

Geography And The Debate Over Medicare Reform

A reform proposal that addresses some underlying causes of Medicare funding woes: geographic variation and lack of incentive for efficient medical practices.

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ABSTRACT: Medicare spending varies more than twofold among regions, and the variations persist even after differences in health are corrected for. Higher levels of Medicare spending are due largely to increased use of “supply-sensitive” services—physician visits, specialist consultations, and hospitalizations, particularly for those with chronic illnesses or in their last six months of life. Also, higher spending does not result in more effective care, elevated rates of elective surgery, or better health outcomes. To improve the quality and efficiency of care, we propose a new approach to Medicare reform based on the principles of shared decision making and the promotion of centers of medical excellence. We suggest that our proposal be tested in a major demonstration project.

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I N SOME REGIONS OF THE UNITED STATES Medicare pays more than twice as much per person for health care as it pays in other regions. For example, age-, sex-, and race-adjusted spending for traditional, fee-for-service (FFS) Medicare in the Miami hospital referral region in 1996 was \$8,414—nearly two and a half times the \$3,341 spent that year in the Minneapolis region.¹

Even after differences in price levels across regions are adjusted for, there are no obvious patterns that suggest why some areas spend more than others. Spending in urban areas in the Northeast tends to be higher than average, but spending in rural regions in the South and urban areas in Southern California is as high or even

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higher. And the dollar transfers involved are enormous. The difference in lifetime Medicare spending between a typical sixty-five-year-old in Miami and one in Minneapolis is more than \$50,000, equivalent to a new Lexus GS 400 with all the trimmings.²

Regional differences in spending have a more immediate consequence for the elderly who are enrolled in Medicare health maintenance organizations (HMOs), since capitated Medicare payments to HMOs under the Medicare+Choice (M+C) program are tied directly to local FFS per capita costs.³ Thus, HMOs in high-cost areas get paid more per subscriber and can therefore provide their clients with drug benefits and prescription eyeglasses, services that HMOs in low-cost regions cannot provide.⁴ Efforts by the federal government to raise HMO capitation rates in low-cost areas have generated problems of their own. A recent report to Congress by the Medicare Payment Advisory Commission (MedPAC) ultimately targeted variation in FFS Medicare payments as the culprit:

If a large portion of the [geographical] difference is due to differences in practice patterns that have no apparent effects on quality of care, then Congress may want to examine whether Medicare payment policy should accommodate that variation...The answer will not lie in changing M+C policy alone. Policies to limit variation in practice patterns will have to be implemented in the FFS sector as well.⁵

In light of the policy recommendations above, we consider four distinct questions. First, can the variations in Medicare spending be explained by differences in illness? In other words, is spending higher in some regions simply because people there are sicker? Second, how do the patterns of practice vary, and what types of health care services do the elderly receive in high-spending regions that they do not get in low-spending regions? Do residents of high-spending regions receive more elective surgery or more effective care? Third, how efficient is this additional spending? Do people in high-spending regions prefer the additional care or experience better health as a result? Finally, how can the Medicare system (and the health care system more generally) be reformed to improve both the quality of care and the efficiency of the health care system?

Do Differences in Illness Levels Explain Higher Medicare Spending?

Health services use is, of course, strongly related to health status. Data from the Medicare Current Beneficiary Survey (MCBS) show that those who reported excellent health spent an average of 1.5 days per year in the hospital, while those in poor health spent an average of 4.2 days in the hospital.⁶ There also are differences in health status across regions. We created an "illness index" that uses regional rates of heart attack, stroke, hip fracture, cancer, gastrointestinal hemor-

“Greater Medicare spending does not purchase the infrastructure needed to ensure compliance with evidence-based medicine.”

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rhage, and death of Medicare beneficiaries to quantify the underlying disease burden in a region. These measures were chosen because the hospitalization records for the illnesses are accurate reflections of their true incidence in the population; nearly every elderly person with a hip fracture ends up in the hospital. (Not surprisingly, the Social Security Administration is assiduous about measuring mortality accurately.) Using regression analysis, we found that the health of enrollees in Grand Junction, Colorado, one of the healthiest regions in the United States, implies that their per capita Medicare spending should be about 20 percent below the national average. By contrast, the regression suggests that those living in Birmingham, Alabama, one of the least healthy regions, should receive about 24 percent above the national average.⁷ These estimated differences in underlying health are substantial and could be used, for example, in “risk-adjusted” regional capitation payments for Medicare enrollees. Still, they explain just 27 percent of the (weighted) variation in Medicare spending across regions. Consequently, illness-adjusted Medicare spending differs greatly across regions.⁸ Other studies with homogeneous patient populations (such as those with hip fracture or heart attack) confirm that substantial differences in Medicare use and spending across U.S. regions are largely independent of beneficiaries’ need for services.⁹

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How Do Practice Patterns Differ In High-Spending Regions?

We considered these questions by examining variations in three categories of services: effective care, preference-sensitive care, and supply-sensitive care. The categories of care are distinguished by the relative roles of medical theory and opinion, medical evidence, the per capita supply of medical resources, and the importance and appropriateness of patients’ preferences in choosing a treatment option (Exhibit 1).

■ **Effective care.** Effective care comprises services whose use is supported by well-articulated medical theory and strong evidence for efficacy, as determined by clinical trials or valid cohort studies. The category is further restricted to interventions that virtually all patients should want as part of the contract they make with their health care systems. Effective-care indicators, based on Health Plan Employer Data and Information Set (HEDIS) measures and ex-

EXHIBIT 1
Categories Of Medical Services

	Factors that influence utilization			
	Medical theory	Medical evidence	Per capita supply of resources	Importance of patients' preferences
Effective care	Strong	Strong	Weak	Weak
Preference-sensitive care	Strong	Variable	Variable	Strong
Supply-sensitive care	Weak	Weak	Strong	Variable

SOURCE: Authors' analysis.

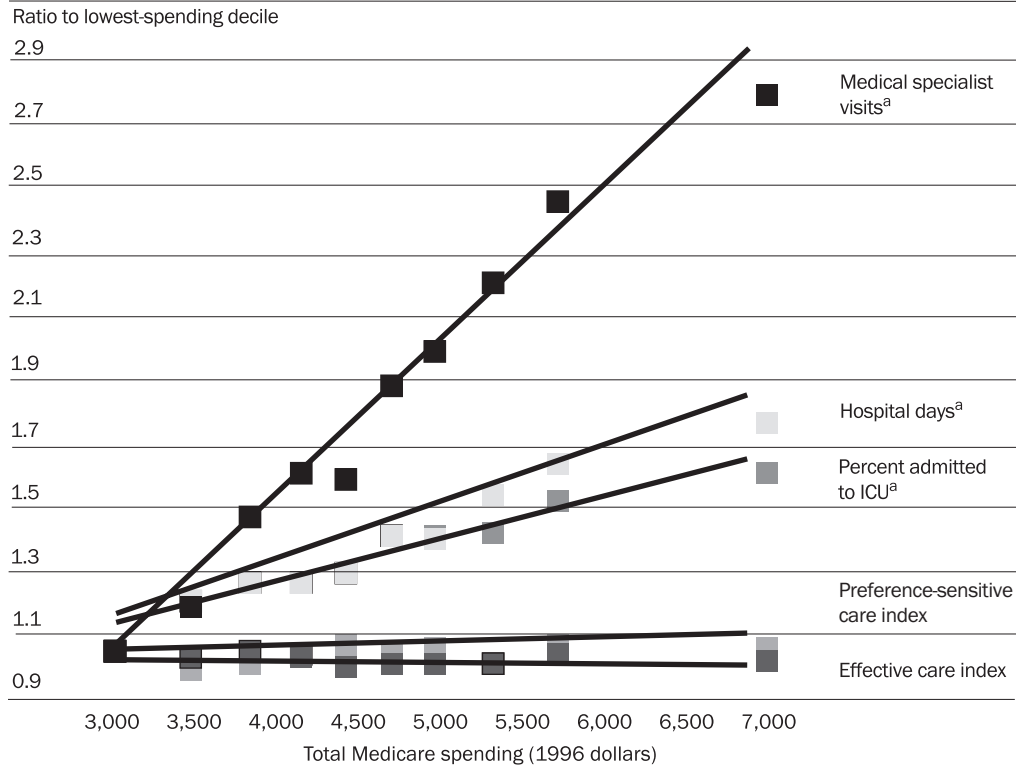
NOTES: *Effective care* refers to services of proven effectiveness that involve no significant trade-offs—all patients with specific medical needs should receive them. Conflict between patients and providers over the value of care is minimal. *Preference-sensitive care* involves trade-offs; decisions should therefore be based on patients' preferences and values. Although opinions are strongly held by clinical advocates, supporting scientific evidence may be weak or strong. The effect of supply on rates of discretionary care is variable. Patients' and providers' values are often in conflict. *Supply-sensitive care* is generally provided in the absence of specific clinical theories of benefit governing the relative frequency of use. Medical texts provide little or no guidance on when to schedule a revisit, perform a diagnostic test, hospitalize, or admit to intensive care. However, utilization rates are strongly influenced by the supply of resources. In some cases, patients' preferences and values should play a central role, particularly for end-of-life care.

panded for the *Dartmouth Atlas of Health Care*, include vaccination for pneumococcal pneumonia; mammography screening for breast cancer and screening for colon cancer; eye examinations for diabetics; HgA1c and blood lipid monitoring for diabetes; and, for heart attack victims, the prescription of aspirin therapy, beta-blockers, angiotensin converting enzyme (ACE) inhibitors and early reperfusion with thrombolytic agents, or percutaneous transluminal coronary angioplasty (PTCA). For each of these services, use rates vary extensively among hospital referral regions. For example, among patients with heart attacks who were considered “ideal candidates” for beta-blockers, those who actually got the needed drug ranged from 5 percent to 92 percent of patients among the 306 *Dartmouth Atlas* Hospital Referral Regions (HRRs). Unfortunately, most regions exhibited substantial underuse: Compliance with evidence-based practice guidelines exceeds 80 percent of patients in only eight regions; in ten regions, compliance was less than 20 percent. The percentage of female Medicare beneficiaries (ages 65–69) who received a mammogram at least once over a two-year period (as recommended by the U.S. Preventive Services Task Force) ranged from 21 percent to 77 percent, with all regions falling below the “best-practice” benchmark provided by Kaiser Permanente South. The most important explanation for such variation in effective care appears to be the lack of infrastructure to ensure compliance with well-accepted (evidence-based) standards of practice.

The important question for our purpose is, Does higher Medicare spending buy better quality? Exhibit 2 suggests that it does not. On average, there is as much underuse in high-cost as in low-cost regions, which suggests that greater spending does not purchase the

EXHIBIT 2

Use Of Effective Care, Preference-Sensitive Care, And Supply-Sensitive Care Among Hospital Referral Regions, Grouped By Per Enrollee Spending Level



SOURCE: Dartmouth Atlas of Health Care, 1998 and 1999.

NOTES: Hospital referral regions were ranked according to per enrollee spending adjusted for age, sex, and race and put into ten groups. The exhibit gives the average per enrollee spending in each group. Use rates for each category of utilization were calculated and expressed as a ratio to rates in thirty-one hospital service areas with lowest spending. Medical specialist visits, hospital days, and percent admitted to ICU are all measures of supply-sensitive care. The index for effective care use is the sum for rates for the eleven indicators cited in the text; the index for preference-sensitive care is the sum for rates for the ten surgical procedures profiled in the 1999 Dartmouth Atlas of Health Care. ICU is intensive care unit.

^a Care provided per decedent in the last six months of life.

infrastructure needed to ensure compliance with the standards of practice dictated by evidence-based medicine.

■ **Preference-sensitive care.** Preference-sensitive care is clinical services where for many patients at least two valid alternative treatment strategies are available. Since the risks and benefits of the options differ, the choice of treatment involves trade-offs. In theory, these treatment choices should depend on informed patients' making decisions based on the best clinical evidence. In practice, however, treatment choices appear to be determined largely by local medical opinion concerning the value of surgery or its alternatives. For example, cardiac bypass surgery rates exhibit about a fourfold range of variation, from three per thousand (adjusted for age, sex, and race) in Albuquerque, New Mexico, to more than eleven per

thousand in Redding, California. The rates are strongly correlated with the numbers of per capita cardiac catheterization labs in the regions but not with illness rates as measured by the incidence of heart attacks in the region. Surgery for back pain varies even more, but the rates are not strongly correlated with supply of beds or surgeons.

While there is a large body of research on bypass surgery, there is much less for other surgical procedures. For example, the surgical decision regarding treatment of low back pain must be made in the absence of evidence from clinical trials. It seems likely that individual physicians' opinions, rather than patients' preferences, explain the more than sixfold variation in surgery rates among the 306 hospital referral regions. Indeed, regions do not show consistently high or low rates across surgical procedures, and for most procedures the patterns are not explained by the supply of surgeons. Rather, the patterns are idiosyncratic, with high rates for some discretionary procedures and low rates for others—a phenomenon we refer to as the “surgical signature.” The use of discretionary surgery is, on average, not higher in regions with greater spending (Exhibit 2).

■ **Supply-sensitive services.** In contrast to effective care and preference-sensitive care, the medical theory governing decisions about the use of hospitals as a site of care or the frequency of physician visits and diagnostic tests is much less well developed. Medical texts and journals, for example, are silent on the incremental value of three-month versus six-month intervals between physician visits for patients with such conditions as diabetes or hypertension. These sources are similarly uninformative with regard to the indications for hospitalization, use of intensive care, and use of imaging and other diagnostic tests for patients with a host of chronic illnesses. Regions differ greatly in these measures of intensity.

These variations are particularly pronounced during the last six months of life, a period of time when many Medicare enrollees are quite sick and which accounts for more than 20 percent of total Medicare expenditures.¹⁰ During 1995–96 the average numbers of visits to medical specialists ranged from two per decedent in Mason City, Iowa, to more than twenty-five in Miami, Florida.¹¹ The average number of days per decedent spent in hospital ranged from 4.6 in Ogden, Utah, to 21.4 in Newark, New Jersey.

A similar pattern holds for admissions to intensive care units (ICUs) in the last six months of life, with nearly half of all decedents experiencing an ICU admission in Miami, Florida, compared with only 14 percent in Sun City, Arizona. These variations cannot reasonably be attributed to differences in illness: During the last six months of life most people are ill, regardless of where they live.

Moreover, similarly situated communities often have strikingly different rates. For example, while in Sun City, Arizona, only 14 percent of decedents experience an ICU admission in the last six months of life, 49 percent and 45 percent of decedents in Sun City, California, and Sun City, Florida, respectively, do so. The local supply of medical specialists and acute care hospital capacity explains 41 percent of the variation in end-of-life care intensity across HRRs.¹² We therefore adopt the term “supply-sensitive” to capture these indicators of health care intensity for chronically ill patients.¹³

The incremental Medicare dollar spent in regions with higher-than-average spending tends to be for medical specialist visits, diagnostic tests, and use of intensive care and hospitalizations for medical conditions.¹⁴ Exhibit 2 shows the close correlation between per capita Medicare spending for the entire Medicare population and the average number of specialist visits for those in their last six months of life. Thus we view the incremental Medicare dollar as flowing not simply toward more specialist visits in the general elderly population but, more specifically, toward specialist visits concentrated among the population with chronic and ultimately life-threatening diseases. Many of these patients do not survive and are thus well represented in our sample of people in their last six months of life.¹⁵

The strong associations between higher spending and greater use of supply-sensitive care, and the lack of association between more spending and more preference-sensitive or effective care, can be seen in the medical care of residents of four regions that represent either very high or very low levels of overall spending: Miami, Florida; Orange County, California; Portland, Oregon; and Minneapolis, Minnesota (Exhibit 3). Age-, sex-, and race-adjusted spending in Miami, for example, is 2.45 times greater than in Minneapolis. During the last six months of life the “extra” spending purchases 6.55 times more visits to medical specialists, 2.13 times more hospital days, and 2.16 times more admissions to an ICU. By contrast, rates for effective care and preference-sensitive care are slightly lower in Miami than in Minneapolis.

Is More Better?

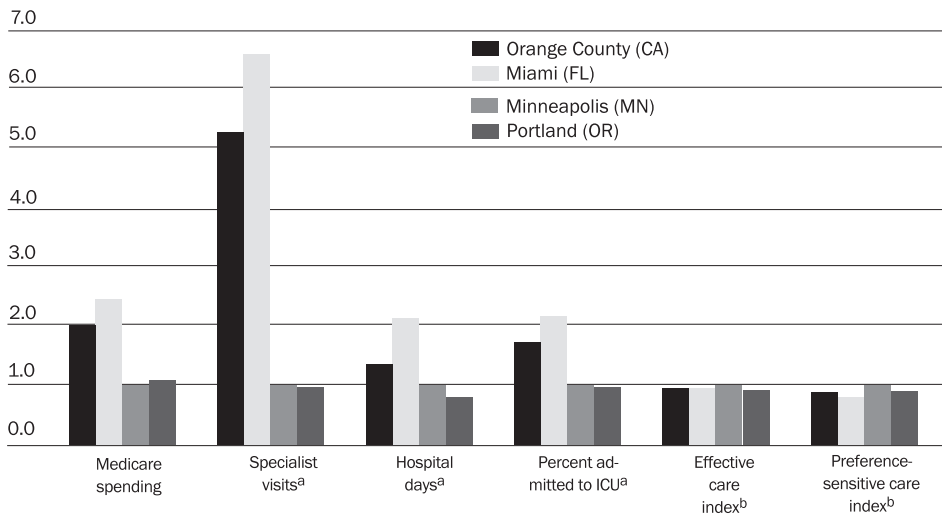
We considered this question for each of the three categories of service. It seems clear that for our eleven indicators of effective care, more is better. One study suggested that regions with better quality are associated with better survival rates in the Medicare population.¹⁶ On these measures of quality, all regions in the United States are practicing subpar medicine—use rates are too low.

In the case of preference-sensitive care, the significance of the

EXHIBIT 3

Comparison Of Medicare Spending, Supply-Sensitive Care, Preference-Sensitive Care, And Effective Care For Orange County, Miami, Minneapolis, And Portland Hospital Referral Regions, 1995–1996

Ratio to Minneapolis region



SOURCE: Dartmouth Atlas of Health Care, 1995–96 database.

NOTE: Rates are given as ratio to Minneapolis hospital referral region (valued as 1.0).

^a Care provided per decedent in the last six months of life.

^b See Exhibit 2 for definitions.

variation in use rates cannot be strictly interpreted from the point of view of the patients' welfare, since it is not clear whether patients actually had much of a say in determining which treatment they received. Clinical studies of shared decision-making programs designed to inform patients about the treatment options available for low-back pain, prostatic hyperplasia, and stable angina do, however, suggest that the amount of surgery now provided in many regions exceeds what an informed Medicare population would demand.¹⁷

Does greater overall health care intensity from the provision of "supply-sensitive" medical care result in better health outcomes? To address this question, we have evaluated the natural experiments afforded by the variations in care intensity among regions. Studies at the population level indicate no net advantage in terms of life expectancy for Medicare enrollees living in regions with more hospital resources (and hospitalizations) and greater care intensity as measured by more aggressive treatment patterns during the last six months of life.¹⁸ Longitudinal (cohort) studies of patients with similar diseases (such as hip fracture) who have been followed for a number of years also show that patients living in high-care-intensity regions gain no survival advantage over those in low-intensity regions.¹⁹

The major limitation of these studies is the possibility that beneficiaries in high-spending regions could achieve gains in their quality of life. Several lines of research provide at least suggestive evidence that quality of life in high-intensity regions may not be better than in low-intensity regions. First, case-mix-adjusted longitudinal studies of Medicare beneficiaries found that those residing in high-intensity regions achieved no gain in relief from angina or improvement in function.²⁰ Second, two randomized trials testing the impact of greater medical care intensity for patients with chronic disease found no benefit in terms of functional status and quality of life.²¹ Third, evidence from the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment (SUPPORT) study suggests a poor match between patients' preferences and how patients with severe chronic illness are actually treated. Patients who stated that they would prefer an out-of-hospital death were no less likely to die in a hospital than were patients who expressed a preference for an in-hospital death. What did matter was local hospital capacity: The overall supply of hospital resources in the region effectively predicted whether the patient died in a hospital.²² Because most elderly people express a preference for a less intensive approach to care as death approaches, greater intensity could lead to poorer quality of care among this group.

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Budgetary Effects Of Reducing Regional Disparities

How much money is at stake? We have used benchmarks for Medicare spending from low-cost regions to estimate how much money would be "saved" if regions with higher spending were brought down to the level of the benchmark. Our estimates are based on 1996 spending. In that year, spending under traditional Medicare was about \$138.3 billion, and per capita spending reached \$4,990. If, on an age-, sex-, and race-adjusted basis, spending levels in the lowest decile were realized in all higher regions, total spending would have been just \$98.2 billion, or a savings of \$40 billion (28.9 percent).²³ In theory, these savings could be used to fund a prescription drug benefit without any increase in taxes or in elderly persons' premiums. Any balanced-budget reform would entail winners and losers, but we argue that every region ultimately would gain if such reallocation were to occur, because the elderly would receive prescription drug benefits of great value to them and would lose medical services of little, or possibly negative, value.²⁴

In theory, the government could effect the entire \$40 billion in savings simply by imposing regional budgetary caps benchmarked (on the basis of age, sex, and illness) to the low-cost areas. Under

this approach, local regions would receive a fixed budget for Medicare services. If the quantity of services provided is above the benchmarked levels, the only way to meet the budgetary cap is to slash how much Medicare pays per procedure or physician visit. Such a reform would generate adverse political repercussions, as well as perverse incentive effects. Some physicians would work harder to maintain their prior level of income, while others might stop seeing Medicare patients because of the lower reimbursement rates. Physicians practicing conservative medicine in high-intensity areas would be punished the most. Most important, these incentives would do nothing to address the fundamental questions about the value of Medicare services raised by the variation phenomena.

Improving The Quality And Efficiency Of Medicare

We suggest that the first task for Medicare reform is to improve the quality of care. We have identified three categories of unwarranted variation affecting the quality and efficiency of care supported by the Medicare program. To address these shortcomings, we propose the following goals for Medicare reform: (1) eliminate underprovision of effective care; (2) establish patient safety; (3) reduce scientific uncertainty through outcomes research; (4) establish shared decision making for preference-based treatments, chronic disease management, and end-of-life care; (5) establish accountability for capacity; and (6) promote conservative practice when greater care is wasteful if not harmful. The strategies described below have been demonstrated in selected specific settings to achieve these goals.

■ **Strategies to ensure that effective care is provided and medical errors are minimized.** The organizational structure of medical care is critical in ensuring that effective care is not underused. Integrated health systems such as staff- and group-model HMOs can deliver effective care to almost all of their enrollees, although they are losing market share to less tightly structured health plans. (By contrast, HMOs that contract with individual physician groups [the “network” model] have been less successful in implementing these quality standards.) A few exemplary organizations, working voluntarily, have developed the administrative and research infrastructure to implement “best practices” and have consequently reduced mortality and morbidity resulting from medical errors. Notable projects include the Northern New England Cardiovascular Study Group and Intermountain Health Systems.²⁵ Yet these examples are not common, and there is no mechanism in the Medicare program designed to reward providers that adopt these best-practice strategies.

■ **Strategies to improve the quality of patient-physician deci-**

“Shared decision making has not been widely implemented, perhaps because of fears about loss of autonomy and income.”

sions regarding treatment for which patients’ preferences should play a role.

Research on health outcomes is important to remedy significant gaps in scientific knowledge. Throughout the 1990s the Agency for Healthcare Research and Quality (AHRQ) undertook programs that encouraged leading health care organizations to develop research programs, and, more recently, the National Institutes of Health (NIH) has supported networks of clinical trials to evaluate the outcomes of treatment options involving preference-sensitive surgery.²⁶ The Maine Medical Assessment Foundation has demonstrated that providers will respond to practice variations by participating in outcomes research.²⁷ Many surgical procedures involve important trade-offs that should depend on patients’ preferences.²⁸ Shared decision making, in which decision support systems are used to provide patients with balanced information about treatment options for their specific disease, is designed to provide a better match between patients’ preferences and the treatment they receive. It also has led to changes in the demand for intensive treatments. In most studies of shared decision making, overall surgery rates have declined. Shared decision making has not been widely implemented, perhaps because of providers’ fears about loss of autonomy and income.

■ **Strategies to promote accountability for capacity and conservative practice where more care is wasteful, if not harmful.**

Attempts to limit hospital capacity through public-sector health planning have met with only limited success. The classic HMO (in contrast to the network HMO model) is generally the only entity that practices private-sector health planning based on population benchmarks in reaching decisions on how many hospital beds to build (or contract for) and how many physicians and other health care workers to hire. Promoting more conservative practice styles, particularly for end-of-life care, is the goal of an increasing number of physicians, notably primary care physicians, hospitalists, geriatricians, and palliative care physicians. However, to affect overall Medicare efficiency, efforts to promote conservative practice styles also must lead to a reduction in excess capacity.

While these approaches have led to improvements in quality of care, they are often piecemeal reforms. Also, the Medicare program is not structured to ensure that these efforts receive the support they deserve; indeed, conservative strategies toward health care are

typically rewarded with lower Medicare reimbursements. We next propose an approach that encourages and rewards health care organizations that improve the quality and efficiency of health care.

Establishing Comprehensive Centers For Medical Excellence

We propose a new structure for Medicare reforms that focuses simultaneously on increasing the use of effective care and reducing medical errors, improving the quality of medical decision making, and reducing supply-sensitive care. We believe that this structure can help to meet Medicare's goals for medical excellence as set forth above. In traditional FFS Medicare, bills are paid whether or not the service was appropriate and whether the hospital or provider is of high or low quality. Only in the case of outright fraud might Medicare shrink from paying. The idea behind our proposed Comprehensive Centers for Medical Excellence (CCMEs) is to allow Medicare to reward both quality and efficiency.

To qualify, hospitals, provider networks, or organizations representing regional coalitions would agree to establish "best-practice" models such as those discussed above to address the underlying causes of variation. CCMEs would in turn partner with the Medicare program, AHRQ, and the NIH to develop a systematic, long-term approach to building the organizational and scientific infrastructure required to bring about fundamental improvements in the performance of the U.S. health care industry. The feasibility of the CCME program thus depends on the willingness of the leading U.S. health care organizations and the federal government to establish a partnership. As the essential first step, we suggest that the federal government undertake a major demonstration project to test the hypothesis that the partnership can fruitfully address each category of unwarranted variations.

■ **Promote effective care and patient safety.** As noted above, staff- and group-model HMOs (the so-called classic HMOs) provide the best model for implementing organizational structures that ensure effective care. Like classic HMOs, CCMEs would be expected to develop procedures and processes of care that, when used with "real-time" Medicare claims or internal data, could develop strategies for assuring the provision of safe and effective care.

The remedy for unexplained variations in surgical mortality rates and other problems of patient safety depends on the active participation of health care providers in programs to improve their practices. Under the CCME project, participating organizations would be expected to develop collaborative strategies to discover the cause of medical errors and create solutions that improve patient safety,

following the best-practice models discussed above. The federal government, through Medicare and AHRQ, would provide financial support and scientific peer review to build and sustain the necessary infrastructure regarding quality standards. The CCME structure also could be used to facilitate additional proposals developed in the recent Institute of Medicine (IOM) study on improving health care quality.²⁹

■ **Reduce unwarranted variation in preference-sensitive care.** First, CCME organizations would be asked to provide shared decision-making tools (such as videos) to patients with diseases such as breast cancer, prostate cancer, angina, and lower back pain. Second, they would be encouraged to participate in clinical research designed to improve the quality of medical knowledge about the outcomes of specific treatments for a wide spectrum of patient characteristics. This research could include outcomes research programs, including clinical trials, sponsored by AHRQ and the NIH.

■ **Reduce overuse of supply-sensitive care.** CCMEs would be asked to develop clinical programs to reduce unwarranted variations in end-of-life care and other examples of overuse of supply-sensitive service, fostering the approach championed by geriatricians and palliative care physicians. Attention also should be paid to the developing role of hospitalists in the reduction of overuse of hospitalizations and ICU stays.³⁰

Like classic HMOs, CCMEs would strive to become accountable for their capacity by adopting population-based approaches to resource allocation in the planning of facilities and the hiring of the workforce. They would seek to base their resource decisions about the size of each sector of care on benchmarks provided by efficient health care organizations. Medicare would provide real-time claims data to compare local capacity with national benchmarks.

Our strategy for achieving accountability for capacity and fostering conservative practice styles is based on research showing that the practice styles of individual health care organizations can be profiled with regard to their use of supply-sensitive care. Under FFS Medicare a given organization typically serves a “defined population,” a loyal group of patients who receive most of their care from that institution. Loyalty is particularly strong for patients with chronic illness. Thus, adjusted for age, sex, race, illness, and price, relative performance can be measured and (relatively) efficient health care organizations identified. Even within traditionally high-cost regions, overall costs vary widely among hospitals.³¹

A critical role of a demonstration project will be to refine approaches to reducing unwarranted levels of supply-sensitive services without leading to the public perception that this means a

reduction in the quality of care. We hope that increased awareness of how capacity and greater intensity affects the quality of life for those with chronic and life-threatening disease (for example, increased use of mechanical ventilators, painful diagnostic testing, and the risk of dying in an ICU) will help to create popular consensus for limiting the intensity of supply-sensitive care in high-cost regions for reasons of quality, not just cost containment.

■ **Refine monitoring systems.** Another important objective of the demonstration project would be to refine the monitoring systems used to evaluate performance in meeting the goals for medical excellence. While routine claims data serve well as the basis for patient registries required to evaluate performance, the advantages and limitations of these databases need to be better understood. Moreover, claims data need to be augmented by critical information extracted from patient records and obtained directly from patients. AHRQ and the participating health care organizations should work together to assure that validated performance measures are available to objectively measure progress in reducing unwarranted variations. These measures are essential for the selective-contracting process.

■ **Reward more efficient resource use.** An important objective of the demonstration project would be to develop appropriate approaches (including financial incentives) that reward more efficient resource levels without unreasonable disruptions of infrastructure and professional careers. The present Medicare FFS reimbursement system does not reward physicians and health care organizations that devote professional time to improving patient safety or reducing underuse of effective care. Physicians (and their institutions) who encourage shared decision making face negative economic consequences when their patients prefer less care. Institutions that reduce supply-sensitive care are unable to retain the savings to invest in productive uses, even when their overall per capita spending rate is low. Federal participation and willingness to support experiments in the fee schedule to remedy these disincentives are critical to the success of the project.

■ **Promote implementation.** If successful, the demonstration project would provide real-world performance standards or best-practice models for achieving medical excellence.³² The next step would be to promote their wide implementation, which may require cooperative as well as competitive strategies. In regions where population density can support more than one integrated health care system, a market strategy could be used to encourage FFS patients to seek care from the higher-quality provider. Medicare could establish a “preferred provider” through selective contracting. By choosing this option, Medicare enrollees would benefit through

a reduction in premiums and copayments for services provided at the CCME. Under a premium support program like that in the Breaux-Thomas proposal, Medicare could subsidize the price of insurance policies (or FFS care) centered at CCMEs.³³

In many nonurban areas the population is not large enough to support more than one integrated health care system.³⁴ In such regions, cooperative rather than competitive strategies are required to build the infrastructure to assure that all segments of the population have access to high-quality care. Cooperative strategies also may prove effective in urban regions; one example is the Pittsburgh Regional Health Care Initiative, a coalition of regional hospitals, clinicians, health plans, and major corporate purchasers.

We are fully aware that major political barriers will exist in the implementation phase. We believe, however, that lessons learned from the demonstration projects can reduce those barriers, and we therefore urge that the organizations selected for participation be located in both rural and urban settings. We also encourage the use of strategies that encompass both cooperative and competitive approaches. Perhaps the most difficult barrier to overcome is the lack of trust and the cynicism that pervades relations between doctors, patients, health plans, and government. A demonstration project that brings the prestige of the NIH and AHRQ and leading U.S. health care organizations into a partnership for quality may help to overcome these barriers.

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Implementation Steps

There are serious defects in the quality of care now provided in FFS Medicare. The gains from improving the quality of care are too large to be ignored.³⁵ They include preventing and reducing morbidity and saving lives and money. The gains from reducing disparities in Medicare spending are also too large to be ignored. The goals are not unreasonable; after all, large metropolitan areas such as Minneapolis and Portland are getting along just fine with relatively modest Medicare expenditures.

We propose addressing the quality issues and the savings issues simultaneously through a new approach that relies on CCMEs, provider groups, hospitals, and regional consortia that provide high quality and efficient care. We suggest a two-step implementation process.

The initial step, which has been the primary focus of this paper, is a demonstration project to test the hypothesis that leading health care organizations will partner with the federal government to reduce unwarranted variations and meet six goals for medical excellence. The demonstration is designed to help us understand what

works and what does not work. At the local level, “test-case” innovations in the traditional Medicare benefit package to improve quality, adopt shared decision making, and create incentives to redirect health providers toward more caring and less intensity would yield best-practice models on which to base a national program. The project would include health care organizations serving urban and rural regions and would be designed to gain information on the feasibility of cooperative as well as competitive strategies for achieving high quality and efficiency.

The second step would be to assure that all Medicare enrollees have access to high-quality care and to reduce the variation in Medicare spending among regions, to move the country toward the benchmarks provided by low-cost regions such as Portland and Minneapolis. While incrementalism is more likely in the near future, at some point in the not-so-distant future major Medicare reform will be inevitable. We believe that this inevitability should add urgency to our suggestion of a major demonstration project. The more we know about what works and what does not, the brighter will be the future of health care in the United States.

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NOTES

1. J.E. Wennberg and M.M. Cooper, eds., *The Quality of Medical Care in the United States: A Report on the Medicare Program, The Dartmouth Atlas of Health Care 1999* (Chicago: American Health Association Press, 1999).
2. This lifetime calculation assumes that the relative differences in Medicare spending persist, life expectancy conditional on reaching age sixty-five is fifteen years, the discount rate is 3 percent, and the annual rate of growth in real per capita Medicare spending is 2 percent. See D. Feenberg and J. Skinner, “Medicare Transfers across States: Winners and Losers,” *National Tax Journal* (September 2000): 713–732.
3. The HMO payment schedule (the adjusted average per capita cost, or AAPCC) is based on a blend of national risk-adjusted rates (10 percent) and local FFS expenditures (90 percent).
4. See T.D. McBride, “Disparities in Access to Medicare Managed Care Plans and Their Benefits,” *Health Affairs* (Nov/Dec 1998): 170–180; and E. Martin, “Tough Times as Medicare HMOs Fold,” *ACP-ASIM News* (February 1999), <www.acponline.org/journals/news/feb99/tough.htm>.
5. Medicare Payment Advisory Commission, *Report to Congress: Medicare Payment Policy* (Washington: MedPAC, March 2001), 115.
6. J.E. Wennberg and M.M. Cooper, eds., *The Dartmouth Atlas of Health Care 1998* (Chicago: American Health Association Press, 1998).
7. These estimates are based on a least-squares regression where age-sex-race-price-adjusted Medicare spending is the dependent variable and the inde-

pendent variables are age-sex-race-adjusted incidence of the “low variation” illnesses (and mortality) discussed in the text. See also J. Skinner and E. Fisher, “Regional Disparities in Medicare Expenditures: Opportunity for Reform,” *National Tax Journal* (September 1997): 413–425. A full set of illness adjustment measures by region is available at <www.dartmouthatlas.org>.

8. A recent study explained up to 70 percent of the variation in regional Medicare spending by including a variety of additional health and demographic variables. D. Cutler and L. Sheiner, “The Geography of Medicare,” *American Economic Review* (May 1999): 228–233. The additional health variables alone did not improve the predictive power of the regression by a significant degree. And while the demographic variables such as the percentage of deaths occurring at older ages and the percentage of the population that is Hispanic were suggestive, they also could be reflecting other variables at the population level. M. Susser, “The Logic in Ecological: I. The Logic of Analysis,” *American Journal of Public Health* (May 1994): 825–829. For example, the authors find that HRR-level Medicare expenditures are positively associated with the Hispanic share of the population. However, at the micro level, per capita Medicare expenditures for Hispanics are slightly lower than those for non-Hispanics. Centers for Medicare and Medicaid Services, *Health and Health Care of the Elderly Population: Data from the 1996 Medicare Current Beneficiary Survey* (2000), Table 4.8. We suspect that expenditures for both non-Hispanic and Hispanic enrollees are higher in Florida and Texas, states with a larger number of Hispanic residents. Similarly, a larger fraction of elderly persons dying at older ages predicts lower Medicare expenditures, even among those who do not die in that year. This finding is consistent with the development of a more conservative strategy for all their patients by physicians in regions with a larger fraction of deaths among the oldest Medicare enrollees (age eighty-five and older). For more detail on this finding, contact John Wennberg, <john.wennberg@dartmouth.edu>.
9. See C.A. Gatsonis et al., “Variations in the Utilization of Coronary Angiography for Elderly Patients with an Acute Myocardial Infarction: An Analysis Using Hierarchical Logistic Regression,” *Medical Care* 33, no. 6 (1995): 625–642; E.S. Fisher et al., “Hospital Readmission Rates for Cohorts of Medicare Beneficiaries in Boston and New Haven,” *New England Journal of Medicine* 331, no. 15 (1994): 989–995; and D. Chau, E.S. Fisher, and J. Skinner, “The Importance of Regional Practice Style in a Cohort of Elderly Hip Fracture Patients” (Unpublished manuscript, Dartmouth Medical School, 2001).
10. J.D. Lubitz and G.F. Riley, “Trends in Medicare Payments in the Last Year of Life,” *New England Journal of Medicine* 328, no. 15 (1993): 1092–1096.
11. For more on dramatic variations in physician revisit intervals, see J.K. Tobacman et al., “Variation in Physician Opinion about Scheduling of Return Visits for Common Ambulatory Care Conditions,” *Journal of General Internal Medicine* 7, no. 3 (1992): 312–316; L.M. Schwartz et al., “Setting the Revisit Interval in Primary Care,” *Journal of General Internal Medicine* 14, no. 4 (1999): 230–235; and H.G. Welch et al., “The Role of Patients and Providers in the Timing of Follow-up Visits,” *Journal of General Internal Medicine* 14, no. 4 (1999): 223–229.
12. This comes from a regression that explains end-of-life care per decedent, at the HRR level, with hospital bed supply, primary care physicians, and specialists, all on a per capita basis. The regression is weighted by the population age sixty-five and older in each HRR. One could question whether the capacity is itself sensitive to greater demand for specific services. However, we find that much of the variation in hospital capacity is the consequence of migration and not health needs; people move away, but the hospital beds stay, or people

- migrate to an area, but relatively few hospital beds are built.
13. The delineation between supply-sensitive and preference-sensitive treatment is more a matter of degree than an absolute difference. While patients' preferences will not likely affect clinical decisions regarding the stabilization of a hip fracture, they may play a role in end-of-life care for the chronically ill.
14. J.S. Skinner, E.S. Fisher, and J.E. Wennberg, "The Efficiency of Medicare," NBER Working Paper no. 8395 (Cambridge, Mass.: National Bureau of Economic Research, July 2001), available at <www.dartmouthatlas.org>.
15. The higher levels of specialist visits are not simply the same specialists visiting much more often; the fraction of patients in their last six months visited by more than ten separate specialists is highly correlated with overall specialist visits. See Wennberg and Cooper, eds., *The Dartmouth Atlas of Health Care 1999*, 192.
16. Skinner et al., "The Efficiency of Medicare."
17. For example, see M.J. Barry et al., "Patient Reactions to a Program Designed to Facilitate Patient Participation in Treatment Decisions for Benign Prostatic Hyperplasia," *Medical Care* 33, no. 8 (1995): 771-782; and M.W. Morgan et al., "A Randomized Trial of the Ischemic Heart Disease Shared Decision Making Program: An Evaluation of a Decision Aid," *Journal of General Internal Medicine* (April 1997) (supp.): 62.
18. See E.S. Fisher et al., "Associations among Hospital Capacity, Utilization, and Mortality of U.S. Medicare Beneficiaries, Controlling for Sociodemographic Factors," *Health Services Research* 34, no. 6 (2000): 1351-1362; H. Krakauer et al., "Physician Impact on Hospital Admission and on Mortality Rates in the Medicare Population," *Health Services Research* 31, no. 2 (1996): 191-211; and Skinner et al., "The Efficiency of Medicare."
19. See Chau et al., "The Importance of Regional Practice Style"; and D.P. Kessler and M.B. McClellan, "Is Hospital Competition Socially Wasteful?" *Quarterly Journal of Economics* 115, no. 2 (2000): 577-616.
20. E. Guadagnoli et al., "Variation in the Use of Cardiac Procedures after Acute Myocardial Infarction," *New England Journal of Medicine* 333, no. 9 (1995): 573-578.
21. See J. Wasson et al., "Telephone Care as a Substitute for Routine Clinic Follow-up," *Journal of the American Medical Association* 267, no. 13 (1992): 1788-1793; and M. Weinberger, E.Z. Oddone, and W.G. Henderson, "Does Increased Access to Primary Care Reduce Hospital Readmissions?" *New England Journal of Medicine* 334, no. 22 (1996): 1441-1447.
22. See the SUPPORT Principal Investigators, "A Controlled Trial to Improve Care for Seriously Ill Hospitalized Patients: The Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment (SUPPORT)," *Journal of the American Medical Association* 274, no. 20 (1995): 1591-1598; and R.S. Pritchard et al., "Influence of Patient Preferences and Local Health System Characteristics on the Place of Death, SUPPORT Investigators, The Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment," *Journal of the American Geriatrics Society* 46, no. 10 (1998): 1242-1250.
23. This figure includes adjustments for the higher reimbursement rates prevailing in high-cost regions such as New York City and San Francisco. See Wennberg and Cooper, eds., *The Dartmouth Atlas, 1999*.
24. Detailed information describing the impact of such a reform on each region is available at <www.dartmouthatlas.org>.
25. G.T. O'Connor et al., "A Regional Intervention to Improve the Hospital Mortality Associated with Coronary Artery Bypass Graft Surgery," *Journal of the American Medical Association* 275, no. 11 (1996): 841-846.
26. For example, the NIH has provided support for clinical trials of back surgery

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- based at eleven medical centers across the country.
27. R.B. Keller et al., *Searching for Quality in Medical Care: The Maine Medical Assessment Foundation Model*, Pub. no. 00-N002 (Rockville, Md.: Agency for Healthcare Research and Quality, 2000).
 28. For example, research on benign prostatic hyperplasia (BPH) demonstrated that while surgery was superior to other treatments in reducing symptoms, its use involved significant trade-offs that depended on patients' preferences: Surgery altered sexual function in a way that some men found very objectionable. The research led to shared decision making, a strategy for clinical decision making that invites the active participation of patients to assure that the patient's own point of view determines the choice of treatment. See J.E. Wennberg et al., "An Assessment of Prostatectomy for Benign Urinary Tract Obstruction: Geographic Variations and the Evaluation of Medical Care Outcomes," *Journal of the American Medical Association* 259, no. 20 (1988): 3027-3030; and Barry et al., "Patient Reactions to a Program."
 29. M.P. Hurtado, E.K. Swift, and J.M. Corrigan, eds., *Envisioning the National Health Care Quality Report* (Washington: National Academy Press, 2001).
 30. D. Meltzer et al., "Effects of Physician Experience on Costs and Outcomes on an Academic General Medicine Service: Results of a Trial of Hospitalists" (Unpublished manuscript, University of Chicago, January 2001).
 31. For example, over several years of follow-up, the per capita use of acute hospital care by cohorts of patients with hip fractures, cancer of the colon, coronary artery disease, and other chronic illness was shown to vary almost twofold among Boston and New Haven teaching hospitals. See Fisher et al., "Hospital Readmission Rates."
 32. In preparation for the implementation phase, an important task is to determine who sets the quality standards. The six goals for medical excellence provide a direction, and CCMEs' best-practice strategies will provide benchmarks on which to base criteria for selective contracting. However, finding a consensus view on quality standards and on the measures for monitoring performance will clearly require the participation of national scientific organizations such as the IOM. We suggest that such an agency be given a role in the demonstration project and be asked to make recommendations on how and by whom the quality standards and performance measures could be set and monitored during the implementation phase.
 33. The Breaux-Thomas plan proposed to replace the existing Medicare program with one modeled on the Federal Employees Health Benefits Program; enrollees would receive a fixed-dollar contribution (or "premium support") that could then be used to purchase coverage from a set of approved health insurance options. See <medicare.commission.gov/medicare/index.html>.
 34. R. Kronick et al., "The Marketplace in Health Care Reform: The Demographic Limitations of Managed Competition," *New England Journal of Medicine* 328, no. 2 (1993): 148-152.
 35. See Hurtado et al., eds., *Envisioning the National Health Care Quality Report*.