Overkill

By Atul Gawande · The New Yorker

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It was lunchtime before my afternoon surgery clinic, which meant that I was at my desk, eating a ham-and-cheese sandwich and clicking through medical articles. Among those which caught my eye: a British case report on the first 3-D-printed hip implanted in a human being, a Canadian analysis of the rising volume of emergency-room visits by children who have ingested magnets, and a Colorado study finding that the percentage of fatal motor-vehicle accidents involving marijuana had doubled since its commercial distribution became legal. The one that got me thinking, however, was a study of more than a million Medicare patients. It suggested that a huge proportion had received care that was simply a waste.

The researchers called it "low-value care." But, really, it was no-value care. They studied how often people received one of twenty-six tests or treatments that scientific and professional organizations have consistently determined to have no benefit or to be outright harmful. Their list included doing an EEG for an uncomplicated headache (EEGs are for diagnosing seizure disorders, not headaches), or doing a CT or MRI scan for low-back pain in patients without any signs of a neurological problem (studies consistently show that scanning such patients adds nothing except cost), or putting a coronary-artery stent in patients with stable cardiac disease (the likelihood of a heart attack or death after five years is unaffected by the stent). In just a single year, the researchers reported, twenty-five to forty-two per cent of Medicare patients received at least one of the twenty-six useless tests and treatments.

Could pointless medical care really be that widespread? Six years ago, I wrote an article for this magazine, titled "The Cost Conundrum," which explored the problem of unnecessary care in McAllen, Texas, a community with some of the highest per-capita costs for Medicare in the nation. But was McAllen an anomaly or did it represent an emerging norm? In 2010, the Institute of Medicine issued a report stating that waste accounted for thirty per cent of health-care spending, or some seven hundred and fifty billion dollars a year, which was more than our nation's entire budget for K-12 education. The report found that higher prices, administrative

expenses, and fraud accounted for almost half of this waste. Bigger than any of those, however, was the amount spent on unnecessary health-care services. Now a far more detailed study confirmed that such waste was pervasive.

I decided to do a crude check. I am a general surgeon with a specialty in tumors of the thyroid and other endocrine organs. In my clinic that afternoon, I saw eight new patients with records complete enough that I could review their past medical history in detail. One saw me about a hernia, one about a fatty lump growing in her arm, one about a hormone-secreting mass in her chest, and five about thyroid cancer.

To my surprise, it appeared that seven of those eight had received unnecessary care. Two of the patients had been given high-cost diagnostic tests of no value. One was sent for an MRI after an ultrasound and a biopsy of a neck lump proved suspicious for thyroid cancer. (An MRI does not image thyroid cancer nearly as well as the ultrasound the patient had already had.) The other received a new, expensive, and, in her circumstances, irrelevant type of genetic testing. A third patient had undergone surgery for a lump that was bothering him, but whatever the surgeon removed it wasn't the lump—the patient still had it after the operation. Four patients had undergone inappropriate arthroscopic knee surgery for chronic joint damage. (Arthroscopy can repair certain types of acute tears to the cartilage of the knee. But years of research, including randomized trials, have shown that the operation is of no help for chronic arthritis- or age-related damage.)

Virtually every family in the country, the research indicates, has been subject to overtesting and overtreatment in one form or another. The costs appear to take thousands of dollars out of the paychecks of every household each year. Researchers have come to refer to financial as well as physical "toxicities" of inappropriate care—including reduced spending on food, clothing, education, and shelter. Millions of people are receiving drugs that aren't helping them, operations that aren't going to make them better, and scans and tests that do nothing beneficial for them, and often cause harm.

Why does this fact barely seem to register publicly? Well, as a doctor, I am far more concerned about doing too little than doing too much. It's the scan, the test, the operation that I *should* have done that sticks with me—sometimes for years. More than a decade ago, I saw a young woman in the emergency room who had severe pelvic pain. A standard X-ray showed nothing. I examined her and found signs of

pelvic inflammatory disease, which is most often caused by sexually transmitted diseases. She insisted that she hadn't been sexually active, but I didn't listen. If I had, I might have ordered a pelvic CT scan or even recommended exploratory surgery to investigate further. We didn't do that until later, by which time the real source of her symptoms, a twisted loop of bowel in her pelvis, had turned gangrenous, requiring surgery. By contrast, I can't remember anyone I sent for an unnecessary CT scan or operated on for questionable reasons a decade ago. There's nothing less memorable.

It is different, however, when I think about my experience as a patient or a family member. I can readily recall a disturbing number of instances of unnecessary care. My mother once fainted in the Kroger's grocery store in our Ohio home town. Emergency workers transported her to a hospital eighty miles away, in Columbus, where doctors did an ultrasound of her carotid arteries and a cardiac catheterization, too, neither of which is recommended as part of the diagnostic workup for someone who's had a fainting episode, and neither of which revealed anything significant. Only then did someone sit down with her and take a proper history; it revealed that she'd had dizziness, likely from dehydration and lack of food, which caused her to pass out.

I began asking people if they or their family had been subject to what they thought was unnecessary testing or treatment. Almost everyone had a story to tell. Some were appalling.

My friend Bruce told me what happened when his eighty-two-year-old father developed fainting episodes. His doctors did a carotid ultrasound and a cardiac catheterization. The tests showed severe atherosclerotic blockages in three coronary arteries and both carotid arteries. The news didn't come as a shock. He had smoked two packs of cigarettes a day since the age of seventeen, and in his retirement years was paying the price, with chronic lung disease, an aortic-aneurysm repair at sixty-five, a pacemaker at seventy-four, and kidney failure at seventy-nine, requiring dialysis three days a week. The doctors recommended doing a three-vessel cardiac-bypass operation as soon as possible, followed, a week or two later, by surgery to open up one of his carotid arteries. The father deferred the decision-making to the son, who researched hospitals and found a team with a great reputation and lots of experience. The team told him that the combined procedures posed clear risks to his father—for instance, his chance of a stroke would be around fifteen per cent—but that the procedures had become very routine, and the doctors were confident that they were

far more likely to be successful than not.

It didn't occur to Bruce until later to question what the doctors meant by "successful." The blockages weren't causing his father's fainting episodes or any other impairments to his life. The operation would not make him feel better. Instead, "success" to the doctors meant reducing his future risk of a stroke. How long would it take for the future benefit to outweigh the immediate risk of surgery? The doctors didn't say, but carotid surgery in a patient like Bruce's father reduces stroke risk by about one percentage point per year. Therefore, it would take fifteen years before the benefit of the operation would exceed the fifteen-per-cent risk of the operation. And he had a life expectancy far shorter than that—very likely just two or three years. The potential benefits of the procedures were dwarfed by their risks.

Bruce's father had a stroke during the cardiac surgery. "For me, I'm kicking myself," Bruce now says. "Because I remember who he was before he went into the operating room, and I'm thinking, Why did I green-light an eighty-something-year-old, very diseased man to have a major operation like this? I'm looking in his eyes and they're like stones. There's no life in his eyes. There's no recognition. He's like the living dead."

A week later, Bruce's father recovered his ability to talk, although much of what he said didn't make sense. But he had at least survived. "We're going to put this one in the win column," Bruce recalls the surgeon saying.

"I said, 'Are you fucking kidding me?' "

His dad had to move into a nursing home. "He was only half there mentally," Bruce said. Nine months later, his father died. That is what low-value health care can be like.

I'm a fan of the radio show "Car Talk" (which ceased taping in 2012 but still airs in reruns), and a regular concern of callers who sought the comic but genuine advice of its repair-shop-owning hosts, Tom and Ray Magliozzi, was whether they were getting snookered by car mechanics into repairs they didn't need.

"There's no question we have considerable up-selling in the industry," Ray told me when I reached him by phone. "Quickie-lube places are the worst for this. I won't name names, but they tend to have the word 'lube' in them." He let out that *nyuk-nyuk-nyuk* laugh he has. "You can't make money on a $29.95 oil change. So they try to

sell you on a lot of stuff. First level, they sell you something you don't need but at least doesn't hurt. Second level, they do some real damage mucking around."

Even reputable professionals with the best intentions tend toward overkill, he said. To illustrate the point, he, too, had a medical story to tell. Eight months earlier, he'd torn a meniscus in his knee doing lunges. "Doing lunges is probably something a sixty-five-year-old should not be doing to begin with," he admitted. He was referred to an orthopedic surgeon to discuss whether to do physical therapy or surgery. "Very good guy. Very unassuming. I had no reason not to trust the guy. But I also know he's a surgeon. So he's going to present surgery to me."

Sure enough, the surgeon recommended arthroscopic knee surgery. "This is going to fix it," Ray recalled him saying. "In by nine, out by noon."

Ray went for a second opinion, to a physical therapist, who, of course, favored physical therapy, just as the surgeon favored surgery. Ray chose physical therapy.

"How'd it turn out?" I asked.

"Amazingly well," he said. "I feel pretty darn good right now."

"What did the surgeon say when you told him you weren't going to do the surgery?"

"He said, 'No problem, go to P.T., and when that doesn't work we can schedule the surgery,' " Ray recalled. "Who knows? Maybe I will end up having to go back. He wasn't trying to pull the wool over my eyes. But he believed."

What Ray recommended to his car-owning listeners was the approach that he adopted as a patient—caveat emptor. He did his research. He made informed choices. He tried to be a virtuous patient.

The virtuous patient is up against long odds, however. One major problem is what economists call information asymmetry. In 1963, Kenneth Arrow, who went on to win the Nobel Prize in Economics, demonstrated the severe disadvantages that buyers have when they know less about a good than the seller does. His prime example was health care. Doctors generally know more about the value of a given medical treatment than patients, who have little ability to determine the quality of the advice they are getting. Doctors, therefore, are in a powerful position. We can recommend

care of little or no value because it enhances our incomes, because it's our habit, or because we genuinely but incorrectly believe in it, and patients will tend to follow our recommendations.

Another powerful force toward unnecessary care emerged years after Arrow's paper: the phenomenon of overtesting, which is a by-product of all the new technologies we have for peering into the human body. It has been hard for patients and doctors to recognize that tests and scans can be harmful. Why not take a look and see if anything is abnormal? People are discovering why not. The United States is a country of three hundred million people who annually undergo around fifteen million nuclear medicine scans, a hundred million CT and MRI scans, and almost ten billion laboratory tests. Often, these are fishing expeditions, and since no one is perfectly normal you tend to find a lot of fish. If you look closely and often enough, almost everyone will have a little nodule that can't be completely explained, a lab result that is a bit off, a heart tracing that doesn't look quite right.

Excessive testing is a problem for a number of reasons. For one thing, some diagnostic studies are harmful in themselves—we're doing so many CT scans and other forms of imaging that rely on radiation that they are believed to be increasing the population's cancer rates. These direct risks are often greater than we account for.

What's more, the value of any test depends on how likely you are to be having a significant problem in the first place. If you have crushing chest pain and shortness of breath, you start with a high likelihood of having a serious heart condition, and an electrocardiogram has significant value. A heart tracing that doesn't look quite right usually means trouble. But, if you have no signs or symptoms of heart trouble, an electrocardiogram adds no useful information; a heart tracing that doesn't look quite right is mostly noise. Experts recommend against doing electrocardiograms on healthy people, but millions are done each year, anyway.

Resolving the uncertainty of non-normal results can lead to procedures that have costs of their own. You get an EKG. The heart tracing is not completely normal, and a follow-up procedure is recommended. Perhaps it's a twenty-four-hour heart-rhythm monitor or an echocardiogram or a stress test or a cardiac catheterization; perhaps you end up with all of them before everyone is assured that everything is all right. Meanwhile, we've added thousands of dollars in costs and, sometimes, physical risks, not to mention worry and days of missed work.

Overtesting has also created a new, unanticipated problem: overdiagnosis. This isn't misdiagnosis—the erroneous diagnosis of a disease. This is the correct diagnosis of a disease that is never going to bother you in your lifetime. We've long assumed that if we screen a healthy population for diseases like cancer or coronary-artery disease, and catch those diseases early, we'll be able to treat them before they get dangerously advanced, and save lives in large numbers. But it hasn't turned out that way. For instance, cancer screening with mammography, ultrasound, and blood testing has dramatically increased the detection of breast, thyroid, and prostate cancer during the past quarter century. We're treating hundreds of thousands more people each year for these diseases than we ever have. Yet only a tiny reduction in death, if any, has resulted.

My last patient in clinic that day, Mrs. E., a woman in her fifties, had been found to have a thyroid lump. A surgeon removed it, and a biopsy was done. The lump was benign. But, under the microscope, the pathologist found a pinpoint "microcarcinoma" next to it, just five millimetres in size. Anything with the term "carcinoma" in it is bound to be alarming—"carcinoma" means cancer, however "micro" it might be. So when the surgeon told Mrs. E. that a cancer had been found in her thyroid, which was not exactly wrong, she believed he'd saved her life, which was not exactly right. More than a third of the population turns out to have these tiny cancers in their thyroid, but fewer than one in a hundred thousand people die from thyroid cancer a year. Only the rare microcarcinoma develops the capacity to behave like a dangerous, invasive cancer. (Indeed, some experts argue that we should stop calling them "cancers" at all.) That's why expert guidelines recommend no further treatment when microcarcinomas are found.

Nonetheless, it's difficult to do nothing. The patient's surgeon ordered a series of ultrasounds, every few months, to monitor the remainder of her thyroid. When the imaging revealed another five-millimetre nodule, he recommended removing the rest of her thyroid, out of an abundance of caution. The patient was seeing me only because the surgeon had to cancel her operation, owing to his own medical issues. She simply wanted me to fill in for the job—but it was a job, I advised her, that didn't need doing in the first place. The surgery posed a greater risk of causing harm than any microcarcinoma we might find, I explained. There was a risk of vocal-cord paralysis and life-threatening bleeding. Removing the thyroid would require that she take a daily hormone-replacement pill for the rest of her life. We were better off just

checking her nodules in a year and acting only if there was significant enlargement.

H. Gilbert Welch, a Dartmouth Medical School professor, is an expert on overdiagnosis, and in his excellent new book, “Less Medicine, More Health,” he explains the phenomenon this way: we’ve assumed, he says, that cancers are all like rabbits that you want to catch before they escape the barnyard pen. But some are more like birds—the most aggressive cancers have already taken flight before you can discover them, which is why some people still die from cancer, despite early detection. And lots are more like turtles. They aren’t going anywhere. Removing them won’t make any difference.

We’ve learned these lessons the hard way. Over the past two decades, we’ve tripled the number of thyroid cancers we detect and remove in the United States, but we haven’t reduced the death rate at all. In South Korea, widespread ultrasound screening has led to a fifteen-fold increase in detection of small thyroid cancers. Thyroid cancer is now the No. 1 cancer diagnosed and treated in that country. But, as Welch points out, the death rate hasn’t dropped one iota there, either. (Meanwhile, the number of people with permanent complications from thyroid surgery has skyrocketed.) It’s all over-diagnosis. We’re just catching turtles.

Every cancer has a different ratio of rabbits, turtles, and birds, which makes the story enormously complicated. A recent review concludes that, depending on the organ involved, anywhere from fifteen to seventy-five per cent of cancers found are indolent tumors—turtles—that have stopped growing or are growing too slowly to be life-threatening. Cervical and colon cancers are rarely indolent; screening and early treatment have been associated with a notable reduction in deaths from those cancers. Prostate and breast cancers are more like thyroid cancers. Imaging tends to uncover a substantial reservoir of indolent disease and relatively few rabbit-like cancers that are life-threatening but treatable.

We now have a vast and costly health-care industry devoted to finding and responding to turtles. Our ever more sensitive technologies turn up more and more abnormalities —cancers, clogged arteries, damaged-looking knees and backs—that aren’t actually causing problems and never will. And then we doctors try to fix them, even though the result is often more harm than good.

The forces that have led to a global epidemic of overtesting, overdiagnosis, and

overtreatment are easy to grasp. Doctors get paid for doing more, not less. We're more afraid of doing too little than of doing too much. And patients often feel the same way. They're likely to be grateful for the extra test done in the name of "being thorough"—and then for the procedure to address what's found. Mrs. E. was such a patient.

Mrs. E. had a turtle. She would have been better off if we'd never monitored her thyroid in the first place. But, now that we'd found something abnormal, she couldn't imagine just keeping an eye on it. She wanted to take her chances with surgery.

The main way we've tried to stop unnecessary treatments has been through policing by insurers: they could refuse to pay for anything that looked like inappropriate care, whether it was an emergency-room visit, an MRI scan, or an operation. And it worked. During the nineteen-nineties, the "Mother, may I?" strategy flattened health-care costs. But it also provoked a backlash. Faceless corporate bureaucrats second-guessing medical decisions from afar created an infuriating amount of hassle for physicians and patients trying to orchestrate necessary care—and sometimes led to outrageous mistakes. Insurance executives were accused of killing people. Facing a public outcry, they backed off, and health-care costs resumed their climb. A decade and a half later, however, more interesting approaches have emerged.

Consider the case of Michael Taylor. A six-foot-tall, fifty-five-year-old optician from Ogden, Utah, Taylor threw his back out a year ago, while pulling weeds from his lawn. When he tried to straighten up, pain bolted from his lower back through his hips and down both thighs. He made his stooped way up his front-porch steps, into his house, and called his wife, Sandy, at work.

"For him to call meant it was *really* bad," she said later.

Taylor was a stoic guy who had had back issues for a long time. By his early thirties, he had already undergone two spine operations: the fusion of a vertebra in his neck, which was fractured in a car accident, and the removal of a ruptured disk in his lower back that had damaged a nerve root, causing a foot drop—his left foot slapped when he walked. He'd had periodic trouble with back spasms ever since. For the most part, he managed them through stretches and exercise. He had been a martial artist since the age of thirteen—he'd earned a third-degree black belt—and retained tremendous flexibility. He could still do splits. Occasionally, if an attack was bad, he saw a pain specialist and got a spinal injection of steroids, which usually worked for a while. This

episode, however, was worse than any before.

“He could hardly walk,” Sandy said. He tried sleeping in a recliner and waiting out the pain. But it didn’t go away. He called his primary-care physician, who ordered an MRI. It showed degenerative disk disease in his lumbar spine—a bulge or narrowing of disk space between two of the vertebrae in his lower back. The doctor prescribed muscle relaxants and pain medications, and said that Taylor might need spinal surgery. She referred him to a local neurosurgeon.

Taylor put off making the appointment. He did his lower-back stretches and range-of-motion exercises, and worked on losing weight. These measures helped a little, but he still couldn’t sleep in his bed or manage more than a shuffling walk. After four weeks with no improvement, he finally went to see the surgeon, who recommended fusing Taylor’s spine where his disk was bulging. Taylor would lose some mobility—his days of spinning kicks were over—and success was not guaranteed, but the doctor thought that it was the best option.

“He said the surgery would be, like, a fifty-fifty thing,” Taylor recalled. “Half of people would see great success. The other half would see little or no difference. And there’d be a few who find it makes the pain worse.” There was also the matter of cost. The vision center he managed was in a Walmart superstore, and the co-payments and deductibles with the company insurance plan were substantial. His bills were likely to run past a thousand dollars.

But Taylor had heard about a program that Walmart had launched for employees undergoing spine, heart, or transplant procedures. Employees would have no out-of-pocket costs at all if they got the procedure at one of six chosen “centers of excellence”: the Cleveland Clinic; the Mayo Clinic; Virginia Mason Medical Center, in Washington; Scott and White Memorial Hospital, in Texas; Geisinger Medical Center, in Pennsylvania; and Mercy Hospital Springfield, in Missouri. Taylor learned that the designated spine center for his region was Virginia Mason, in Seattle. He used to live in Washington, and the back surgery he’d had when he was younger was at the same hospital. He trusted the place, and it had a good reputation. He decided to proceed.

The program connected him to the hospital, and its staff took care of everything from there. They set up his appointments and arranged the travel for him and his wife. All expenses were covered, even their food and hotel costs.

"They flew us from Salt Lake City and picked us up at the airport in a town car," Taylor said. He said he felt like royalty.

Walmart wasn't providing this benefit out of the goodness of its corporate heart, of course. It was hoping that employees would get better surgical results, sure, but also that the company would save money. Spine, heart, and transplant procedures are among the most expensive in medicine, running from tens of thousands to hundreds of thousands of dollars. Nationwide, we spend more money on spinal fusions, for instance, than on any other operation—thirteen billion dollars in 2011. And if there are complications the costs of the procedure go up further. The medical and disability costs can be enormous, especially if an employee is left permanently unable to return to work. These six centers had notably low complication rates and provided Walmart a fixed, package price.

Two years into the program, an unexpected pattern is emerging: the biggest savings and improvements in care are coming from avoiding procedures that shouldn't be done in the first place. Before the participating hospitals operate, their doctors conduct their own evaluation. And, according to Sally Welborn, the senior vice-president for benefits at Walmart, those doctors are finding that around thirty per cent of the spinal procedures that employees were told they needed are inappropriate. Dr. Charles Nussbaum, until recently the head of neurosurgery at Virginia Mason Medical Center, confirmed that large numbers of the patients sent to his hospital for spine surgery do not meet its criteria.

Michael Taylor was one of those patients. Disk disease like the kind seen on his MRI is exceedingly common. Studies of adults with no back pain find that half or more have degenerative disk disease on imaging. Disk disease is a turtle—an abnormality that generally causes no harm. It's different when a diseased disk compresses the spinal cord or nerve root enough to cause specific symptoms, such as pain or weakness along the affected nerve's territory, typically the leg or the arm. In those situations, surgery is proved to be more effective than nonsurgical treatment. For someone without such symptoms, though, there is no evidence that surgery helps to reduce pain or to prevent problems. One study found that between 1997 and 2005 national health-care expenditures for back-pain patients increased by nearly two-thirds, yet population surveys revealed no improvement in the level of back pain reported by patients.

There are gray-zone cases, but Taylor's case was straightforward. Nussbaum said that

Taylor's MRI showed no disk abnormality compressing his spinal cord or nerve root. He had no new leg or foot weakness. His pain went down both legs and not past the knee, which didn't fit with disk disease. The symptoms were consistent with muscle spasms or chronic nerve sensitivity resulting from his previous injuries. Fusing Taylor's spine—locking two vertebrae together with bolts and screws—wouldn't fix these problems. At best, it would stop him from bending where it hurt, but that was like wiring a person's jaw shut because his tooth hurts when he chews. Fusing the spine also increases the load on the disks above and below the level of fusion, making future back problems significantly more likely. And that's if things go well. Nussbaum recommended against the surgery.

This was not what Taylor's wife wanted to hear. Had they come all this way for nothing? "I got kind of angry," Sandy told me later. She wanted his back problem solved.

He did, too. But he was relieved to hear that he wouldn't have to undergo another back operation. Nussbaum's explanations made sense to him, and he had never liked the idea of having his spine fused. Moreover, unlike most places, the Virginia Mason spine center had him seen not only by a surgeon but also by a rehabilitation-medicine specialist, who suggested a nonsurgical approach: a spinal injection that afternoon, continued back exercises, and a medication specifically for neuropathic pain—chronic nerve sensitivity.

"Within a couple of weeks, I was literally pain free," Taylor said. It was six months after his visit to Seattle, and he could do things he hadn't been able to do in decades.

"I was just amazed," Sandy said. "The longer it's been, the better he is."

If an insurer had simply decreed Taylor's back surgery to be unnecessary, and denied coverage, the Taylors would have been outraged. But the worst part is that he would not have got better. It isn't enough to eliminate unnecessary care. It has to be replaced with necessary care. And that is the hidden harm: unnecessary care often crowds out necessary care, particularly when the necessary care is less remunerative. Walmart, of all places, is showing one way to take action against no-value care—rewarding the doctors and systems that do a better job and the patients who seek them out.

Six years ago, in "The Cost Conundrum," I compared McAllen with another Texas

border town, El Paso. They had the same demographics—the same levels of severe poverty, poor health, illegal immigration—but El Paso had half the per-capita Medicare costs and the same or better results. The difference was that McAllen's doctors were ordering more of almost everything—diagnostic testing, hospital admissions, procedures. Medicare patients in McAllen received forty per cent more surgery, almost twice as many bladder scopes and heart studies, and two to three times as many pacemakers, cardiac bypass operations, carotid endarterectomies, and coronary stents. Per-capita spending on home-health services was five times higher than in El Paso and more than half of what many American communities spent on all health care. The amount of unnecessary care appeared to be huge.

What explained this? Our piecework payment system—rewarding doctors for the quantity of care provided, regardless of the results—was a key factor. The system gives ample reward for overtreatment and no reward for eliminating it. But these inducements applied everywhere. Why did McAllen succumb to them more than other medical communities did? Doctors there described a profit-maximizing medical culture. Specialists not only made money from the services they provided; many also owned stakes in home-health-care agencies, surgery and imaging centers, and the local for-profit hospital, which brought them even bigger returns from health-care overuse.

The test of health-care reform, I wrote, was whether McAllen or El Paso would become the new norm. Would McAllen's costs come down or El Paso's go up? Now that it has been five years since the passage of the Affordable Care Act, I thought I'd find out. I returned to the economist Jonathan Skinner, of the Dartmouth Institute for Health Policy and Clinical Practice, who had provided the earlier analysis of the Medicare data, and worked with him to get a sense of what recent data reveal. As it turns out, the cost of a Medicare patient has flattened across the country, El Paso included. U.S. health-care inflation is the lowest it has been in more than fifty years. Most startling of all, McAllen has been changing its ways. Between 2009 and 2012, its costs dropped almost three thousand dollars per Medicare recipient. Skinner projects the total savings to taxpayers to have reached almost half a *billion* dollars by the end of 2014. The hope of reform had been to simply "bend the curve." This was savings on an unprecedented scale.

Skinner showed me the details. In-patient hospital visits dropped by about ten per

cent—and physicians reduced the mad amounts of home-health-care spending by nearly forty per cent. McAllen's spending on ambulance rides—previously the highest in the country—dropped by almost forty per cent, too.

I followed up with doctors there to find out how this had happened. I started with Lester Dyke, a cardiac surgeon who was one of many doctors troubled by what they were seeing, but the only one to let me quote him by name in my McAllen piece. ("Medicine has become a pig trough here," he had told me. "We took a wrong turn when doctors stopped being doctors and became businessmen.") After it was published, television crews descended on the town. Texas newspapers did follow-up investigations.

"The reaction here was fierce, just a tremendous amount of finger-pointing and yelling and screaming," Dyke recently told me. The piece infuriated the local medical community, which felt unfairly singled out. And Dyke paid a steep price: "I became persona non grata overnight." Colleagues said that he would be to blame if they lost money. Cardiologists stopped sending him patients. "My cases went down by ninety per cent," he told me. He had to give up his practice at Doctors Hospital at Renaissance, the for-profit hospital, after it became clear that he wasn't welcome there, but he was able to continue doing some surgery at two other hospitals. When I talked to Dyke in the first months afterward, he'd sounded low. The few friends who voiced support didn't want to be seen in public with him. He thought he might be forced to retire.

Yet he insisted that he had no regrets. Two of his children went into medicine, and in a medical-ethics class his son was assigned the article. The professor asked whether he was related to the Dr. Dyke quoted in it.

"Yes, I am," he said proudly. "That's my crazy dad."

"I don't think you often get a chance in life to stand up to all the badness," Dyke told me.

With time, the anger of colleagues subsided. Many of them resumed sending him patients. Within a couple of years, he was back to an annual caseload of three hundred open-heart operations. Meanwhile, it got harder for McAllen physicians to ignore the evidence about unnecessary care. Several federal prosecutions cracked down on

outright fraud. Seven doctors agreed to a twenty-eight-million-dollar settlement for taking illegal kickbacks when they referred their patients to specialty medical services. An ambulance-company owner was indicted for reporting six hundred and twenty-one ambulance rides that allegedly never happened. Four clinic operators were sent to jail for billing more than thirteen thousand visits and procedures under the name of a physician with dementia. The prosecutions involved only a tiny fraction of the medical community. But Dyke thought it led doctors to say to themselves, "Hey, we're under the magnifying glass. We need to make sure we're doing things strictly by the book."

Jose Peña, an internist, was a board member at Doctors Hospital at Renaissance in 2009. When we spoke recently, he didn't hesitate to tell me the immediate reaction his colleagues had to what I'd written. "We hated you," he said. The story "put us in a spotlight, in a bad way," but, he added, "in a good way at the same time." They hadn't known that they were one of the most expensive communities in the country, he maintained. They knew there were problems, "but we did not know the magnitude." His hospital did its own analysis of the data and reluctantly came to the same conclusion that the article did: inappropriate and unnecessary care was a serious problem.

The major overuse of home-health-care services proved particularly embarrassing. "We didn't know that home health was a thousand dollars a month" for each patient, Peña said. People in the medical community had never paid attention to how much of it they were ordering or how little of it was really needed. He led monthly staff meetings with more than four hundred local physicians and began encouraging them to be more mindful about signing home-health-care orders. Within a year, home-health-care agencies started going out of business.

But more interesting was how broad and enduring the cost decline has been. E.R. visits, hospital admissions, tests, and procedures all fell from the Texas stratosphere. And, years after the attention and embarrassment had passed, the costs continued to fall. Bad publicity, a few prosecutions, and some stiffened regulatory requirements here and there couldn't explain that. I probed for months, talking to local doctors and poring over data. And I've come to think that a major reason for the change may be a collection of primary-care doctors who don't even seem to recognize the impact of what they've been doing.

Armando Osio is a sixty-three-year-old family physician in McAllen. In 2009, when the article came out, he did not own part of an imaging center or sleep-testing center or hospital or any other medical money-making venture. He didn't have any procedures or tests that he made big money from. He was just a primary-care doctor doing what primary-care doctors do—seeing patient after patient every twenty to thirty minutes, for about sixty dollars a visit. That's what Medicare paid; private insurance paid more, and Medicaid or the uninsured paid less. He earned nothing like the income of the specialists that I'd written about.

Then, later that year, officials at a large medical group called WellMed contacted Osio. They wanted to establish a practice in McAllen, catering to Medicare patients, and asked whether he'd join them. WellMed had contracted with Medicare H.M.O. plans to control their costs. Its pitch to clinicians was that, if a doctor improved the quality of care, this would save on costs, and WellMed would share those savings with the doctor in the form of bonuses. That meant Osio would have to see fewer patients, for longer visits, but WellMed assured him that, if he could show measurable quality improvements, he'd actually make more money.

Osio was skeptical, but he agreed to see some of WellMed's patients. When he was in training, he'd been interested in geriatrics and preventive medicine. In practice, he hadn't had time to use those skills. Now he could. With WellMed's help, Osio brought on a physician assistant and other staff to help with less complex patients. He focussed on the sicker, often poorer patients, and he found that his work became more satisfying. With the bonuses for higher patient satisfaction, reducing hospital admissions, and lowering cardiology costs, his income went up. This was the way he wanted to practice—being rewarded for doing right rather than for the disheartening business of churning through more and more people. Within a year, he'd switched his practice so that he was seeing almost entirely WellMed patients.

He gave me an example of one. That day, he'd seen an elderly man who had taken a bad spill two or three weeks earlier, resulting in a contused kidney and a compression fracture of his lower spine. After a couple of days in the hospital, he'd been sent home. But the pain remained unmanageable. He called Osio's office seeking help.

If the man had called five years ago, a receptionist would have told him that the schedule was full for days and sent him to an emergency room. There, he would have waited hours, been seen by someone who didn't know his story, been given a repeat

CT or MRI, and then likely have been kept for another hospital stay. Once the doctors were sure that the situation wasn't dangerous, he would finally have been sent home, with pain medicine and instructions to see his primary-care doctor. Cost: a few thousand dollars.

Now when the man called, the receptionist slotted him to see Osio that afternoon. The doctor examined him and, being familiar with his case, determined that he had no worsening signs requiring imaging. He counselled patience and offered reassurance, gave him pain medication, and sent him home, with a plan for his nurse to check on him the next day. Cost: at most, a hundred dollars. And the patient got swifter, better care.

I spoke to Carlos Hernandez, an internist and the president of WellMed. He explained that the medical group was founded twenty-five years ago, in San Antonio, by a geriatrician who believed that what the oldest and sickest most needed in our hyper-specialized medical system was slower, more dedicated primary care. "Our philosophy is that the primary-care physician and patient should become the hub of the entire health-care-delivery system," Hernandez said. He viewed the primary-care doctor as a kind of contractor for patients, reining in pointless testing, procedures, and emergency-room visits, coördinating treatment, and helping to find specialists who practice thoughtfully and effectively. Our technology- and specialty-intensive health system has resisted this kind of role, but countries that have higher proportions of general practitioners have better medical outcomes, better patient experiences, and, according to a European study, lower cost growth. WellMed found insurers who saw these advantages and were willing to pay for this model of care. Today, WellMed has more than a hundred clinics, fifteen hundred primary-care doctors, and around a quarter of a million patients across Texas and Florida.

There's a reason that WellMed focussed on these two states. They are among the nation's most expensive states for Medicare and are less well-supplied with primary care. An independent 2011 analysis of the company's Texas clinics found that, although the patient population they drew from tended to be less healthy than the over-all Medicare population (being older and having higher rates of diabetes and chronic lung disease, for instance), their death rates were half of the Texas average.

This last part puzzled me. I had started to recognize how unnecessary care could crowd out necessary care—but enough that dedicated primary care could cut death

rates in half? That seemed hard to believe. As I learned more about how Dr. Osio's practice had changed, though, I began to grasp how it could happen.

He told me, for instance, about a new patient he'd seen, a sixty-five-year-old man with diabetes. His blood-sugar level was dangerously high, at a level that can signify a full-blown diabetic crisis, with severe dehydration, rising acid levels in the blood, and a risk of death. The man didn't look ill, though. His vital signs were normal. Osio ordered a urine test, which confirmed that the man was not in crisis. That was, in a way, a bad sign. It meant that his diabetes was so out of control that his body had developed a tolerance to big spikes in blood sugar. Unchecked, his diabetes would eventually cause something terrible—kidney failure, a heart attack, blindness, or the kind of wound-healing problem that leads to amputation.

Previously, Osio would not have had the time or the resources to do much for the man. So he would have sent him to the hospital. The staff there would have done a battery of tests to confirm what Osio already knew—that his blood sugar was way too high. They would have admitted him, given him insulin, and brought his blood sugar down to normal. And that would have been about it. The thousands of dollars spent on the hospital admission would have masked a galling reality: no one was addressing the man's core medical problem, which was that he had a chronic and deadly disease that remained dangerously out of control.

But now WellMed gave Osio bonuses if his patients' diabetes was under better control, and helped him to develop a system for achieving this. Osio spent three-quarters of an hour with the man, going over his pill bottles and getting him to explain what he understood about his condition and how to treat it. The man was a blue-collar worker with limited schooling, and Osio discovered that he had some critical misunderstandings. For instance, although he checked his blood-sugar level every day, he wrongly believed that if the level was normal he didn't need to take his medicine. No, Osio told him; his diabetes medication was like his blood-pressure medication—he should never skip a dose unless the home measurements were too low.

Osio explained what diabetes is, how dangerous it can be, how insulin works. Then he turned the man over to an office nurse who had taken classes to become certified as a diabetes educator. She spent another forty-five minutes having him practice how to draw up and take his insulin, and how to track his sugar levels in a logbook. She set a

plan to call him every other day for a week and then, if necessary, bring him back for another review. This would continue until his disease was demonstrably under control. After that, she'd check on him once a month by phone, and Osio would see him every three to four months. The nurse gave him her direct phone number. If he had any problems or questions, she told him, "*Llámame*"—call me.

Step by deliberate step, Osio and his team were replacing unnecessary care with the care that people needed. Since 2009, in Hidalgo County, where McAllen is situated, WellMed has contracted with physicians taking care of around fourteen thousand Medicare patients. According to its data, the local WellMed practices have achieved the same results as WellMed has elsewhere: large reductions in overuse of care and better outcomes for patients. Indeed, for the past two years, the top-ranked primary-care doctor out of WellMed's fifteen hundred—according to a wide range of quality measures, such as the percentage of patients with well-controlled blood pressure and diabetes, rates of emergency-room visits and hospital readmissions, and levels of patient satisfaction—has been a McAllen physician.

I spoke to that doctor, Omar Gomez. He said that he'd set about building a strong team around his patients, and that team included specialists such as cardiologists and surgeons. He encouraged his patients to shift to the ones who, he noticed, didn't subject them to no-value care. He sat with the specialists, and, he said, "I told them, 'If my patient *needs* a cardiac cath—by all means, do it. But if they don't, then don't do it. That's the only thing I ask.' "

The passage of the Affordable Care Act, in 2010, created opportunities for physicians to practice this kind of dedicated care. The law allows any group of physicians with five thousand or more Medicare patients to contract directly with the government as an "accountable-care organization," and to receive up to sixty per cent of any savings they produce. In McAllen, two primary-care groups, with a total of nearly thirteen thousand patients, formed to take advantage of the deal. One, as it happens, was led by Jose Peña, the Doctors Hospital at Renaissance internist. Two years later, Medicare reported that Peña's team had markedly improved control of its patients' diabetes; patients also had dramatically lower emergency-room visits and hospital admissions. And the two McAllen accountable-care organizations together managed to save Medicare a total of twenty-six million dollars. About sixty per cent of that went back to the groups. It wasn't all profit—achieving the results had meant installing expensive

data-tracking systems and hiring extra staff. But even after overhead doctors in one group took home almost eight hundred thousand dollars each (some of which they shared with their mid-level staff). It was proving to be a very attractive way to practice.

McAllen, in large part because of changes led by primary-care doctors, has gone from a cautionary tale to something more hopeful. Nationwide, the picture is changing almost as fast. Just five years after the passage of health-care reform, twenty per cent of Medicare payments are being made to physicians who have enrolled in alternative-payment programs, whether through accountable-care organizations like those in McAllen or by accepting Walmart-like packaged-price care—known as bundled payment—for spine surgery, joint surgery, and other high-cost procedures. If government targets are met, these numbers will reach thirty per cent of Medicare payments by 2016. A growing number of businesses are also extending the centers-of-excellence approach to their employees, including Boeing, Kohl's, Lowe's, and PepsiCo. And a nonprofit in California, the Pacific Business Group on Health, now offers to provide a similar network to any health-care purchaser in the country.

Could a backlash arrive and halt the trend? It's a concern. No one has yet invented a payment system that cannot be gamed. If doctors are rewarded for practicing more conservative medicine, some could end up stinting on care. What if Virginia Mason turns away a back-pain patient who should have gone to surgery? What if Dr. Osio fails to send a heart patient to the emergency room when he should have? What if I recommend not operating on a tiny tumor, saying that it is just a turtle, and it turns out to be a rabbit that bounds out of control?

Proponents point out that people can sue if they think they've been harmed, and doctors' groups can lose their contracts for low-quality scores, which are posted on the Web. But not all quality can be measured. It's possible that we will calibrate things wrongly, and skate past the point where conservative care becomes inadequate care. Then outrage over the billions of dollars in unnecessary stents and surgeries and scans will become outrage over necessary stents and surgeries and scans that were not performed.

Right now, we're so wildly over the boundary line in the other direction that it's hard to see how we could accept leaving health care the way it is. Waste is not just consuming a third of health-care spending; it's costing people's lives. As long as a

more thoughtful, more measured style of medicine keeps improving outcomes, change should be easy to cheer for. Still, when it's your turn to sit across from a doctor, in the white glare of a clinic, with your back aching, or your head throbbing, or a scan showing some small possible abnormality, what are you going to fear more—the prospect of doing too little or of doing too much?

Mrs. E., my patient with a five-millimetre thyroid nodule that I recommended leaving alone, feared doing too little. So one morning I took her to the operating room, opened her neck, and, in the course of an hour, removed her thyroid gland from its delicate nest of arteries and veins and critical nerves. Given that the surgery posed a greater likelihood of harm than of benefit, some people would argue that I shouldn't have done it. I took her thyroid out because the idea of tracking a cancer over time filled her with dread, as it does many people. A decade from now, that may change. The idea that we are overdiagnosing and overtreating many diseases, including cancer, will surely become less contentious. That will make it easier to calm people's worries. But the worries cannot be dismissed. Right now, even doctors are still coming to terms with the evidence.

Other people of a more consumerist bent will be troubled not that I gave her the choice but that she paid virtually none of the expenses incurred by it. The nature of her insurance coverage guaranteed that. Her employer had offered her two options. One was a plan with a high deductible and a medical savings account that would have made her pay a substantial portion of the many-thousand-dollar operation. And this might have made her think harder about proceeding (or, at least, encouraged her to find someone cheaper). But, like many people, she didn't want to be in that situation. So she chose the second option, which provided full coverage for cases like this one. She found it difficult enough to weigh her fears of the cancer against her fears of the operation—with its risks of life-threatening bleeding and voice damage—without having to put finances into the equation.

Two hours after the surgery, Mrs. E.'s nurse called me urgently to see her in the recovery room. Her neck was swelling rapidly; she was bleeding. We rushed her back to the operating room and reopened her neck before accumulating blood cut off her airway. A small pumping artery had opened up in a thin band of muscle I'd cauterized. I tied the vessel off, washed the blood away, and took her back to the recovery room.

I saw her in my office a few weeks later, and was relieved to see she'd suffered no

permanent harm. The black and blue of her neck was fading. Her voice was normal. And she hadn't needed the pain medication I'd prescribed. I arranged for a blood test to check the level of her thyroid hormone, which she now had to take by pill for the rest of her life. Then I showed her the pathology report. She did have a thyroid cancer, a microcarcinoma about the size of this "O," with no signs of unusual invasion or spread. I wished we had a better word for this than "cancer"—because what she had was not a danger to her life, and would almost certainly never have bothered her if it had not been caught on a scan.

All the same, she thanked me profusely for relieving her anxiety. I couldn't help reflect on how that anxiety had been created. The medical system had done what it so often does: performed tests, unnecessarily, to reveal problems that aren't quite problems to then be fixed, unnecessarily, at great expense and no little risk. Meanwhile, we avoid taking adequate care of the biggest problems that people face—problems like diabetes, high blood pressure, or any number of less technologically intensive conditions. An entire health-care system has been devoted to this game. Yet we're finally seeing evidence that the system can change—even in the most expensive places for health care in the country. ♦