



The Care of Patients with Severe Chronic Illness: A Report on the Medicare Program by the Dartmouth Atlas Project

The Medicare program could reduce current spending by at least 30%, while improving the medical care of the most severely ill Americans.

More than 90 million Americans live with chronic illnesses such as diabetes, cancer and heart disease; and seven out of ten American deaths are caused by chronic illnesses. The care of people with chronic illness accounts for more than 75% of all U.S. health care expenditures, but Medicare spends much more per enrollee in some states and regions than it does elsewhere. The differences in spending provide important insights into the causes of waste in our current health care system – and the opportunities to improve both the quality and the efficiency of care.

The differences in spending are not because there are more sick people in high spending regions; while the prevalence of chronic disease varies among regions, differences in illness levels are virtually unrelated to the differences in spending. And while variation in the price of care explains some of the differences in spending among states and regions, what matters most is the variation in the amount of care provided on a per person basis. Chronically ill patients living in high spending regions have more visits, hospitalizations, stays in ICUs, and diagnostic tests. Behind the striking variations in spending and utilization are equally striking variations in the resources — the numbers of beds and clinically active physicians — that providers use in managing chronic illness. A similar pattern of variation is evident among leading academic medical centers with strong national reputations for high quality care, as well as among the hospitals in major metropolitan markets such as Manhattan, Miami, Los Angeles, Minneapolis and Seattle.

The bottom line diagnosis: The extra spending, resources, physician visits, hospitalizations and diagnostic tests provided in high spending states, regions and hospitals doesn't buy longer life or better quality of life. In fact, those with chronic illnesses who live in high rate regions have slightly shorter life expectancies and less satisfaction with their care than those in regions with lower rates of spending. When it comes to managing chronic illnesses, greater use of hospitals and physician labor doesn't result in additional health; the problem is waste, and over-use in high rate states, regions and hospitals — not under-use and health care rationing in low rate areas and institutions.

This edition of the Dartmouth Atlas shows how to identify high quality, high efficiency providers and how to measure the potential savings that could be achieved if all providers met these benchmarks. **If the resources and utilization of efficient providers were realized by all providers managing the care of people with severe chronic illnesses during the last two years of their lives, Medicare spending for this group could be reduced by 30%.** The challenge is to realize these savings and reallocate resources to build and maintain integrated community-based systems for managing chronic illness.

An important task in meeting this challenge is transparency in measuring quality and efficiency. The performance measures described in this edition are now available on the Dartmouth Atlas Website for 4,346 hospitals. The measures will be updated and added to on a timely basis and posted on the website, which can be accessed without restriction. The data can be used to identify providers who are relatively efficient in managing severe chronic illness compared to others, including hospitals located within the same community.



Highlights on a Chapter-by-Chapter Basis

Chapter One:

Chronic Illness and the Problem of Supply-Sensitive Care

Why spending and utilization varies: unmanaged supply of resources, limited evidence and optimistic assumptions (that turn out to be false). The first chapter explains why differences in per capita resources drive differences in utilization and spending in managing patients with severe, life threatening chronic illness. A hospital bed, once built, will be occupied. A medical specialist, once trained, will see patients, order tests, and make referrals to other specialists. But evidence-based medicine plays virtually no role in governing the frequency of use of these supply-sensitive services. In the absence of strong evidence (such as clinical trials comparing one kind of care management to another), other factors drive clinical decisions – including the widely held assumption that for patients with severe chronic illness, more medical care means better care. This assumption is reinforced by fee-for-service payment systems and by physician fears of malpractice lawsuits.

The critical question is whether more supply-sensitive care results in better health outcomes. The chapter reviews the research demonstrating that greater use of supply-sensitive services appears to be associated with worse outcomes, poorer quality and lower satisfaction. Although higher-spending regions spend more, use more resources, and have higher hospitalization rates, the technical quality of care and patient reports concerning access to care are marginally worse, and patients with the same disease have higher mortality rates, very likely because of medical errors associated with the increased use of acute care hospitals. Comparisons of major academic medical centers revealed the same pattern; higher spending was not associated with better quality of care or outcomes.

Implications: high performing health systems can be used as benchmarks of efficiency. The evidence that the outcomes and quality of care tend to be better in regions with lower resources shows that providers serving such regions are not rationing care. On the contrary, they are more efficient; they achieve equal and often better outcomes with fewer resources.

Chapter Two:

Variations Among States in the Management of Severe Chronic Illness

Patients are treated very differently, depending on the state where they live. This chapter illustrates striking variations among states in Medicare spending, resource inputs and utilization. It illustrates the importance of the mix of physician specialties, as well as the per capita numbers of physicians, in achieving low cost/high quality health care. It shows that states that rely more on primary care physicians than on medical specialists in managing chronic illness tend to have lower Medicare spending and use fewer ICU beds. They also have less overall physician labor and fewer referrals to multiple physicians — and have better quality of care as measured by standard process of care measures. The hospital-specific data now available can help states address practice variation in their various roles as purchasers (Medicaid and state employees), regulators (decisions on need to construct hospital beds and other capacity-influencing decisions) and educators (decisions to expand medical schools or other policies that promote growth in the supply of physicians).

Chapter Three:

Treatment of the Chronically Ill at Academic Medical Centers

Academic medical centers vary remarkably in the way they manage chronic illness. Readers of this chapter should come away with the clear impression that there is no consensus among academic medical centers on the clinically appropriate way to manage chronic illness. Academic medical centers differ dramatically in their patterns of practice and resource use. For example, during the last six months of life, patients using New York University Hospital had 76 physician visits per person; Mayo Clinic patients had only 24 visits. Academic medical centers differ in the way they use physicians. Over the last two years of a patient's life, the University of California teaching hospital in Los Angeles (UCLA) uses twice as much physician labor — measured as full-time equivalent physicians — as does the Mayo Clinic. UCLA is very medical specialist oriented; they use 2.5 times more specialists than primary care physicians. UCLA's sister academic medical center, the Uni-

versity of California teaching hospital in San Francisco, favors the use of primary care physicians: they use 1.2 times more primary physicians than medical specialists.

The chapter shows the importance of the choice of benchmark in establishing the need for physician labor. Depending on which region or academic medical center is chosen as the benchmark for physician supply, very different conclusions can be reached about the adequacy of the current supply of physicians. Benchmarks based on regions where large group practices or integrated health care systems dominate practice — such as the Rochester, Minnesota region (where most care is provided by physicians associated with the Mayo Clinic) — indicate that the country has a current surplus of physicians and is likely to have enough physicians to meet U.S. needs thorough 2020, when the Medicare population is swollen by the baby boom generation. In view of the close association between physician supply, the utilization of supply-sensitive care in managing chronic illness, and the evidence that more intensive care may have worse outcomes, we believe that policy makers should respond to the current calls for increasing the supply of physicians by 15-30% with caution.

Chapter Four:
How to Use
the Dartmouth Atlas to
Compare Performance in
Managing Chronic Illness

Hospitals, even those in the same region, vary remarkably in the way they manage chronic illness. Hospitals, even those with same region, often differ remarkably in utilization, Medicare spending and resources allocated to manage chronic illness. For example, Medicare spending for inpatient care and physician visits varies more than twofold among the hospitals in Miami. The major contributor to variation in per person spending within a region is usually variation in the volume of care (i.e., the utilization rate), not variation in the price of care (i.e., reimbursements per day in hospital or physician visit). *Identifying efficient providers depends on being able to measure the volume of care* (patient days and visits per person, for example) as well as unit price; the hospital-specific methods used in this edition of the Atlas provide this critical population-based information. The chapter describes in detail the routine population-based performance reports for evaluating the relative efficiency of regions and hospitals. The reports can be downloaded from the Dartmouth Atlas web site.

Chapter Five:
The Problem of Overuse of
Acute Care Hospitals in
Managing Chronic Illness:
A Regional Analysis

The problem of overuse of acute care hospitals in managing chronic illness. The final chapter draws attention to the over-dependency on acute care hospitals, with their emphasis on “rescue medicine,” in the management of chronic illness. As discussed in Chapter One, it can no longer be assumed that this management approach results in better outcomes. Chapter Five presents evidence that the differences in Medicare spending among regions are not a consequence of greater need for care (there is no correlation between the prevalence of severe chronic illness and spending). What matters in predicting Medicare overall spending is how much is spent per patient for those who have a chronic illness. The subsidies between regions, which are based on the way Medicare is financed, have no justification either in terms of differences in illness or in terms of the potential benefit to the populations of living in high spending regions. The only significant benefit of the federal subsidies to high spending regions is in their contribution to the local economy in high cost regions.

The problem of overuse of acute care hospitals in managing chronic illness is not only a Medicare problem. Although there is no systematic national database available for analysis, studies in Michigan have shown striking correlations between variations in Medicare utilization and variations in Blue Cross Blue Shield utilization. The Michigan analysis also traced the variations to the “system effect of capacity,” namely variations in the per capita numbers of hospital beds in Michigan communities.



The problem of overuse of acute care hospitals and medical specialists in the management of chronic illness is rapidly getting worse. Over the four-year period 2000-2003, per capita labor inputs of medical specialists, as well as the number of ICU beds per capita, increased more than 13% in the United States. The growth in utilization was greater in regions with higher baseline spending rates. In other words, the disparity between regions in spending and utilization appears to be increasing. For example, per patient rate of use of intensive care units during the last six months of life increased more than 15% in the highest rate regions, compared to 9.7% in the lowest rate regions.

Reducing variation toward the benchmarks of efficient practice would mean large Medicare savings. Utilization and resource use patterns in regions where care is better organized provide promising benchmarks of the fiscal benefits that would accrue by reducing overuse of acute care hospitals and medical specialists. For example, if utilization rates of acute inpatient care and physician visits were reduced to benchmarks provided by Salt Lake City, a region where more than half of health care is delivered through an integrated health care delivery system provided by Intermountain Healthcare, inpatient reimbursements would be reduced 32% and reimbursements for physician consultations and visits by 34%.

Toward a Solution

The reallocation of resources from the acute care sector to create a population-based, community-wide integrated system for managing severe chronic illness is today only a thought experiment. It should become a national goal. Realizing the savings that better organized care can bring requires building community-wide systems of coordinated care. In most communities, such systems do not now exist. The benchmarks from efficient practice indicate that Medicare already invests more than enough money to build and maintain such a system. The problem is that the resources are now largely locked in by Medicare's reimbursement policy. To meet their payrolls and amortize their debts, acute care hospitals are dependent on utilization; reduced utilization results in loss of income. In many regions the reduction in utilization required to meet efficiency benchmarks would have serious — indeed, devastating — consequences for acute care hospitals. Finding a solution will require payers, particularly Medicare, to develop new methods of financing care that provides a fiscal “safe landing” for hospitals and retained savings for use in building community-based systems for managing severe chronic illness. It will also require accountability for system integration. With proper reform of financial models, large group practice and integrated care systems should be able to provide this accountability for the populations they serve in regions where such practices exist. Through economic incentives, existing large group practices might be persuaded to accept responsibility for organizing such care in regions where it does not now exist. Traditionally, hospitals have served as the focus for coordinating community resources. They are the only locus of organized care available throughout the United States; perhaps acute care hospitals could take on the mission of integrating providers into community-based systems for managing chronic illness.

About the Dartmouth Atlas Project

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The Dartmouth Atlas Project (DAP) began in 1993 as a study of health care markets in the United States, measuring variations in health care resources and their utilization by both geographic areas. More recently, the research agenda has expanded to reporting on the resources and utilization among patients at specific hospitals. DAP research uses very large claims databases from the Medicare program and other sources to define where Americans seek care, what kind of care they receive, and to determine whether increasing investments in health care resources and their use result in better health outcomes for Americans.

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