



**The Dartmouth Institute for**  
**Health Policy and Clinical Practice**  
**Q&A with Dr. Jack Wennberg**  
**What's wrong with the U.S. Health-Care System?**

**Date of Transcription: 03/21/2008**

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DR. JACK WENNBERG: Well, for one thing we're throwing a lot of money at it and we don't what we're getting out of it. A lot goes in, and very little seems to be coming out the other side in terms of welfare and satisfaction and extended life. This is certainly true for the chronically ill, where we simply do not have a firm scientific basis for managing chronic illness. We have a system that essentially the amount of care that you get depends on where you live, the capacity of the local system, how many doctors per capita there are, how many beds per capita there are. That's what determines the frequency with which you are hospitalized, the frequency with which you visit doctors, how many days you spend in intensive care units, and how many imaging exams you get. And we've yet to work out the understanding of the science of chronic disease management to the point where we can say with confidence that this system is better, is more efficient and is more productive of health than another system.

What we do know now, however, and this is thanks to a lot of work that Elliott Fisher's been doing, is that patients who live in regions with very intensive care – we're talking about places like Los Angeles, Miami, Manhattan – do not live as long and seem to have worse quality of life than patients who live in regions with more conservative practice patterns. And here we're talking about patients that have essentially the same condition. Our strategies for analysis are uniquely capable of adjusting for illnesses. We're quite confident that these differences that we're talking about represent local practice differences, not differences in illness rates.

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**How did you become the founder of outcomes research?**

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DR. JACK WENNBERG: Well, I'm not quite sure that my colleagues would want me to be honored with that title, particularly since outcome research is so unimportant, shall we say, in terms of the way the health-care system continues to work. But in any case, let me say that my interest in outcomes research was initiated by the observations that practices differed so much among one community to the other. We started this research in Vermont in the late 60s and early 70s looking at the differences in utilization rates between local communities, such as Montpelier and Burlington and the Hanover region, and saw striking differences in the frequency with which the everyday practice of medicine was being performed. Particularly striking were some of the differences in surgical procedure rates. For example, tonsillectomy rates in Mooresville, Vermont, were such that about 70% of children were getting their tonsils out by the time they were 12 years old or 15 years old. In neighboring Waterbury, where my kids were actually going to school, the rate was about 20%. We lived right on the Stowe-Waterbury boundary, and you could see by going one direction that the kids looked the same as they did in the other direction. As an epidemiologist, it didn't take me too long to really come down to the conclusion that the risk factor here was the local physicians having very different attitudes to how to treat tonsils. It wasn't that more tonsils were sicker in one region or the other. This led to an effort to actually feed information back to physicians to see if we could get some explanation of what was going on. And lo and behold, after a couple of years we noticed a radical drop in the tonsillectomy rate in the Mooresville population. It actually became less and lower than it was in Waterbury. And I learned subsequently that what had happened was the physicians there had become quite concerned about the differences that we were describing. They had set up a second

opinion project, had actually been able to codify how tonsils should be treated in a more or less uniform way, and had seen the results plummet.

That led us to another question. If you have such radical differences in the way a common medical problem [audio gap] implications. So we undertook at that time an effort to convince the government that they should invest in research that would look at the natural history of untreated tonsils and would look at the outcomes associated with patients that were getting the treatment. Unfortunately, at that time there wasn't much interest in outcomes research, and so we never were able to complete that study.

But I never lost that curiosity and that interest. And in subsequent years, we were able to do similar studies looking at variations in practices in Maine, doing prospective forward-looking clinical studies, and did demonstrate that through outcomes research, one could really begin to challenge conventional wisdom, could learn how to actually evaluate the different treatment theories that physicians were practicing under and lead to substantial changes in the way medicine was practiced.

The important outcome of the work in Maine, which was associated originally on a prostate disease, was to see that the choice of surgery versus watchful waiting – and here we're talking about surgery for benign prostatic – an enlarged prostate, not cancer – that what really was at stake there was a trade-off between improved urinary tract function – people had less symptoms with surgery, but they also had impairment of sexual function as a fairly significant risk. So the trade-off was really between two different aspects of the quality of life. And that insight led us to spend a lot of time over the years trying to figure out what was at stake in these high-stake kinds of surgical interventions, and ultimately led to our strong emphasis on involving patients in decision-making.



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**What is the Dartmouth Atlas project?**

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DR. JACK WENNBERG: Well, the Dartmouth Atlas Project began in the early 90s. Let me tell you a little bit of the history of it, because it started for one purpose and ended up doing another. When the Clinton health plan proposals were on the horizon in the early 90s, we were aware that practice differed very much between one community and another. All our research had showed that in the 70s and 80s. We also knew that any effort to reform health-care needed to take into account regional differences, if only in the price of care, how much money was spent in care. So we proposed to the Robert Wood Johnson Foundation that we would develop a project to inform the reformers that were supposed to come out the Clinton health-plan about the geography of health-care, where the markets are located, how much money is being spent in different parts of the country. The issue of transfer payments, where communities with low rates of use and low expenditure rates were subsidizing high-cost regions such as Miami and Los Angeles – and we got the money; they gave it to us. And we used the Medicare data to undertake this very large and extensive analysis of health-care in the United States, looking at how much money was spent, how many resources were used, how many doctors, how many beds, and what happened in terms of that investment in terms of utilization. And to some extent outcomes, although we were stuck at that to very global outcomes [ph] such as mortality rates.

When the Clinton health-care tanked, we basically had data but no customer. And the question is, what do you do with an analysis of this type? So that's when the Dartmouth Atlas concept was actually born. So we said, rather than effect change through a structured federal policy, we're left essentially with a kind of residual issue of could we provide enough information to the country that would be respected and understood and would lead to deeper thinking about the sources of variability in medicine and what needs to be done about it. And

maybe, just luckily, processes for reform could then begin to formulate more directly in terms of the knowledge base of what actually is going on. And that's what essentially has happened.

We've seen over the years the Dartmouth Atlas grow to a point where it's now kind of a brand name in many parts of the country. And as the time comes again to consider health reform on a national basis, I think we're right back now where we were at the beginning of the 90s. I think the Dartmouth Atlas is in for another very interesting ride.

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**What are some major findings of the Dartmouth Atlas?**

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DR. JACK WENNBERG: The most important finding is variation, the fact that there is no standard of practice throughout the United States. It depends on whether we're talking about such things as surgical procedures or we're talking about the care of the chronically ill to answer the question about the important findings. What's been very helpful to us in understanding practice variations is to see that there are essentially two types of variation. One is extremely related to the supply of resources – how many doctors there are, how many beds there are, how much ancillary services are available. This quantity of capacity drastically effects the intensity with which chronically ill people are treated from one part of the country to another. And this is the source of the huge differences in overall Medicare spending, the fact that spending in Miami is nearly twice that – in fact, is more than twice that – of Minnesota or Portland, Oregon, is because of this difference in the way chronically ill patients are being treated.

The other major finding or focus is on surgical procedure, variations in the rates of knee replacements, hip replacements, gallbladder surgery, heart surgery, carotid artery surgery, you name it, where the surgical variation is essentially one side of the equation. On the other side of the equation is the alternative way of treating the same condition. What we see here then are situations where the practice patterns reflect underlying differences in opinion about whether one treatment should be used or another treatment should be used. And that is a very different set of issues than for the chronic disease situation where it's the frequency with which you see a doctor, the frequency with which you're hospitalized is at stake. Here, it's basically whether your condition is treated with surgery, such as a knee replacement, or whether it's treated medically. The important point here is that what really matters here is patient preferences with regard to the benefits and risks of these treatments. And the source of the variation here is the

fact that we have yet to learn how to inform patients in a meaningful way about their treatment options, and furthermore, to encourage them to take choices that basically reflect their preferences.

The Dartmouth Atlas is all about clarifying practice variations in these two categories, those that are related to capacity and those that are related to the individual choice between procedures, such as surgery.

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**Why are there geographical variations in surgical procedures?**

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DR. JACK WENNBERG: Well, geographic variations, first of all, really ought to be reflective of illness, patient preferences and scientific medicine. But in fact, very little of the variation can be associated with illness, with patient preferences. Much of what we do has no scientific evidence behind it. So by that token, most variation is what we call “unwarranted,” it can’t be explained by those factors. Now, what does actually cause the unwarranted variation depends again on whether we’re talking about surgical procedure variation or whether we’re talking about the way chronically-ill patients are being treated. Let me try to clarify why that distinction is important.

For surgical variation, what we call basically “preference-sensitive treatments,” which really should depend on the patient’s point of view, the variation can be traced to a dichotomy between the classic idea that physicians should decide for patients what they should be treated with, namely delegating decision-making to doctors. And the more modern viewpoint, the viewpoint which I think emerges out of a lot of our research, that patients’ preferences should be the guiding decision-maker on the choice of treatment. What we find, for example – let me start with a simple problem with knee replacement, which is a very common procedure. In that case, one has arthritis of the knee, its impairments. And one treatment, if it’s severe enough, is a knee replacement. However, it turns out that patients have different points of view about when the knee replacement is appropriate for them. So what you end up with is a set of medical criteria that patients meet. But the question is, if you meet that criteria, do you also want the procedure or do you want the alternative? So it’s a dichotomy between what is clinically appropriate, defined by classic physician criteria – practice guidelines, for example, and preferences of

patients for those who actually have the clinical condition for which the procedure is appropriate but so also is another alternative treatment.

Let me give you an example of a study that may help clarify this. There's a very interesting study in Canada in which a group of researchers were very interested in knowing whether the rate of surgery was appropriate for arthritis of the knee. So what they did was they very carefully questioned a random sample of people and found [audio gap] that met the clinical criteria for knee replacement in terms of the severity of their symptoms. They then took x-rays and they defined a group of people who met not only the symptomatic definition, but also the x-ray evidence of deformity in terms of the joint. And these were the group of patients that were defined as clinically appropriate. That is to say that's the group of patients which most physicians under the delegated decision model would decide were appropriate for the procedure. But the researchers did one other thing. They then asked the patients who were clinically appropriate whether or not they actually wanted the surgery. And it turned out that only 15% of those that met the clinical definition of appropriateness actually chose surgery at that time. Now, we're not saying that if they had waited and the disease had gotten worse they would have changed their mind. But the point of view is that the minority of patients who met the clinical criteria actually preferred the treatment. And this, I think, focuses full attention on the fundamental need of getting the patient involved. Because ultimately, under our sense of what should be going on here, the definition of medical necessity should ride with the patient's point of view, given the fact that that patient has a clinical condition that can be adequately treated by surgery.

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**Why are there geographical variations in chronic illness care?**

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DR. JACK WENNBERG: The question about chronic illness and the variation in their treatments is fundamentally important. And understanding why those variations occur is the first step towards figuring out what to do about it. The part that may be difficult for patients, lay people and even doctors to understand is that the scientific basis for managing chronic illness over time – that is to say, how much resources, how frequently do you visit a patient or re-visit the patient, schedule a patient, refer to a medical specialist, hospitalize for an exacerbation of illness, put in intensive care unit or order imaging exam – there really isn't any scientific evidence governing the frequencies with which these services should be used. As a result, and because I think it's fair to say most people believe that more is better when you're sick – you should use resources to treat it – there's a natural association between the capacity of a system and the intensity with which patients are treated.

So the cause of variation for chronic illness is the fact that at one level, the supply is dominating the overall frequency. And at the level of the individual patient, clinical science is so poorly articulated that we really don't have good treatment algorithms or good treatment guidelines about how to do it. So the remedy then comes by both figuring out how to manage the overall capacity of the system, but also to develop the clinical pathways, the scientific basis, for knowing how to deliver care.

So these two reforms work hand in hand towards resolving the problem of unwarranted variation.

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**Have the Dartmouth Atlas findings been controversial?**

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DR. JACK WENNBERG: Well, it depends on how far back you go. When we first began to document this extensive variation, a lot of people didn't believe it and basically maybe didn't even understand what we're talking about. Knowing what a rate is and knowing what the basic epidemiologic principles are takes some sitting down. Intelligent people can do it pretty quickly.

But in short, we wrote these findings on the Vermont experience, and we kept getting form letter rejections from every journal that we sent it to, every medical journal we sent it to. Finally in kind of desperation, we sent it to *Science*, which is a very prestigious national journal. And fortunately, they saw the value of what we were doing. And so our first article actually was in *Science*, which is quite incredible, and that article sort of started the whole stream of work that has culminated all up in the Dartmouth Atlas and other current work that we're doing now.

The work remains controversial, there's no question about it, because it's a significant challenge to the conventional wisdom about how health-care markets work. Most people will assume, and still do, that it's driven by illness, by patient need and preferences and by good science, and our analysis basically challenges each of those positions

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**How can more care result in poorer outcomes?**

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DR. JACK WENNBERG: First of all, let's take the surgical situation where we've seen four- or five-fold rates variation in the risk of having, say, back surgery. The real problem here is that all the evidence that we've been able to generate through clinical trials and decision aids and other strategies for informing patients show that in the absence of really good information, physicians often end up operating on the wrong patient. A pretty serious medical error when you look at it that way. Mainly patients who do not want the procedure when fully informed.

In the case of the management of chronic illness, we have evidence at the population level that patients who are treated more extensively – for example, people with heart attacks, hip fractures, cancers, live in high regions like Miami and Los Angeles – actually have poorer outcomes than similar patients treated in Minneapolis and Portland, Oregon, and other places where care intensity is a lot lower. The outcomes are poorer in terms of mortality, so we're actually seeing an increased risk of earlier death associated with high-intensity care. And people will ask, "Well, how could that possibly be the case?" Well, first of all, you have to ask the question, what's the science that says that more is better at the patient level? And as I've tried to say many times in my career, the evidence simply isn't there. We do not have science that says, "If you do this and that and that, you get better outcomes for patients with chronic illness." By "this and that" I mean, if you visit them more frequently, if you put them in the hospital more frequently. But what we do know is that we see actually higher mortality rates. Now, how could that be? Well, in the absence of positive benefit associated with more care, then again the medical error problem takes over. Because everyone understands, increasingly so, that hospitals are risky places to be. And if you hospitalize people twice as often in one part of the country than you do in another for the same condition, the chances of having a medical error are about

twice as high. And a serious medical error could lead to death. And my personal opinion is that this is behind this strange association that we see, that more isn't better.

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**What is DHMC doing to address practice variations?**

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DR. JACK WENNBERG: Being associated with Dartmouth Hitchcock has been a real pleasure for me, particularly in the last few years. Kim Weinstein, Dale Collins, Blaire Brooks, a number of people now are systematically working to introduce shared decision-making at Dartmouth in efforts to resolve the variation in surgical practices. This is a very important development. And Dartmouth is now recognized widely as the leader in this field across the country, and that gives me great satisfaction.

Dartmouth is also beginning to take some important steps towards understanding how better to manage chronic illness. And this is part of a project that the CCS has been involved with the Mayo Clinic and Intermountain Healthcare. Intermountain Healthcare has a long tradition of efforts to rationalize the management of chronic illness – diabetes, congestive heart failure. The Mayo Clinic has been, I think, attracted to the problem partly from our data, which show interesting variations even within the Mayo Clinic system in terms of how chronic illness is managed. And these three groups – Dartmouth, Intermountain Healthcare and Mayo Clinic – are about to undertake a two-year project to “institutionalize,” I think is the right word, into the practices at the Mayo Clinic in Rochester, Minnesota, both a shared decision-making protocols, some of which have been developed here, but also the chronic disease-management protocols that Brent James and others have been working on at Intermountain Healthcare. And Dartmouth serves to gain, I think, on the latter set of work. We're hopeful that the tea leaves here will make it possible for Dartmouth to participate actively in the chronic disease-management program as well as they now are already doing in the patient information system, in the shared decision-making projects.

So the Hitchcock Medical Center is to me an extraordinary leader in this field. And that gives us great satisfaction at CCS, because we've seen this grow. Not because of anything we directly did, but rather through the ambassadorship of our educational programs, which now many of the junior faculty and some of the senior faculty have taken those courses. In a sense, we have kind of infiltrated clinical thinking there in ways we have not had the opportunity to do anywhere else in the world. So we're really happy about the progress.

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