

stat

COMING //

- **MARCH 20:** On Match Day, 31,000 or so anxious senior medical students find out if they will be filling one of 24,000 residency positions. After the students submit their program preferences in ranked lists, and residency program directors do the same, an electronic process searches for overlaps.
- **APRIL 10:** Three poets perform public readings of their works about the eye as part of a series hosted by London's Wellcome Collection to celebrate the intersection of poetry and medical science.



FOCUS // BREAKING DOWN a waste called bilirubin often overtaxes newborns' livers—it builds up, causing jaundice. A baby might need to spend several days under a bili light, a blue beam that alters bilirubin to make it water-soluble (and thus excretable). Yet many developing-world hospitals do not have this equipment because of its high cost (more than \$5,000). In response, Duke University engineering students invented the BlueRay (here, in experimental use in Honduras), which uses light-emitting diodes instead of more costly bulbs and will sell for about \$500. ■

INTERVIEW //

All Over the Map

■ BY CHARLES SLACK

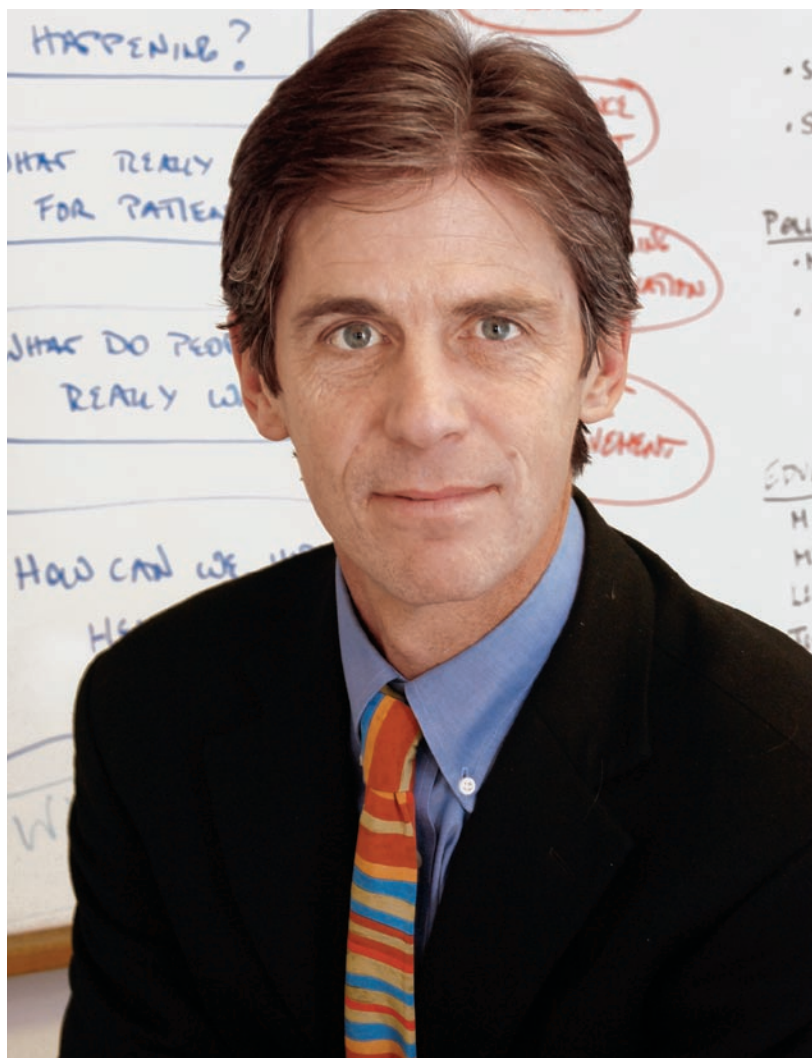
In a nation as large and diverse as the United States, it's not surprising that health care costs vary by region. What is surprising is that higher spending doesn't buy better care. That's the finding of Elliott Fisher and his colleagues. Fisher, a professor at Dartmouth Medical School in Hanover, N.H., and co-director of the VA Outcomes Group at the VA Medical Center in White River Junction, Vt., was recently named director of the Dartmouth Atlas Project, which analyzes regional variations in practice and spending for the Medicare population. In July, Fisher's team announced a partnership with the Brookings Institution, the Washington, D.C., think tank, to foster policies that improve health care while controlling escalating costs.

Q: It's not hard to guess which Atlas Project finding surprised you most.

A: Right, that despite a twofold or threefold cost difference, people in high-cost areas such as New York City and Los Angeles are less likely than those in Rochester, N.Y., or Portland, Ore., to receive important treatments such as angioplasty, mammography and cholesterol-lowering drugs.

Q: Have you determined what accounts for the higher costs?

A: The difference in spending is almost entirely due to greater use of



discretionary services. Patients in high-cost areas see their physicians more frequently, are more likely to see specialists, spend 70% more time in the hospital and receive more minor diagnostic tests, imaging and other procedures.

Q: Could the concentration of elite medical schools and teaching hospitals in high-cost cities account for some of the difference?

A: Patients at teaching hospitals with the most expensive practices—such as UCLA and New York University Medical Center—have no better

outcomes than those at low-cost centers. At UCLA it costs \$72,793 to take care of seriously ill Medicare patients in their last two years of life. At the Cleveland Clinic, the average cost is \$35,455, with no discernible difference in results. We're looking into why that is.

Q: Don't more doctor visits and tests mean better care?

A: On average, there's no evidence that the extra visits and tests in high-spending regions are providing any benefit. In fact, low-spending areas actually do a better job of making

sure that patients receive necessary services, such as treatment for heart attacks and screening for breast cancer. And the five-year mortality rate for patients with heart attacks, hip fractures or colon cancer is slightly lower in the low-cost regions.

Q: How do you explain that?

A: I think there are two likely reasons: poor communication and the harm that

■ In high-cost regions, patients are three times as likely to have 10 or more physicians involved in their care. Too many cooks spoil the soup.

comes from unnecessary care. In high-cost regions, patients are three times as likely to have 10 or more physicians involved in their care. Physicians in those regions are more likely to say that lack of communication impedes high-quality care. Too many cooks spoil the soup. And receiving unnecessary treatment can be risky: Hospitals are dangerous places if you don't really need to be there.

Q: Should we return to the days when one physician handled all or most of a patient's problems?

A: It's not that easy. Technologically, we've advanced way beyond the capacity of one individual to know everything about a patient or provide care. What we need is better coordination to ensure continuity of information and decision-making.

Q: Health care is a hot presidential-campaign topic right now. What

should the next president do?

A: Most of the candidates are focusing on expanding insurance coverage. This is important, but they should also think about how to improve the delivery system.

Q: Where do we start?

A: We need to move away from fee-for-service payment toward a system that rewards better—but not necessarily

more—care. We should eliminate incentives for superfluous procedures and services while creating incentives for physicians to work together to effectively treat an entire population.

Q: Managed care is the answer?

A: When it was tried in the early 1990s, managed care made a lot of people nervous, and for good reason. It was adopted in the absence of comprehensive performance measures, and the incentives were for hospitals and physicians to provide less care. Any such system needs to be counterbalanced by vigorous efforts to track patient care in multiple dimensions: Was it safe, timely, effective, efficient and equitable? One of the reasons for our partnership with Brookings is to develop and implement performance measures and payment reforms that move the United States toward a high-quality—and affordable—health care system. ■

BY THE NUMBERS //

Can't Sleep Tight

71 Percent increase since 2000 of the number of pest-control companies across the United States that receive calls about bedbugs—as many as 50 per week

60 Percentage of customers who were more upset to find out they had bedbugs rather than rodents, roaches, termites or some other infestation, according to a survey of pest-control companies

2 Minimum number of visits recommended by a pest-management professional to stop an outbreak

1/4 Length, in inches, of the average bedbug (*Cimex lectularius*), which wedges its flat, wingless body into mattress creases and behind headboards and then crawls out at night to attack humans, leaving behind itchy bites that even doctors confuse with those of other insects

6 Number of times its weight in blood that a bedbug can consume in one meal

35 Number of years since the ban of DDT (an effective but harmful insecticide), which, coupled with increased international travel, is thought to be a major factor in the rise in U.S. bedbug infestations during the past decade

1,000 Number of buildings listed on a volunteer bedbug-mapping Website that helps visitors plan an infestation-free North American trip

28 Number of human pathogens, including HIV, that bedbugs have been found to harbor, though they are not known to transmit disease

1 Primary recommended treatment for bites: anti-itch cream ■

The Outsourced Patient

BY JEFF GREENWALD // INFOGRAPHIC BY FLYING CHILLI

A growing number of Americans are saving untold thousands of dollars on major surgeries by traveling thousands of miles, even halfway around the world. State-of-the-art hospitals on nearly every continent—many of them accredited by the Joint Commission International (JCI), a branch of the U.S. hospital accreditation organization—have sprung up to offer care for fees as much as 85% lower than their U.S. counterparts'. Though there are no official numbers (patients travel as tourists, not under medical visas), as many as half a million Americans might be travelling abroad for treatment each year. Some do so at the urging of employers and benefits providers, who are also beginning to recognize the potential savings of medical tourism. Here's where Americans are going, what they're having done, and for how much (the numbers cited are estimates and can vary widely).


Mexico

Each year, tens of thousands of U.S. citizens make the trip across the border to clinics that offer relatively simple procedures—dental, cosmetic and ophthalmological.

-  Implants **\$1,500** (U.S.: \$2,400)
-  Rhinoplasty **\$3,800** (U.S.: \$4,500)



Costa Rica

Though most visitors to this lush Central American nation are attracted by the prospect of ecotourism, almost 14% go for medical care. "Recovery retreats," hotels staffed with nurses and interns, ease the post-op period.

-  Liposuction **\$1,200** (U.S.: \$3,500)

Argentina

Superb plastic surgeons make this style-conscious country a popular destination for medical tourists. One in 30 Argentines undergoes plastic surgery, making it the world's third-most-operated-on population, after the United States and Mexico.

-  Implants **\$1,000** (U.S.: \$2,400)
-  Facelift **\$3,960** (U.S.: \$8,500)



South Africa

Home of the world's first heart transplant, this nation has a sterling reputation for care. At least one travel agency offers packages that include wildlife safaris (to be taken before a procedure, as sun exposure is contraindicated after some cosmetic surgeries).

-  Facelift **\$6,000** (U.S.: \$8,500)



India

Some 500,000 foreigners travel here each year for medical care, often for orthopedic and cardiac surgery. The Confederation of Indian Industry puts the size of the country's medical tourism at more than \$300 million and estimates that it will grow to \$2 billion by 2012.

-  Heart bypass **\$10,000** (U.S.: \$130,000)
-  Hip replacement **\$9,000** (U.S.: \$43,000)

Malaysia

Facilities here are on par with those in India and Thailand, but the country is a well-kept secret as far as medical tourism goes. A pioneer in preventive-care screening, Malaysia offers packages for bone scans and heart, stroke and cancer testing.

-  Heart bypass **\$9,000** (U.S.: \$130,000)
-  Hip replacement **\$10,000** (U.S.: \$43,000)

MAIN SOURCE: JOSEF WOODMAN, AUTHOR OF PATIENTS BEYOND BORDERS.

Thailand

Bangkok's posh Bumrungrad Hospital serves more than 1 million patients annually from more than 190 countries, about 64,000 of them Americans. It's one of three medical facilities in Bangkok that boast hospital accreditation from JCI. Both Bangkok and Phuket are popular destinations for sex-change operations, one of the top 10 procedures for which patients visit Thailand.



Angioplasty
\$13,000 (U.S.: \$57,000)



Hip replacement
\$12,000 (U.S.: \$43,000)



Gender-reassignment surgery
\$8,000 (U.S.: \$20,000)

Singapore

More than 250,000 patients per year visit Singapore, a large percentage of them from the Middle East. The tiny, English-speaking nation has 11 JCI-accredited hospitals.



Heart bypass
\$18,500 (U.S.: \$130,000)



Hip replacement
\$12,000 (U.S.: \$43,000)

Caveat Emptor

Medical tourists face special risks: Though they are often treated by physicians trained in the United States and Europe, the expertise of nurses and other staff is not as assured. Sanitary conditions inside hospitals and environmental conditions beyond their doors may invite infection, digestive problems or other conditions that slow or even prevent recovery. And once home, follow-up care is a challenge (though some foreign surgeons are willing to consult with local doctors by phone). Then there's the fact that, should something go wrong, legal recourse is much more difficult abroad—so patients should proceed with extreme care.

MILESTONES //

A Miraculous Conception

Almost 30 years ago, on July 25, 1978, newspaper headlines ("First Test-Tube Baby! It's a Girl!") heralded the first successful instance of in vitro fertilization (IVF) when Lesley Brown of Bristol, England, gave birth to a five-pound, 12-ounce baby, who was named Louise.

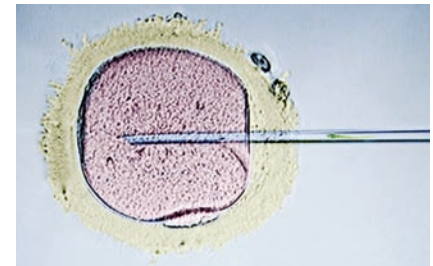
After nearly a decade of trying to conceive and enduring failed attempts to clear her blocked fallopian tubes, Lesley and her husband, John, as a last resort sought out Robert Edwards and Patrick Steptoe, who had been experimenting with a stunning new technology: conception outside the human body. First, Steptoe, a surgeon and gynecologist, retrieved an egg cell from Lesley and fertilized it with John's sperm in a petri dish. After two and a half days, an embryo was implanted in Lesley's uterus.

For Steptoe and Edwards, a physiologist, the success had been a decade in the making. After the pair's first successful fertilization of a human egg in a petri dish, they spent six years implanting fertilized eggs that had undergone as many as 100 cell divisions. Few took; just one resulted in a pregnancy, which had to be terminated because it was ectopic. Lesley—within whom they implanted an embryo that had only eight cells—was the first to carry such a child to term. All along, Edwards and Steptoe were repeatedly denied research funds because fellow scientists were convinced that their work would produce abnormal babies.

These days, though it is the final resort—after use of

follicle-stimulating drugs alone or in combination with artificial insemination—IVF accounts for more than 1% of all pregnancies. During the past 30 years, the procedure has been refined. Now stimulating drugs produce more follicles but fewer side effects, and scientists have learned how to develop the later-stage embryos that Steptoe and Edwards attempted.

Despite such improvements, some women may undergo three to five cycles of IVF (each of which costs an average of \$12,400) before it works. What's more, IVF isn't a surefire way to beat one's biological clock; because a woman's egg quality



declines after the age of 35, so does her chance of full-term pregnancy (at 42, as low as 8%).

Age might be a moot concern for a woman if her eggs are destroyed by, say, chemotherapy. For that reason, researchers at the Massachusetts General Hospital are experimenting with freezing a woman's eggs before she undergoes treatment; success rates are still low, in part because the egg's genetic machinery is susceptible to damage caused by ice formations.

Frozen embryos, much harder than eggs, are frequently used in IVF—and, in the past decade, in stem-cell research as well. As it turned out, one controversial practice spawned another. ■

POINT/COUNTERPOINT //

Are public report cards that evaluate individual physicians a good thing?

POINT: Yes. Public reporting on the quality of all health care services is key in the nation's efforts to develop a value-driven health care system, says Carolyn M. Clancy, a general internist and the director of the Agency for Healthcare Research and Quality, one of twelve agencies that are part of the U.S. Department of Health and Human Services.

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A value-driven system is one in which substantial investments made in health care result in improved outcomes for patients. For such a system to work, patients, providers, policy makers and other stakeholders need reliable, comparable information to make informed decisions.

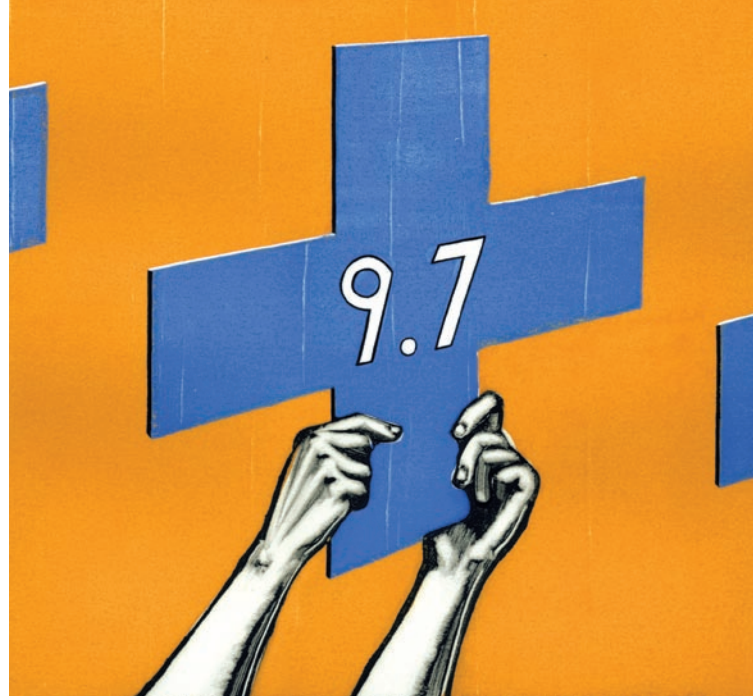
We are seeing escalating health care costs and persistent evidence of a substantial gap between the best possible care and that which is routinely delivered. These observations have helped spur interest in the use of performance measurement to drive clinical improvements and inform patient choices.

Although report cards and the performance measures that populate those cards are in a relatively early stage of development, we know that public reporting is associated with significant improvements in care. Data from the 2006 National Healthcare Quality Report, produced by the Agency for Healthcare Research and Quality, found that hospital measures of quality improved at a median annual rate of 7.8%.

We have also learned that keeping data private isn't as effective as public reporting in quality improvement. In Wisconsin, hospitals strongly encouraged by local employers to submit data on performance were split into two groups: those who saw the results privately and those whose results were posted publicly. One year later, the latter group had undertaken many more quality-improvement efforts than the hospitals with privately reported data.

In a follow-up study conducted two years after the Wisconsin data was made public, one-third of hospitals with public reporting had significantly improved their performance for obstetric conditions and only 5% saw a decline. For those whose data was reported privately, only one-fourth saw improvements in obstetric performance and about 14% saw a decline.

A crucial next step is to engage consumers. Although the public expresses strong interest in knowing the quality of hospitals and physicians, evidence is limited that people are paying attention to and using the data. However, I am encouraged that from 2000 to 2005, the percentage of people doing so rose from 4% to 12%.



For reporting on physician performance to be successful, measures must be valid, data must be risk-adjusted and samples must be of sufficient size. Given that high-quality care is often a team effort, an important but as-yet-unanswered question is: For which clinical situations should quality be measured at the individual level and for which should it be assessed at the team level?

To get this right, physician leadership is crucial. Already, the nation's physician organizations have led the efforts to develop effective, fair physician performance measures and report cards. They are collaborating with consumers, policy makers, insurers and others to ensure that report cards are used to improve care rather than to deny coverage.

Transparency regarding quality is a powerful tool if done wisely. The ultimate goal is not to create better report cards but to add value to a clinician's work by making it easier to provide the best care and focusing on what physicians believe to be in the best interest of their patients.

COUNTERPOINT: No, because the wrong kind of performance measurements can do more harm than good, says David F. Torchiana, a cardiac surgeon and the head of the Massachusetts General Physicians Organization.

Proponents of publicly reporting physician outcomes give two reasons for doing so: to help patients make better choices and to use public opinion as a catalyst for improvement. Both of these objectives are worthy, but it is also important for the benefits of public reporting to outweigh the shortcomings.

The theoretical ideal might be a definitive physician rank order for every condition. It doesn't exist. The primary data sources used for ranking are claims data, which are gathered

for billing and payment. They are a poor surrogate for real clinical detail, which is more challenging and costly to collect. Moreover, only one operation (coronary bypass graft surgery) is performed often enough to meaningfully differentiate mortality rates among hospitals, and it takes three years of data to make that distinction. Trying to compare individual practitioners is more difficult because the caseload per physician is smaller still, which makes comparisons even weaker. The validity of attributing an outcome to a single physician is also unfair; most care is the product of a team of providers. Finally, outcomes are labile: This year's outstanding performer may be in the middle of the pack next year, or worse, and then bounce back the year after that. Instead of an authoritative rank order we have an unstable, imprecise process based on soft data that is often invalid at the physician level and shouldn't be attributed at that level anyway.

What about public reporting drawing greater attention and therefore stimulating a stronger response? Maybe—but it can be as much of a danger as a benefit. The experience with cardiac surgery report cards demonstrates that there are three ways to improve outcomes in response to a public report card. One is good: better operations and better patient care. The other two are less positive. “Up-coding”—reporting more severe patient co-morbidities so that the expected risk goes up—improves risk-adjusted outcomes without actually improving the care at all. In New York, where outcomes were first reported publicly almost 20 years ago, risk-adjusted cardiac surgical mortality dropped by 36%, from 4.2% to 2.7%, in the first few years. To produce this number, actual mortality fell by 11%, while predicted mortality went up by 37%, driven by changes in coding which included a sevenfold increase in the recorded incidence of the risk factor of renal failure and a

greater than fourfold increase in congestive heart failure.

The third way to “improve” is clearly the most distressing: Stop caring for the sickest patients, the very same group of patients who typically stand to gain the most from treatment. The most important evidence that this happens comes from public data on coronary angioplasty. In New York, after years of reporting, the mortality rate was 0.6% in 2005. In Massachusetts' first report that same year, mortality was 1.7%. Is angioplasty really three times safer in New York? In fact, angioplasty for equivalent cases had about the same outcome in each state. The difference, rather, was in the mix of patients selected for the procedure. In Massachusetts there were about six times more angioplasty patients considered highest-risk (suffering from shock because of extensive acute cardiac damage) than in New York. For such a patient, angioplasty can be truly life-saving: The odds of survival at five years are 66% better with angioplasty, but the risk of mortality is much higher than in an elective setting. This data suggests that a lower mortality rate for angioplasty on a report card has been traded for a potentially poorer survival for five out of six patients with a heart attack and cardiogenic shock—a trade no one would logically make.

A negative public report card threatens the reputation and livelihood of the physician portrayed—that's what makes reporting such a powerful stimulus for practice change, for better or worse. The benefits of public reporting have been oversold and the downside ignored. Most attempts at outcome reports at the physician level are inaccurate and misleading. Even when the data is valid, much of the supposed resultant improvement comes from coding changes or negative changes in practice. Public reporting at the individual physician level is a two-edged sword. Let's wield it carefully. ■

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Technetium

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DEFINED //

technetium-99m \tek-'nē-sh(ē)-lām nīn'tē nīn ěm\ n : A radioactive isotope used in as many as 20 million medical scans in the United States each year that has been at the center of controversy because of the shutdown of a 50-year-old nuclear reactor in Canada.

Chalk River Laboratories produces as much as 65% of the world's supply of the radiopharmaceutical, which is used to diagnose and treat a range of diseases. In November 2007, the reactor was closed after the Canadian Nuclear Safety Commission discovered that emergency backup power systems were not connected to cooling pumps. The reactor had been expected to resume production in early to mid-January 2008. Yet as hospitals throughout North America began to feel the squeeze—delaying tests or finding more complicated alternatives—the Canadian government took surprising action, passing legislation on December 12 to immediately reopen the reactor for 120 days.

Once production resumed, hospitals were likely to wait two to three weeks for full shipments of technetium-99m, according to Sandy McEwan, president of the Society of Nuclear Medicine, which has pressed before for the creation of an American source of the radiopharmaceutical. “This will renew the conversation,” he says. There's likely to be no end to conversation in Canada about what the government considered a compliance issue versus what critics see as a safety issue for those who live near the reactor. ■