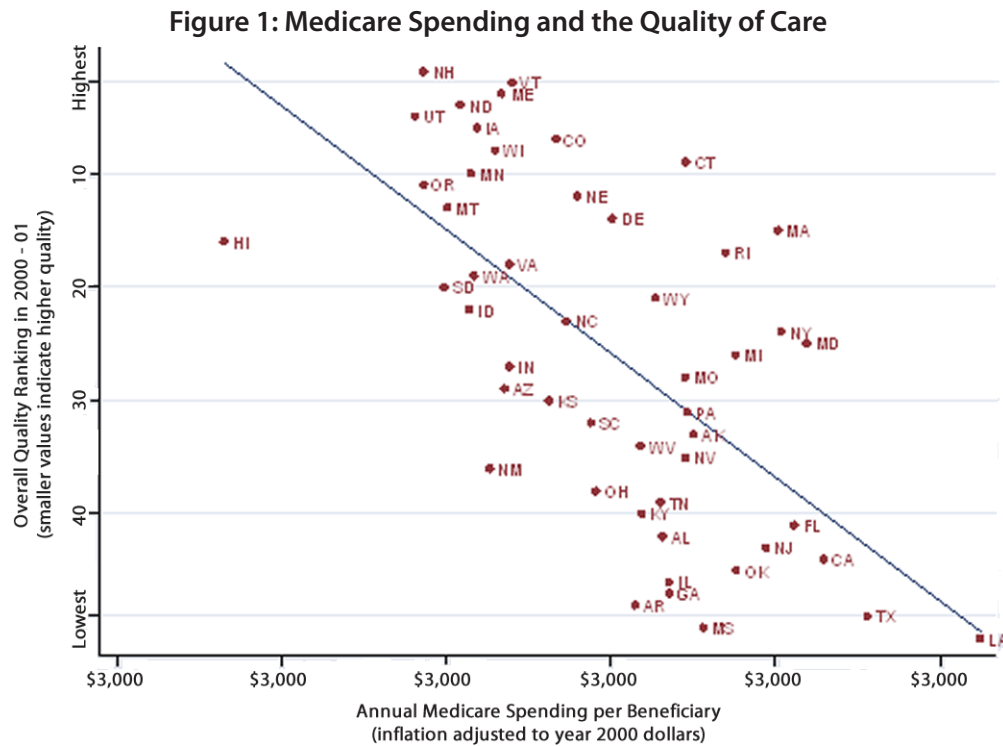
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Source: Baicker & Chandra, *Health Affairs*, 2004

therapies to patients from a wide geographic area, but it is not obvious that incremental care provided generates substantial gains in quality or length of life that are commensurate with the additional costs of such care.

The wedge between spending and value has important implications for both public and private insurance. Increasing spending on health care is placing a growing strain on the federal and state budgets that finance Medicare and Medicaid. The increasing costs of private insurance, which is largely purchased through employers, erodes the wage increases that workers might otherwise see and, especially for low-wage workers, puts jobs in jeopardy and could thus drive even higher rates of uninsurance.<sup>5</sup> The goals of increasing value and increasing coverage are thus intertwined, and improving the value delivered through the health care system could have wide-ranging benefits.

The substantial variation in local practice patterns presents both challenges and opportunities. Quality and value improvements in some hospitals may have spillover effects to neighboring hospitals if physicians and hospital staffs learn best practices from each other. Improving the performance of hospitals that lag behind their local peers could go a long way towards improving health care delivery and reducing disparities. The focus on local peers may also be more practical and politically palatable than a strategy of implementing national benchmarks where hospitals in an area may be asked to perform at a higher level than any other provider in the area.

### Measuring Quality and Cost

To estimate potential gains, we follow previous research and construct measures of quality of care and end-of-life spending that also take into account potentially large differences in the mix of patients seen at particular hospitals.

Figure 2a: Part A Medicare Reimbursements in Boston and Nearby Regions, 1992 - 2006

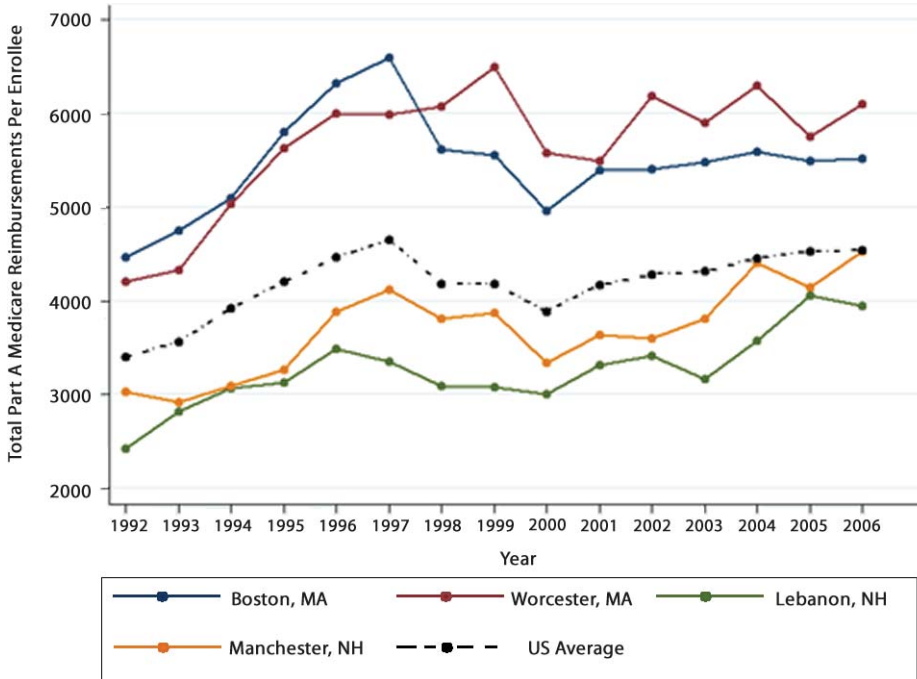
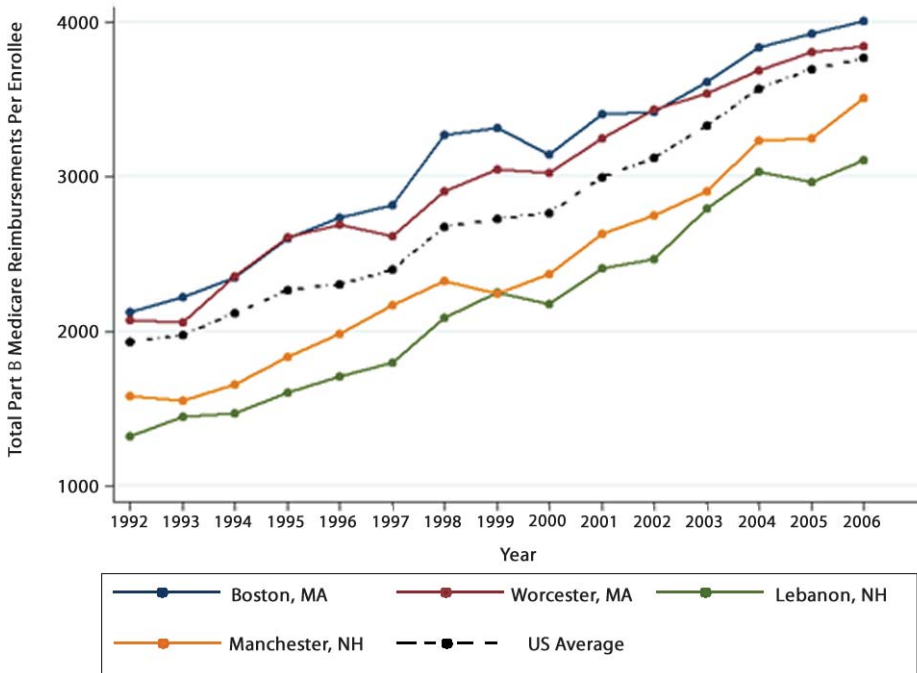


Figure 2b: Part B Medicare Reimbursements in Boston and Nearby Regions, 1992 - 2006



**Measuring Quality:** To measure quality, we used data from the Hospital Quality Alliance (HQA), a public-private collaboration between the Centers for Medicare and Medicaid Services (CMS) and several hospital organizations, that publicly reports hospital performance on select process-of-care measures through an online website.<sup>6</sup> These measures focus on three major conditions for which evidence-based treatments are supported by a solid body of evidence: Acute Myocardial Infarction (AMI, or heart attack), pneumonia, and Congestive Heart Failure (CHF). We pooled data from 2005-2007, and used only the measures for which a majority of hospitals reported at least 25 observations.<sup>7</sup> We then created a measure of the quality of care: the number of times a hospital performed the appropriate action across all measures for that condition by the number of “opportunities” the hospital had to provide appropriate care for each hospital.

**Measuring Low-Value Spending:** To measure spending that is likely to be of low value to patients we used spending on Medicare beneficiaries in the last two years of life. As *The Dartmouth Atlas of Health Care* has shown, this measure is not correlated with the delivery of health care whose efficacy is determined by well-articulated medical theory, much less by scientific evidence. For example, higher utilization of end-of-life care is associated with multiple specialist visits, shorter revisit intervals, and the use of imaging and diagnostic technologies. Each of these services is clearly therapeutic for some patients, but clinical trials and medical textbooks offer little guidance to the “right rate” for these technologies. Moreover, by focusing on variation in the treatment of patients with identical life expectancy, the end-of life (EOL) spending measure better reflects the portion of spending that is attributable

to differences in the ways similar patients are treated. Spending data were adjusted for differences in age, sex, race, and the relative frequency of chronic illness among the beneficiaries studied.

**Defining Geographic Areas:** To compare each hospital’s performance to local benchmarks, we used the *Dartmouth Atlas’s* 306 Hospital Referral Regions (HRRs). We linked these data with the American Hospital Association Annual Survey database, which has information on hospitals’ staffing, capacity and patient pool characteristics. In particular, we used information on the racial composition of each hospital’s patient population to estimate effects of quality improvement on racial disparities.

### **National and Local Variation in Quality and Cost**

Overall, most patients receive high-quality care. The average score for the quality of care is 87.9 percent (meaning that in 87.9 percent of the instances, appropriate care such as aspirin at admission for heart attack is in fact administered). However, hospitals in the bottom quartile provide this appropriate care 85.8 percent of the time, and only 77.3 percent of the time for heart failure patients. By contrast, hospitals in the top quartile delivered appropriate care 92.5 percent of the time overall, and 90.0 percent of the time for heart failure patients. As important, 68 percent of the variation in overall quality occurs *within* Hospital Referral Regions (HRRs), with only 32 percent driven by differences *between* those regions. This means that there is much more variation in quality among the hospitals within a given area, such as greater Boston, than there is variation between the average quality provided at Boston-area hospitals and the average quality provided in other regions.

Average spending for Medicare beneficiaries (expressed in 2005 dollars) in the last two years of life is similarly variable. The national average was \$35,278 – while the difference between the highest cost quartile and the lowest cost quartile was \$12,000. Unlike quality, however, there is much less variation within HRRs in the cost of EOL care than there is between HRRs: only 23 percent of the variation in EOL spending is attributable to differences in costs at hospitals in the same area such as greater Boston, with the majority attributable to differences in the average cost in greater Boston compared to the average in other HRRs.

**Learning from Neighbors:** The fact that hospitals in a local area tend to provide a similar style of care introduces the opportunity for leveraging investments in quality and value. We used these data to see if an increase in quality in one hospital has a “spillover” effect to neighboring hospitals. Can providers “learn” from others’ experiences? (While we characterize this as “learning,” the mechanisms through which these spillovers might occur have not been conclusively established.)

Table 1 shows that even controlling for how well each hospital performed on quality measures last year, an increase in the quality of neighboring hospitals was associated with a quality improvement of 0.2 percentage points. Similarly, if neighboring hospitals spent \$1,000 more on EOL care, a hospital was likely to have EOL spending that was \$170 higher. This spillover effect suggests that investments that drive improvements in quality and value in one hospital may reap broader rewards. They also suggest a strategy for improving performance and reducing disparities in a way that may be more logistically and politically feasible than trying to impose national performance standards.

**Table 1: Spillovers from Neighboring Hospitals**

|  | Quality        | EOL            |
|--|----------------|----------------|
| Hospital's Own Quality or Spending Last Year | 0.68<br>(0.02) | 0.76<br>(0.02) |
| Quality or Spending in Neighboring Hospitals | 0.21<br>(0.03) | 0.17<br>(0.01) |

Source: Baicker and Chandra, *NBER Agglomerations Volume*, Forthcoming. Additional controls include hospital and patient pool characteristics.

### Using Local Benchmarks to Achieve Larger Goals

Given that the quality and cost of care also varies greatly within each region, a promising approach may be to focus on the cost saving and quality improvement that could be achieved if lower-performing hospitals and their medical staffs approached only the level of value achieved by the better performers in their own local area. This strategy would produce a substantial share of the potential gains from using national benchmarks and also erase substantial share of the well-documented disparities in the quality of care received by black and white patients.

If all hospitals currently scoring below the 25th percentile of overall quality score nationally were brought up to that threshold, the overall quality score would improve from 87.9 to 89.8, as shown in Table 2. Total per-patient EOL spending for the highest-spending quartile of hospitals is \$39,216. If all hospitals spending more than that were to reduce their spending to that level, national average EOL spending for Medicare beneficiaries would be reduced from \$35,278 to \$31,198.

Achieving national-level (or even state-level) benchmarks may be quite difficult, however. For example, hospitals in western

**Table 2: Gains from Raising Performance**

|                        | Average Value | Setting National Standards |                        | Setting Local Standards |                        |
|------------------------|---------------|----------------------------|------------------------|-------------------------|------------------------|
|                        |               | Bringing up Bottom 10%     | Bringing up Bottom 25% | Bringing up Bottom 10%  | Bringing up Bottom 25% |
| Overall Quality        | 87.9          | 89.1                       | 89.8                   | 88.9                    | 89.5                   |
| Reduction in Disparity |               | 32%                        | 52%                    | 12%                     | 28%                    |
| End-of-life Spending   | \$35,278      | \$33,358                   | \$31,198               | \$34,946                | \$34,249               |

Source: Baicker and Chandra, preliminary analysis from work in progress.

Massachusetts may not see the hospitals in downtown Boston as their peers, let alone hospitals in Los Angeles. Not only do they serve very different populations, but the physician staffs likely have quite limited interactions and have different resources at their disposal.

Because the majority of variation in quality occurs within HRRs, bringing lagging hospitals up to the performance level of other hospitals in their region would capture most of the gains of setting a national benchmark. Overall quality would improve from the current average of 87.9 to 89.5 rather than the 89.8 for national benchmarks.

In contrast, as noted above, the variation in EOL spending is much greater between HRRs than it is within HRRs. Consequently, bringing down the spending of the highest-spending hospitals within an area to the level of their lower-spending peers would not do much to reduce aggregate EOL spending, with levels dropping only from \$35,278 to \$34,249, compared to \$31,198 for national benchmarks.

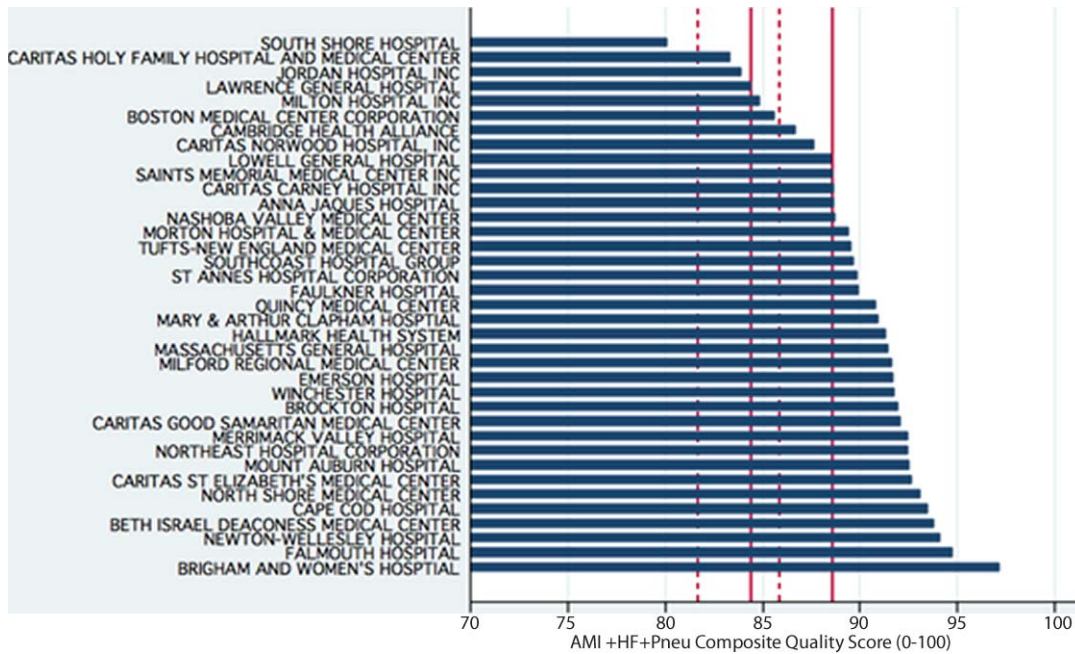
Figure 3a and 3b show these results graphically

for hospitals in greater Boston. The top panel shows the distribution of quality for heart attack patients, while the bottom panel shows inpatient EOL spending. The vertical lines show local and national benchmarks. From this we see that Boston quality is above the national average, but it also spends more on EOL care of questionable value.

### Effects on Disparities

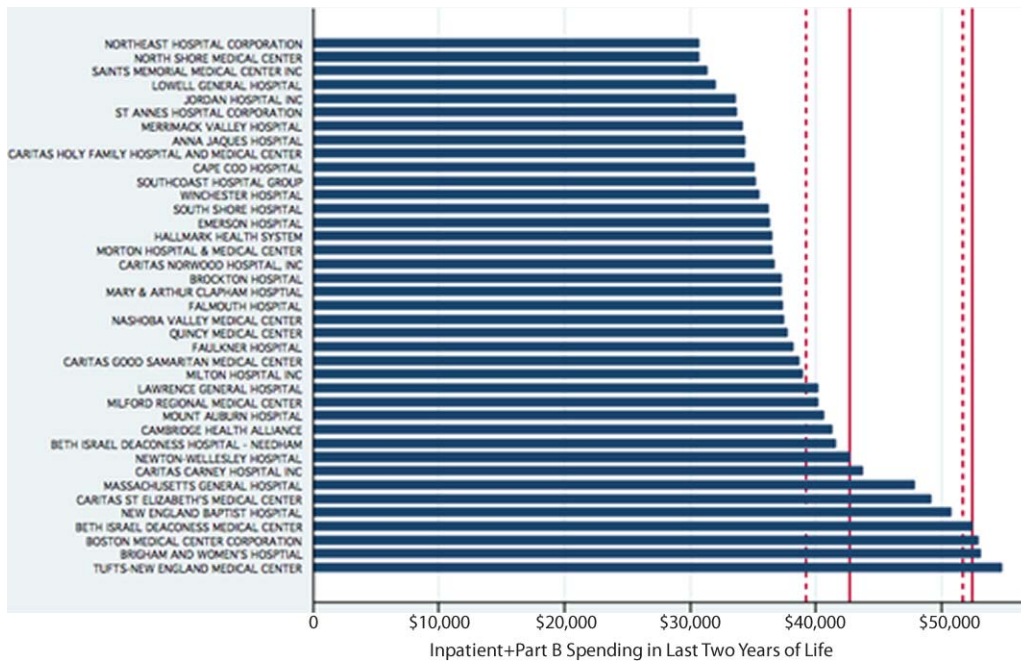
Because many of the well-documented disparities in treatment based on race are due to the fact that minority patients systematically are treated at lower-quality hospitals,<sup>8</sup> benchmarks can also greatly reduce racial disparities in health care. Table 2 also shows the current between-hospital quality disparity between white and black patients. The average between-hospital difference in overall quality score (calculated based on the racial mix of each hospital's patient pool and the quality of care delivered at that hospital, not individual treatment) is 2.5. That disparity would drop to 1.2 if the bottom 25 percent of hospitals nationally were elevated to the 25th percentile score for overall quality – eliminating 52 percent of the quality gap. On the other hand,

Figure 3a: Quality of Care for Heart Attack Patients at Boston-area Hospitals



Solid lines represent the 10th and 25th percentiles within the geographical area, and dashed lines represent the corresponding national percentile..

Figure 3b: Cost of End-of-Life Care at Boston-area Hospitals



Solid lines represent the 75th and 90th percentiles within the geographical area, and dashed lines represent the corresponding national percentile..

Source: Baicker and Chandra, preliminary analysis from work in progress.

if the bottom 25 percent of hospitals in each HRR were elevated to the local benchmark, the disparity would drop from 2.5 to 1.8 – eliminating 28 percent of the gap, or a little more than half of the reduction achievable through attaining the national benchmark. For the heart failure subcomponent of quality, virtually all of the gain is achievable through local benchmark performance.

## Conclusion

Bringing quality up and costs down in hospitals whose performance lags has emerged as a key component of long-term health-care reform. Achieving this goal on a national scale, however, may be stymied by both logistical and political resistance. Looking instead to improve hospital performance to the levels achieved by their better-performing peers within their own local area – rather than asking them to attain national benchmarks that may seem quite removed from local resources, practice styles, and capabilities – may be a more viable alternative, particularly because there is suggestive evidence that hospitals are able to “learn” practices from other nearby hospitals.

Using measures of quality and low-value spending that are relatively robust to differences in patient mix and illness burden, we show that achieving local benchmark performance would raise quality by almost as much as achieving national benchmarks. Achieving local quality benchmarks would also go a long way in reducing the disparities in the quality of care received by black and white patients. However, local benchmarks would not go as far in reducing low-value spending. These results suggest that policies that focus on local benchmarks, which may be most feasible, may not sacrifice much in terms of quality improvements, making them an attractive option for setting goals in future health reforms.

Of course, establishing the value of local goal-setting does not tell us the best way to achieve those local goals. Reducing spending on low-value care while improving the overall quality of care delivered is likely to require the deployment of many policy levers, including provider payment and insurance system reform. While these reforms are likely to be politically and practically difficult to achieve, setting effective metrics by which to gauge success may help smooth the path.

## Endnotes

<sup>1</sup> See Katherine Baicker and Amitabh Chandra, “Myths and Misconceptions About Health Insurance,” *Health Affairs*, Vol. 27, no. 6, w533-w543, October 21, 2008.

<sup>2</sup> John Wennberg and Megan Cooper, *The Dartmouth Atlas of Health Care* (Chicago: American Hospital Association Press, 1999).

<sup>3</sup> See Katherine Baicker and Amitabh Chandra, “Medicare Spending, the Physician Workforce, and Beneficiaries’ Quality of Care,” *Health Affairs* Suppl Web Exclusive (2004): w184-197 (published online 187 April 2004; 2010.1377/hlthaff.w2004.2184). Amitabh Chandra and Douglas O. Staiger. “Productivity Spillovers in Health Care: Evidence from the Treatment of Heart Attacks.” *Journal of Political Economy* Vol.115, no. 1 (February 2007): 103-140. Katherine Baicker, Amitabh Chandra, Jonathan S. Skinner and John E. Wennberg, “Who You Are and Where You Live: How Race and Geography Affect the Treatment of Medicare Beneficiaries,” *Health Affairs*, Web Exclusive (2004): 33-44.

<sup>4</sup> See Laurence Baker, Elliot Fisher, and John Wennberg, “Variations in Hospital Resource Use for Medicare and Privately Insured Populations in California,” *Health Affairs*, Web Exclusive (2008), 12 Feb, hltaff.27.2.w123.

<sup>5</sup> See Katherine Baicker and Helen Levy, “Employer Health Insurance Mandates and the Risk of Unemployment,” *Risk Management and Insurance Review* Vol. 11, no. 1 (2008): 109-132; Katherine Baicker and Amitabh Chandra, “The Labor Market Effects of Rising Health Insurance Premiums,” *Journal of Labor Economics* Vol. 24, no. 3 (2006); Cutler, David, and Brigitte Madrian. “Labor Market Responses to Rising Health Insurance Costs: Evidence on Hours Worked,” *RAND Journal of Economics*, Vol. 29, No. 3 (Autumn, 1998), 509-



530.

<sup>6</sup> For details see Ashish K. Jha, Zhonghe Li, E. John Orav and Arnold M. Epstein, “Care in U.S. Hospitals--the Hospital Quality Alliance Program,” *New England Journal of Medicine* Vol. 353, no. 3 (2005): 265-274.

<sup>7</sup> For AMI patients, the treatments are: aspirin at arrival, aspirin at discharge, beta-blocker prescription at arrival, beta-blocker prescription at discharge. For CHF patients, the treatments are: assessment of left ventricular function, provision of discharge instruction, and ACE-inhibitor or ARB prescription for patients with left ventricular systolic dysfunction (LVSD). For pneumonia patients, the treatments are: blood culture performed before receiving the first antibiotic in the hospital, first dose of antibiotics within four hours of admission, initial antibiotic selected appropriately, and assessment of arterial oxygenation within 24 hours of arrival.

<sup>8</sup> See, for example Amitabh Chandra and Jonathan S. Skinner, “Geography and Health Disparities,” In *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*, edited by Norman B. Anderson, Rodolfo Bulatao and Barney Cohen. Washington D.C.: National Research Council of the National Academies, 2004 and Amber E. Barnato, F. Lee Lucas, Douglas O. Staiger, John E. Wennberg and Amitabh Chandra, “Hospital-Level Racial Disparities in Acute Myocardial Infarction Treatment and Outcomes,” *Medical Care* Vol. 43, no. 4 (2005): 308-319.

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