

No one questions the good intentions of health-care providers. It's the processes of health care—the flow of information, the paperwork, the transfer of responsibility from one caregiver to another—where the system falls down.

PATRICK J. SAINE

# Delivering the goods

**My father chose a Wal-Mart** parking lot somewhere in South Dakota as the best place to park our 38-foot RV for the night. It was early August of 2000, and my dad, mom, and I had left Fairbanks, Alaska, almost two weeks earlier. We'd had our fill of beautiful scenery and private campsites. Now we needed simply a place to park our rig so we could get some sleep before hitting the road again. My mom was finishing the dishes and I was settling into the bunk bed when my dad, age 59, emerged from the bathroom. He looked pale and in shock. He had thought he was having a loose bowel movement, he explained, but when he looked in the toilet, he saw that it was filled with blood. Not long after, he filled the bowl again—with blood.

Most people would have found the nearest hospital. Instead, my dad, a stubborn New Englander, insisted that we drive to Chicago, Ill., where we have relatives. If he had to be admitted to a hospital, it would be better to be near family, he reasoned. I didn't know it at the time, but navigating the heavy traffic and narrowly spaced Jersey barriers around Chicago was easy compared to navigating the health-care quagmire that awaited us there.

My father was admitted right away to the hospital—one with a good reputation. Over the next 20 days, we got firsthand exposure to the dangers and frustrations of our country's sophisticated and technologically advanced but poorly coordinated and expensive health-care system.

We learned that to receive good-quality care, patients should have an advocate by their side at all times. Someone to prevent you from getting a med-

**When U.S. health care is good, it's very, very good.**

**But when it's bad . . .**

**well, it's no secret that**

**many aspects of the system**

**need fixing. A concerted**

**new effort at Dartmouth**

**to study and teach how to**

**improve the delivery of**

**care is bringing together**

**experts from many fields.**

**By Jennifer Durgin**

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“The majority of medical errors do not result from individual recklessness,” the IOM declared. “This is not a ‘bad apple’ problem. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.”

## GLOSSARY: A compendium of health-care delivery concepts

**Accountable care organizations** are groups of doctors, clinics, and/or hospitals structured to coordinate and be responsible for the continuum of care for a defined population of patients; invest in infrastructure; reliably measure performance and health outcomes; redesign care processes; reward high-quality and efficient services; and slow health-care spending. (Adapted from a May 2010 paper by Drs. Stephen Shortell and Lawrence Casalino in the *Journal of the American Medical Association*.)

**Bending the cost curve** is just a “highfalutin way,” according to Politico.com, of saying “lowering costs over time.” In health care, it often means reducing the growth of health-care spending while maintaining or improving quality. At Dartmouth, the preferred term is “bending the value curve,” because that encompasses both cost reduction and quality improvement.

**Fee-for-service** is the predominant health-care payment model in the U.S. It means hospitals, doctors, and other providers are paid for performing discrete services, such as tests and procedures, regardless of patient outcomes and with little, if any, payment for coordinating a patient’s overall care.

**Clinical microsystems** are “the front-line units that provide most health care to most people . . . the places where patients, families, and care teams meet,” according to Dartmouth’s Clinical Microsystem Resource Group. The clinical microsystem approach focuses on improving quality at the micro-unit level, arguing that overall care can be “no better than the quality produced by the small systems that come together to provide care.” (Adapted from <http://dms.dartmouth.edu/cms>.)

**Health-care delivery science** is an emerging discipline that draws on the fields of management, economics, systems thinking and engineering, the biomedical sciences, the social sciences, health policy, and outcomes research to study and improve how health care is delivered.

**Pay-for-performance** is a payment model that gives health-care providers financial incentives for meeting quality, efficiency, and safety targets. For example, an insurance company or government payor might provide higher reimbursements to physicians who make sure that their diabetic patients receive annual eye examinations.

**Preference-sensitive care** refers to treatments for conditions where more than one legitimate treatment option exists and the options involve different risks and tradeoffs. “Decisions about these interventions—whether to have them or not, and which ones to have—should thus reflect patients’ personal values and preferences, and should be made only after patients have enough information to make an informed choice, in partnership with the physician,” says the *Dartmouth Atlas of Health Care*.

**Shared decision-making** (a.k.a. informed patient choice) is the process by which a provider communicates to a patient personalized but objective information about the options, outcomes, probabilities, and scientific uncertainties of available treatments for that patient’s condition. The patient, in turn, communicates his or her values and the relative importance he or she places on relevant benefits, risks, and side effects. (Adapted from the Foundation for Informed Medical Decision Making—see [www.informedmedicaldecisions.org](http://www.informedmedicaldecisions.org).)

**Supply-sensitive care** “refers to services where the supply of a specific resource has a major influence on utilization rates. The frequency of use of supply-sensitive care is not determined by well-articulated medical theory, much less by scientific evidence; rather, it is largely due to differences in local capacity, and a payment system that ensures that existing capacity remains fully deployed. Simply put, in regions where there are more hospital beds per capita, patients will be more likely to be admitted to the hospital,” according to the *Dartmouth Atlas of Health Care* (see [www.dartmouthatlas.org](http://www.dartmouthatlas.org)).

**Practice variation** refers to dramatic differences from region to region in the amount, intensity, and cost of health care provided to patients. These variations cannot be explained by socioeconomic factors, illness severity, medical evidence, or patient preferences.

**Value-based care** is health care that aims to deliver high value, with value equaling the health outcomes achieved for the patient divided by the total expenditure required to achieve those outcomes. The goal is to simultaneously deliver higher-quality care at a lower cost.



ication dose twice or the wrong medication. Someone to track down the overwhelmed nurses when you’ve called for help three times or when a monitoring device won’t stop beeping. Someone to read, try to understand, and sign the endless forms. Someone to keep track of the half-dozen specialists you’ve seen. Someone to do battle over the phone with your insurance company to get any required prior approvals. And someone to raise hell when no one’s cleaned your bathroom in the four hours since your roommate, unable to make it to the toilet in time, soiled the floor.

**Let me be clear.** This story is not about my father’s brush with death in an American hospital. A diverse body of research from Dartmouth and elsewhere tells me that my own family’s experience wasn’t unique—but rather all too common. Scientific knowledge and technological wonders have revolutionized modern medicine. But, too often, patients suffer because of the poorly designed systems in which they receive care.

This reality was broadly recognized in 1999, when the Institute of Medicine published a now-legendary report titled *To Err is Human*. “The majority of medical errors do not result from individual recklessness or the actions of a particular group,” the authors declared. “This is not a ‘bad apple’ problem. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.”

And the problems with U.S. health care are not confined to medical errors or other measures of quality. Nor are many of the problems unique to the U.S., though we do spend far more on health care than any other developed country and yet achieve results that are no better, and arguably worse. Total health expenditures in the U.S. reached \$2.3 trillion in 2008, which translates to \$7,681 per person and 16.2% of the nation’s gross domestic product, according to the U.S. Department of Health and Human Services. And a substantial portion of the U.S. population—20% by some estimates—does not have access to high-quality care (though that is likely to change as a result of the recent national health-care legislation). So the problem is at least three-fold: routine quality problems, exorbitant costs, and limited access.

**What this story is about** is the effort under way at Dartmouth—and elsewhere—to change health-care systems and, ultimately, to revolutionize health-care delivery in this country, as well as around the world.

That’s a goal that no person, institution, or government agency has yet managed to accomplish.

Health-care systems are some of “the most complex social, scientific, delivery systems that exist on the face of the Earth,” says Dr. Jim Yong Kim, the president of Dartmouth College and an expert in global health. Kim, who is trained as both a physician and an anthropologist, cofounded Partners in Health, a global health-care nonprofit; formerly headed the Department of HIV/AIDS at the World Health Organization; and was a recipient of a MacArthur “genius” Fellowship. (For more on Kim’s background, see [dartmed.dartmouth.edu/su09/v03](http://dartmed.dartmouth.edu/su09/v03).)

Last May, Kim announced that the College had received an anonymous \$35-million gift to establish the Dartmouth Center for Health Care Delivery Science. The Center will bring together experts and students from all three of Dartmouth’s professional schools, as well as its arts and sciences programs, to collaborate on fixing and optimizing the systems in which people receive care. Researchers from medicine, health policy, management, systems thinking and engineering, sociology, anthropology, economics, and several other fields, including the humanities, will bring their knowledge to bear on the problem of health-care delivery.

The disciplines will be further integrated through new undergraduate and graduate courses and degree programs, such as a new master’s program in health-care delivery science (see the box on page 38 for more on this initial educational offering). Kim himself will lead an undergraduate course in health-care delivery science in the upcoming winter term. He has also called for health-care delivery to be taught as part of the standard curriculum for medical students, which will make DMS the first medical school in the country to do so. Clinicians and administrators from Dartmouth-Hitchcock will contribute to the effort, too, with DHMC serving as a demonstration center to test and to validate new ways of delivering high-quality care. Dissemination of new models of care will be another major focus of the Center.

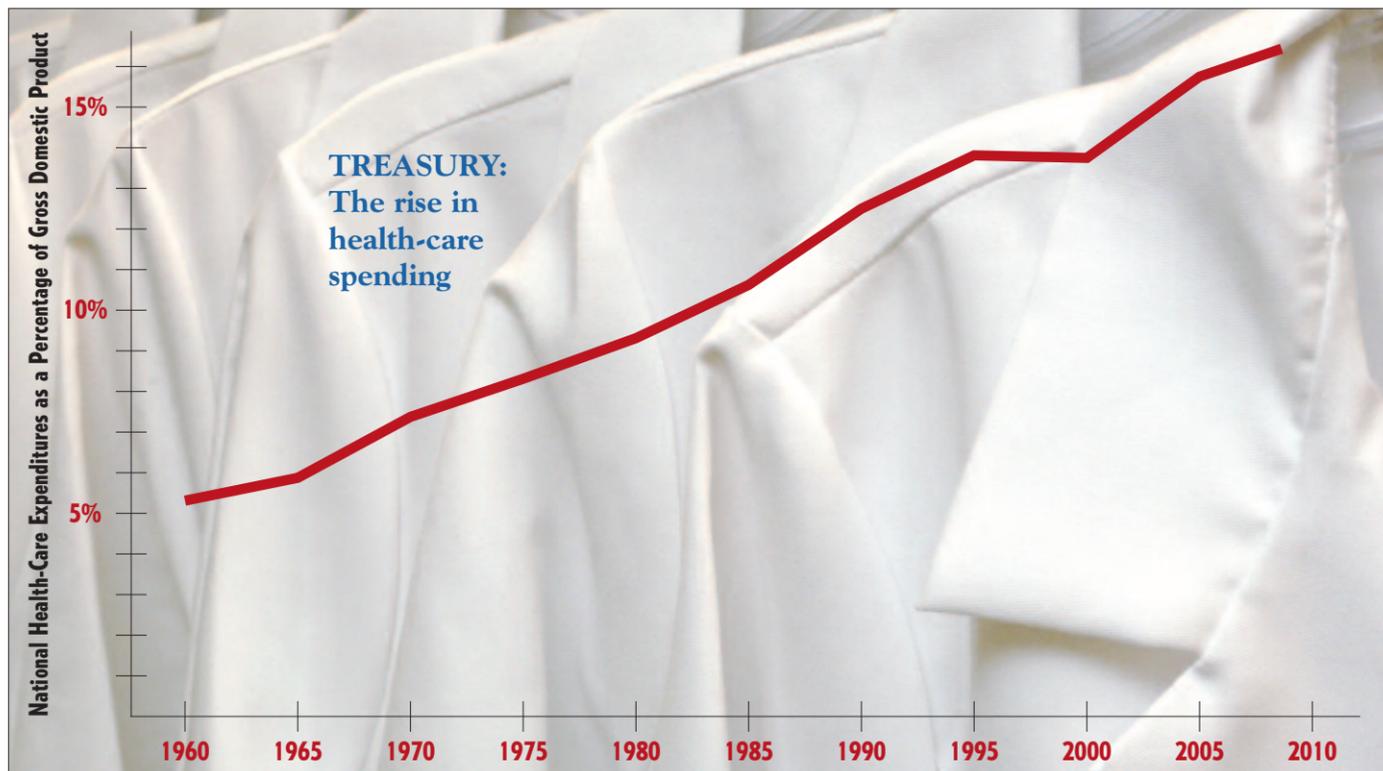
“We’re not saying that we’re the only ones [studying] health-care delivery,” explains Kim. “There are lots and lots of wonderful researchers who are working [in this field].” And some health-care networks (Kaiser Permanente in California, for example) are working to improve quality and reduce costs by changing the way they practice. But Dartmouth is the first institution to bring together such a diverse group of disciplines through research, education, and outreach with a singular focus on fixing health-care delivery.

To get the Center up and running, Kim has teamed up with Dr. James Weinstein, director of the Dartmouth Institute for Health Policy and Clinical Practice (TDI) and copresident of Dart-



Kim advocates a “rigorous academic field” devoted to health-care delivery.

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The cost of health care as a share of the gross domestic product more than tripled in the United States between 1960 and 2008—from 5.2% to 16.2% of GDP. The rising cost of care is one of the factors driving the effort to reform the delivery system; unevenness in quality and limitations in access to care are also key concerns.

“These debates [about reforming the health-care delivery system] should happen in the context of a rigorous academic field,” says Kim. “We disagree about research results and conclusions all the time in academia.”

mouth-Hitchcock Medical Center. Weinstein, an orthopaedic surgeon and TDI alumnus, also founded DHMC’s Spine Center and its first-in-the-nation Center for Shared Decision Making; both are national models for informed patient choice.

Kim and Weinstein agree that TDI and its research will form the foundation of the new Center. This makes sense because TDI has a long tradition, beginning with its founder, Dr. John Wennberg, of investigating, challenging, and analyzing the status quo in health care. TDI, originally known as the Center for the Evaluative Clinical Sciences, offers three graduate degrees (M.P.H., M.S., and Ph.D.) and encompasses a diverse group of researchers. For example, some TDI faculty specialize in how information is communicated to patients and the public. Others focus on population health, patient safety, and quality improvement. Still others build on Wennberg’s work documenting and studying geographic variations in health-care utilization. Even those who don’t work in the exact same field as Wennberg say he was pivotal in TDI’s development as the only institution of its kind in the country. As one TDI faculty member puts it, Wennberg was “the gravitational force that pulled in other luminaries and created something so special here.”

Wennberg’s influential work dates back to the

early 1970s, when he revealed that much of what doctors do is based on personal preferences and beliefs, not data. For example, he found that in one town in Vermont, nearly 70% of children had had their tonsils removed. But in a neighboring and nearly identical town, only 20% had had a tonsillectomy. The cause, to his surprise—and the disbelief of nearly everyone else—was variation in the practice patterns of individual doctors.

In the nearly 40 years since then, Wennberg and his colleagues have continued to document dramatic, widespread variations across the United States, as well as elsewhere, in the treatments for dozens of conditions—including heart disease, end-of-life care, and back pain, to name just a few. And these variations cannot be explained by socioeconomic factors, prevalence of illness, medical evidence, or patient preference.

**The mechanism behind** doctors’ influence on variations in care depends on the category of care, explains Wennberg in a new book, *Tracking Medicine*. “For preference-sensitive care, epitomized by elective surgery, the most important factor is the physician’s opinion about the outcomes of various treatment options and the physician’s belief about the patient’s preference.” Research from Dart-

mouth and elsewhere has shown that shared decision-making, in which patients receive comprehensive, unbiased information about their condition and treatment options, can go a long way toward addressing this variation—and reducing costs.

“The influence of physicians on the utilization of what we call supply-sensitive care follows a different behavioral model,” Wennberg continues. “The primary issue is the frequency, or the intensity of use, of routine care—services like physician visits, referrals to specialists, imaging exams, hospitalizations, and stays in the intensive care unit. The frequency of these services varies remarkably from one clinical setting to another, and it is the primary reason for the more than 2.5-fold variation in Medicare spending among regions.” Supply-sensitive variation is difficult to address, according to Wennberg, in part because of the deeply held belief that in health care, “more is better.” Another factor, Wennberg explains in his new book, is “the disorganized care systems that are presently incapable of coordinating care, controlling capacity, and learning from experience” in ways that lead to better care.

Wennberg’s book, part memoir, part argument, provides a comprehensive look at TDI’s variations research. The findings have also been published in numerous peer-reviewed scientific journals over the years, as well as in the *Dartmouth Atlas of Health Care*, which includes interactive online maps and reports. (TDI’s research portfolio is much broader than just the variations studies, but that’s the work that garners the most attention.)

Among Wennberg’s and his colleagues’ most important and best-known discoveries is the finding that hospitals and regions that spend the most money on health care often have no better, and sometimes worse, outcomes than places that spend considerably less. During the recent federal health-reform debate, officials in the White House, including President Obama himself, cited the Dartmouth research as evidence of the tremendous waste in the U.S. health-care system. As a result of the high-profile attention, the research came under fire, for the first time, in the national mainstream press and in certain political circles. (For more on that subject, see [dartmed.dartmouth.edu/su10/f01](http://dartmed.dartmouth.edu/su10/f01).)

“What should have been a reasoned, rational, intellectual, academic debate” about research methods, observes Kim, “turned into a political battle. To me, it just illustrates even more clearly the need for a field” devoted to health-care delivery. “These debates should happen in the context of a rigorous academic field. We disagree about research results and conclusions all the time in academia.”

“People create controversy when anything is at stake for them,” says Weinstein. The health-care reform debate was “not actually about altruism,” he contends, but rather about who has control over health-care access, decisions, and spending. “That is a sociology issue that the Center will also want to look at,” he says.

Another reason that TDI became such a target, Kim argues, is that there are no other academic groups with such a comprehensive and robust database about health outcomes and delivery. So TDI became “the singular source of information for decision-making,” says Kim. “We are one academic group, and there should be many other academic groups with plenty of funding so that they could approach this in a different way. Let’s have the academic debate and provide all the information in understandable ways to legislatures and then, at the end of the day, they’ll make the decision about . . . policy.”

In fact, informing policy is a primary goal of the new Center. “Some people say that academic institutions cannot influence health policy,” says Kim. “I disagree. Frankly, I’ve done it. . . . I have personal experience on changing policy on things like drug-resistant tuberculosis and HIV.” And, he adds, “the *Dartmouth Atlas* has had a huge impact on policy already.” Then—quoting Dr. Julio Frenk, dean of the Harvard School of Public Health and a former minister of health in Mexico—Kim says, “Never underestimate the power of ideas to change the ideas of power.”

**A central concept**—but certainly not the only one—that will drive the Center’s research, educational offerings, and policy work is summarized by Harvard’s Michael Porter, a prominent strategy guru in the business world who turned his attention to health care almost a decade ago.

“The real constraint today is fundamentally a managerial and organizational constraint,” explains Porter, who is already collaborating with the Dartmouth Center for Health Care Delivery Science. “It’s not that we don’t know what to do or that we don’t have good technology. It’s the capacity to deploy technology, deploy knowledge, to really deliver value.”

In 2001, the Institute of Medicine reported that it “takes an average of 17 years for new knowledge generated by randomized controlled trials to be incorporated into practice.” That extremely slow adoption rate for innovations and best practices—coupled with outdated and inadequate managerial, organizational, and strategic models—is the major reason why health care has lagged behind other industries in terms of improving quality and contain-



Weinstein has been a leader in the shared decision-making movement.

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Robert Hansen, senior associate dean at Dartmouth's Tuck School of Business, thinks that no other business, public health, and medical schools are "doing partnership and alliance" at this level. He admits that it is not easy to mesh the disciplines. "But it has to be done," he says.

### MASTERY: A look at the Center's first educational offering

Every system is perfectly designed to achieve the results it gets." That's the "central law of improvement," according to Dr. Donald Berwick, administrator of the U.S. Centers for Medicare and Medicaid, and his longtime collaborator Dr. Paul Batalden, a Dartmouth professor who pioneered a quality improvement concept called clinical microsystems. It then follows that to get different results, the system has to change. That is the principle behind Dartmouth's new master's degree in health-care delivery science (see <http://mhcds.dartmouth.edu/>).

In a system as complex as health care, it will take an entire army of leaders with the right training to make meaningful and lasting change. The new degree program is aimed at building that army, says Robert Hansen, senior associate dean at Dartmouth's Tuck School of Business and faculty codirector of the new program. "We want to equip an army of change agents . . . to go out and . . . deliver better health-care outcomes at lower costs," he explains. The 18-month program is being designed for health-care managers, administrators, and clinicians. It will make heavy use of online technology so students can keep working and complete much of the coursework from afar.

"Most of the M.B.A. [programs] in health care look at the system as it is and describe how to do better" within it, says Eric Wadsworth, the program's other faculty codirector. Wadsworth spent 10 years as chief financial officer of Dartmouth Medical School and, until recently, led the office of professional education at the Dartmouth Institute for Health Policy and Clinical Practice (TDI). "Our approach is 'The system is broken. Seriously flawed.' So you have to think about it differently."

The new degree, the first to be offered by the Center for Health Care Delivery Science, will draw on the expertise of faculty at both TDI and Tuck. TDI has a long tradition of thinking differently about health care. Known for its groundbreaking research, TDI remains the foremost authority on practice variations, the measurement of health outcomes, shared decision-making, and clinical microsystems. A top-tier business school, Tuck is known for its expertise in accounting, operations and financial management, strategy, and leadership.

Combining the Tuck and TDI skill sets is not a new idea. TDI researchers have worked closely with health economists at Tuck for years now. And DMS and Tuck have offered a popular elective called Medical Care and the Corporation for more than 30 years. The course was started by Michael Zubkoff, a health economist who has chaired DMS's Department of Community and Family Medicine since 1975 and who nurtured TDI in its earliest days. The course brings together M.D. students, TDI students, and Tuck students to study the critical issues facing the health-care system—including cost, quality, and access.

The students look at problems from different perspectives, says Paul Gardent, one of the professors who now teaches the course (and a 1976 Tuck alum). Gardent has spent his career straddling the worlds of health care and business. He helped run DHMC for 27 years, retiring in 2007 as executive vice president to spend more time teaching. He's noticed that each group of students brings a different worldview to health-care matters. Medical students tend to focus on "what's in the best interest of the patient," business students take "a more organizational perspective," and health-policy students take a "broader community-health perspective," Gardent explains. "Invariably, they talk about how they each look at things . . . and how much they learn from each other."

The dozen faculty members from DMS, TDI, and Tuck who will be teaching in the new master's program are likely to have a similar experience. Before the program launches in July 2011, the instructors will be teaching each other about their own areas of expertise during several "faculty integration" sessions, explains Wadsworth. Never before have faculty from these disciplines worked so closely at Dartmouth as they will in this program. In fact, Hansen thinks that no other business, public health, and medical schools are "doing partnership and alliance" at this level. He admits that it is not easy to mesh the disciplines. "But it has to be done," he says.

By integrating the disciplines into a single master's program, Hansen and Wadsworth believe the program will produce "a group of graduates who knows what to do and how to get it done."

The "it" is reform of the health-care delivery system. Since many of the students will already be in high-level management positions within health care, they'll have the authority to make system-level changes. In other words, they'll have the power and the knowledge to "get it done."



ing costs, agree Kim, Porter, Weinstein, and other leaders in health-care delivery.

Yet improving quality by adopting best practices from the business world is not a concept new to health care. In the early 1990s, for example, management expert W. Edwards Deming's definition of quality was adopted widely by health-care organizations. The concept of clinical microsystems, a key component in meaningful health reform, has its roots in Deming's work and that of Brian Quinn, an emeritus professor of management at Dartmouth's Tuck School of Business. Over the past two decades, the concept has been championed widely by DMS faculty member Dr. Paul Batalden and his collaborators at TDI, DHMC, and the Boston-based Institute for Healthcare Improvement. (For more about the concept of clinical microsystems, see [dartmed.dartmouth.edu/su06/f01](http://dartmed.dartmouth.edu/su06/f01).)

"Quality was redefined as a journey toward a goal you never arrive at," explains Eric Wadsworth, one of the faculty codirectors of Dartmouth's new master's program in health-care delivery science, which will be the first degree offered by the Center (see the box on the facing page for more on this new program). Wadsworth was chief financial officer of Dartmouth Medical School for 10 years and until recently led the office of professional education at TDI.

Deming showed that continuous quality improvement usually leads to a reduction in costs and a higher value for consumers, Wadsworth explains. That principle has held true, he adds, for many of the top companies that have adopted the concept, including Toyota, General Electric, Johnson and Johnson, and Boeing.

But what about health care? Does improving quality lead to lower costs and better value there? Wadsworth asked that very question in his doctoral dissertation in business in 2007. The answer he came up with was no, at least not yet for hospitals, clinics, or other such providers of care.

Even in the highest-performing integrated health systems in the U.S., improving quality more often than not hurts the provider's bottom line. Consider Intermountain Healthcare, a nonprofit system of 23 hospitals and numerous clinics in Utah and southeastern Idaho. Wennberg, Weinstein, and others at Dartmouth have been collaborating for some time with Intermountain, as well as the Mayo Clinic, to share best practices and figure out the best way to align payment systems to deliver high-quality care at a low cost. Wennberg has called Intermountain "the best model in the country for how you can actually change health care" because of its rigorous efforts to analyze and improve bedside care.

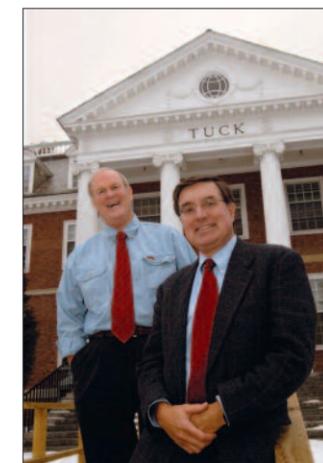
The driving force behind those efforts has been Dr. Brent James, Intermountain's chief quality officer. Under James's leadership, Intermountain has made massive, system-wide improvements in its management and organizational structure; its data system (which now tracks costs and clinical outcomes for 80% of all services); and its clinical processes. About 10 years ago, James and his colleagues mapped out everything that Intermountain does in the clinical realm. They discovered that 104 conditions accounted for 95% of the care they delivered. They then redesigned their organizational structure around those conditions and focused intensively on improving the related processes. Today, James estimates that these efforts have taken out at least \$150 million a year in costs. But a reduction in health-care costs usually also means a reduction in revenues for the care provider.

James says that three out of four quality improvement projects cause a drop in revenue for Intermountain that is equal to or greater than the money saved. For example, an improvement that prevents a patient from being admitted to the hospital results in thousands of dollars in savings for the patient and his or her insurance company but represents a roughly equivalent loss in revenue for the hospital.

In a November 2009 article, a *New York Times* reporter gave this example: "When Intermountain standardized lung care for premature babies, it not only cut the number who went on a ventilator by more than 75 percent; it also reduced costs by hundreds of thousands of dollars a year. Perversely, Intermountain's revenues were reduced by even more . . . \$329,000."

James is not being hyperbolic when he states, flatly, "Under today's payment mechanism in the United States, I'm paid to harm my patients. There's a strong financial incentive to deliver treatments that are non-beneficial . . . [and] to tolerate or allow complications that are preventable."

"Perverse" is a word that is frequently used to describe the U.S.'s current fee-for-service payment system, in which doctors and hospitals are paid for individual procedures and not for quality or for their patients' overall health outcomes. Dartmouth's Dr. Elliott Fisher, a leading voice in payment reform, has used "perverse" in his own writings about the fee-for-service system. Fisher is a physician-researcher at TDI, the primary investigator for the *Dartmouth Atlas*, and one of the chief architects behind a new health-care model called accountable care organizations (ACOs). He's also heading the Brookings-Dartmouth Accountable Care Organization Learning Network, a consortium



Zubkoff and Gardent teach a course that's a model Tuck-DMS alliance.

In the U.S.'s current fee-for-service payment system, doctors and hospitals are paid for individual procedures and not for quality or for their patients' overall health outcomes. Dartmouth's Dr. Elliott Fisher has used the word "perverse" in writing about the fee-for-service system.

Experts have been calling for more and better measurement in health care. “We’ve been flying the health-care airlines with no instruments,” observes Weinstein. Ultimately, what health-care delivery science is all about, he says, is “real people” and their experiences with the health-care system.

## BIBLIOGRAPHY: A list of further readings in the field

### Tracking Medicine: A Researcher’s Quest to Understand Health Care ▶

By John E. Wennberg, published by Oxford University Press, 2010

### Redefining Health Care: Creating Value-Based Competition on Results

By Michael E. Porter and Elizabeth Olmsted Teisberg, published by Harvard Business Press, 2006

### To Err is Human: Building a Safer Health System

Committee on Quality of Health Care in America and Institute of Medicine, National Academies Press, 2000



### Crossing the Quality Chasm: A New Health System for the 21st Century

Committee on Quality of Health Care in America and Institute of Medicine, National Academies Press, 2001

### Chaos and Organization in Health Care

By Thomas H. Lee and James J. Mongan, published by MIT Press, 2009

### Designing Care: Aligning the Nature and Management of Health Care ◀

By Richard M.J. Bohmer, published by Harvard Business Press, 2009

of 60 health systems that shares and disseminates information about ACOs.

The definition of ACOs has been a little murky until recently, with some people mistaking the concept as nothing more than a newfangled name for health management organizations (HMOs). But scholarly papers published in the past year by Fisher and others have described the essential characteristics of ACOs and are helping to eliminate the confusion.

“ACOs are organizations that include physicians, hospitals, and other health-care organizations with the legal structure to receive and distribute payments to participating physicians and hospitals to provide care coordination, to invest in infrastructure and redesign care processes, and to reward high-quality and efficient services.” That’s how the authors of a May 2010 article in the *Journal of the American Medical Association* defined ACOs. “The ACO model is based on three design principles: accountability of the ACO for the entire continuum of care for a defined population of patients; payment reforms that reward quality improvement and slow spending increases while avoiding excessive financial risk for the ACOs; and reliable performance measurement to support improvement and provide public confidence that lower cost can be achieved with better care.”

**The intensive focus** on measuring everything from health outcomes to costs to patient satisfaction is part of what distinguishes ACOs from HMOs. Health reformers like Fisher, Wennberg, Weinstein, Batalden, James, and numerous others—as well as experts from the business world like

Porter—have been calling for more and better measurement in health care for many years now. Some systems—most notably Intermountain, and to a lesser degree the Mayo Clinic, Dartmouth-Hitchcock, Geisinger, the Cleveland Clinic, and a few others—have answered the call. There’s a consensus, at least among this group of reformers, that fixing the payment structure and developing comprehensive measurement and data systems are the most pressing changes needed to fix the health-care delivery system.

“Until you measure outcomes . . . how can we expect that we can make rapid and deep improvement in delivery?” asks Porter. The “number-one thing” that the federal government should do to improve the health-care system, he says, is develop “a universal system of outcome measurement across every medical condition.”

For three years, Weinstein has been working with the leaders of several of the nation’s top-performing health-care systems, including Intermountain, Mayo, and others, to develop such a system. The collaborative has drafted a memorandum of understanding to share cost and outcomes data and to look at best practices.

“We’ve been flying the health-care airlines with no instruments,” he observes. He even worries that the recent health-care reform legislation “was based on little information.” In the future, Weinstein would like Dartmouth’s Center for Health Care Delivery Science to provide that information.

But Wennberg, the founding father of health-care delivery research, cautions that technological fixes, such as better measurement and realignment of the payment system to reward quality not quan-

tity, will not be enough. “Getting beyond the ‘more is better’ assumption will likely require a national debate on the limitations of medicine’s power to heal and cure, and on the quality of care at the end of life,” he writes in the last chapter of his book.

Reforming the health-care delivery system “requires transforming the culture of medicine,” he contends, “and reengineering an industry that accounts for nearly 18% of the U.S. gross domestic product.”

Weinstein, Kim, and others involved with the Dartmouth Center are hopeful that it will be able to drive the kind of change Wennberg describes, by uniting the best practices from health care and business in the context of a fertile, multidisciplinary academic home.

“Health care really is different,” agrees Porter. “It is a highly complex, technologically intensive service industry [that deals with] matters of life and death and people’s well-being. The setting of health care is sufficiently unique that we can’t just take management concepts and slap them into health care.” A new science—integrating the underlying principles of management and strategy with health care—has to be built from the ground up.

Ultimately, what health-care delivery science is all about, says Weinstein, is “real people” and their experiences with the health-care system.

**It has been 10 years** since my dad almost died from his hospital-acquired infection. I’d like to think that the health-care delivery system that he and my mom and I encountered during his 20-day hospital stay would be different now. It might be, depending on the hospital. But what I’ve learned from talking with leaders in health-care delivery and reform, and from reading broadly on the subject, tells me that my father’s story is still relevant today.

Here’s how events unfolded for him: It took three days in the hospital and three colonoscopies before the doctors could get a clear look at his large intestine. By that time, the bleeding had stopped and any inflammation that might have caused it had resolved. His doctors diagnosed him with a case of acute diverticulitis, a condition that’s not uncommon for someone of his age and is usually not life-threatening. Abnormal pouches in his colon called diverticula had most likely ruptured and caused the bleeding.

So he seemed fine to go home—or continue on our trip. But shortly after eating lunch while waiting to be discharged, he became gravely ill. In medical terms, he had an acute onset of severe diffuse pain. His abdomen grew more and more distended during the next 24 hours, and by the following

evening he was sweating profusely. He seemed to have a serious infection somewhere in his body, but no one could figure out where. Even a CT scan did not reveal its location.

Eventually, his doctors told us they needed to do an emergency exploratory laparotomy—meaning they would cut open his abdomen to look for infection. But once inside, the surgeon still could not find the source of the infection. (He decided to remove my father’s appendix while he was in there because it looked inflamed, but the pathology lab later determined it was fine.) The doctors’ best guess was that there had been a microperforation in my father’s colon that had closed on its own prior to the laparotomy. The perforation was probably a result of one of the three colonoscopies my father had undergone after being admitted.

My father “tolerated” the surgery “very well,” according to the surgeon’s notes. Unfortunately, additional serious complications awaited him. Five days after the operation, his kidneys began to fail, most likely as a result of either an intravenous antibiotic called gentamicin, which he began receiving just prior to the surgery, and/or septic shock from the surgery and the infection. So he was put on kidney dialysis. Simultaneously, he developed dangerous blood clots in both legs, called deep venous thromboses. At one point, his doctors thought he might be developing pneumonia, too. We were relieved when that did not come to pass.

In the end, my dad pulled through. He emerged from the hospital 20 days after he was admitted, haggard and 20 pounds lighter. The total charge for the stay was over \$120,000, as my parents recall it. They kept all the doctors’ notes but discarded the financial records once their insurance company finally agreed to pay the entire bill—after several phone calls and a letter from the surgeon.

My father hasn’t been hospitalized since, and I doubt he’s seen a doctor more than five times in the past 10 years, despite various illnesses and symptoms that probably warrant attention. Thanks to his brush with death in that Chicago hospital, I haven’t been able to change his mind.

**It’s impossible to say** that a particular doctor, nurse, or procedure was responsible for the complications that my father experienced. More likely, it was systemic inefficiencies and shortcomings that made his hospital stay so unpleasant and dangerous. We’ll never know for sure.

But I hope that the next time he lands in a hospital, the best practices of the health-care, systems engineering, and business worlds—as well as the latest advances in biomedical science—find their way to his bedside. ■



Fisher and Wennberg have pioneered the study of health-care variations.

Wennberg, the founding father of health-care delivery research, cautions in his book that “getting beyond the ‘more is better’ assumption will likely require a national debate on the limitations of medicine’s power to heal and cure, and on the quality of care at the end of life.”