

Understanding Practice Patterns:

*A Focus on What the Quality Movement Can Do to Reduce
Unwarranted Variations*

The Institute for Healthcare Improvement
Orlando, FL

Presentation by John Wennberg

December 14, 2005

On December 14th, 2005, I gave the keynote lecture at the Institute for Healthcare Improvement's National Forum in Orlando, FL. I took the opportunity to provide an update on our efforts to better understand unwarranted variation in health care -- variation that cannot be explained on the basis of illness, patient preferences or the dictates of evidence-based medicine.

The Three Categories of Care

- **Effective Care**
- **Preference-sensitive Care**
- **Supply-sensitive Care**

Dartmouth Atlas Project researchers have distinguished between three types of services:

- (1) “Effective Care”: interventions that are viewed as medically necessary on the basis of clinical outcomes evidence and for which the benefits so outweigh the risks that virtually all patients with medical need should receive the them.
- (2) “Preference-sensitive Care”: treatments, such as discretionary surgery, for which there are two or more valid treatment alternatives, and the choice of treatment involves tradeoffs that should be based on patients’ preferences.
- (3) “Supply-sensitive Care”: services such as physician visits, referrals to specialists, hospitalizations and stays in intensive care units involved in the medical (non-surgical) management of disease. In Medicare, the large majority of these services are for patients with chronic illness.

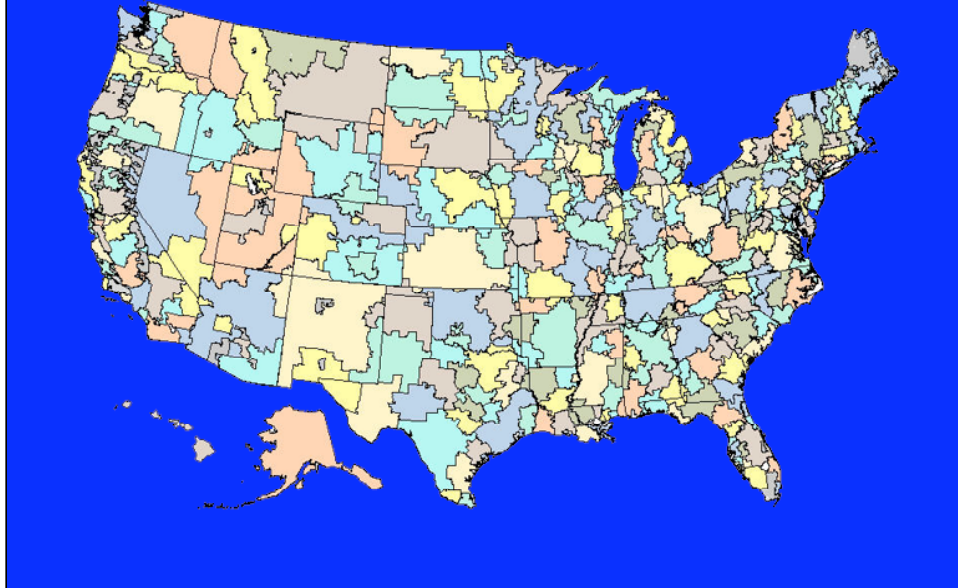
The Three Categories of Care

- Effective Care
- Preference-sensitive Care
- Supply-sensitive Care

The lecture examined the pattern of variation among enrollees in traditional (fee-for-service) Medicare by each category of care, focusing on the contributions of illness, idiosyncratic practice styles, and resource supply to variation. I presented new information on hospital-specific variation including hospitals that are now engaged in IHI's struggle to improve patient safety -- the 100,000 Lives Campaign. My lecture concentrated on new challenges to the quality movement: reducing unwarranted variation in supply- and preference-sensitive care. Step one, as Tom Nolan has said, is will formation: the problem needs to be recognized and owned. We hope that Dartmouth Atlas data can help; we plan for the public release hospital specific data covering virtually all US hospitals in early 2006. However, pre-release data is now available so IHI members begin to use it immediately.

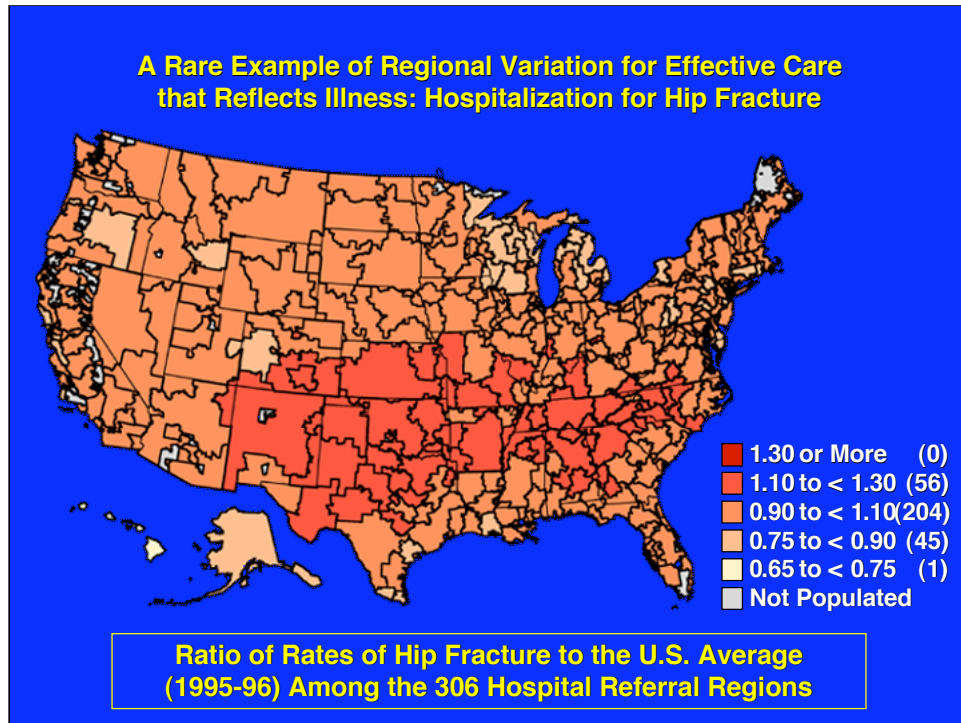
The lecture concluded with discussion of the opportunities for provider leadership -- for what Don Berwick called Provider Power -- to create what he called in his keynote address -- the New American Health System. I suggested that provider power can successfully mobilize to overcome the cultural barriers to redesigning health care that so far have frustrated efforts to come to terms with unwarranted variation; but to overcome the significant economic barriers to reform, progressive providers will need the sources of economic power: progressive providers will need to partner with progressive payers. CMS's new demonstration project -- the Medicare Health Quality Programs -- may provide such an opportunity.

**The Dartmouth Atlas Project: 306 Hospital Referral Regions
Ongoing Study of Traditional Medicare Population**



The essence of practice variation studies is the comparison of rates of use of medical care among defined populations. Sometimes the “population at risk” is the resident population living in a region. For example, the incidence of Medicare hospitalizations for hip fracture is measured by counting the number of residents who were hospitalized in a given period of time (the numerator of the rate) and dividing by the number of Medicare enrollees living in the same region (the denominator). The rates of discretionary surgery in this lecture are calculated this way, as are a few examples of supply-sensitive care. Sometimes, the populations selected for comparison are those with the same status of illness or health care needs. Most effective care quality measures are calculated this way. For example, one of the measures of the quality of care for diabetic patients is based on a numerator that is a count of all diabetic patients who received the recommended eye examination at least once over a two-year period, and the denominator is a count of all diabetic patients living in the region. The measures of supply-sensitive care at the end of life are also based on the experience of specific subpopulation. In these cases, the numerator is the number of events experienced by patients during the last six months of their lives; the denominator is the number of patients who died.

In the lecture, practice variations were viewed two ways. First was the traditional Atlas strategy, which examines variation among Medicare residents living in the 306 hospital referral regions in the United States. The second was a newer method that examines variations at the hospital-specific level among patients with chronic illness who received most of their care from a given hospital.

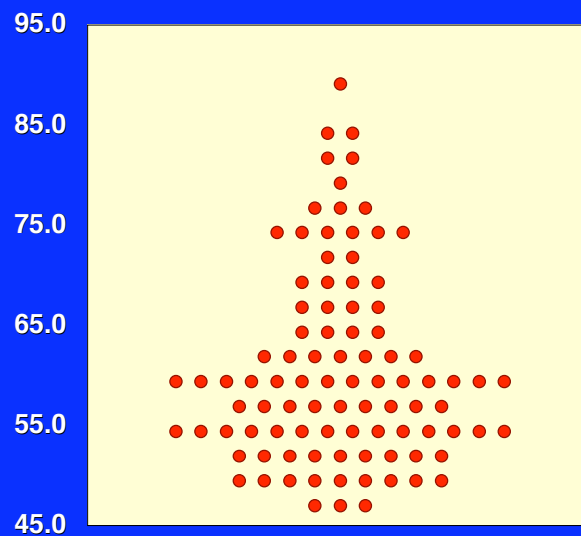


Some utilization rates are driven primarily by the incidence of illness. The behavioral basis for this interpretation is clear to clinicians. Hip fractures are painful, debilitating injuries that motivate every person who has one to seek care. Hip fractures are almost always correctly diagnosed; and all physicians, irrespective of their specialty or geographic location, agree on the need for hospitalization. Medical opinion thus uniformly favors hospitalization. As a consequence, the rate of hospitalization closely reflects the actual incidence of hip fracture in a region's population.

The map shows the rates of hospitalization for hip fracture in each of the 306 hospital referral regions in the United States. The rates are expressed as ratios to the national average. Note that there are no regions where the rates exceed the national average by as much as 30%, and only one with a rate that more than 25% below the average. Note also that the rates of hip fracture are uniformly elevated throughout a broad inland zone extending from the Southeast to Texas. To the best of my knowledge, neither epidemiologists nor other scientists interested in the causes of hip fracture have yet provided a satisfactory explanation for the higher rate of incidence throughout the inland mid-south.

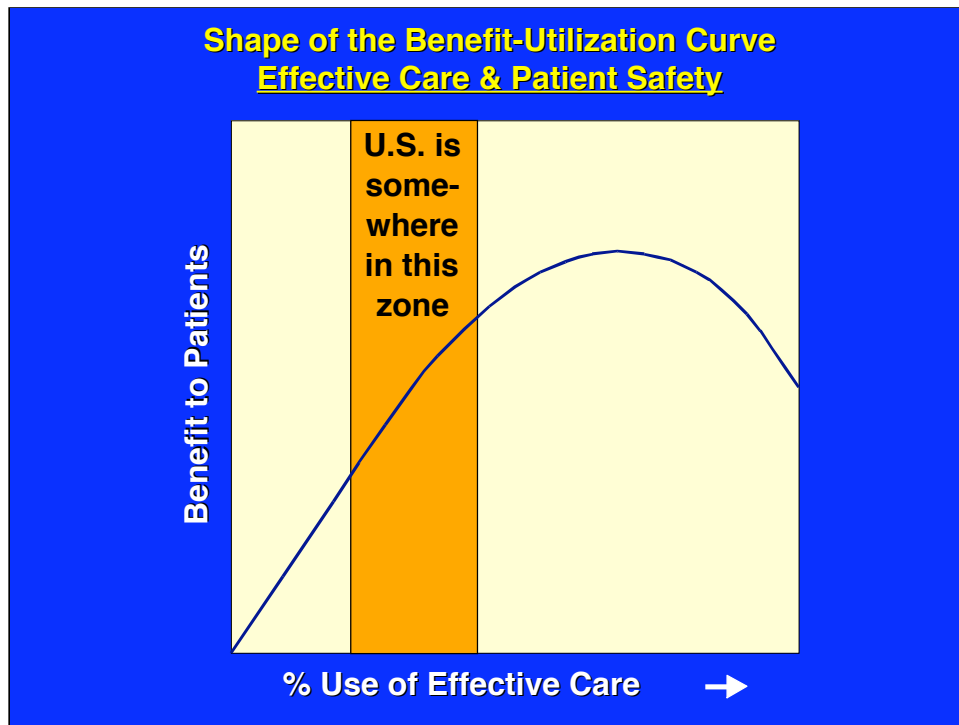
Only a few medical conditions vary in ways that closely reflect underlying illness rates.

**Variation in Quality Scores for Care Related to Pneumonia
Among Medicare Enrollees Receiving Most of Their Care at
Academic Medical Centers (2004)**



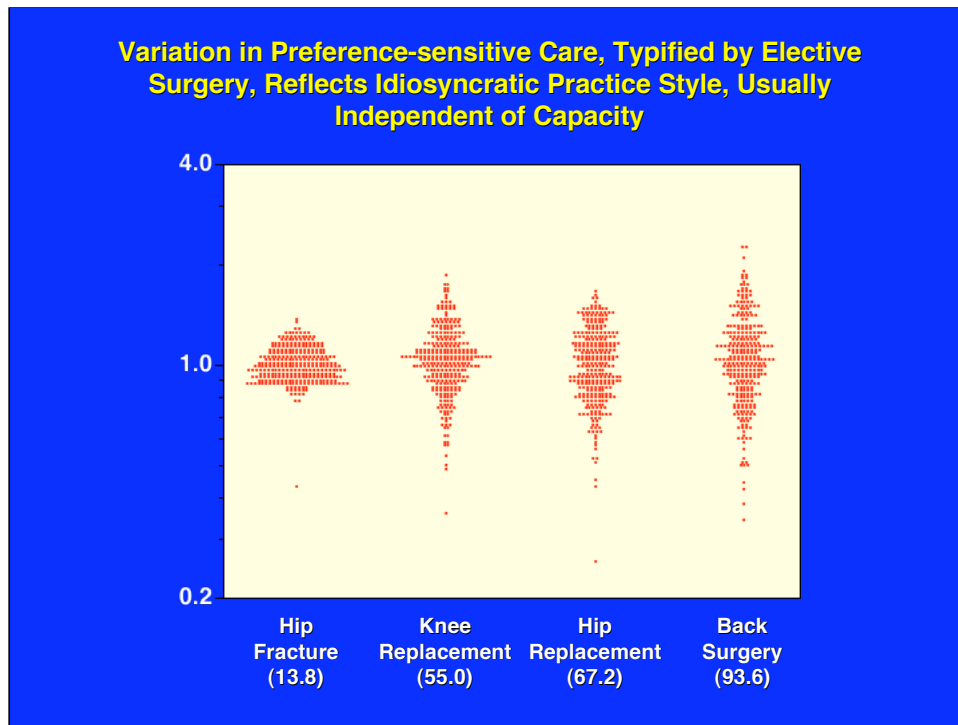
Concern about the underuse of effective care has led to a major national effort to improve the quality of care. Finding remedies for such problems is a high priority of IHI. Data is playing an important role. CMS, working with providers, has developed a national reporting system for measuring compliance with practice guidelines for patients with acute myocardial infarction, congestive heart failure, and pneumonia. This slide profiles integrated academic medical centers according to the percent of eligible patients who received the specific treatments recommended by the guidelines. The quality score is an average for the hospital's performance on three individual measures: percent of patients with pneumonia who (1) had evidence of being vaccinated; (2) received antibiotics in timely fashion; and (3) had their level of oxygenation measured. Each dot represents a hospital. None had scores that approached the "right rate" of 100%. Among the highest ranked hospitals, patients got the needed care about 85% of the time; among the lowest, less than 50% did.

I believe the behavioral basis for the underuse of effective care is caused in large part by the lack of the infrastructure necessary to assure the timely use of these procedures. Organized group practices such as Kaiser-Permanente have made concerted efforts to improve the management of chronic illness, including the use of electronic medical records to identify patients in need, and to develop processes that assure compliance with guidelines. These efforts have led to levels of effective care that exceed those in fee-for-service markets.



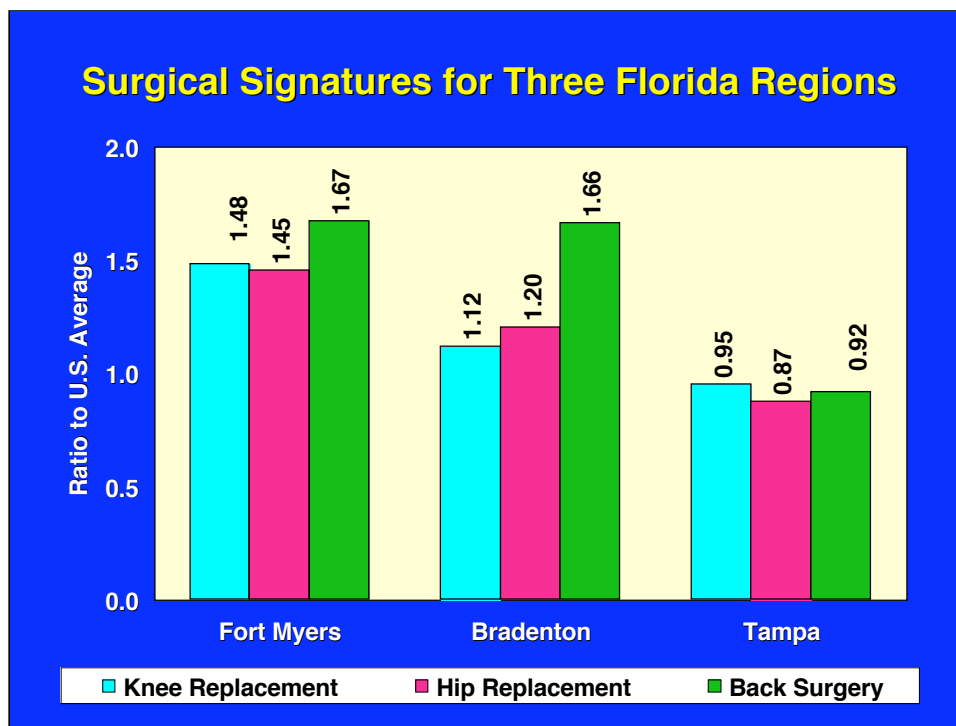
The underuse of effective care is a national problem. In a recent publication in the New England Journal of Medicine, Beth McGlynn and her colleagues used a sample of medical records across the United States to examine compliance with practice guidelines. Overall, the researchers examined 439 indicators of quality, most of which were designed to detect underuse of effective care.

The graph provides an normative interpretation of variation that captures the situation for most examples of effective care. For those interventions where benefit far exceeds risk (such as the use of beta-blockers, a life-saving drug for heart attack patients) guidelines are not uniformly followed. As a result, a significant percentage of patients are denied necessary care in every region, although more so in some than in others. While more effective care is better care, having more medical resources or spending more Medicare program dollars is not associated with more effective care. The experience of IHI, Kaiser-Permanente and others involved in the rationalization of care processes indicate that improvement in the organization and efficiency of care systems, particularly those involved in the management of chronic illness, results in less underuse of effective care.



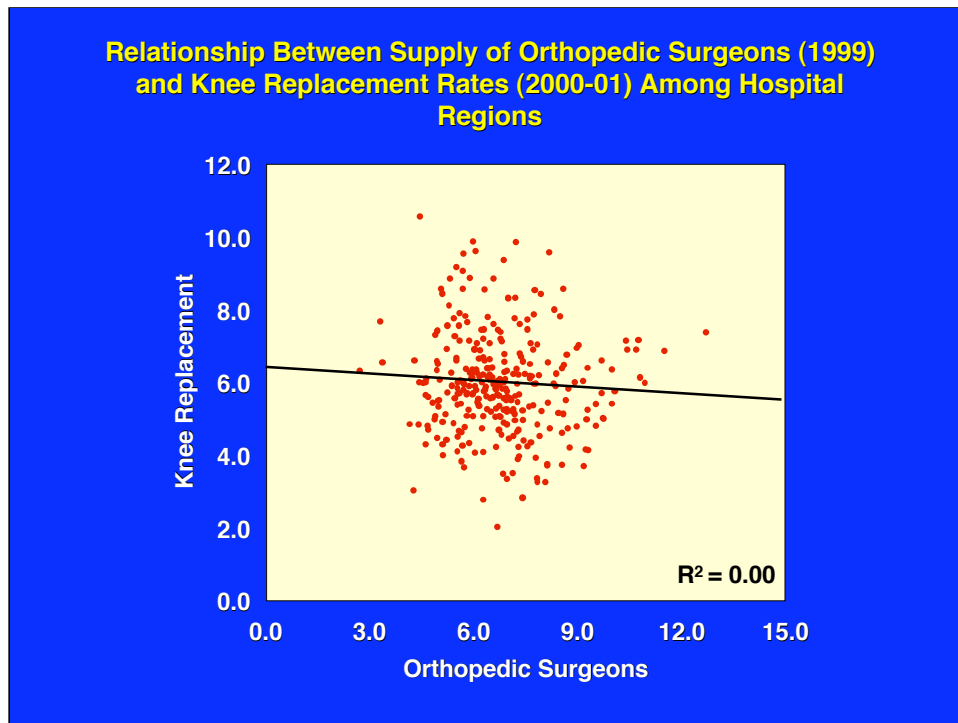
There is also unwarranted variation in the use of preference-sensitive care. I look here at three orthopedic procedures: knee replacement, hip replacement, and back surgery. As I have discussed, once a hip fracture has occurred, hospitalization is uniformly prescribed. However, the conditions that give rise to hip, knee and back surgery are chronic, not acute, conditions -- arthritis of the hip, knee and spine, and back pain associated with herniated discs. Even patients with advanced conditions can be treated more than one way, including more conservative medical interventions. Patients traditionally have looked to their physicians to advise them on when it is time to undergo surgery. Several strands of evidence point to the importance of idiosyncratic differences in clinical practice among physicians as a causal factor behind variations among regions and hospitals.

Each dot in the figure represents one of the 306 hospital referral regions; the rates were calculated (for 2002-03) using the resident population as the denominator and expressed as the average to the US average (plotted on a log scale). The number in parentheses is the systematic component of variation, a measure that allows comparisons of variation among procedures with different mean rates. Knee replacement is about four times more variable than hip fracture repair; back surgery is almost seven times more variable.



One indication of the importance of the practice style of local physicians is the **surgical signature phenomenon**: sharp differences in the rates of surgery among neighboring medical care communities. The figure profiles the risk of surgery among three hospital service areas on the west coast of Florida. In theory, the differences among these communities in rates of knee and hip replacement and of back surgery could reflect differences in patient preferences or the incidence of osteoarthritis and/or herniated discs. However, there is no epidemiologic evidence to support the hypothesis that illness or preferences vary dramatically according to the boundaries of health care markets. It seems very unlikely that differences in illness and/or patient preferences could account for the differences in rates of knee and back surgery among residents of these neighboring regions.

The behavioral basis for the surgical signature phenomenon, I believe, rests in the propensity of surgeons to specialize in a particular subset of the orthopedic surgical workload. The surgical rates are influenced by clinical decisions made by a small group of orthopedic surgeons. Orthopedic surgeons have many options regarding the clinical conditions in which they can subspecialize, including trauma, sports medicine, carpal tunnel syndrome, and knee, hip or back surgery. In the Bradenton area, the surgeons are oriented toward back surgery; in Fort Myers, all three operations are performed at rates well above the national average; and in Tampa, all are below average. It is of note that the per capita supply of orthopedic surgeons in these regions is about the same.



An examination of the association between the local supply of surgical specialists and the rates of procedures that the specialty performs adds additional evidence in support of the theory of idiosyncratic practice style's influence on rates. If surgeons of a particular specialty were allocating their time and surgical effort among a prioritized list of indications based on patient need and patient preference, regions with more surgeons should have higher rates of surgery for common conditions such as osteoarthritis of the knee or hip. But, in fact, there is very little association between the supply of orthopedic surgeons and rates of hip, knee and back surgery. For example, although the supply of orthopedic surgeons varies more than 4.7-fold among regions, this figure makes clear that there is no relationship between the supply of orthopedic surgeons and rates of knee replacement.

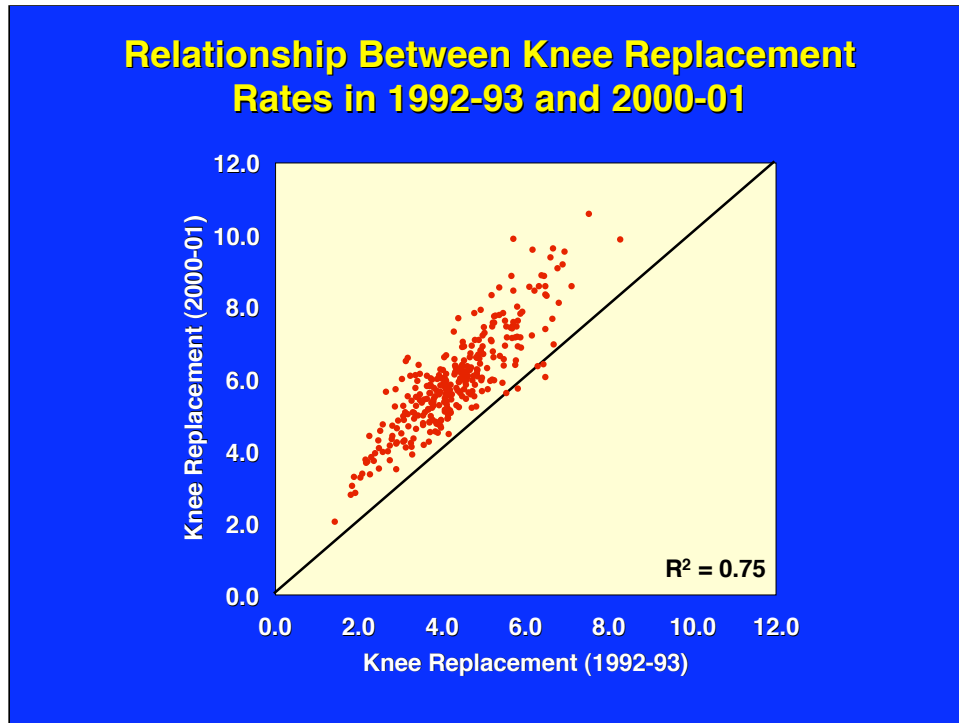
This figure compares the supply of orthopedic surgeons (horizontal axis) and rates of knee replacement (vertical axis). The R^2 statistic can be interpreted as the percent of variation in one variable that is "explained" by another. In this case, the R^2 is zero; i.e., none of the variation in surgery rates can be explained by the local supplies of orthopedic surgeons.

Association Between Surgery Rate (2000-01) and Supply of Surgeons (1999); 10 Preference-Sensitive Procedures (R²)

Procedure	Specialty	Association with Surgeon (R ²)
Knee Replacement	Orthopedics	.00
Hip Replacement	Orthopedics	.08
Back Surgery	Orthopedics	.02
CABG	Cardiac Surgery	.08
PCI	Cardiology	.06
TURP for BPH	Urology	.00
Prost. for cancer	Urology	.01
Gall bladder	General Surgery	.01
Carotid endart.	General Surgery	.04
Lower extremity Bypass	Vascular Surgery	.09

The absence of a strong association between the supply of orthopedic surgeons and the rates of knee replacement is similar to the relationships between other surgical specialties and procedures performed on the Medicare population. Although the supplies of cardiovascular surgeons, cardiologists, urologists, general surgeons and vascular surgeons vary more than three-fold among hospital referral regions, there is very little association with the rates of the procedures commonly performed by these specialists. The R² statistic ranged from .00 for the association between urologists per capita and and transurethral prostatectomy for an enlarged prostate to .09 for the association between vascular surgeons and lower extremity bypass grafting.

I believe the behavioral basis for this lack of association rests in the fact that surgical specialists tend to become expert in a subset of the procedures that their specialty is responsible for and orient their workloads toward the patients eligible for the procedures they prefer. In this regard it is of interest that even though we see little association between cardiologists and rates of PCI, when the analysis is limited to the supply of invasive cardiologists, the correlation with PCI is much stronger, reaching an R² of .36. Invasive cardiologists, unlike other surgeons, do not have great latitude in the kinds of procedures they do.



The relative variation among regions is stable over long periods of time. This is evident in the strong correlation between regional rates of a given procedure in 1992-93 and the rates nine and ten years later, in 2000-01. This figure shows that 75% of the variation in knee replacement rates among the 306 hospital referral regions in 2000-01 was “explained” by the rates of knee replacement in 1992-93. The practice patterns that prevailed in the earlier years persisted over the decade. The figure also shows that in the vast majority of regions, the rates in 2000-01 were higher than they were in 1992-93. During this period, the US average rate increased 40% , and the supply of orthopedic surgeons increased by about the same amount. But even though the supply increased, local practice patterns showed little evidence of “regression to the mean.”

Association Between Surgery Rate (2000-01) and Surgery Rate (1992-93) (R^2)

Procedure	Association (R^2)
Knee replacement	.75
Hip replacement	.81
Back surgery	.51
CABG	.39
PCI	.34
TURP for BPH	.28
Prostatectomy for cancer	.25
Gall bladder surgery	.32
Carotid endarterectomy	.53
Lower extremity bypass	.56

The persistence in patterns of variation in orthopedic procedures over long periods of time is also evident in other procedures. Among the 306 hospital referral regions, the 2000-01 rates of most other common procedures also had strong relationships with rates for the same procedure in 1992-93. The association was highest for hip replacement ($R^2=.81$) and lowest for the two urology procedures, transurethral prostatectomy for BPH ($R^2=.28$) and radical prostatectomy for cancer ($R^2=.25$). For five of the ten listed procedures, more than half of the variation in 2000-01 is explained by the 1992-93 rate.

Papers

Decision aids for patients facing health treatment or screening decisions: systematic review

Annette M O'Connor, Alaa Rostom, Valerie Fiset, Jacqueline Tetroe, Vikki Entwistle, Hilary Llewellyn-Thomas, Margaret Holmes-Rovner, Michael Barry, Jean Jones

Abstract

Objective To conduct a systematic review of randomised trials of patient decision aids in improving decision making and outcomes.
Design We included randomised trials of interventions providing structured, detailed, and specific information on treatment or screening options and outcomes to aid decision making. Two reviewers independently screened and extracted data on several evaluation criteria. Results were pooled by using weighted mean differences and relative risks.
Results 17 studies met the inclusion criteria. Compared with the controls, decision aids produced higher knowledge scores (weighted mean difference = 19/100, 95% confidence interval 14 to 25); lower decisional conflict scores (weighted mean difference = -0.3/5, -0.4 to -0.1); more active patient participation in decision making (relative risk

tioners. Their efficacy has been described in general reports and reviews.⁴⁻⁶ We conducted a systematic overview of the trials of decision aids to determine whether they improved decision making and outcomes for patients facing treatment or screening decisions.

Methods

The search strategy is described in detail elsewhere.⁷ We searched the following electronic databases: Medline (1966-April 98); Embase (1980-November 98); PsycINFO (1979-March 98); CINAHL (1983-February 98); Aidsline (1980-98); CancerLit (1983-April 98); and the Cochrane Controlled Trials Register (1998, Issue 4). Additional studies were searched for in our personal files and the contents lists of *Health Expectations* (1998), *Medical Decision Making* (January-March 1986-January-March 1998), and *Patient Education and*

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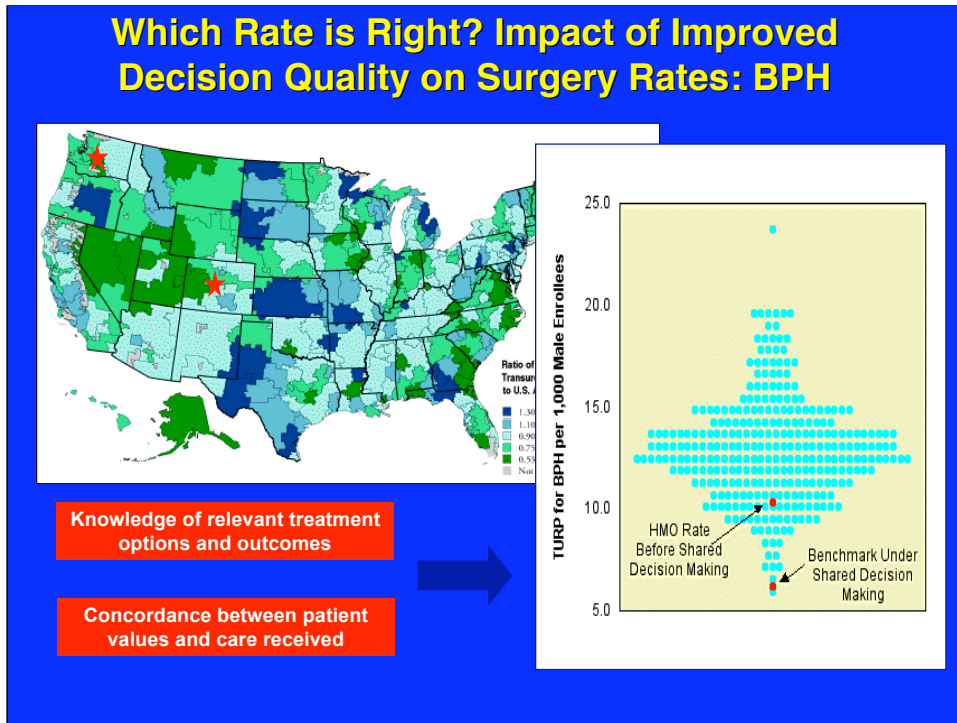
Direct evidence of the role of physician opinion or practice style on rates of surgery comes from clinical trials that compare the impact of patient decision aids on clinical decisions. Patient decision aids are clinical interventions designed to improve the quality of patient decision making for “preference-sensitive” treatment choices such as whether to undergo a lumpectomy or mastectomy for early stage breast cancer, whether to undergo invasive cardiac treatment or more conservative medical management for chest pain due to coronary artery disease, or whether to have joint replacement or medical management for osteoarthritis of the knee. Clinical trials of decision aids, in which usual practice is the control arm, have helped clarify the value of decision aids and also provide direct evidence that physicians’ opinions sometimes differ in important ways from patients’ preferences. Compared to those in control groups, patients who use decision aids are better informed about the risks and benefits (and clinical uncertainties) associated with the treatment options. Moreover, the outcomes of the decision process, such as the frequency of choice of surgery, differs. In most clinical trials, patients in the intervention group have tended to choose surgery less often and to make decisions that more closely reflect their personal preferences.

Reducing misuse of preference-sensitive care

- **Major focus: shared decision making**

Shared decision making is the process of interacting with the patient to help him or her “make informed, values-based choices among two or more medically reasonable alternatives, and patient decision aids are standardized, evidence-based tools designed to facilitate that process.” They are designed to provide (1) high-quality, up-to-date information about the condition, including risks and benefits of available options and, if appropriate, a discussion of the limits of scientific knowledge about outcomes; (2) values clarification to help patients in sorting out their values and preferences; and (3) guidance or coaching in deliberation, designed to improve the patient’s involvement in the decision process.

Which Rate is Right? Impact of Improved Decision Quality on Surgery Rates: BPH

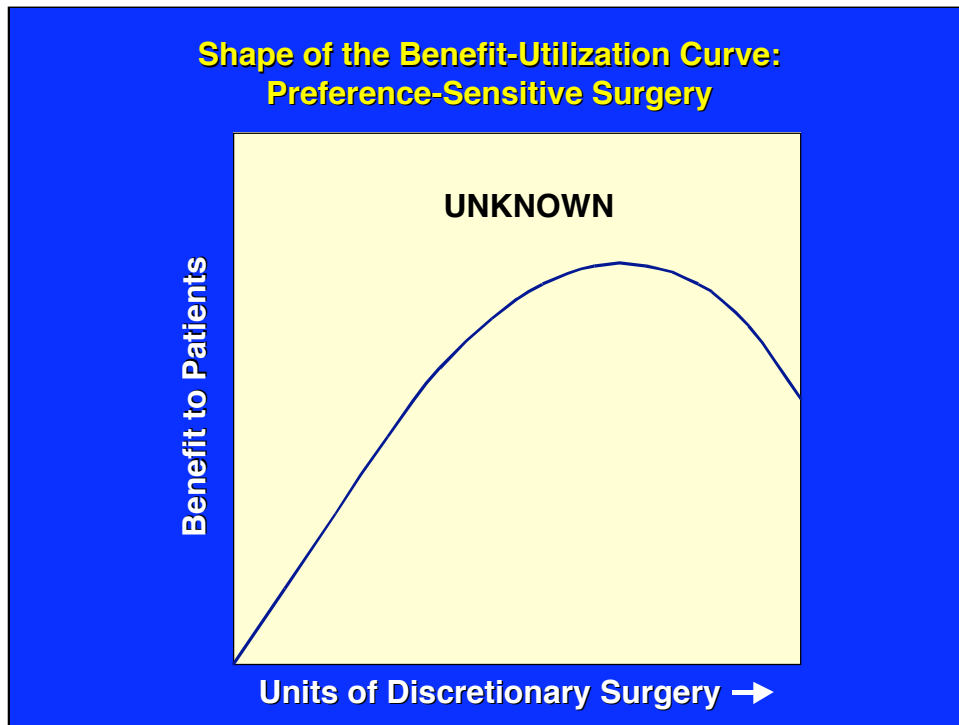


Under the normative assumption that the “right rate” of a given procedure should be based on the choices made by informed patients who are free of undue influence from the practice styles and preferences of their physicians or other unwarranted influences, the systematic implementation of decision aids among patient populations would offer an opportunity to obtain valid measures of the “true” demand for a given treatment option. Such an opportunity presented itself to our research group in the early 1990s, when a decision aid we had designed to help patients decide between watchful waiting and surgery for their enlarged prostates was introduced in the urologic clinics in two pre-paid group practices, Kaiser-Permanente in Denver and Group Health Cooperative in Seattle. After the implementation of shared decision making, the population-based rates of prostatectomy fell 40%, providing a measure of demand under shared decision making. (Rates in the control group, Group Health Cooperative’s Tacoma site, did not change.) When we compared this benchmark to the rates among the 306 hospital referral regions (background dots in the above figure), we found that the informed decision making rate fell at the extreme low end of the national distribution, suggesting that the rates of surgery in most US regions exceeded the amount that informed patients wanted.

Reducing misuse of preference-sensitive care

- Major focus: shared decision making
- New focus: report cards measuring decision quality

Traditional quality measures have focused on technical processes of care such as compliance with guidelines for caring for pneumonia patients. In the case of preference-sensitive care, quality measures should focus on the quality of patient decision making; are patients fully informed about treatment options, including an understanding of the importance of their own preferences in choice of treatment? Was there concordance between the patient's values and the risks and benefits of the chosen treatment option? Standardized questions for evaluating decision quality are an important part of the infrastructure needed to implement shared decision making widely. Fortunately, the research community is rising to this challenge. Decision quality measures are available for several preference-sensitive treatments and consensus standards for constructing and evaluating patient quality measures are under development.



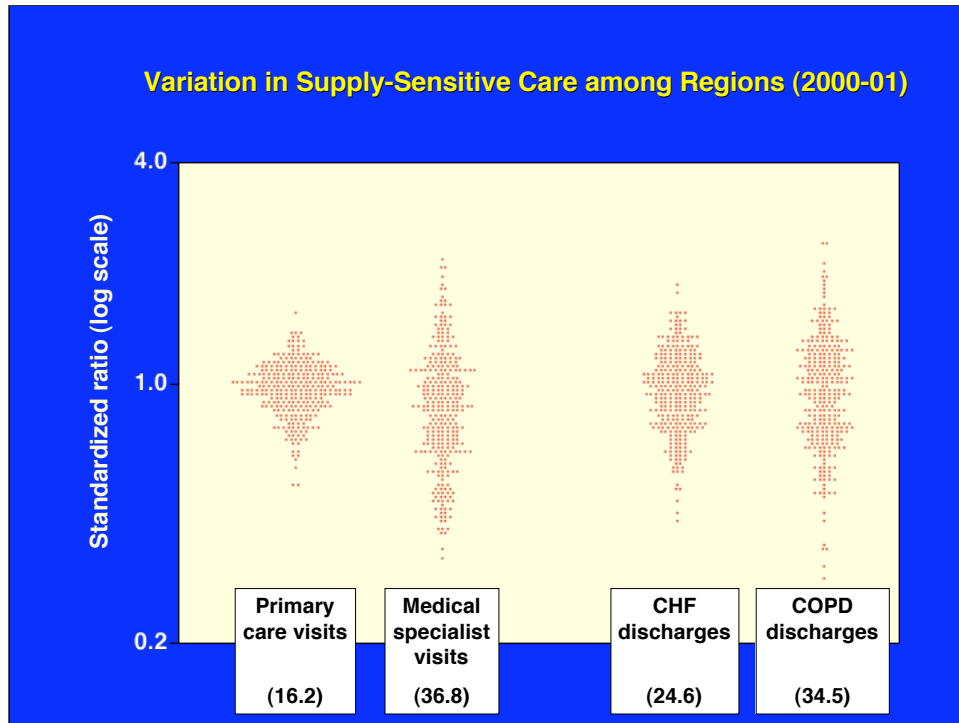
Which rate is right? Even though the results of clinical trials of decision aids and observational studies of their impact on population based rates suggest that the amount of discretionary surgery performed in the United States exceeds the amount that informed patients want, it is not clear what the steady-state demand for discretionary surgery would be over time if shared decision making were fully implemented in primary care as well as specialty practice. Many patients who would want surgery might escape referral because of the practice styles of their primary physicians. Moreover, patient preferences concerning discretionary procedures intended to improve the quality of life, such as knee and hip replacement, might change over time as the condition progresses, becoming more painful or limiting of function. What is safe to conclude, however, is that current patterns of practice do not reflect demand based on patient preferences, and that geographic variations in the risk of surgery based on physician practice style will persist until patients are actively involved in the decision process. Consequently, the shape of the benefit-utilization curve for preference-sensitive care is unknown. Part of the challenge to progressive providers is to undertake the studies necessary to discover the “true” rate of demand.

Reducing misuse of preference-sensitive care

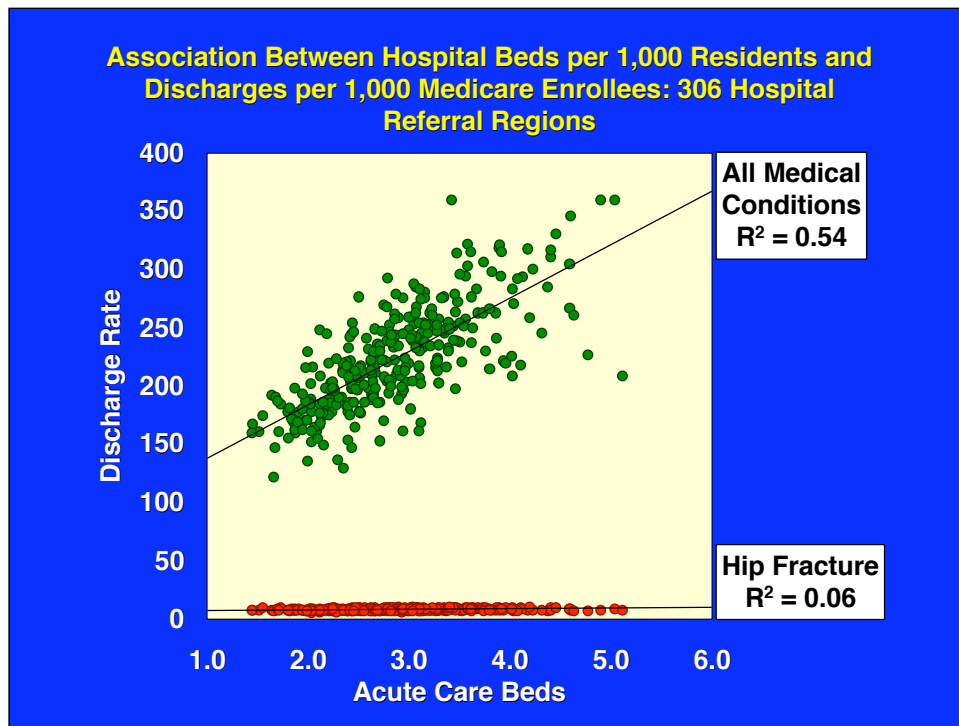
- Major focus: shared decision making
- New focus: report cards measuring decision quality
- Traditional provider-focused appropriateness guidelines don't work
- Major impediment: resistance to cultural change; & adverse economic incentives

Let me summarize the predicament facing the profession with regard to preference-sensitive care. The knowledge for reducing unwarranted variations is at hand. Bringing the patient into decision making as an active partner -- shared decision making -- works to reduce unwarranted variation. Libraries of decision aids have been developed and tested in clinical trials; their use results in better decisions that more closely reflect patient preference. Methods for evaluating the quality of patient decision making are becoming increasingly available; high quality decision making can be distinguished from poor quality. But the remedies haven't been widely implemented.

A major impediment is the cultural bias that physicians should make decisions for their patients (and that patients should expect this to be so). Professional leadership to overcome this bias is an essential step in reform. Economic barriers also impede. Under most forms of payment for medical care, providers are paid to do procedures. Losing control over demand may be risky to financial well-being. Widespread implementation of informed patient choice will require change in reimbursement policies to reduce financial risk to progressive providers.



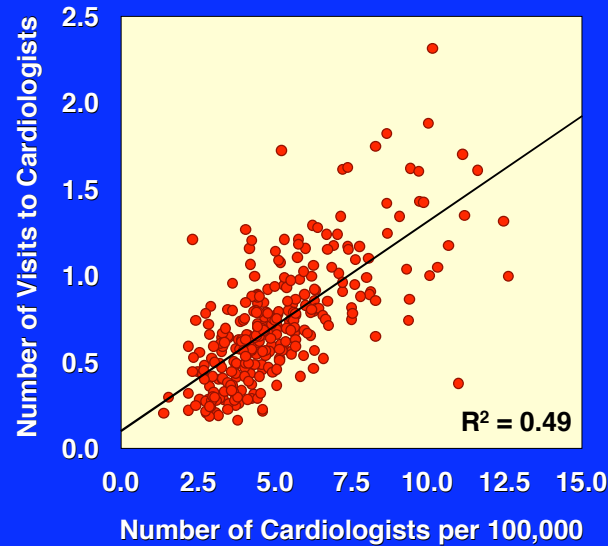
There is also unwarranted variation in the rates of supply-sensitive care. Of concern here is the frequency of physician visits (and revisits), hospitalizations, stays in intensive care units, referrals to specialists, and use of imaging and other diagnostic tests. In contrast to effective and preference-sensitive care, specific medical theories play little role in governing the frequency of use of supply-sensitive care. Medical text books are silent when it comes to evidence-based clinical guidelines governing decision for scheduling patients for return visits, when to hospitalize or admit to an ICU, when to refer, or, for most conditions, when to order a diagnostic or imaging test. For example, the pages of the British Medical Journal's annual Clinical Evidence Concise -- which describes itself as "the international source of the best available medical evidence for effective care" -- contain not a single reference as to when to schedule a revisit or hospitalize patients with congestive heart failure or COPD. In the absence of evidence and under the generally held assumption that medical resources should be fully utilized in the effort to obtain medical benefit, it should not be surprising that the supply of resources governs the frequency of their use.



As the name implies, supply-sensitive services are related to the supply of the resource that provides the service. This figure shows the association between the supply of staffed hospital beds per 1,000 residents of the hospital referral region and the hospitalization rates for medical (non-surgical) conditions among Medicare enrollees. More than half of the variation in discharge rates is associated with bed capacity (staffed beds). By contrast, hospitalization for hip fracture -- one of the few conditions for which the pattern of variation is determined by the incidence of illness -- shows little correlation with the supply of resources. The denominator for the utilization rates is the Medicare population resident in the region; the denominator of the rate of beds in the region is the entire population of the region.

The behavioral basis of this association must rest in Roemer's law -- the long-held hypothesis that hospital beds, once built (and staffed), tend to be filled. In my experience, the impact of beds per capita on clinical decision making is subliminal, in the sense that clinicians are unaware of differences in practice style associated with bed capacity. I gained this impression from interviews with clinicians practicing in Boston and New Haven, who were not aware of 60% differences in hospitalization rates for medical conditions, even though some had practiced in both communities.

Association Between Cardiologists and Visits per Person to Cardiologists among Medicare Enrollees: 306 Regions



This figure illustrates the relationship between the number of cardiologists per 100,000 residents of hospital referral regions and the number of visits to cardiologists per Medicare enrollee. About half of the variation is “explained” by supply. The behavioral basis of this association seems clear: the Medicare population comprises a large share of cardiologists’ patient loads.

Appointments to see physicians characteristically are fully “booked” -- very few hours in the work week go unfilled. Most office visits are for established patients, and the interval between revisits is governed by the size of the physician’s panel of patients. On average, regions with twice as many cardiologists per 100,000 residents will have twice as many available office visit hours. In the absence of evidence-based guidelines on the appropriate interval between revisits, available capacity governs the frequency of revisits.

The strength of the association between physician supply and physician visit rates among the Medicare population depends on the specialty. The association between internists and visits to internists is similar to that of cardiologists. However, for family practice physicians, the association is much weaker. I believe the likely explanation rests in the much smaller proportion of their total visits that family practice physicians dedicate to patients 65 and older.

The denominator for physician supply is census count for the region; for Medicare visits, it is the number of Medicare enrollees living in each region.

The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care

Elliott S. Fisher, MD, MPH; David E. Wennberg, MD, MPH; Thérèse A. Stukel, PhD; Daniel J. Gottlieb, MS; F.L. Lucas, PhD; and Étoile L. Pinder, MS

Background: The health implications of regional differences in Medicare spending are unknown.

Objective: To determine whether regions with higher Medicare spending achieve better survival, functional status, or satisfaction with care.

Design: Cohort study.

Setting: National study of Medicare beneficiaries.

horts), change in functional status (MCBS cohort), and satisfaction (MCBS cohort).

Results: Cohort members were similar in baseline health status, but those in regions with higher end-of-life spending received 60% more care. Each 10% increase in regional end-of-life spending was associated with the following relative risks for death: hip fracture cohort, 1.003 (95% CI, 0.999 to 1.006); colorectal cancer cohort, 1.012 (CI, 1.004 to 1.019); acute myocardial infarction

The bottom-line question is: Do populations with chronic illness who receive higher rates of supply-sensitive services have better outcomes? Do they live longer, experience higher quality of life or greater satisfaction with care? Up front, it is important to recognize that this question has received virtually no attention from academic medicine and the National Institutes of Health. Clinical trials and other patient-level studies that might shed light on this question are rare.

A recent study by Elliott Fisher and colleagues at Dartmouth, conducted at the population level, provides a provisional answer to whether regions with greater intensity of clinical practice have better outcomes. In this study, the researchers examined whether patient cohorts with hip fractures, cancer of the colon and heart attacks who lived in regions with more medical resources, higher spending and higher frequency of use of supply-sensitive care had better outcomes than those living in regions with less care. The patients were followed for a year after their hip fracture, surgery for colon cancer, or heart attack. Because we believe that the variation among regions in end of life spending provides a valid measure of relative intensity of care, untainted by differences in illness, this was the measure Fisher and colleagues used as the “exposure” variable.

In summary, the study showed an increase in mortality and no difference in functional status measures or satisfaction with care (the latter measures obtained from CMS’s ongoing Medicare beneficiary survey).

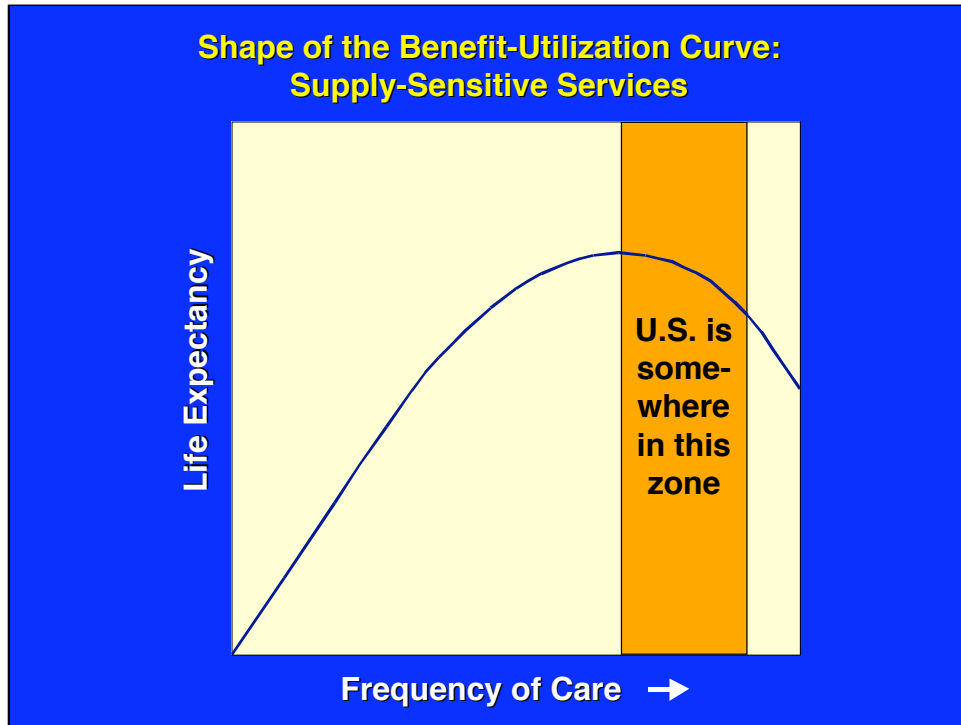
Per Capita Resource Inputs and Health Outcomes: Ratio High/Low Quintiles of Spending

Resource Inputs		Cohort Health Outcomes		
Medicare Spending	1.61	Death	R.R.	95% CL
Hospital Beds (1000)	1.32			
Physician Supply*		Hip Fracture	1.019	1.001-1.039
All Physicians	1.31	Colon Cancer	1.052	1.018-1.094
Medical Specialists	1.65	Heart Attack	1.052	1.018-1.094
General Internists	1.75	Functional Status:	Same	
Family Practice	0.74	Satisfaction:	Same	
Surgeons	1.37	Access to Care:	Worse	

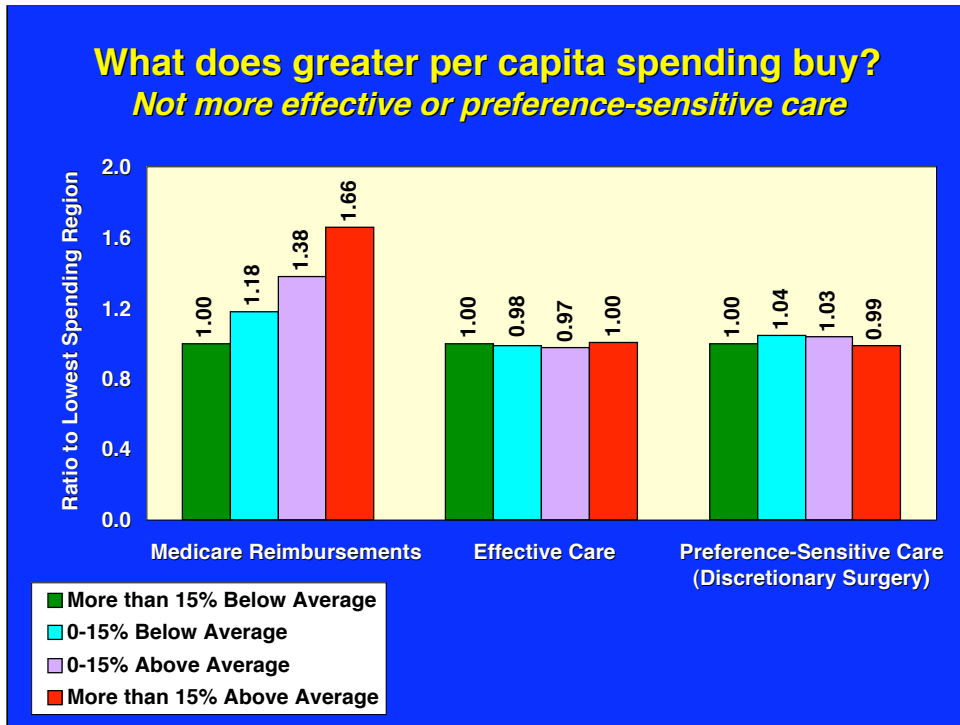
*per 10,000

This slide, adapted from the Fisher study, compares on the left the level of resource inputs and on the right the health outcomes. It compares the regions in the highest quintile of Medicare spending with those in the lowest quintile. Relative to the experience of the population living in the lowest quintile, Medicare spending was 61% higher (on a price-adjusted basis). High rate regions had 32% more hospital beds per 1,000 residents, 31% more physicians, 65% more medical specialists, 75% more general internists and 37% more surgeons. By contrast, the low rate region had 36% more family practice physicians.

Although the hip fracture, colon cancer and heart attack cohorts were comparable in baseline morbidity, those living in the high rate region had higher mortality rates: 1.9% among hip fracture patients, 5.2% among colon cancer patients, and 5.2% among heart attack patients. Functional status and satisfaction, which were measured using data from the Medicare beneficiary survey, showed no differences. Despite the greater supplies of resources, patients' perceptions of their access to care were lower.

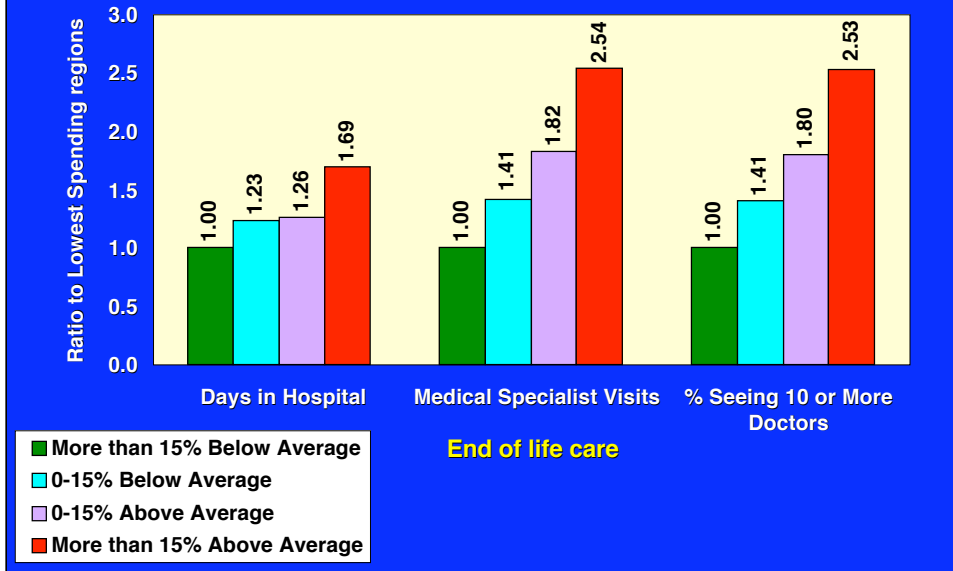


The available evidence indicates that marginal increments in care intensity in managing chronic illness -- among both regions and academic medical centers -- do not have a positive effect on population life expectancy and produce no apparent net increase in quality of life. The policy problem is thus NOT underuse and health care rationing in low use regions; rather, it is overuse and inefficiency (waste) in high rate regions. Under this circumstance, regions and hospitals with low intensity of care can be viewed as benchmarks of relative efficiency.



This slide shows that per person Medicare spending in the highest regions (red) exceed spending in the lowest regions (green) by 66%; But spending more doesn't result in higher rates of effective care or of preference-sensitive surgery. It may seem surprising but it is true: surgery rates in high cost regions such as Manhattan, Miami and Los Angeles are not higher, on average, than surgery rates in Minneapolis, Portland OR or Madison.

What does greater per capita spending buy? *More Supply-Sensitive Care!!*



Greater spending is associated with higher use of supply-sensitive care: on average, compared to their counterparts living in low spending regions, Medicare enrollees living in high spending regions spend 69% more days in hospital per person, have 154% more physician visits, and see many more physicians during the last six months of life.

Reducing overuse of supply-sensitive care

- **Major focus: At patient level, active chronic disease management**
- **Major focus: At system level, control of capacity relative to size of population served**
- **Major impediment: Lack of population-based data; resistance to cultural change; & adverse economic incentives**

Let me try to summarize the opportunities as well as the predicament facing the profession with regard to supply-sensitive care. The knowledge for reducing unwarranted variation in management of chronic illness is at hand. At the patient level, population-based (community-based) strategies for managing chronic illness are available and to an increasing degree, progressive providers are rationalizing care pathways with a view toward both improved quality and improved efficiency. At the system level, the association between capacity and utilization is becoming increasingly clear. The importance of controlling capacity has long been understood by pre-paid group practices such as Kaiser-Permanente. Population-based data have been used by such organizations in evaluating the need for constructing hospital beds and hiring their professional workforces. However, for most other providers, population-based information on resource allocation and utilization have available only on a regional basis, not on the hospital-specific basis required to support clinical or resource allocation decisions. However, at least for Medicare patients, this limitation is being overcome. The Dartmouth Atlas project has developed methods to close the information gap; to make it possible to measure resource inputs and utilization on a population basis.

We believe progressive providers could use this information to address a major problem in the US health care economy: the over-reliance on acute hospitals in the management of chronic illness.

Reducing overuse of supply-sensitive care

- **Major focus: At patient level, active chronic disease management**
- **Major focus: At system level, control of capacity relative to size of population served**
- **Major impediment: Lack of population-based data; resistance to cultural change; & adverse economic incentives**

Major impediments, however, must be overcome. First, the cultural barrier: the viewpoint that more is better permeates American medical culture, providers, patients and the public at large. The notion that less may be better raises the stigma of health care rationing. The Fisher findings should go a long way to clear the air for at least considering the alternative hypothesis -- that more may be harmful. But to fully engage the nation in this debate, progressive providers need to take seriously the differences in their own practice styles: to undertake the necessary outcome studies to further clarify the relationship between resource inputs, utilization and outcomes of care. Economic barriers also impede. Reducing overdependence on acute care medicine has significant negative consequences. Widespread implementation of population-based management of chronic illness will require change in reimbursement policy to reduce financial risk to progressive providers.

Use Of Medicare Claims Data To Monitor Provider-Specific Performance Among Patients With Severe Chronic Illness

Analyses of seventy-seven of America's "best hospitals" document extensive variation in the amount of care provided to patients with three common chronic conditions.

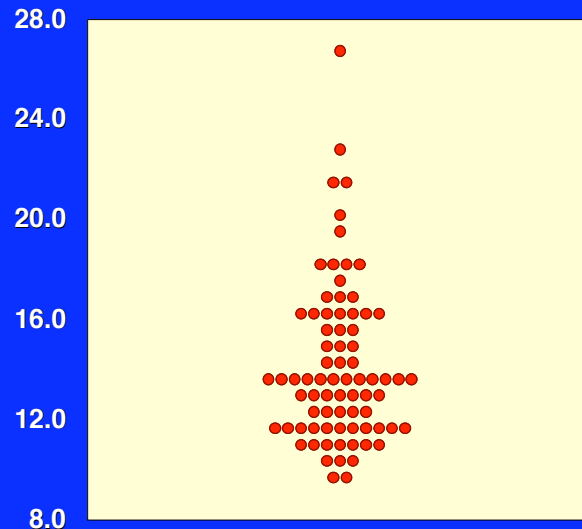
by **John E. Wennberg, Elliott S. Fisher, Thérèse A. Stukel, and Sandra M. Sharp**

ABSTRACT: This study illustrates that Medicare claims can be used to measure population-based, provider-specific rates of resource inputs, utilization, and Medicare spending. The target populations are seventy-seven cohorts of chronically ill Medicare enrollees who received most of their care from seventy-seven well-known U.S. hospitals. Striking variations are documented in resource inputs and use of services during the last six months of life. The patterns of care seen in the progression of chronic illness correlate highly with care

Let me turn to describe how performance data based on claims comes into the picture. We recently developed a method for using Medicare claims to monitor provider-specific performance for patients with severe chronic illness. Hospital-specific measures of utilization and resource inputs are possible because most Medicare patients with serious chronic illnesses tend to use the same hospital and associated medical staff throughout the course of their illnesses. To create the study populations, we examined the pattern of use of hospitals in the two years prior to death and assigned patients to the hospitals they most often used. Medicare spending, resource inputs (FTE physician labor, hospital and ICU beds) and utilization were calculated for fixed intervals prior to death for patients with chronic illnesses. Rates were adjusted for age, sex, race, and type of chronic illness.

In our initial studies, we applied the methodology to examined patterns of utilization among populations that receive most of their care from hospitals that appear of US News & World Report's list of America's best hospitals.

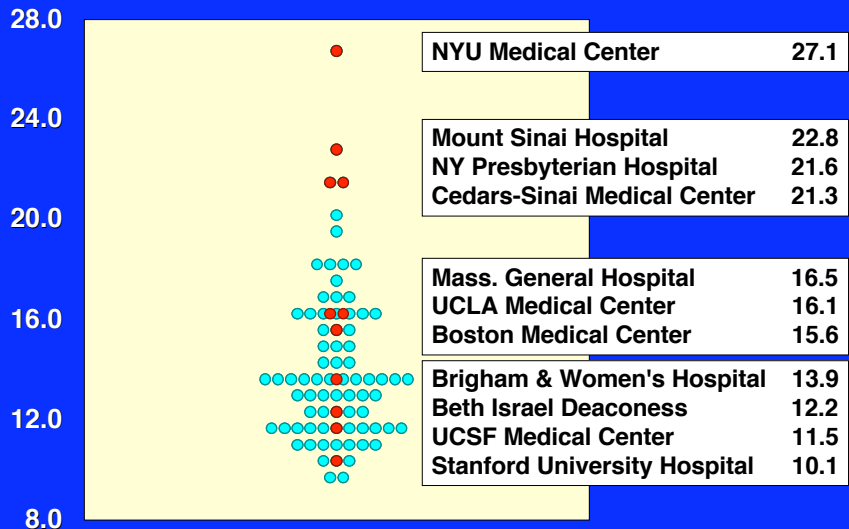
Supply-Sensitive Care
Days in hospitals per decedent during last six months of life
among patients assigned to the 77 “best” U.S. hospitals



Although these hospitals (and associated physicians) were selected because of their reputations for high quality in geriatric care and the management of chronic illness, they differ remarkably in the amount of care they actually provide to patients with similar illness and at a similar stage in the progression of disease. Each dot on this slide represents the average number of days spent in hospital during the last six months of life among chronically ill Medicare patients assigned to one of the 77 hospitals USN&WR best hospitals. Average days in hospital varied from less than 9 days to more than 27 days.

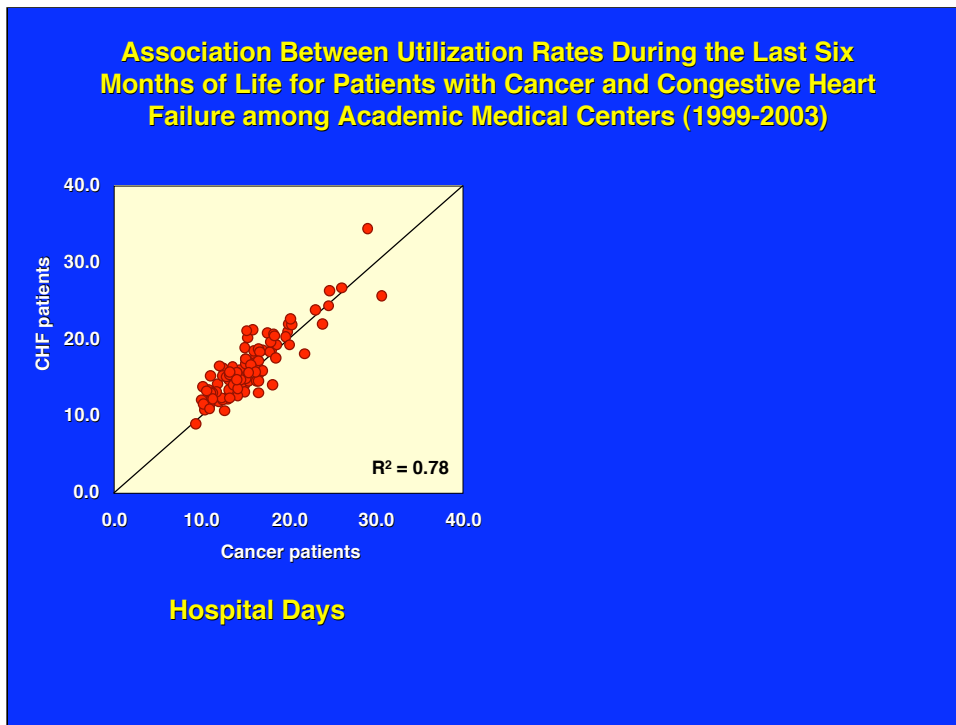
Rates are based on all hospitalizations during the last six months of life, the vast majority of which occurred in the hospital to which the patients were assigned. Severe chronic illness was defined as patients with complicated illness in 12 categories of chronic illness as proposed by Iezonni and her colleagues. Rates are adjusted for age, sex, race, and type of chronic illness.

Supply-Sensitive Care
Days in hospitals per decedent during last six months of life
among patients assigned to academic medical centers



Most of the hospitals on USN&WR's best hospital list are well-known academic medical centers. This slide shows how much they differ among themselves. Note the differences between UCLA and UCSF -- academic medical centers belonging to the same hospital system. Patient day rates for patients assigned to UCLA were more than 50% higher than they were for patients assigned to UCSF.

Rates are based on all hospitalizations during the last six months of life, the vast majority of which occurred in the hospital to which the patients were assigned.



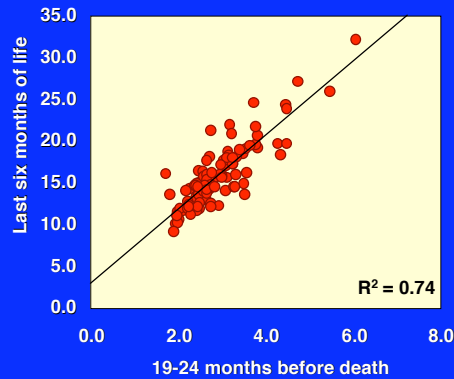
We have already established, at the regional level, the importance of hospital capacity in influencing decisions to hospitalize. In other regional studies, we have shown that the association between capacity and utilization is similar for various types of medical conditions. For example, ambulatory care-sensitive conditions (ACS) and all other (non-ACS) medical conditions have similar strong correlations with bed capacity. What is true for regions is also true for specific hospitals: this slide illustrates that among academic medical centers, the hospital-specific effect on utilization is similar for a cancer patients (a non-ACS condition) and for congestive heart failure patients (an ACS condition). At the same hospital, CHF patients tend to have higher patient day rates than cancer patients (as indicated by the predominance of dots clustered above the 45-degree line in the graph). However, what really matters in determining the number of hospital days is the hospital where most of the care is received, not the nature of the patient's chronic illness. We infer that the mediating factor is the supply of hospital beds relative to the size of the population of patients who "belong" to the physicians who use the hospital.

Association (R^2) Between Utilization Rates During the Last Six Months of Life for Patient Cohorts According to Demographic Characteristics among Academic Medical Centers (1999-2003)

	Hospital days
Black & Non-Black	0.67
Male & Female	0.92
Younger & Older	0.82
Medicaid & Non-Medicaid	0.84

It is a well-understood fact of medical care epidemiology that utilization rates are influenced by demographic factors. (This is why we adjust for age, sex, race and socioeconomic status.) As it turns out, the hospital effect is more important than these factors in predicting hospitalization rates. While at the same hospital, black patients tend to have higher utilization rates during the last six months of life than non-black patients, the high R^2 of the association between race-specific hospitalization rates at academic medical centers (and the wide variation in the rates themselves) indicate that the hospital where care is delivered is much more important than race in determining relative risk of hospitalization during the last six months of life. The same is true of other predictors of individual risk of hospitalization: males, younger patients and lower people of lower socioeconomic status (as defined by Medicaid buy-in) tend to be higher users. However, by far the most important factor in determining relative risk is the hospital where care is delivered.

Association Between Utilization Rates 19-24 Months Before Death and During the Last Six Months of Life among Academic Medical Centers (1999-2003)

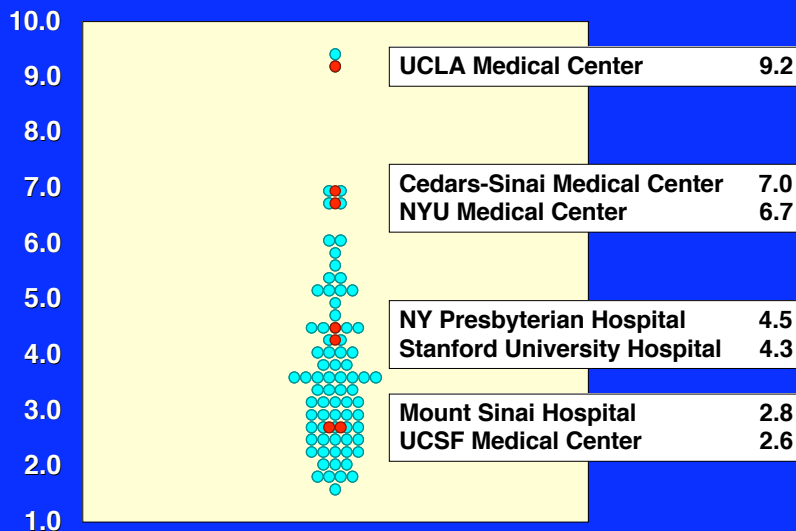


Hospital Days

This slide illustrates two important features of the hospital effect on utilization. First, it is independent of the severity of illness. This interpretation is supported by the high R^2 of hospitalization rates during the last six months of life (a time of highest acuity of illness) and rates during the 19th-24th month interval prior to death (when patients are less ill). Although rates are about five times higher during the last six months of life, the relative rates among hospitals are highly correlated, indicating that the hospital effect on utilization is similar across severity of illness subgroups. Second, the effects we are measuring are not reserved for end of life care; rather, we believe, they represent a stable attribute of the hospital, reflecting variation in capacity relative to size of the population at risk, which affects the threshold for hospitalizing chronically ill patients at all stages in the progression of disease.

Supply-Sensitive Care

Days in intensive care per decedent during last six months of life among patients assigned to academic medical centers

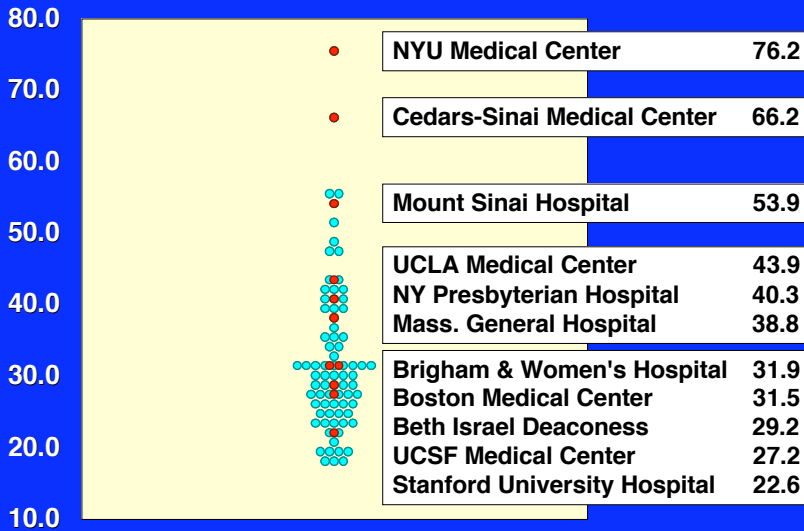


Each dot represents one of the 77 hospital cohorts, presenting the average number of days spent in intensive care per person during the last six months of life for each cohort. There is considerable variation in the rates of use of intensive care in managing chronic illness among America's best hospitals. During the last six months of life we observed more than a five-fold variation.

Among California hospitals, there are striking differences. UCLA patients had almost 3.5 times more ICU bed days than UCSF patients. Care at UCLA is much more oriented to aggressive intervention: 59.4% of patient days during the last six months of life are ICU bed days among UCLA patients; among UCSF patients only 28.4% of hospital days were in intensive care.

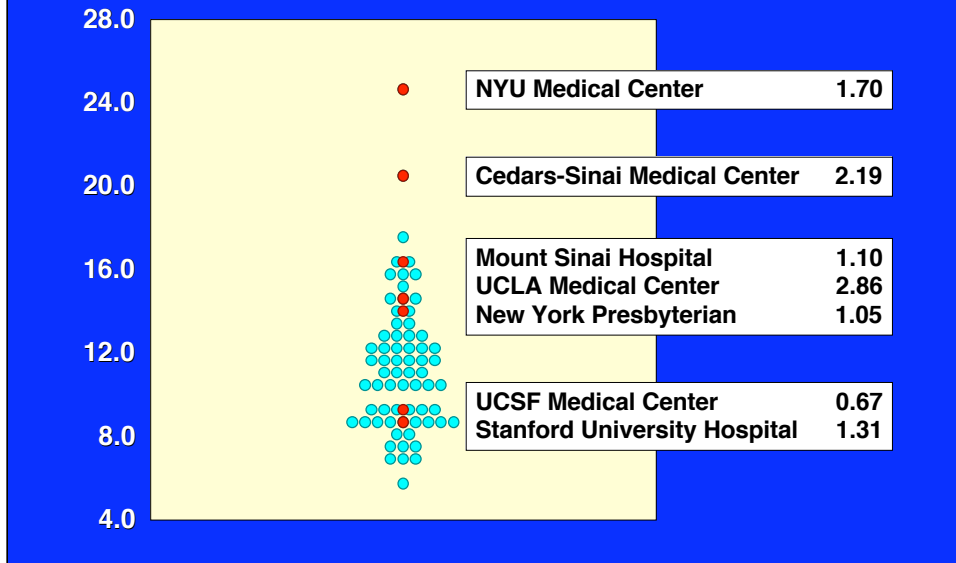
Supply-Sensitive Care

Physician visits per decedent during last six months of life among patients assigned to academic medical centers

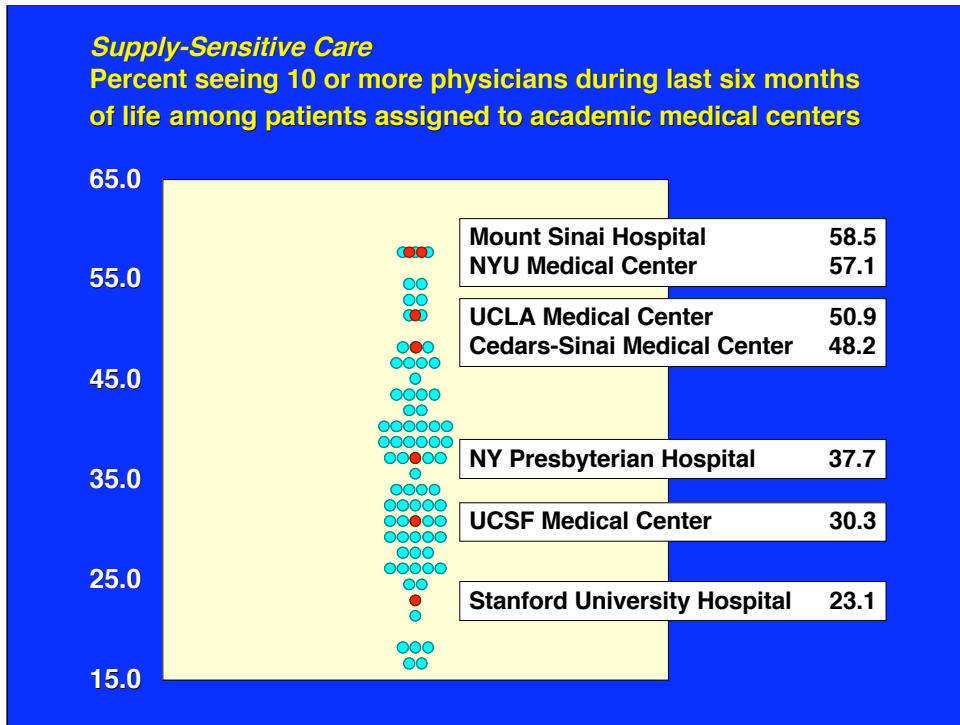


This slide examines the number of visits per person during the last six months of life among patients loyal to the 77 best US hospitals. Visit rates ranged from fewer than 18 per person to 77 per person. Within California teaching hospitals, there was a 2.9 fold variation, with Cedars-Sinai at the high end (66.2 visits) and Stanford at the low end (22.6 visits).

Supply-Sensitive Care
Ratio of medical specialist to primary care visits during last six months of life among patients assigned to academic medical centers

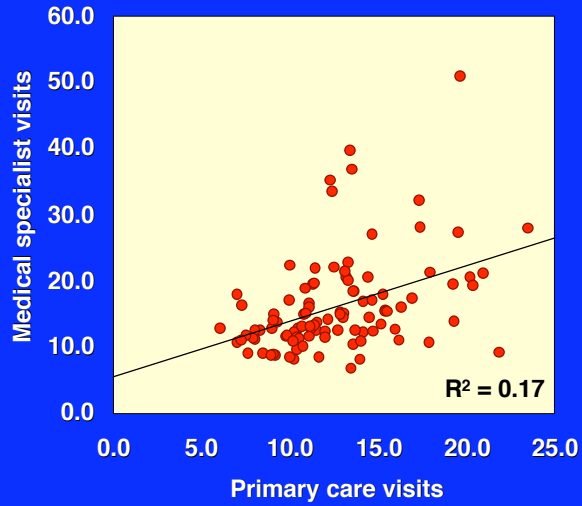


There are striking differences among America's best hospitals in reliance on primary care or on specialty care in managing chronic illness. This is measured here by the proportion of patient visits provided by medical specialists, compared to primary care physicians. Practice patterns at UCLA are oriented to specialty care; during the last six months of life, patients associated with this hospital incurred 2.9 times more visits with medical specialists than with primary care physicians. By contrast, practice patterns at UCSF are oriented toward primary care: the ratio of medical specialist visits to primary care visits was .67.



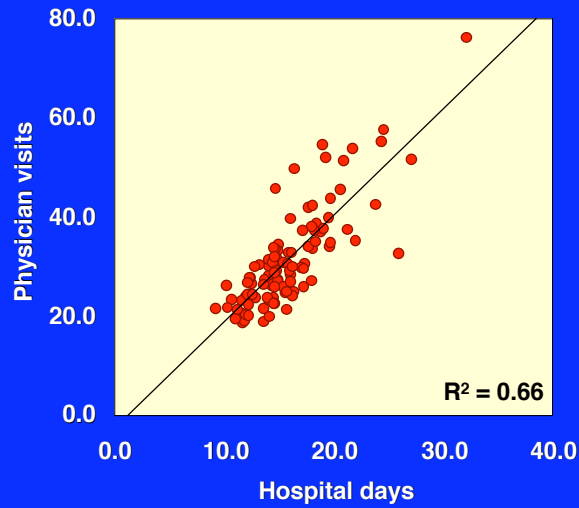
Another way of looking at the patterns of practice of physician care is to evaluate the propensity within a region or health care organization to involve many physicians in the care of a given patient. While judicious use of referrals is an important part of good practice, the exposure of larger proportions of the patient populations to multiple physicians might not be. Health care organizations that perform on the high end of this measure may suffer from lack of continuity of care, from what is sometimes called “ping-ponging” or “multiple referral syndrome,” in which no one physician is responsible for care coordination. It is of interest that researchers have found an inverse relationship between the percent of patients seeing ten or more physicians and effective care quality measures. Note that at Mount Sinai and NYU Medical Centers, more than 57% of patients see ten or more physician during the last six months of life; while among patients loyal to Stanford, only 23% do.

Association Between Medical Specialist and Primary Care Physician Visits During the Last Six Months of Life Among Academic Medical Centers (2000-03)



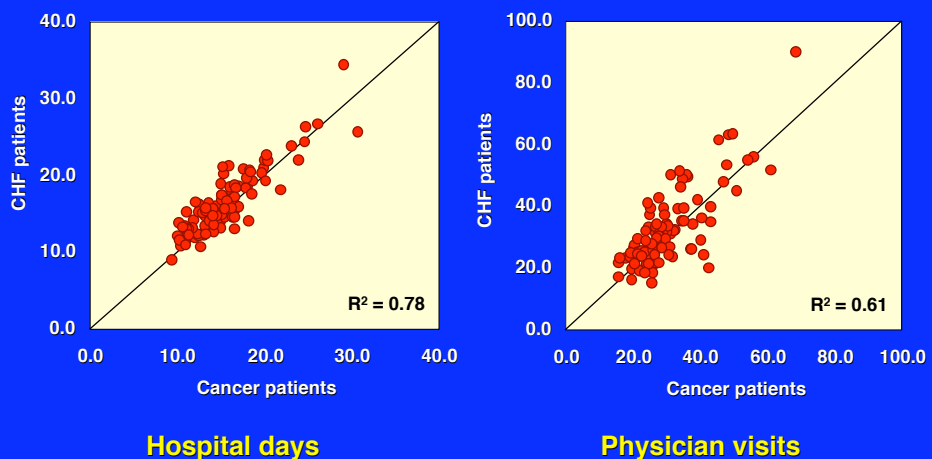
It is worthy of note that we found no inverse relationship between visit rates for primary care and visit rates for medical specialist care. In other words, there is no evidence of a systematic tradeoff between primary and specialty care. Indeed, hospitals with higher rates of one service tended to have higher rates of the other, although the association is not strong, and there are some hospitals that have high rates of primary care visits and low rates of specialty visits (and vice versa).

**Association Between Hospital Days and Physician Visits During
the Last Six Months of Life Among Academic Medical Centers
(1999-2003)**



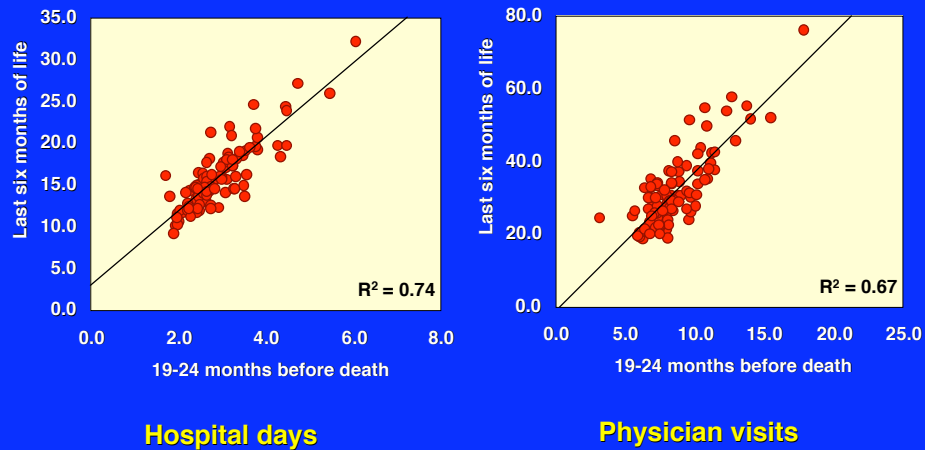
Patients who spend more days in hospitals also receive more physician visits, presumably because it is easier to schedule consultations and to revisit hospitalized patients. This figure gives the association between days spent in hospitals and total physician visit rates among academic medical centers during the last six months of life. The association is quite strong.

Association Between Utilization Rates During the Last Six Months of Life for Patients With Cancer and Congestive Heart Failure Among Academic Medical Centers (1999-2003)



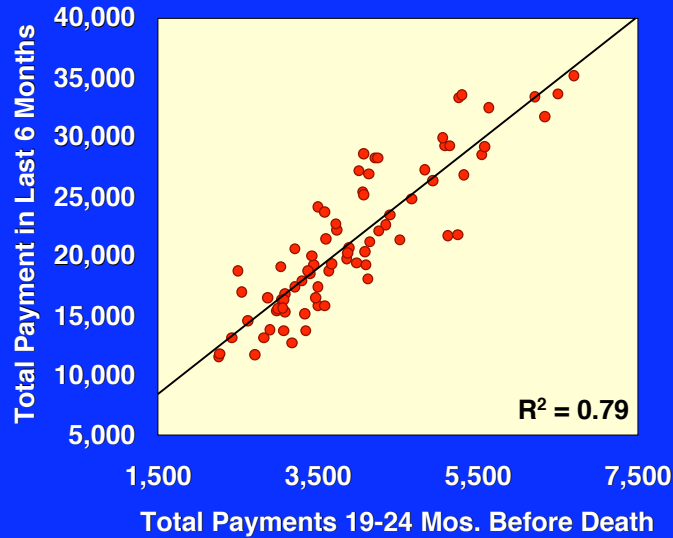
We found the same pattern of practice in physician visits as we did for hospital days; what matters most in determining the relative frequency of visits is not the illness, but the system that provides the care. This was also true for race, sex, age and poverty status.

Association Between Utilization Rates 19-24 Months Before Death and During the Last Six Months of Life Among Academic Medical Centers (1999-2003)



The pattern of hospital influence is consistent over different periods in the progression of chronic illness. While physician visit rates are more frequent in the last six months of life, the relative rates tend to be consistent over various stages in the progression of chronic illness.

Association Between Total Medicare Payments 19-24 Months and 0-6 Months Before Death: 77 “Best” Hospitals (1999-01)



The level of Medicare spending during the last six months of life is strongly associated with spending in previous periods. Thus, relative spending level during the last six months of life provides a hospital-specific estimate of the relative cost of managing chronic illness that is “adjusted” for illness (prognosis is identical; rates are adjusted for age, sex, race and type of chronic illness). We believe these estimates could be useful in planning strategies for reimbursement experiments (such as cost-sharing or partial capitation) under Medicare demonstration programs (for example, the Medicare Health Care Quality Demonstration Programs).

Evaluating The Efficiency Of California Providers In Caring For Patients With Chronic Illnesses

Important opportunities exist for hospitals, in California and elsewhere, to improve the efficiency of their chronic illness care.

by **John E. Wennberg, Elliott S. Fisher, Laurence Baker, Sandra M. Sharp, and Kristen K. Bronner**

ABSTRACT: In this paper we compare the relative efficiency of health care providers in managing patients with severe chronic illnesses over fixed periods of time. To minimize the contribution of differences in severity of illness to differences in care management, we evaluate performance over fixed intervals prior to death for patients who died during a five-year period, 1999–2003. Medicare spending, hospital bed and full-time equivalent (FTE) physician inputs, and utilization varied extensively between regions, among hospitals located within a given region, and among hospitals belonging to a given hospital system. The data point to important opportunities to improve efficiency.

WIDESPREAD CONCERN ABOUT THE QUALITY and cost of medical care has spurred public- and private-sector efforts to measure the performance of individual physicians, medical groups, hospitals, nursing homes, and health plans. Currently available performance measures, however, are limited in their scope. Most focus on the technical processes of care—in particular, the underuse of effective care, such as indicated screening tests in diabetics.

The Dartmouth Atlas project plans to make hospital specific data available for virtually all US hospitals. The first database will provide performance measures for managing chronic illness. Data is already available for California hospitals. The next few slides provide an overview of the California data (which can now be accessed on the Dartmouth Atlas web site:

<http://www.dartmouthatlas.org/>).

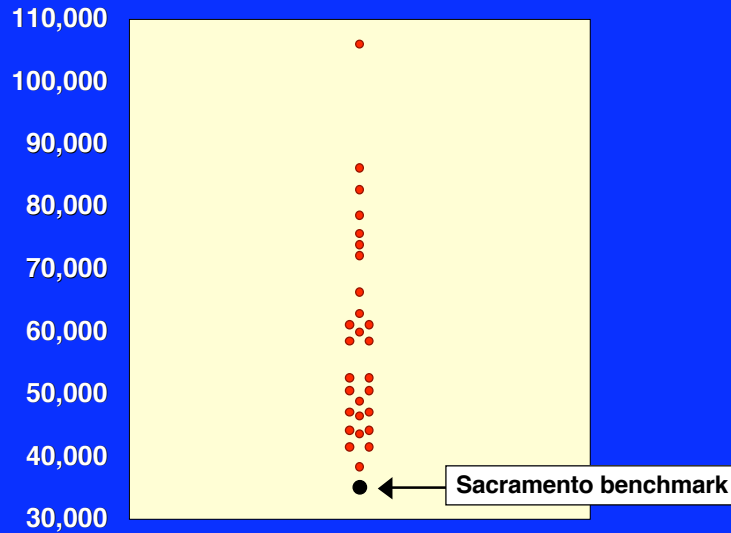
**Medicare spending in managing chronically ill Medicare enrollees
last two years of life: Residents of Los Angeles vs. Sacramento**

Spending per person (1999-03)

	Los Angeles	Sacramento
Inpatient + Part B	\$58,480 (1.69)	\$34,659
Inpatient reimbursements	43,506 (1.67)	26,048
Part B payments	14,974 (1.74)	8,611

Data are available on a regional as well as a hospital-specific basis. In California, we found striking differences among regions. This slide compares Medicare spending for inpatient (Part A) care and for Part B (physicians' services). The data are for patients with chronic illness who were hospitalized at least once during the last two years for a chronic illness and who were residents of the Los Angeles or the Sacramento hospital referral region as defined in the Dartmouth Atlas. Note that per person spending was 69% greater for enrollees living in Los Angeles than for those in Sacramento. The differences were not explained by local labor costs (which are higher in Sacramento than in Los Angeles).

Inpatient & Part B spending per person during the last two years of life (1999-2003) among Los Angeles hospitals with 1000+ deaths



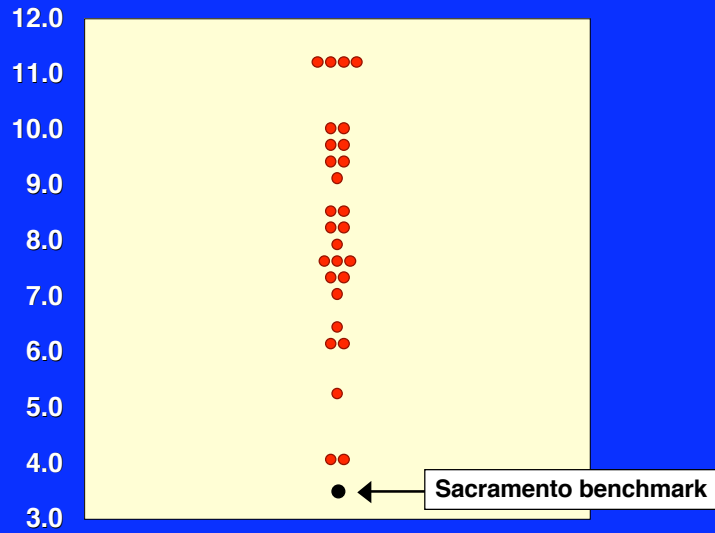
This slide compares per person spending during the last two years of life among 28 of Los Angeles' larger hospitals. While on average, spending in Los Angeles regions is 69% greater than in Sacramento, there is more than a 2.7 fold variation among the Los Angeles hospitals. Note that, although there is considerable variation, each LA hospital exceeds the Sacramento benchmark. (Sacramento was selected as a reasonable benchmark for comparing relative efficiency among California regions on the basis of its lower costs, more efficient use of resources, conservative practice patterns and superior quality measures, including patient ratings.) For fuller discussion, please see "Evaluating The Efficiency Of California Providers In Caring For Patients With Chronic Illnesses" at <http://content.healthaffairs.org/cgi/content/abstract/hlthaff.w5.526>

Medicare spending and resource inputs for chronically ill Medicare decedents during the last two years of life in selected hospitals in the Los Angeles region (1999-2003)

	Inpatient & Part B spending	Hospital bed inputs	Physician FTE inputs
Garfield Medical Center	\$106,254	105.3	57.6
Centinela Medical Center	\$86,074	101.3	49.5
Long Beach Memorial	\$52,466	76.3	39.3
Presbyterian Intercomm.	\$40,986	62.0	29.8
Foothill Presbyterian	\$38,567	62.1	27.7

The Dartmouth Atlas performance measures include spending and resource inputs for patients with chronic illness. They provide for direct comparisons between regions and hospitals. This table provides an example of hospital specific measures for five Los Angeles hospitals, sampled according to their rank on Medicare spending on the previous graph -- the two highest, the median (14th), and the two lowest ranked hospitals. For example, Medicare spending for patients who received most their care at the highest ranked Garfield Medical Center was over \$106,000. Clinicians treating these patients used 105 hospital beds and physician labor input over the last two years of life was 57.6 per 1,000 Medicare decedents.

Days spent in intensive care per person during the last six months of life (1999-2003) among Los Angeles hospitals with 1000+ deaths

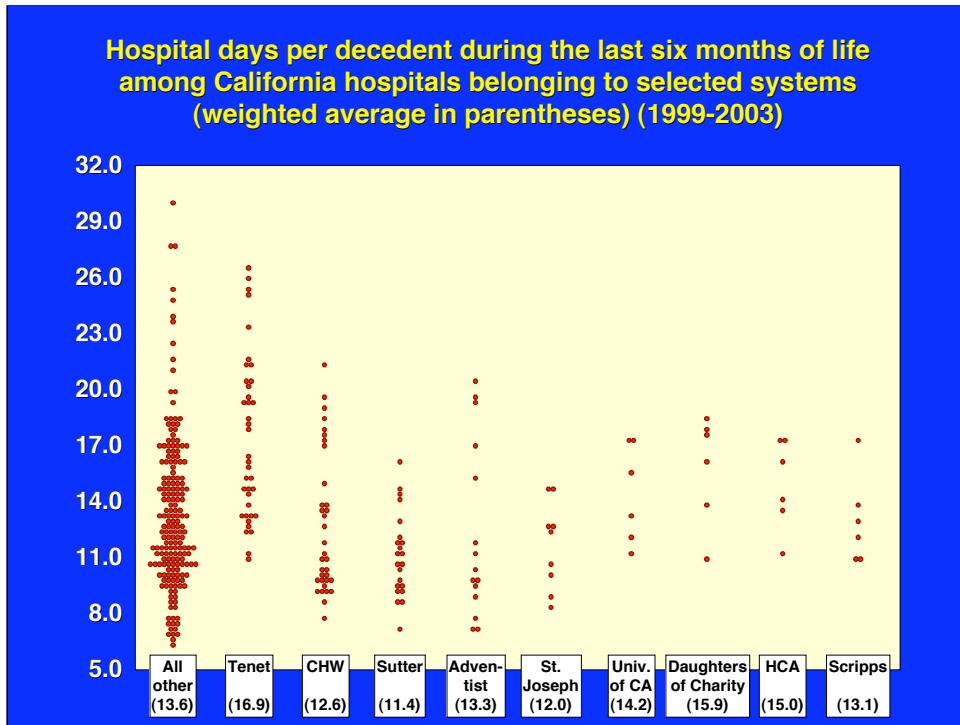


This slide compares use of intensive care during the last six months of life. The average number of days spent in intensive care varied from about 4 days to more than 11 days per decedent. Each hospital exceeded the Sacramento benchmark.

Utilization per decedent among chronically ill Medicare patients during the last six months of life in selected hospitals in the Los Angeles region (1999-2003)

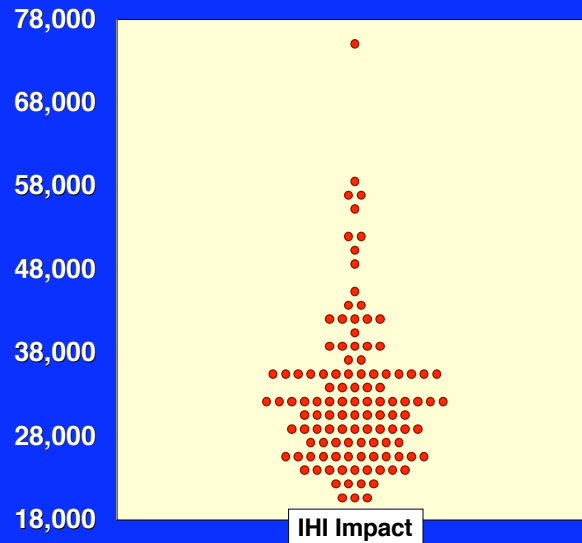
	Hospital days	ICU days	Physician visits
Garfield Medical Center	23.4	11.2	92.8
Centinela Medical Center	21.4	11.2	68.3
Long Beach Memorial	15.9	6.9	55.0
Presbyterian Intercomm.	13.4	5.2	45.2
Foothill Presbyterian	12.7	4.2	39.7

The Dartmouth Atlas performance measures include utilization of medical services over fixed intervals of time for patients with chronic illness. These support direct comparisons between regions and hospitals. For example, per decedent utilization rates during last six months of life among patients loyal to Garfield Medical Center averaged 23 days in hospital, 11.2 days in intensive care, and nearly 93 visits to physicians.



Analysis of the California database shows striking variation among hospitals belonging to the same hospital systems, as well as interesting differences in system-wide averages. This slide profiles California hospitals according to days spent in hospital during the last six months of life.

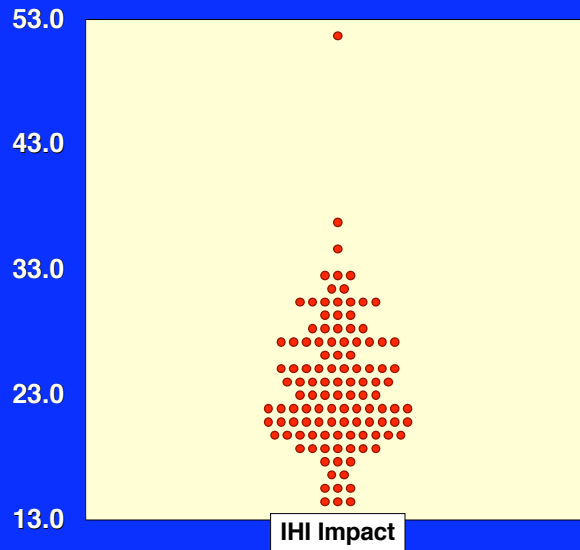
Inpatient & Part B Medicare spending per person during the last two years of life among chronically ill Medicare patients (1999-2003)



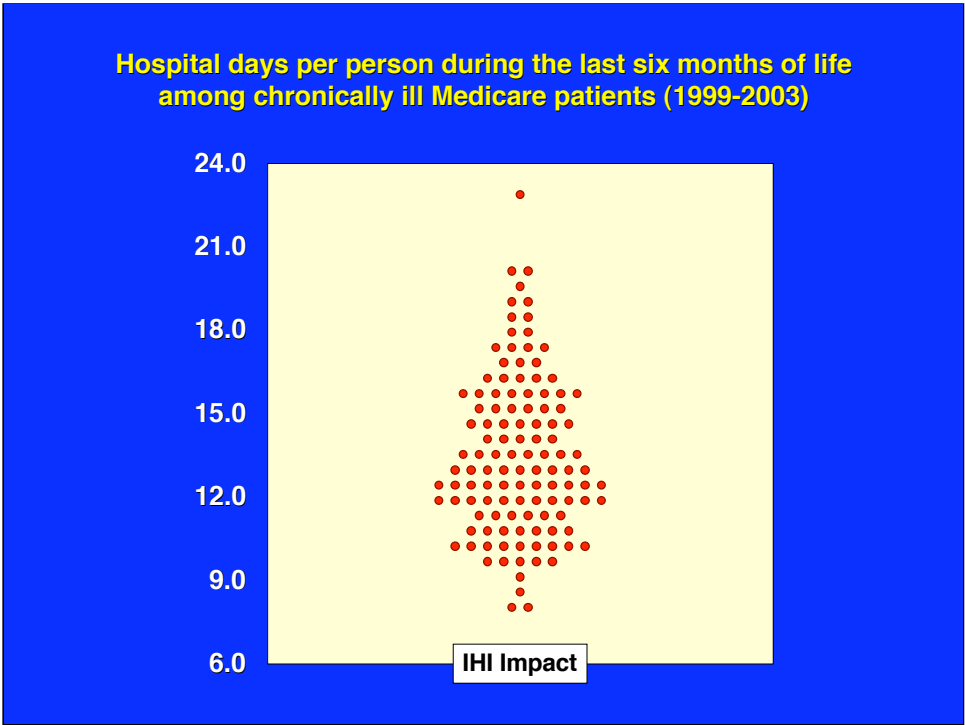
The Dartmouth Atlas performance measures similar to those in California database will be released to the public early in 2006. However, pre-release data is now available to IHI hospitals. The method for access data will be posted on the IHI website shortly.

This slide shows the variations in Medicare spending among hospitals belong to the IHI Impact network (as of last summer).

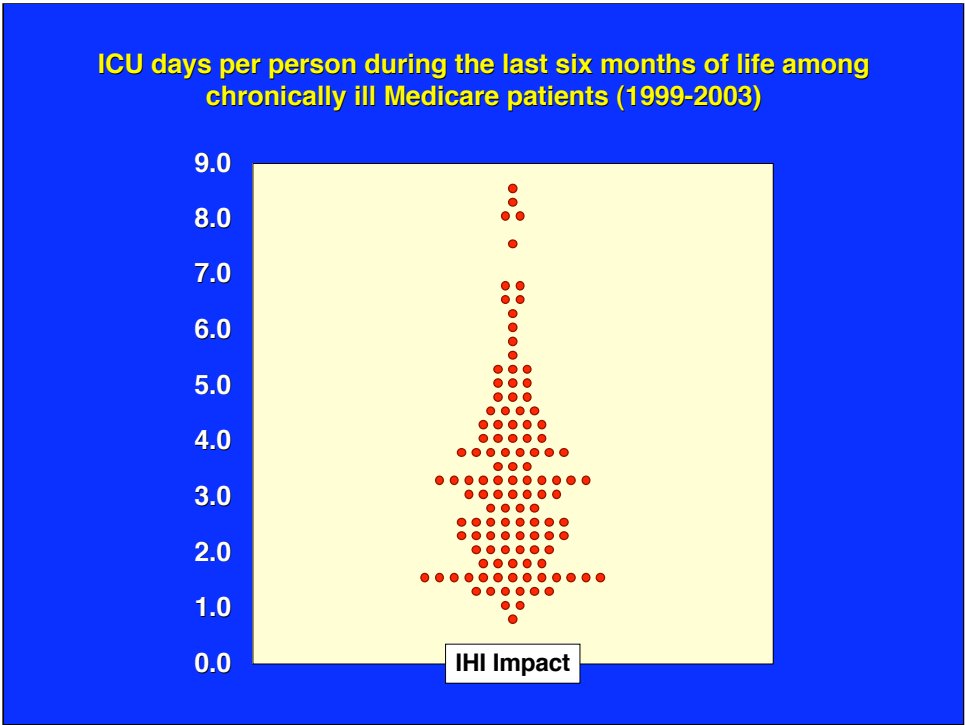
FTE physician labor inputs per 1,000 during the last two years of life among chronically ill Medicare patients (1999-2003)



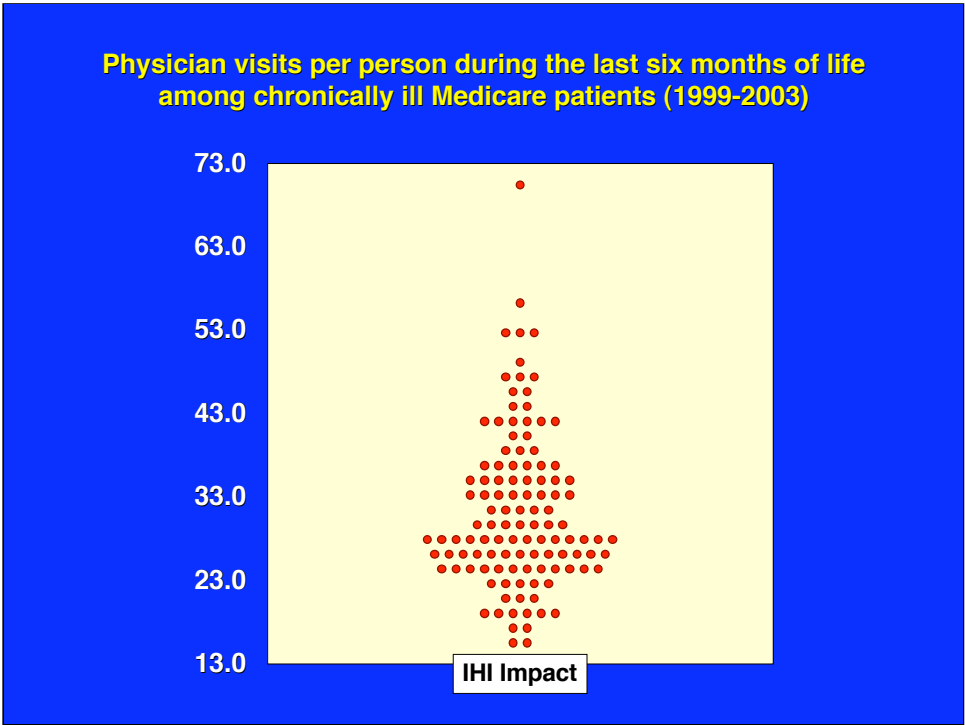
This slide profiles variation in physician labor input among IHI hospitals belonging to the Impact network.



Hospital days also show considerable variation among IHI network hospitals.



ICU use varies from less than one to more than eight days per decedent during the last six months of life among IHI hospitals in the Impact network.



Physician visits also vary substantially.

Summary: “System” Causes of Unwarranted Variation

Underuse of effective care

- **Discontinuity of care (worse when more physicians are involved in the care)**
- **Lack of infrastructure to assure outreach and the timely use of effective care**
- **Finance “system” that fails to support infrastructure and rewards quantity, not quality**

Don Berwick has called for provider leadership to show the way to the redesign of health care systems to bring about “An American Health Care System worthy of the name.” We suggest that such a system must be capable of reducing unwarranted variation in all three categories of care.

This slide summarizes our diagnosis of the “system” causes of unwarranted variation in effective care and patient safety: the causes that must be addressed in the redesign of American health care. The 100,000 Lives Campaign provides an excellent example of the required professional leadership.

Summary: “System” Causes of Unwarranted Variation

Misuse of preference-sensitive care

- **Poor communication between MD and patient regarding the risks and benefits of alternative treatments;**
- **Patient dependency on physician’s opinion in sorting out preferences; (flaws in agency model)**
- **Inadequate evaluation of (evolving) treatment theory**
- **Health care finance “system” that rewards procedures, not the quality of decision making**

This slide summarizes our diagnosis of the “system” causes of unwarranted variation in preference-sensitive care: the causes that must be addressed in the redesign of American health care. The quality movement has made huge progress in patient safety but needs to expand its focus to include the quality of patient decision making if we are to succeed in establishing the new American Health Care System.

Summary: “System” Causes of Unwarranted Variation

Overuse of supply-sensitive care

- Over-dependence on acute hospital care;
- Lack of infrastructure to support population-based management of chronically ill patients;
- Cultural assumption that more care is better care (without evidence at the clinical level that this is so)
- Lack of accountability for the capacity of the health care system relative to the size of the population served
- Finance “system” that rewards high intensity care and doesn’t pay for infrastructure, efficiency or learning

This slide summarizes our diagnosis of the “system” causes of unwarranted variation in supply-sensitive care: the causes that must be addressed in the redesign of American health care. The quality movement needs to address the critical problem of overuse of supply-sensitive care -- the waste and inefficiencies that are a source of the current chaos in US health care and, I believe, much of the harm that the patient safety movement seeks to overcome.

What needs to be done to reduce unwarranted variation:

- Eliminate underservice of effective care
- Reduce medical mistakes
- Learn what works (outcomes research)
- Assure informed patient choice (shared decision making)
- Achieve efficient and effective management of chronic illness (target: use of supply-sensitive care)
- Achieve efficient allocation of resources geared to size of the population served

Here is the challenge the study of practice variations brings to the quality movement: a list of what needs to be done to reduce unwarranted variation.

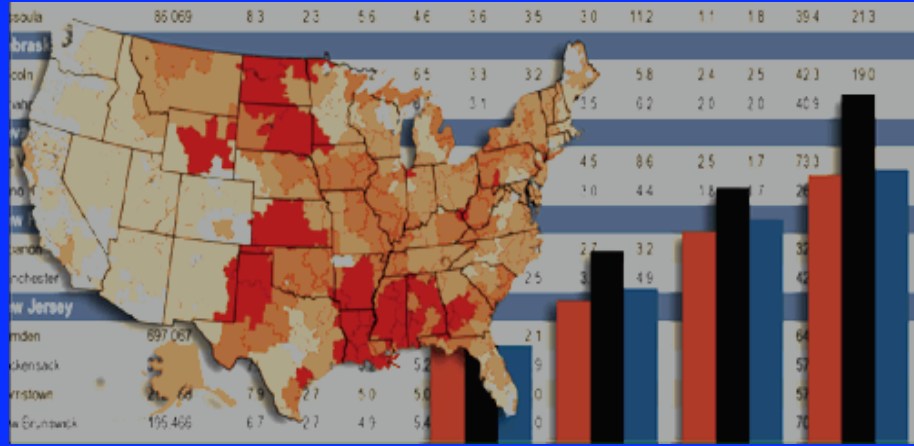
The CMS 646 Opportunity **(Medicare Health Care Quality Demonstration Programs)**

- **Provider focus: group practices, integrated health care systems and regional coalitions can propose radical changes in health care delivery**
- **Focus on improving quality and efficiency in all three categories of care**
- **RFP seeks proposals to reform financing systems as well as the regulatory environment (and might include commercial as well as Medicaid programs)**
- **Encourages collaboration between applicants, NIH and ARC to improve the scientific basis of clinical decision making**
- **Five-year time horizon**

Provider power works well for achieving the will to deal with patient safety and the 100,000 Lives Campaign shows that implementation is possible without major change in economic incentives. However, I believe that substantially reducing unwarranted variation in preference- and supply-sensitive care requires change in economic incentives. The redesign of the doctor-patient relationship to assure informed patient choice is very difficult when reimbursement depends on doing procedures rather than making good decisions. Population-based management of chronic illness requires infrastructure and approaches that do not easily fit into traditional reimbursement strategies. And managing the problem of reducing excess acute sector capacity is likely impossible when revenues and debt retirement depend on utilization. To achieve these reforms, progressive providers need to partner with progressive payers.

I believe that CMS's 646 opportunity may be the opportunity for such a partnership. I hope IHI's consortium of progressive providers accept the challenge to test whether this is the chance we have been waiting for.

Thank You!!!!



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