



Health Care Spending, Quality, and Outcomes

A Dartmouth Atlas Project Topic Brief

More Isn't Always Better

February 27, 2009

Elliott Fisher, MD, MPH
David Goodman, MD, MS
Jonathan Skinner, PhD
Kristen Bronner, MA

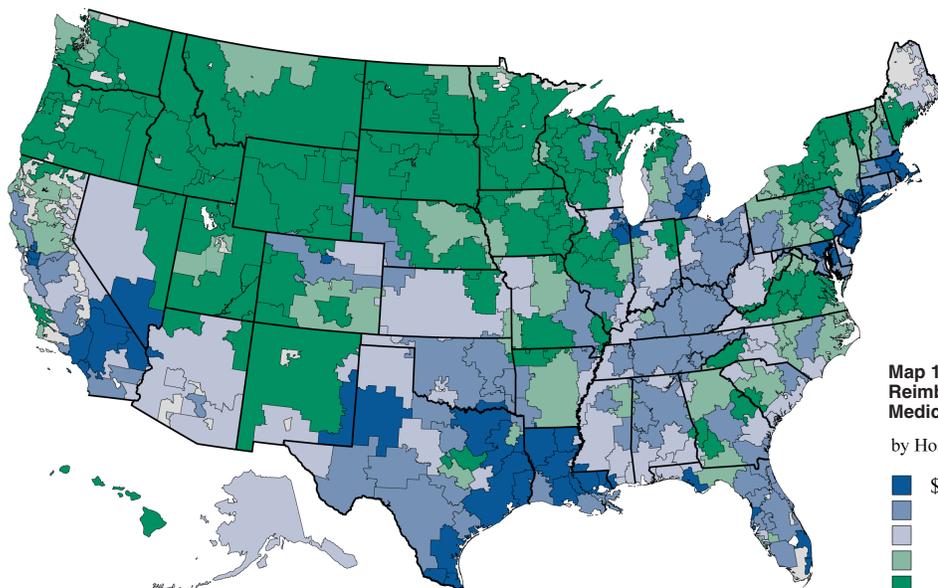
The U.S. health care system is broken. Overall life expectancy has improved, but the burden of chronic illness is increasing, and racial and socioeconomic disparities in mortality are widening.^{1,2} Almost 50 million Americans lack health insurance, and coverage for many others is inadequate.³ The safety and reliability of care in hospitals, surgical centers, nursing homes and physician offices is far from assured. And health care costs—already the highest in the world—are growing at a rate that poses a serious threat to patients, employers and the nation.

For two decades, the Dartmouth Atlas Project has examined regional variations in the practice of medicine and in spending for health care, principally in the Medicare population.⁴ This policy brief focuses on what we have learned about the relationship between regional differences in spending and the quality of care—and the implications for efforts to reform the U.S. health care system.

Medicare spending varies dramatically

Medicare spending in 2006 varied more than threefold across U.S. hospital referral regions (see Map 1). Research has shown that some of the variation is due to

differences in the prices paid for similar services, and some is due to differences in illness; but even after accounting for these factors, twofold differences remain. In other words, the differences in spending are almost entirely explained by differences in the *volume* of health care services received by similar patients.



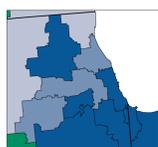
Map 1. Total Rates of Reimbursement for Noncapitated Medicare per Enrollee

by Hospital Referral Region (2006)

- \$9,000 to 16,352 (57)
- 8,000 to < 9,000 (79)
- 7,500 to < 8,000 (53)
- 7,000 to < 7,500 (42)
- 5,310 to < 7,000 (75)
- Not populated



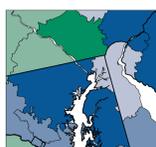
San Francisco



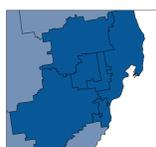
Chicago



New York



Washington-Baltimore



Detroit

Why is spending higher in some regions?

More “supply-sensitive care”

Studies that have looked carefully at the additional services provided in high-spending regions have shown that the higher volume of care does not produce better outcomes for patients.⁵ Medicare beneficiaries in high-spending regions do not receive more “effective care” (services shown by randomized trials to result in better health outcomes, such as making sure that heart attack patients get proper medication). Nor do they receive more “preference-sensitive care”—elective surgical procedures which have both benefits and risks—where patients’ preferences should determine the final choice of treatment. Rather, the additional services provided to Medicare beneficiaries in higher-spending regions all fall into the category of “supply-sensitive care”: discretionary care that is provided more frequently when a population has a greater per capita supply of medical resources. Higher-spending regions have more hospital beds (especially intensive care unit beds), more physicians overall, and more specialists per capita. Patients in high-spending regions are hospitalized more frequently, spend more time in the ICU, see physicians more frequently, and get more diagnostic tests than identical patients in lower-spending regions.

In other words, in regions where there are more hospital beds per capita, patients will be more likely to be admitted to the hospital—and Medicare will spend more on hospital care. In regions where there are more intensive care unit beds, more patients will be cared for in the ICU—and Medicare will spend more on ICU care. And the more CT scanners are available, the more CT scans patients will receive. Conversely, in regions where there are relatively fewer medical resources, patients get less care—and Medicare spends less. So geography becomes destiny for Medicare patients.

What are the consequences for patients?

Worse access, lower quality

Using more resources and spending more money would not be controversial if it produced better health care or better outcomes. So the critical question underlying the variations in practice and spending is: What is the relationship between quantity and quality? Over the past ten years, a number of studies have explored the relationship between higher spending and the quality and outcomes of care (see Table 1). The findings are remarkably consistent: higher spending does not result in better quality of care, whether one looks at the technical quality and reliability of hospital or ambulatory care,⁵⁻⁷ or survival following such serious conditions as a heart attack or hip fracture.⁸ This finding holds even when we consider changes over time; regions experiencing the greatest increase in health care spending for heart attack patients did not exhibit the most rapid improvements in health outcomes.⁹

Higher spending also did not result in improved patient perceptions of the accessibility or quality of medical care and their experiences in the hospital.^{5,10,11} Remarkably, in regions where the numbers of hospital beds and specialists are *greater*, physicians are *more* likely to have difficulty getting their patients into the hospital or getting a specialist referral.¹² Access is *worse* where there are more medical resources: a “paradox of plenty.”

Recent studies have also examined the causes of the differences in practice and spending. Patients' preferences for care vary only slightly across regions.^{10,13} Fear of malpractice suits is reported by many physicians to influence their practice, but differences in the malpractice environment explain only 10% of state variations in spending.¹⁴

As suggested above, differences in supply are clearly important. In a payment system where provider incomes depend upon the volume of services they provide, patients in regions with more physicians and hospital beds have more frequent visits to physicians and more hospitalizations.⁷ But some recent work also points to the key role of the discretionary decisions doctors make.¹⁵ These studies found that physicians' decisions in higher-spending regions were similar to those in low-spending regions in cases where there was strong evidence for a specific treatment. But physicians in high-spending regions were much more likely to intervene in cases where judgment was required (such as whether to admit a patient with heart failure to the hospital or whether to refer a patient with heartburn to a specialist).

In other words, the local "ecology" of health care—local capacity, local social norms and the current payment environment—profoundly influences clinical decisions. In most locales, hospitals and physicians are rewarded for expanding capacity (especially for highly profitable services) and for recruiting additional procedure-oriented specialists (such as interventional cardiologists and radiologists). And when there are more specialists or hospital beds available, primary care physicians and specialists will learn to rely on those specialists and use those beds, because it is more "efficient" from their perspective to do so. Although it is difficult to point to a single factor that "causes" higher expenditures in one region over another, there are few mechanisms currently in place to reduce these wide variations in spending; what is seen as excessive in one community (e.g., doctors owning their own CT or MRI scanners) is quite acceptable in another.

Perhaps the most counter-intuitive finding is that higher spending does not necessarily lead to better access to health care (see box), or better quality of care. Patient outcomes can actually suffer, because having more physicians involved increases the likelihood of mistakes (too many cooks spoil the soup), and because hospitals are dangerous places to be if you do not absolutely need to be there.¹⁶

Why is care worse in high-spending regions?

Poorly coordinated and fragmented care

Table 1. Relationship Between Regional Differences in Spending and the Content, Quality, and Outcomes of Care

	Higher-Spending Regions Compared to Lower-Spending Ones*
Health care resources	<ul style="list-style-type: none"> • Per capita supply of hospital beds 32% higher.⁵ • Per capita supply of physicians 31% higher overall: 65% more medical specialists.⁵
Technical quality	<ul style="list-style-type: none"> • Adherence to evidence-based care guidelines worse.^{5,6}
Health outcomes	<ul style="list-style-type: none"> • Mortality higher following acute myocardial infarction, hip fracture, and colorectal cancer diagnosis.⁸
Physician perceptions of quality	<ul style="list-style-type: none"> • More likely to report poor communication among physicians and inadequate continuity with patients.¹² • Greater difficulty obtaining inpatient admissions or high-quality specialist referrals.¹²
Patient-reported quality of care	<ul style="list-style-type: none"> • Worse access to care and greater waiting times.⁸ • No difference in patient-reported satisfaction with ambulatory care.^{8,10} • Worse inpatient experiences.²¹

* High- and low-spending regions were defined as the U.S. hospital referral regions in the highest and lowest quintiles of per capita Medicare spending as in Fisher (2003).

What can be done?
**Accountability,
better evidence, and
payment reform**

These findings have important implications for the reform of the U.S. health care delivery system. Three underlying causes are particularly important:

- *Lack of accountability* for the overall quality and costs of care—and for local capacity;
- *Inadequate information* on the risks and benefits of many common treatments and the related assumption (on the part of most patients and many physicians) that more medical care means better medical care;
- *A flawed payment system* that rewards more care, regardless of the value of that care.

Each suggests important principles that any successful effort to reform the U.S. health care delivery system will have to address.

Accountability for quality, cost and capacity. Controlling the growth of health care spending while improving the quality of care will not be possible without policies that slow the growth of capacity. Several approaches are possible (some more politically feasible than others). These include regulatory approaches that limit the further growth of the acute care hospital sector (such as Certificate of Need or hospital budget approval processes) and more market-oriented approaches that foster the development of organized delivery systems that are responsible for the overall costs and quality of care for their patients.¹⁷ Given the evidence on access and quality, further expansion of physician supply should not be seen as a likely means to improve access to care, and would certainly increase the overall costs of care.¹⁸

Better evidence, better performance measures. Addressing the assumption that more medical care means better medical care will require better evidence on the effectiveness of treatments, and ensuring that patients receive balanced information on the risks and benefits of different treatment alternatives. We must also improve the information on the quality and costs of care so that patients can understand that lower cost care often results in better outcomes.

Payment reform. A key cause of the current crisis of access and costs is the fee-for-service payment system (where providers are paid a fee for each service). A number of current reform proposals focus on payment reforms that would strengthen primary care (such as payments to support a “medical home” for patients organized by their primary care physicians¹⁹) and bundled payments (where a hospital and physician are paid a combined fee for all of the costs associated with a given major surgical procedure, including initial care after hospitalization²⁰). While each addresses an important problem in our current system, they are unlikely to slow the overall growth of health care spending. Neither reverses the current incentives to expand capacity, increase the overall volume of services, or focus investments on high-margin procedures. To slow the growth of health care spending, payment reform must foster global accountability for the quality and overall costs of care for patients.

Efforts to reform the U.S. health care delivery system face serious challenges that will require multiple stakeholders to work together. One of the important insights from research on geographic variations in health care spending is that the U.S. health care system does not face a problem of scarcity. Rather, the evidence indicates that we have more than enough resources to provide high quality care for all—and to maintain provider incomes. Understanding the problem of supply-sensitive care is a critical first step.

Thinking critically about access to care — not just the numbers.

One of the more surprising findings of the Dartmouth work is that, in regions with more physicians, both patients and physicians report greater difficulty getting needed care or needed referrals. In Massachusetts, a state with perhaps to the greatest per capita supply of both primary care and specialist physicians in the country, the Medical Society reports a “critical” shortage: 35% of family practice physicians and 48% of general internists are not accepting new patients; 70% of physicians report difficulty making specialty referrals.

The most likely explanation—in an era of relatively constrained physician fees for visits and increasing patient complexity—is that physicians are forced to manage their time much more efficiently. This efficiency may be achieved by referring more of their patients to specialists (including many that they could have managed themselves if they had more time); seeing patients they know well more frequently (they are the easiest to care for); and closing their practices to new patients (who are more complex and require more time than is covered in the fee).

The problem is not how many physicians we have; it is how we pay them and how care is organized. I have asked physician audiences what proportion of the patients they saw in their office that day needed to be seen; many will say that only a minority of their patients needed to be seen. They are seeing the others because they need to keep their offices full to pay the rent, and because they are not paid to provide care in any other way, such as through telephone calls or email.

Elliott Fisher, MD, MPH

Endnotes

1. Harper S, Lynch J, Burris S, Davey Smith G. Trends in the black-white life expectancy gap in the United States, 1983-2003. *JAMA* 2007;297:1224-32.
2. Jemal A, Ward E, Anderson RN, Murray T, Thun MJ. Widening of socioeconomic inequalities in U.S. death rates, 1993-2001. *PLoS ONE* 2008;3:e2181.
3. Schoen C, Collins SR, Kriss JL, Doty MM. How many are underinsured? Trends among U.S. adults, 2003 and 2007. *Health Aff (Millwood)* 2008;27:w298-309.
4. Orszag PR, Ellis P. The challenge of rising health care costs--a view from the Congressional Budget Office. *N Engl J Med* 2007;357:1793-5.
5. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder EL. The implications of regional variations in Medicare spending. Part 1: the content, quality, and accessibility of care. *Ann Intern Med* 2003;138:273-87.
6. Baicker K, Chandra A. Medicare Spending, The Physician Workforce, And Beneficiaries' Quality Of Care. *Health Aff (Millwood)* 2004.
7. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ. Variations in the longitudinal efficiency of academic medical centers. *Health Aff (Millwood)* 2004;Suppl Web Exclusive:VAR19-32.
8. Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder EL. The implications of regional variations in Medicare spending. Part 2: health outcomes and satisfaction with care. *Ann Intern Med* 2003;138:288-98.
9. Skinner JS, Staiger DO, Fisher ES. Is technological change in medicine always worth it? The case of acute myocardial infarction. *Health Aff (Millwood)* 2006;25:w34-47.
10. Fowler FJ, Jr., Gallagher PM, Anthony DL, Larsen K, Skinner JS. Relationship between regional per capita Medicare expenditures and patient perceptions of quality of care. *Jama* 2008;299:2406-12.
11. Wennberg JE, Bronner K, Skinner JS, Fisher ES, Goodman DC. Inpatient care intensity and patients' ratings of their hospital experiences. *Health Aff (Millwood)* 2009;28:103-12.
12. Sirovich BE, Gottlieb DJ, Welch HG, Fisher ES. Regional variations in health care intensity and physician perceptions of quality of care. *Ann Intern Med* 2006;144:641-9.
13. Barnato AE, Herndon MB, Anthony DL, et al. Are regional variations in end-of-life care intensity explained by patient preferences?: A Study of the US Medicare Population. *Med Care* 2007;45:386-93.
14. Baicker K, Fisher ES, Chandra A. Malpractice liability costs and the practice of medicine in the Medicare program. *Health Aff (Millwood)* 2007;26:841-52.
15. Sirovich B, Gallagher PM, Wennberg DE, Fisher ES. Discretionary decision making by primary care physicians and the cost of U.S. Health care. *Health Aff (Millwood)* 2008;27:813-23.
16. Fisher ES, Welch HG. Avoiding the unintended consequences of growth in medical care: How might more be worse? *JAMA*. February 3, 1999;Vol 281, No. 5.
17. Fisher ES, Staiger DO, Bynum JP, Gottlieb DJ. Creating accountable care organizations: the extended hospital medical staff. *Health Aff (Millwood)* 2007;26:w44-57.
18. Goodman DC, Fisher ES. Physician workforce crisis? Wrong diagnosis, wrong prescription. *N Engl J Med* 2008;358:1658-61.
19. Berenson RA, Hammons T, Gans DN, et al. A house is not a home: keeping patients at the center of practice redesign. *Health Aff (Millwood)* 2008;27:1219-30.
20. Hackbarth G, Reischauer R, Mutti A. Collective accountability for medical care--toward bundled Medicare payments. *N Engl J Med* 2008;359:3-5.
21. Wennberg JE, Bronner KK, Skinner JS, Fisher ES, Goodman DC. Inpatient care intensity and patients' ratings of their hospital experiences. *Health Affairs* 2009 Jan;28(1):103-112.

The Dartmouth Atlas Project is funded by a broad coalition of funders, led by the **Robert Wood Johnson Foundation**.

Other major sources of funding include the **National Institute of Aging**, **California Healthcare Foundation**, **Aetna Foundation**, **United Healthcare Foundation**, and the **WellPoint Foundation**.

The Dartmouth Atlas

The Dartmouth Institute for Health Policy and Clinical Practice
Center for Health Policy Research

Contact: Hae Jin Shin
Tel: (202) 261-2888
Fax: (202) 467-5187

www.dartmouthatlas.org