

The Vermont Humanities Council
and the
Vermont Board of Medical Practice

Present

A six-part public discussion program

***Doctors, Patients, and the Public Trust: Conversations in Literature and
Medicine***

Using fiction, essays, and other forms of literature, the following questions will be explored:

- Doctors: are they devils or deities? Or are they just human?
- What problems do physicians face in today's world?
- How do physicians cope with those problems?
- What effects do such problems have on our medical and social systems?
- How can the problems best be dealt with?

Third program: Wednesday, November 12, 2008

5:30 to 7:00 PM

Fletcher Free Library

235 College St (at S. Winooski Ave.), Burlington

For further info: 802-657-4220

Complications

A Surgeon's Notes on an Imperfect Science

Atul Gawande

Picador
A Metropolitan Book
Henry Holt and Company
New York

When Doctors Make Mistakes

To much of the public—and certainly to lawyers and the media—medical error is fundamentally a problem of bad doctors. The way that things go wrong in medicine is normally unseen and, consequently, often misunderstood. Mistakes do happen. We tend to think of them as aberrant. They are, however, anything but.

At 2 A.M. on a crisp Friday in winter a few years ago, I was in sterile gloves and gown, pulling a teenage knifing victim's abdomen open, when my pager sounded. "Code Trauma, three minutes," the operating room nurse said, reading aloud from my pager display. This meant that an ambulance would be bringing another trauma patient to the hospital momentarily, and, as the surgical resident on duty for emergencies, I would have to be present for the patient's arrival. I stepped back from the table and took off my gown. Two other surgeons were working on the knifing victim: Michael Ball, the attending (the staff surgeon in charge of the case), and David Hernandez, the chief resident (a general surgeon in his final year of training). Ordinarily, these two would have come to supervise and help with the trauma, but they were stuck here. Ball, a dry, cerebral forty-two-year-old, looked over at me as I

headed for the door. "If you run into any trouble, you call, and one of us will peel away," he said.

I did run into trouble. In telling this story, I have had to change some details about what happened (including the names of those involved). Nonetheless, I have tried to stay as close to the actual events as I could while protecting the patient, myself, and the rest of the staff.

The emergency room was one floor up, and, taking the stairs two at a time, I arrived just as the emergency medical technicians wheeled in a woman who appeared to be in her thirties and to weigh more than two hundred pounds. She lay motionless on a hard orange plastic spinal board—eyes closed, skin pale, blood running out of her nose. A nurse directed the crew into Trauma Bay 1, an examination room outfitted like an OR, with green tiles on the wall, monitoring devices, and space for portable X-ray equipment. We lifted her onto the bed and then went to work. One nurse began cutting off the woman's clothes. Another took vital signs. A third inserted a large-bore intravenous line into her right arm. A surgical intern put a Foley catheter into her bladder. The emergency-medicine attending was Samuel Johns, a gaunt, Ichabod Crane-like man in his fifties. He was standing to one side with his arms crossed, observing, which was a sign that I could go ahead and take charge.

In an academic hospital, residents provide most of the "moment to moment" doctoring. Our duties depend on our level of training, but we're never entirely on our own: there's always an attending, who oversees our decisions. That night, since Johns was the attending and was responsible for the patient's immediate management, I took my lead from him. At the same time, he wasn't a surgeon, and so he relied on me for surgical expertise.

"What's the story?" I asked.

An EMT rattled off the details: "Unidentified white female unrestrained driver in high-speed rollover. Ejected from the car.

Found unresponsive to pain. Pulse a hundred, BP a hundred over sixty, breathing at thirty on her own . . ."

As he spoke, I began examining her. The first step in caring for a trauma patient is always the same. It doesn't matter if a person has been shot eleven times or crushed by a truck or burned in a kitchen fire. The first thing you do is make sure that the patient can breathe without difficulty. This woman's breaths were shallow and rapid. An oximeter, by means of a sensor placed on her finger, measured the oxygen saturation of her blood. The "O₂ sat" is normally more than 95 percent for a patient breathing room air. The woman was wearing a face mask with oxygen turned up full blast, and her sat was only 90 percent.

"She's not oxygenating well," I announced in the flattened-out, wake-me-up-when-something-interesting-happens tone that all surgeons have acquired by about three months into residency. With my fingers, I verified that there wasn't any object in her mouth that would obstruct her airway; with a stethoscope, I confirmed that neither lung had collapsed. I got hold of a bag mask, pressed its clear facepiece over her nose and mouth, and squeezed the bellows, a kind of balloon with a one-way valve, shooting a liter of air into her with each compression. After a minute or so, her oxygen came up to a comfortable 98 percent. She obviously needed our help with breathing. "Let's tube her," I said. That meant putting a tube down through her vocal cords and into her trachea, which would insure a clear airway and allow for mechanical ventilation.

Johns, the attending, wanted to do the intubation. He picked up a Mac 3 laryngoscope, a standard but fairly primitive-looking L-shaped metal instrument for prying open the mouth and throat, and slipped the shoehornlike blade deep into her mouth and down to her larynx. Then he yanked the handle up toward the ceiling to pull her tongue out of the way, open her mouth and throat, and reveal the vocal cords, which sit like fleshy tent flaps at the entrance to the trachea. The patient didn't wince or gag: she was still out cold.

"Suction!" he called. "I can't see a thing."

He sucked out about a cup of blood and clot. Then he picked up the endotracheal tube—a clear rubber pipe about the diameter of an index finger and three times as long—and tried to guide it between her cords. After a minute, her sat started to fall.

"You're down to seventy percent," a nurse announced.

Johns kept struggling with the tube, trying to push it in, but it banged vainly against the cords. The patient's lips began to turn blue.

"Sixty percent," the nurse said.

Johns pulled everything out of the patient's mouth and fitted the bag mask back on. The oximeter's luminescent-green readout hovered at 60 for a moment and then rose steadily, to 97 percent. After a few minutes, he took the mask off and again tried to get the tube in. There was more blood, and there may have been some swelling, too: all the poking down the throat was probably not helping. The sat fell to 60 percent. He pulled out and "bagged" her until she returned to 95 percent.

When you're having trouble getting the tube in, the next step is to get specialized expertise. "Let's call anesthesia," I said, and Johns agreed. In the meantime, I continued to follow the standard trauma protocol: completing the examination and ordering fluids, lab tests, and X rays. Maybe five minutes passed as I worked.

The patient's sats drifted down to 92 percent—not a dramatic change but definitely not normal for a patient who is being manually ventilated. I checked to see if the sensor had slipped off her finger. It hadn't. "Is the oxygen up full blast?" I asked a nurse.

"It's up all the way," she said.

I listened again to the patient's lungs—no collapse. "We've got to get her tubed," Johns said. He took off the oxygen mask and tried again.

Somewhere in my mind, I must have been aware of the possibility that her airway was shutting down because of vocal cord

swelling or blood. If it was, and we were unable to get a tube in, then the only chance she'd have to survive would be an emergency tracheotomy: cutting a hole in her neck and inserting a breathing tube into her trachea. Another attempt to intubate her might even trigger a spasm of the cords and a sudden closure of the airway—which is exactly what did happen.

If I had actually thought this far along, I would have recognized how ill-prepared I was to do an emergency "trache." As the one surgeon in the room, it's true, I had the most experience doing tracheotomies, but that wasn't saying much. I had been the assistant surgeon in only about half a dozen, and all but one of them had been non-emergency cases, employing techniques that were not designed for speed. The exception was a practice emergency trache I had done on a goat. I should have immediately called Dr. Ball for backup. I should have got the trache equipment out—lighting, suction, sterile instruments—just in case. Instead of hurrying the effort to get the patient intubated because of a mild drop in saturation, I should have asked Johns to wait until I had help nearby. I might even have recognized that she was already losing her airway. Then I could have grabbed a knife and done a tracheotomy while things were still relatively stable and I had time to proceed slowly. But for whatever reasons—hubris, inattention, wishful thinking, hesitation, or the uncertainty of the moment—I let the opportunity pass.

Johns hunched over the patient, trying intently to insert the tube through her vocal cords. When her sat once again dropped into the 60s, he stopped and put the mask back on. We stared at the monitor. The numbers weren't coming up. Her lips were still blue. Johns squeezed the bellows harder to blow more oxygen in.

"I'm getting resistance," he said.

The realization crept over me: this was a disaster. "Damn it, we've lost her airway," I said. "Trache kit! Light! Somebody call down to OR 25 and get Ball up here!"

People were suddenly scurrying everywhere. I tried to proceed deliberately, and not let panic take hold. I told the surgical intern to get a sterile gown and gloves on. I took an antiseptic solution off a shelf and dumped a whole bottle of yellow-brown liquid on the patient's neck. A nurse unwrapped the tracheostomy kit—a sterilized set of drapes and instruments. I pulled on a gown and a new pair of gloves while trying to think through the steps. This is simple, really, I tried to tell myself. At the base of the thyroid cartilage, the Adam's apple, is a little gap in which you find a thin, fibrous covering called the cricothyroid membrane. Cut through that and—*voilà!* You're in the trachea. You slip through the hole a four-inch plastic tube shaped like a plumber's elbow joint, hook it up to oxygen and a ventilator, and she's all set. Anyway, that was the theory.

I threw some drapes over her body, leaving the neck exposed. It looked as thick as a tree. I felt for the bony prominence of the thyroid cartilage. But I couldn't feel anything through the layers of fat. I was beset by uncertainty—where should I cut? should I make a horizontal or a vertical incision?—and I hated myself for it. Surgeons never dithered, and I was dithering.

"I need better light," I said.

Someone was sent out to look for one.

"Did anyone get Ball?" I asked. It wasn't exactly an inspiring question.

"He's on his way," a nurse said.

There was no time to wait. Four minutes without oxygen would lead to permanent brain damage, if not death. Finally, I took the scalpel and cut. I just cut. I made a three-inch left-to-right swipe across the middle of the neck, following the procedure I'd learned for elective cases. Dissecting down with scissors while the intern held the wound open with retractors, I hit a vein. It didn't let loose a lot of blood, but there was enough to fill the wound: I couldn't see anything. The intern put a finger on the bleeder. I called for suction. But the suction wasn't working; the tube was clogged with clot from the intubation efforts.

"Somebody get some new tubing," I said. "And where's the light?"

Finally, an orderly wheeled in a tall overhead light, plugged it in, and flipped on the switch. It was still too dim; I could have done better with a flashlight.

I wiped up the blood with gauze, then felt around in the wound with my fingertips. This time, I thought I could feel the hard ridges of the thyroid cartilage and, below it, the slight gap of the cricothyroid membrane, though I couldn't be sure. I held my place with my left hand.

James O'Connor, a silver-haired, seen-it-all anesthesiologist, came into the room. Johns gave him a quick rundown on the patient and let him take over ventilating her.

Holding the scalpel in my right hand like a pen, I stuck the blade down into the wound at the spot where I thought the thyroid cartilage was. With small, sharp strokes—working blindly, because of the blood and the poor light—I cut down through the overlying fat and tissue until I felt the blade scrape against the almost bony cartilage. I searched with the tip of the knife, walking it along until I felt it reach a gap. I hoped it was the cricothyroid membrane, and pressed down firmly. I felt the tissue suddenly give, and I cut an inch-long opening.

When I put my index finger into it, it felt as if I were prying open the jaws of a stiff clothespin. Inside, I thought I felt open space. But where were the sounds of moving air that I expected? Was this deep enough? Was I even in the right place?

"I think I'm in," I said, to reassure myself as much as anyone else.

"I hope so," O'Connor said. "She doesn't have much longer."

I took the tracheostomy tube and tried to fit it in, but something seemed to be blocking it. I twisted it and turned it, and finally jammed it in. Just then Ball, the surgical attending, arrived. He rushed up to the bed and leaned over for a look. "Did you get it?" he asked. I said that I thought so. The bag mask was plugged onto the open end of the trache tube. But when the bellows were compressed

the air just gurgled out of the wound. Ball quickly put on gloves and a gown.

"How long has she been without an airway?" he asked.

"I don't know. Three minutes."

Ball's face hardened as he registered that he had about a minute in which to turn things around. He took my place and summarily pulled out the trache tube. "God, what a mess," he said. "I can't see a thing in this wound. I don't even know if you're in the right place. Can we get better light and suction?" New suction tubing was found and handed to him. He quickly cleaned up the wound and went to work.

The patient's sat had dropped so low that the oximeter couldn't detect it anymore. Her heart rate began slowing down—first to the 60s and then to the 40s. Then she lost her pulse entirely. I put my hands together on her chest, locked my elbows, leaned over her, and started doing chest compressions.

Ball looked up from the patient and turned to O'Connor. "I'm not going to get her an airway in time," he said. "You're going to have to try again from above." Essentially, he was admitting my failure. Trying an oral intubation again was pointless—just something to do instead of watching her die. I was stricken, and concentrated on doing chest compressions, not looking at anyone. It was over, I thought.

And then, amazingly, O'Connor: "I'm in." He had managed to slip a pediatric-size endotracheal tube through the vocal cords. In thirty seconds, with oxygen being manually ventilated through the tube, her heart was back, racing at a hundred and twenty beats a minute. Her sat registered at 60 and then climbed. Another thirty seconds and it was at 97 percent. All the people in the room exhaled, as if they, too, had been denied their breath. Ball and I said little except to confer about the next steps for her. Then he went back downstairs to finish working on the stab-wound patient still in the OR.

We eventually identified the woman, whom I'll call Louise Williams; she was thirty-four years old and lived alone in a nearby suburb. Her alcohol level on arrival had been three times the legal limit, and had probably contributed to her unconsciousness. She had a concussion, several lacerations, and significant soft-tissue damage. But X rays and scans revealed no other injuries from the crash. That night, Ball and Hernandez brought her to the OR to fit her with a proper tracheostomy. When Ball came out and talked to family members, he told them of the dire condition she was in when she arrived, the difficulties "we" had had getting access to her airway, the disturbingly long period of time that she had gone without oxygen, and thus his uncertainty about how much brain function she still possessed. They listened without protest; there was nothing for them to do but wait.

Consider some other surgical mishaps. In one, a general surgeon left a large metal instrument in a patient's abdomen, where it tore through the bowel and the wall of the bladder. In another, a cancer surgeon biopsied the wrong part of a woman's breast and thereby delayed her diagnosis of cancer for months. A cardiac surgeon skipped a small but key step during a heart valve operation, thereby killing the patient. A general surgeon saw a man racked with abdominal pain in the emergency room and, without taking a CT scan, assumed that the man had a kidney stone; eighteen hours later, a scan showed a rupturing abdominal aortic aneurysm, and the patient died not long afterward.

How could anyone who makes a mistake of that magnitude be allowed to practice medicine? We call such doctors "incompetent," "unethical," and "negligent." We want to see them punished. And so we've wound up with the public system we have for dealing with error: malpractice lawsuits, media scandal, suspensions, firings.

There is, however, a central truth in medicine that complicates this tidy vision of misdeeds and misdoers: all doctors make terrible

mistakes. Consider the cases I've just described. I gathered them simply by asking respected surgeons I know—surgeons at top medical schools—to tell me about mistakes they had made just in the past year. Every one of them had a story to tell.

In 1991, the *New England Journal of Medicine* published a series of landmark papers from a project known as the Harvard Medical Practice Study—a review of more than thirty thousand hospital admissions in New York State. The study found that nearly 4 percent of hospital patients suffered complications from treatment which either prolonged their hospital stay or resulted in disability or death, and that two-thirds of such complications were due to errors in care. One in four, or 1 percent of admissions, involved actual negligence. It was estimated that, nationwide, upward of forty-four thousand patients die each year at least partly as a result of errors in care. And subsequent investigations around the country have confirmed the ubiquity of error. In one small study of how clinicians perform when patients have a sudden cardiac arrest, twenty-seven of thirty clinicians made an error in using the defibrillator—charging it incorrectly or losing too much time trying to figure out how to work a particular model. According to a 1995 study, mistakes in administering drugs—giving the wrong drug or the wrong dose, say—occur, on average, about once every hospital admission, mostly without ill effects, but 1 percent of the time with serious consequences.

If error were due to a subset of dangerous doctors, you might expect malpractice cases to be concentrated among a small group, but in fact they follow a uniform, bell-shaped distribution. Most surgeons are sued at least once in the course of their careers. Studies of specific types of error, too, have found that repeat offenders are not the problem. The fact is that virtually everyone who cares for hospital patients will make serious mistakes, and even commit acts of negligence, every year. For this reason, doctors are seldom outraged when the press reports yet another medical horror story. They usually have a different reaction: That could be me. The important

question isn't how to keep bad physicians from harming patients; it's how to keep good physicians from harming patients.

Medical malpractice suits are a remarkably ineffective remedy. Troyen Brennan, a Harvard professor of law and public health, points out that research has consistently failed to find evidence that litigation reduces medical error rates. In part, this may be because the weapon is so imprecise. Brennan led several studies following up on the patients in the Harvard Medical Practice Study. He found that fewer than 2 percent of the patients who had received substandard care ever filed suit. Conversely, only a small minority among the patients who did sue had in fact been the victims of negligent care. And a patient's likelihood of winning a suit depended primarily on how poor his or her outcome was, regardless of whether that outcome was caused by disease or unavoidable risks of care.

The deeper problem with medical malpractice suits is that by demonizing errors they prevent doctors from acknowledging and discussing them publicly. The tort system makes adversaries of patient and physician, and pushes each to offer a heavily slanted version of events. When things go wrong, it's almost impossible for a physician to talk to a patient honestly about mistakes. Hospital lawyers warn doctors that, although they must, of course, tell patients about injuries that occur, they are never to intimate that they were at fault, lest the "confession" wind up in court as damning evidence in a black-and-white morality tale. At most, a doctor might say, "I'm sorry that things didn't go as well as we had hoped."

There is one place, however, where doctors can talk candidly about their mistakes, if not with patients, then at least with one another. It is called the Morbidity and Mortality Conference—or, more simply, M & M—and it takes place, usually once a week, at nearly every academic hospital in the country. This institution survives because laws protecting its proceedings from legal discovery have stayed on the books in most states, despite frequent challenges. Surgeons, in particular, take the M & M seriously. Here they can

gather behind closed doors to review the mistakes, untoward events, and deaths that occurred on their watch, determine responsibility, and figure out what to do differently next time.

At my hospital, we convene every Tuesday at five o'clock in a steep, plush amphitheater lined with oil portraits of the great doctors whose achievements we're meant to live up to. All surgeons are expected to attend, from the interns to the chairman of surgery; we're also joined by medical students doing their surgery "rotation." An M & M can include almost a hundred people. We file in, pick up a photocopied list of cases to be discussed, and take our seats. The front row is occupied by the most senior surgeons: terse, serious men, now out of their scrubs and in dark suits, lined up like a panel of senators at a hearing. The chairman is a leonine presence in the seat closest to the plain wooden podium from which each case is presented. In the next few rows are the remaining surgical attendings; these tend to be younger, and several of them are women. The chief residents have put on long white coats and usually sit in the side rows. I join the mass of other residents, all of us in short white coats and green scrub pants, occupying the back rows.

For each case, the chief resident from the relevant service—cardiac, vascular, trauma, and so on—gathers the information, takes the podium, and tells the story. Here's a partial list of cases from a typical week (with a few changes to protect confidentiality): a sixty-eight-year-old man who bled to death after heart valve surgery; a forty-seven-year-old woman who had to have a reoperation because of infection following an arterial bypass done in her left leg; a forty-four-year-old woman who had to have bile drained from her abdomen after gallbladder surgery; three patients who had to have reoperations for bleeding following surgery; a sixty-three-year-old man who had a cardiac arrest following heart bypass surgery; a sixty-six-year-old woman whose sutures suddenly gave way in an abdominal wound and nearly allowed her intestines to spill out. Ms. Williams's case, my failed tracheostomy, was just one case on a list

like this. David Hernandez, the chief trauma resident, had subsequently reviewed the records and spoken to me and others involved. When the time came, it was he who stood up front and described what had happened.

Hernandez is a tall, rollicking, good old boy who can spin a yarn, but M & M presentations are bloodless and compact. He said something like: "This was a thirty-four-year-old female unrestrained driver in a high-speed rollover. The patient apparently had stable vitals at the scene but was unresponsive, and was brought in by ambulance unintubated. She was GCS 7 on arrival." GCS stands for the Glasgow Coma Scale, which rates the severity of head injuries, from three to fifteen. GCS 7 is in the comatose range. "Attempts to intubate were made without success in the ER and may have contributed to airway closure. A cricothyroidotomy was attempted without success."

These presentations can be awkward. The chief residents, not the attendings, determine which cases to report. That keeps the attendings honest—no one can cover up mistakes—but it puts the chief residents, who are, after all, underlings, in a delicate position. The successful M & M presentation inevitably involves a certain elision of detail and a lot of passive verbs. No one screws up a cricothyroidotomy. Instead, "a cricothyroidotomy was attempted without success." The message, however, was not lost on anyone.

Hernandez continued, "The patient arrested and required cardiac compressions. Anesthesia was then able to place a pediatric ET tube and the patient recovered stable vitals. The tracheostomy was then completed in the OR."

So Louise Williams had been deprived of oxygen long enough to go into cardiac arrest, and everyone knew that meant she could easily have suffered a disabling stroke or worse. Hernandez concluded with the fortunate aftermath: "Her workup was negative for permanent cerebral damage or other major injuries. The tracheostomy tube was removed on Day 2. She was discharged to home in good condition on Day 3." To the family's great relief, and mine,

she had woken up in the morning a bit woozy but hungry, alert, and mentally intact. In a few weeks, the episode would heal to a scar.

But not before someone was called to account. A front-row voice immediately thundered, "What do you mean, 'a cricothyroidotomy was attempted without success'?" I sank into my seat, my face hot.

"This was my case," Dr. Ball volunteered from the front row. It is how every attending begins, and that little phrase contains a world of surgical culture. For all the talk in business schools and in corporate America about the virtues of "flat organizations," surgeons maintain an old-fashioned sense of hierarchy. When things go wrong, the attending is expected to take full responsibility. It makes no difference whether it was the resident's hand that slipped and lacerated an aorta; it doesn't matter whether the attending was at home in bed when a nurse gave a wrong dose of medication. At the M & M, the burden of responsibility falls on the attending.

Ball went on to describe the emergency attending's failure to intubate Williams and his own failure to be at her bedside when things got out of control. He described the bad lighting and her extremely thick neck, and was careful to make those sound not like excuses but merely like complicating factors. Some attendings shook their heads in sympathy. A couple of them asked questions to clarify certain details. Throughout, Ball's tone was objective, detached. He had the air of a CNN newscaster describing unrest in Kuala Lumpur.

As always, the chairman, responsible for the overall quality of our surgery service, asked the final question. What, he wanted to know, would Ball have done differently? Well, Ball replied, it didn't take long to get the stab-wound patient under control in the OR, so he probably should have sent Hernandez up to the ER at that point or let Hernandez close the abdomen while he himself came up. People nodded. Lesson learned. Next case.

At no point during the M & M did anyone question why I had not called for help sooner or why I had not had the skill and knowledge that Williams needed. This is not to say that my actions were seen as acceptable. Rather, in the hierarchy, addressing my errors

was Ball's role. The day after the disaster, Ball had caught me in the hall and taken me aside. His voice was more wounded than angry as he went through my specific failures. First, he explained, in an emergency tracheostomy it might have been better to do a vertical neck incision; that would have kept me out of the blood vessels, which run up and down—something I should have known at least from my reading. I might have had a much easier time getting her an airway then, he said. Second, and worse to him than mere ignorance, he didn't understand why I hadn't called him when there were clear signs of airway trouble developing. I offered no excuses. I promised to be better prepared for such cases and to be quicker to ask for help.

Even after Ball had gone down the fluorescent-lit hallway, I felt a sense of shame like a burning ulcer. This was not guilt: guilt is what you feel when you have done something wrong. What I felt was shame: I was what was wrong. And yet I also knew that a surgeon can take such feelings too far. It is one thing to be aware of one's limitations. It is another to be plagued by self-doubt. One surgeon with a national reputation told me about an abdominal operation in which he had lost control of bleeding while he was removing what turned out to be a benign tumor and the patient had died. "It was a clean kill," he said. Afterward, he could barely bring himself to operate. When he did operate, he became tentative and indecisive. The case affected his performance for months.

Even worse than losing self-confidence, though, is reacting defensively. There are surgeons who will see faults everywhere except in themselves. They have no questions and no fears about their abilities. As a result, they learn nothing from their mistakes and know nothing of their limitations. As one surgeon told me, it is a rare but alarming thing to meet a surgeon without fear. "If you're not a little afraid when you operate," he said, "you're bound to do a patient a grave disservice."

The atmosphere at the M & M is meant to discourage both attitudes—self-doubt and denial—for the M & M is a cultural ritual that

inculcates in surgeons a "correct" view of mistakes. "What would you do differently?" a chairman asks concerning cases of avoidable harm. "Nothing" is seldom an acceptable answer.

In its way, the M & M is an impressively sophisticated and human institution. Unlike the courts or the media, it recognizes that human error is generally not something that can be deterred by punishment. The M & M sees avoiding error as largely a matter of will—of staying sufficiently informed and alert to anticipate the myriad ways that things can go wrong and then trying to head off each potential problem before it happens. It isn't damnable that an error occurs, but there is some shame to it. In fact, the M & M's ethos can seem paradoxical. On the one hand, it reinforces the very American idea that error is intolerable. On the other hand, the very existence of the M & M, its place on the weekly schedule, amounts to an acknowledgment that mistakes are an inevitable part of medicine.

But why do they happen so often? Lucian Leape, medicine's leading expert on error, points out that many other industries—whether the task is manufacturing semiconductors or serving customers at the Ritz-Carlton—simply wouldn't countenance error rates like those in hospitals. The aviation industry has reduced the frequency of operational errors to one in a hundred thousand flights, and most of those errors have no harmful consequences. The buzzword at General Electric these days is "Six Sigma," meaning that its goal is to make product defects so rare that in statistical terms they are more than six standard deviations away from being a matter of chance—almost a one-in-a-million occurrence.

Of course, patients are far more complicated and idiosyncratic than airplanes, and medicine isn't a matter of delivering a fixed product or even a catalogue of products; it may well be more complex than just about any other field of human endeavor. Yet everything we've learned in the past two decades—from cognitive psychology, from "human factors" engineering, from studies of disasters like Three Mile Island and Bhopal—has yielded the same insights: not

only do all human beings err, but they err frequently and in predictable, patterned ways. And systems that do not adjust for these realities can end up exacerbating rather than eliminating error.

The British psychologist James Reason argues, in his book *Human Error*, that our propensity for certain types of error is the price we pay for the brain's remarkable ability to think and act intuitively—to sift quickly through the sensory information that constantly bombards us without wasting time trying to work through every situation anew. Thus systems that rely on human perfection present what Reason calls "latent errors"—errors waiting to happen. Medicine teems with examples. Take writing out a prescription, a rote procedure that relies on memory and attention, which we know are unreliable. Inevitably, a physician will sometimes specify the wrong dose or the wrong drug. Even when the prescription is written correctly, there's a risk that it will be misread. (Computerized ordering systems can almost eliminate errors of this kind, but only a small minority of hospitals have adopted them.) Medical equipment, which manufacturers often build without human operators in mind, is another area rife with latent errors: one reason physicians are bound to have problems when they use cardiac defibrillators is that the devices have no standard design. You can also make the case that onerous workloads, chaotic environments, and inadequate team communication all represent latent errors in the system.

James Reason makes another important observation: disasters do not simply occur; they evolve. In complex systems, a single failure rarely leads to harm. Human beings are impressively good at adjusting when an error becomes apparent, and systems often have built-in defenses. For example, pharmacists and nurses routinely check and countercheck physicians' orders. But errors do not always become apparent, and backup systems themselves often fail as a result of latent errors. A pharmacist forgets to check one of a thousand prescriptions. A machine's alarm bell malfunctions. The one attending

trauma surgeon available gets stuck in the operating room. When things go wrong, it is usually because a series of failures conspires to produce disaster.

The M & M takes none of this into account. For that reason, many experts see it as a rather shabby approach to analyzing error and improving performance in medicine. It isn't enough to ask what a clinician could or should have done differently so that he and others may learn for next time. The doctor is often only the final actor in a chain of events that set him or her up to fail. Error experts, therefore, believe that it's the process, not the individuals in it, that requires closer examination and correction. In a sense, they want to industrialize medicine. And they can already claim successes: the Shouldice Hospital's "focused factory" for hernia operations, for one—and far more broadly, the entire specialty of anesthesiology, which has adopted their precepts and seen extraordinary results.

At the center of the emblem of the American Society of Anesthesiologists is a single word: "Vigilance." When you put a patient to sleep under general anesthesia, you assume almost complete control of the patient's body. The body is paralyzed, the brain rendered unconscious, and machines are hooked up to control breathing, heart rate, blood pressure—all the vital functions. Given the complexity of the machinery and of the human body, there are a seemingly infinite number of ways in which things can go wrong, even in minor surgery. And yet anesthesiologists have found that if problems are detected they can usually be solved. In the 1940s, there was only one death resulting from anesthesia in every twenty-five hundred operations, and between the 1960s and the 1980s the rate had stabilized at one or two in every ten thousand operations.

But Ellison (Jeep) Pierce had always regarded even that rate as unconscionable. From the time he began practicing, in 1960, as a young anesthesiologist out of North Carolina and the University of

Pennsylvania, he had maintained a case file of details from all the deadly anesthetic accidents he had come across or participated in. But it was one case in particular that galvanized him. Friends of his had taken their eighteen-year-old daughter to the hospital to have her wisdom teeth pulled, under general anesthesia. The anesthesiologist inserted the breathing tube into her esophagus instead of her trachea, which is a relatively common mishap, and then failed to spot the error, which is not. Deprived of oxygen, she died within minutes. Pierce knew that a one-in-ten-thousand death rate, given that anesthesia was administered in the United States an estimated thirty-five million times each year, meant thirty-five hundred avoidable deaths like that one.

In 1982, Pierce was elected vice president of the American Society of Anesthesiologists and got an opportunity to do something about the death rate. The same year, ABC's *20/20* aired an exposé that caused a considerable stir in his profession. The segment began, "If you are going to go into anesthesia, you are going on a long trip, and you should not do it if you can avoid it in any way. General anesthesia [is] safe most of the time, but there are dangers from human error, carelessness, and a critical shortage of anesthesiologists. This year, six thousand patients will die or suffer brain damage." The program presented several terrifying cases from around the country. Between the small crisis that the show created and the sharp increases in physicians' malpractice insurance premiums at that time, Pierce was able to mobilize the Society of Anesthesiologists to focus on the problem of error.

He turned for ideas not to a physician but to an engineer named Jeffrey Cooper, the lead author of a groundbreaking 1978 paper entitled "Preventable Anesthesia Mishaps: A Study of Human Factors." An unassuming, fastidious man, Cooper had been hired in 1972, when he was twenty-six years old, by the Massachusetts General Hospital bioengineering unit, to work on developing machines for anesthesiology researchers. He gravitated toward the operating room,

however, and spent hours there observing the anesthesiologists, and one of the first things he noticed was how poorly the anesthesia machines were designed. For example, a clockwise turn of a dial decreased the concentration of potent anesthetics in about half the machines but increased the concentration in the other half. He decided to borrow a technique called "critical incident analysis"—which had been used since the 1950s to analyze mishaps in aviation—in an effort to learn how equipment might be contributing to errors in anesthesia. The technique is built around carefully conducted interviews, designed to capture as much detail as possible about dangerous incidents: how specific accidents evolved and what factors contributed to them. This information is then used to look for patterns among different cases.

Getting open, honest reporting is crucial. The Federal Aviation Administration has a formalized system for analyzing and reporting dangerous aviation incidents, and its enormous success in improving airline safety rests on two cornerstones. Pilots who report an incident within ten days have automatic immunity from punishment, and the reports go to a neutral, outside agency, NASA, which has no interest in using the information against individual pilots. For Jeffrey Cooper, it was probably an advantage that he was an engineer and not a physician, so that anesthesiologists regarded him as a discreet, unthreatening researcher.

The result was the first in-depth scientific look at errors in medicine. His detailed analysis of three hundred and fifty-nine errors provided a view of the profession unlike anything that had been seen before. Contrary to the prevailing assumption that the start of anesthesia ("takeoff") was the most dangerous part, anesthesiologists learned that incidents tended to occur in the middle of anesthesia, when vigilance waned. The most common kind of incident involved errors in maintaining the patient's breathing, and these were usually the result of an undetected disconnection or misconnection of the breathing tubing, mistakes in managing the airway, or mistakes in

using the anesthesia machine. Just as important, Cooper enumerated a list of contributory factors, including inadequate experience, inadequate familiarity with equipment, poor communication among team members, haste, inattention, and fatigue.

The study provoked widespread debate among anesthesiologists, but there was no concerted effort to solve the problems until Jeep Pierce came along. Through the anesthesiology society at first, and then through a foundation that he started, Pierce directed funding into research on how to reduce the problems Cooper had identified, sponsored an international conference to gather ideas from around the world, and brought anesthesia machine designers into safety discussions.

It all worked. Hours for anesthesiology residents were shortened. Manufacturers began redesigning their machines with fallible human beings in mind. Dials were standardized to turn in a uniform direction; locks were put in to prevent accidental administration of more than one anesthetic gas; controls were changed so that oxygen delivery could not be turned down to zero.

Where errors could not be eliminated directly, anesthesiologists began looking for reliable means of detecting them earlier. For example, because the trachea and the esophagus are so close together, it is almost inevitable that an anesthesiologist will sometimes put the breathing tube down the wrong pipe. Anesthesiologists had always checked for this by listening with a stethoscope for breath sounds over both lungs. But Cooper had turned up a surprising number of mishaps—like the one that befell the daughter of Pierce's friends—involving undetected esophageal intubations. Something more effective was needed. In fact, monitors that could detect this kind of error had been available for years, but, in part because of their expense, relatively few anesthesiologists used them. One type of monitor could verify that the tube was in the trachea by detecting carbon dioxide being exhaled from the lungs. Another type, the pulse oximeter, tracked blood oxygen levels, thereby providing an

early warning that something was wrong with the patient's breathing system. Prodded by Pierce and others, the anesthesiology society made the use of both types of monitor for every patient receiving general anesthesia an official standard. Today, anesthesia deaths from misconnecting the breathing system or intubating the esophagus rather than the trachea are virtually unknown. In a decade, the overall death rate dropped to just one in more than two hundred thousand cases—less than a twentieth of what it had been.

And the reformers have not stopped there. David Gaba, a professor of anesthesiology at Stanford, has focused on improving human performance. In aviation, he points out, pilot experience is recognized to be invaluable but insufficient: pilots seldom have direct experience with serious plane malfunctions anymore. They are therefore required to undergo yearly training in crisis simulators. Why not doctors, too?

Gaba, a physician with training in engineering, led in the design of an anesthesia-simulation system known as the Eagle Patient Simulator. It is a life-size, computer-driven mannequin that is capable of amazingly realistic behavior. It has a circulation, a heartbeat, and lungs that take in oxygen and expire carbon dioxide. If you inject drugs into it or administer inhaled anesthetics, it will detect the type and amount, and its heart rate, its blood pressure, and its oxygen levels will respond appropriately. The "patient" can be made to develop airway swelling, bleeding, and heart disturbances. The mannequin is laid on an operating table in a simulation room equipped exactly like the real thing. Here both residents and experienced attending physicians learn to perform effectively in all kinds of dangerous, and sometimes freak, scenarios: an anesthesia machine malfunction, a power outage, a patient who goes into cardiac arrest during surgery, and even a cesarean-section patient whose airway shuts down and who requires an emergency tracheostomy.

Though anesthesiology has unquestionably taken the lead in analyzing and trying to remedy "systems" failures, there are signs of change in other quarters. The American Medical Association, for

example, set up its National Patient Safety Foundation in 1997 and asked Cooper and Pierce to serve on the board of directors. The foundation is funding research, sponsoring conferences, and attempting to develop new standards for hospital drug-ordering systems that could substantially reduce medication mistakes—the single most common type of medical error.

Even in surgery there have been some encouraging developments. For instance, operating on the wrong knee or foot or other body part of a patient has been a recurrent, if rare, mistake. A typical response has been to fire the surgeon. Recently, however, hospitals and surgeons have begun to recognize that the body's bilateral symmetry makes these errors predictable. In 1998, the American Academy of Orthopedic Surgeons endorsed a simple way of preventing them: make it standard practice for surgeons to initial, with a marker, the body part to be cut before the patient comes to surgery.

The Northern New England Cardiovascular Disease Study Group, based at Dartmouth, is another success story. Though the group doesn't conduct the sort of in-depth investigation of mishaps that Jeffrey Cooper pioneered, it has shown what can be done simply through statistical monitoring. Six hospitals belong to this consortium, which tracks deaths and other bad outcomes (such as wound infection, uncontrolled bleeding, and stroke) arising from heart surgery and tries to identify the various risk factors involved. Its researchers found, for example, that there were relatively high death rates among patients who developed anemia after bypass surgery, and that anemia developed most often in small patients. The solution used to "prime" the heart-lung machine caused the anemia, because it diluted a patient's blood, so the smaller the patient (and his or her blood supply) the greater the effect. Members of the consortium now have several promising solutions to the problem. Another study found that a group at one hospital had made mistakes in "handoffs"—say, in passing preoperative lab results to the people in the operating room. The study group solved the problem by developing a pilot's checklist for all patients coming to the OR. These

efforts have introduced a greater degree of standardization, and so reduced the death rate in those six hospitals from 4 percent to 3 percent between 1991 and 1996. That meant two hundred and ninety-three fewer deaths. But the Northern New England cardiac group, even with its narrow focus and techniques, remains an exception; hard information about how things go wrong is still scarce. There is a hodgepodge of evidence that latent errors and systemic factors may contribute to surgical errors: the lack of standardized protocols, the surgeon's inexperience, the hospital's inexperience, inadequately designed technology and techniques, thin staffing, poor teamwork, time of day, the effects of managed care and corporate medicine, and so on and so on. But which are the major risk factors? We still don't know. Surgery, like most of medicine, awaits its Jeff Cooper.

It was a routine gallbladder operation, on a routine day: on the operating table was a mother in her forties, her body covered by blue paper drapes except for her round, antiseptic-coated belly. The gallbladder is a floppy, finger-length sac of bile like a deflated olive-green balloon tucked under the liver, and when gallstones form, as this patient had learned, they can cause excruciating bouts of pain. Once we removed her gallbladder, the pain would stop.

There are risks to this surgery, but they used to be much greater. Just a decade ago, surgeons had to make a six-inch abdominal incision that left patients in the hospital for the better part of a week just recovering from the wound. Today, we've learned to take out gallbladders with a miniature camera and instruments that we manipulate through tiny incisions. The operation, often done as day surgery, is known as laparoscopic cholecystectomy, or "lap chole." Half a million Americans a year now have their gallbladders removed this way; at my hospital alone, we do several hundred lap choles annually.

When the attending gave me the go-ahead, I cut a discreet inch-long semicircle in the wink of skin just above the belly button. I dis-

sected through fat and fascia until I was inside the abdomen and dropped into place a "port," a half-inch-wide sheath for slipping instruments in and out. We hooked gas tubing up to a side vent on the port, and carbon dioxide poured in, inflating the abdomen until it was distended like a tire. I inserted the miniature camera. On a video monitor a few feet away, the woman's intestines blinked into view. With the abdomen inflated, I had room to move the camera, and I swung it around to look at the liver. The gallbladder could be seen poking out from under the edge.

We put in three more ports through even tinier incisions, spaced apart to complete the four corners of a square. Through the ports on his side, the attending put in two long "graspers," like small-scale versions of the device that a department store clerk might use to get a hat off the top shelf. Watching the screen as he maneuvered them, he reached under the edge of the liver, clamped onto the gallbladder, and pulled it up into view. We were set to proceed.

Removing the gallbladder is fairly straightforward. You sever it from its stalk and from its blood supply, and pull the rubbery sac out of the abdomen through the incision near the belly button. You let the carbon dioxide out of the belly, pull out the ports, put a few stitches in the tiny incisions, slap some Band-Aids on top, and you're done. There's one looming danger, though: the stalk of the gallbladder is a branch off the liver's only conduit for sending bile to the intestines for the digestion of fats. And if you accidentally injure this main bile duct, the bile backs up and starts to destroy the liver. Between 10 and 20 percent of the patients to whom this happens will die. Those who survive often have permanent liver damage and can go on to require liver transplantation. According to a textbook, "Injuries to the main bile duct are nearly always the result of misadventure during operation and are therefore a serious reproach to the surgical profession." It is a true surgical error, and, like any surgical team doing a lap chole, we were intent on avoiding this mistake.

Using a dissecting instrument, I carefully stripped off the fibrous white tissue and yellow fat overlying and concealing the base of the gallbladder. Now we could see its broad neck and the short stretch where it narrowed down to a duct—a tube no thicker than a daisy stem peeking out from the surrounding tissue, but magnified on the screen to the size of major plumbing. Then, just to be absolutely sure we were looking at the gallbladder duct and not the main bile duct, I stripped away some more of the surrounding tissue. The attending and I stopped at this point, as we always do, and discussed the anatomy. The neck of the gallbladder led straight into the tube we were eyeing. So it had to be the right duct. We had exposed a good length of it without a sign of the main bile duct. Everything looked perfect, we agreed. “Go for it,” the attending said.

I slipped in the clip applier, an instrument that squeezes V-shaped metal clips onto whatever you put in its jaws. I got the jaws around the duct and was about to fire when my eye caught, on the screen, a little globule of fat lying on top of the duct. That wasn't necessarily anything unusual, but somehow it didn't look right. With the tip of the clip applier, I tried to flick it aside, but instead of a little globule, a whole layer of thin unseen tissue came up, and, underneath, we saw that the duct had a fork in it. My heart dropped. If not for that little extra fastidiousness, I would have clipped off the main bile duct.

Here was the paradox of error in medicine. With meticulous technique and assiduous effort to insure that they have correctly identified the anatomy, surgeons need never cut the main bile duct. It is a paradigm of an avoidable error. At the same time, studies show that even highly experienced surgeons inflict this terrible injury about once in every two hundred lap choles. To put it another way, I may have averted disaster this time, but a statistician would say that, no matter how hard I tried, I was almost certain to make this error at least once in the course of my career.

But the story doesn't have to end here, as the cognitive psychologists and industrial error experts have demonstrated. Given the

results they've achieved in anesthesiology, it's clear that we can make dramatic improvements by going after the process, not the people. But there are distinct limitations to the industrial cure, however necessary its emphasis on systems and structures. It would be deadly for us, the individual actors, to give up our belief in human perfectibility. The statistics may say that someday I will sever someone's main bile duct, but each time I go into a gallbladder operation I believe that with enough will and effort I can beat the odds. This isn't just professional vanity. It's a necessary part of good medicine, even in superbly “optimized” systems. Operations like that lap chole have taught me how easily error can occur, but they've also showed me something else: effort does matter; diligence and attention to the minutest details can save you.

This may explain why many doctors take exception to talk of “systems problems,” “continuous quality improvement,” and “process re-engineering.” It is the dry language of structures, not people. I'm no exception: something in me, too, demands an acknowledgment of my autonomy, which is also to say my ultimate culpability. Go back to that Friday night in the ER, to the moment when I stood, knife in hand, over Louise Williams, her lips blue, her throat a swollen, bloody, and suddenly closed passage. A systems engineer might have proposed some useful changes. Perhaps a backup suction device should always be at hand, and better light more easily available. Perhaps the institution could have trained me better for such crises, could have required me to have operated on a few more goats. Perhaps emergency tracheostomies are so difficult under any circumstances that an automated device could have been designed to do a better job.

Yet although the odds were against me, it wasn't as if I had no chance of succeeding. Good doctoring is all about making the most of the hand you're dealt, and I failed to do so. The indisputable fact was that I hadn't called for help when I could have, and when I plunged the knife into her neck and made my horizontal slash my best was not good enough. It was just luck, hers and

mine, that Dr. O'Connor somehow got a breathing tube into her in time.

There are all sorts of reasons that it would be wrong to take my license away or to take me to court. These reasons do not absolve me. Whatever the limits of the M & M, its fierce ethic of personal responsibility for errors is a formidable virtue. No matter what measures are taken, doctors will sometimes falter, and it isn't reasonable to ask that we achieve perfection. What is reasonable is to ask that we never cease to aim for it.

THE MALPRACTICE MESS

Who pays the price when patients sue doctors?

BY ATUL GAWANDE

It was an ordinary Monday at the Middlesex County Superior Court in Cambridge, Massachusetts. Fifty-two criminal cases and a hundred and forty-seven civil cases were in session. In Courtroom 6A, Daniel Kachoul was on trial for three counts of rape and three counts of assault. In Courtroom 10B, David Santiago was on trial for cocaine trafficking and illegal possession of a deadly weapon. In Courtroom 7B, a scheduling conference was being held for *Minihan v. Wallinger*, a civil claim of motor-vehicle negligence. And next door, in Courtroom 7A, Dr. Kenneth Reed faced charges of medical malpractice.

Reed was a Harvard-trained dermatologist with twenty-one years of experience, and he had never been sued for malpractice before. That day, he was being questioned about two office visits and a phone call that had taken place almost nine years earlier. Barbara Stanley, a fifty-eight-year-old woman, had come to see him in the summer of 1996 about a dark warty nodule a quarter-inch wide on her left thigh. In the office, under local anesthesia, Reed shaved off the top for a biopsy. The pathologist's report came back a few days later, with a near-certain diagnosis of skin cancer—a malignant melanoma. At a follow-up appointment, Reed told Stanley that the growth would have to be completely removed. This would require taking a two-centimetre margin—almost an inch—of healthy skin beyond the lesion. He was worried about metastasis, and recommended that the procedure be done immediately, but she balked. The excision that he outlined on her leg would have been three inches across, and she couldn't believe that a procedure so disfiguring was necessary. She said that she had a friend who had been given a diagnosis of cancer erroneously, and underwent unnecessary surgery. Reed pressed, though, and by the end of their discus-

sion she allowed him to remove the visible tumor that remained on her thigh, only a half-inch excision, for a second biopsy. He, in turn, agreed to have another pathologist look at all the tissue and provide a second opinion.

To Reed's surprise, the new tissue specimen was found to contain no sign of cancer. And when the second pathologist, Dr. Wallace Clark, an eminent authority on melanoma, examined the first specimen he concluded that the initial cancer diagnosis was wrong. "I doubt if this is melanoma, but I cannot completely rule it out," his report said. Reed and Stanley spoke by phone on August 10, 1996, to go over the new findings.

None of this is under dispute; what's under dispute is what happened afterward. According to Barbara Stanley, Reed told her that she did not have a melanoma after all—the second opinion on the original biopsy "was negative"—and that no further surgery was required. That's not how Reed recalled the phone conversation. "I indicated to Barbara Stanley . . . that Dr. Wallace Clark felt that this was a benign lesion called a Spitz nevus, and that he could not be a hundred per cent sure it was not a melanoma," he testified. "I also explained to her that in Dr. Clark's opinion this lesion had been adequately treated, that follow-up would be necessary, and that Dr. Clark did not feel that further surgery was critical. I also explained to Barbara Stanley that this was in conflict with the previous pathology report, and that the most cautious way to approach this would be to allow me to [remove additional skin] for a two-centimetre margin." She told him, he said, that she didn't want more surgery. "At that point, I reemphasized to Barbara Stanley that at least she should come in for regular follow-up." Unhappy with the care she received, she didn't return.

After two years, the growth reappeared. Stanley went to another doctor,

and the pathology report came back with a clear diagnosis: a deeply invasive malignant melanoma. A complete excision, she was told, should probably have been done the first time around. When she finally did undergo the more radical procedure, the cancer had spread to lymph nodes in her groin. She was started on a yearlong course of chemotherapy. Five months later, she suffered a seizure. The cancer was now in her brain and her left lung. She had a course of brain and lung radiation. A few weeks after that, Barbara Stanley died.

But not before she had called a lawyer from her hospital bed. She found a full-page ad in the Yellow Pages for an attorney named Barry Lang, a specialist in medical-malpractice cases, and he visited her at her bedside that very day. She told him that she wanted to sue Kenneth Reed. Lang took the case. Six years later, on behalf of Barbara Stanley's children, he stood up in a Cambridge courtroom and called Reed as his first witness.

Malpractice suits are a feared, often infuriating, and common event in a doctor's life. (I have not faced a bonafide malpractice suit, but I know to expect one.) The average doctor in a high-risk practice like surgery or obstetrics is sued about once every six years. Seventy per cent of the time, the suit is either dropped by the plaintiff or won in court. But the cost of defense is high, and when doctors lose, the average jury verdict is half a million dollars. General surgeons pay anywhere from thirty thousand to two hundred thousand dollars a year in malpractice-insurance premiums, depending on the litigation climate of the state they work in; neurosurgeons and obstetricians pay upward of fifty per cent more.

Every doctor, it seems, has a crazy-lawsuit story. My mother, a pediatrician, was once sued after a healthy two-

month-old she had seen for a routine checkup died of sudden infant death syndrome a week later. The lawsuit alleged that she should have prevented the death, even though a defining characteristic of SIDS is that it occurs without warning. One of my colleagues performed lifesaving surgery to remove a woman's pancreatic cancer only to be sued years later because she developed a chronic pain in her arm; the patient blamed it, implausibly, on potassium that she received by I.V. during recovery from the surgery. I have a crazy-lawsuit story of my own. In 1990, while I was in medical school, I was at a crowded Cambridge bus stop and an elderly woman tripped on my foot and broke her shoulder. I gave her my phone number, hoping that she would call me and let me know how she was doing. She gave the number to a lawyer, and when he found out that it was a medical-school exchange he tried to sue me for malpractice, alleging that I had failed to diagnose the woman's broken shoulder when I was trying to help her. (A marshal served me with a subpoena in physiology class.) When it became apparent that I was just a first-week medical student and hadn't been treating the woman, the court disallowed the case. The lawyer then sued me for half a million dollars, alleging that I'd run his client over with a bike. I didn't even have a bike, but it took a year and a half—and fifteen thousand dollars in legal fees—to prove it.

My trial had taken place in the same courtroom as Reed's trial, and a shudder went through me when I recognized it. Not all Americans, however, see the system the way doctors do, and I had come in an attempt to understand that gap in perspectives. In the courtroom gallery, I took a seat next to Ernie Browe, the son of Barbara Stanley. He was weary, he told me, after six years of excruciating delays. He works for a chemistry lab in Washington State and has had to take vacation time and money out of his savings to pay for hotels and flights—including for two trial dates that were postponed as soon as he arrived. "I wouldn't be here unless my mother asked me to, and she did before she died," he said. "She was angry, angry to have lost all those years because of Reed." He was glad that Reed was finally being called to account.

The dermatologist sat straight-

backed and still in the witness chair as Lang fired questions at him. He was clearly trying not to get flustered. A friend of mine, a pediatric plastic surgeon who had had a malpractice suit go to trial, told me the instructions that his lawyer had given him for his court appearances: Don't wear anything flashy or expensive. Don't smile or joke or frown. Don't appear angry or uncomfortable, but don't appear overconfident or dismissive, either. How, then, are you supposed to look? Reed seemed to have concluded that the only choice was to look as blank as possible. He parsed every question for traps, but the strenuous effort to avoid mistakes only made him seem anxious and defensive.

"Wouldn't you agree," Lang asked, "that [melanoma] is very curable if it's excised before it has a chance to spread?" If a patient had asked this question, Reed would readily have said yes. But, with Lang asking, he paused, uncertain.

"It's hypothetical," Reed said.

Lang was clearly delighted with this sort of answer. Reed's biggest problem, though, was that he hadn't kept notes on his August 10th phone conversation with Barbara Stanley. He could produce no corroboration for his version of events. And, as Lang often reminded the jury, plaintiffs aren't required to prove beyond a reasonable doubt that the defendant has committed malpractice. Lang needed ten of twelve jurors to think only that it was more likely than not.

"You documented a telephone conversation that you had with Barbara Stanley on August 31st, isn't that correct?" Lang asked.

"That is correct."

"Your assistant documented a discussion that you had with Barbara Stanley on August 1st, right?"

"That is correct."

"You documented a telephone call with Malden Hospital, correct?"

"That is correct."

"You documented a telephone conversation on September 6th, when you gave Barbara Stanley a prescription for an infection, correct?"

"That is correct."

"So you made efforts and you had a habit of documenting patient interactions and telephone conversations, right?"

"That is correct."

Lang began to draw the threads together. "Exactly what Barbara Stanley needed, according to you, [was] a two-centimetre excision, right?"

"Which is what I instructed Ms. Stanley to do . . ."

"Yet you did not tell Dr. Hochman"—Stanley's internist—"that she needed a two-centimetre excision, right?"

"That is correct."

"But you want this jury to believe you told Barbara Stanley?"

"I want this jury to believe the truth—which is that I told Barbara Stanley she needed a two-centimetre excision."

Lang raised his voice. "You *should* have told Barbara Stanley that . . . isn't that correct?" He all but called Reed a perjurer.

"I did tell Barbara Stanley, repeatedly!" Reed protested. "But she refused." As the examination continued, Reed tried to keep his exasperation in check, and Lang did all he could to discredit him.

"In your entire career, Doctor, how many articles have you published in the literature?" Lang asked at another point.

"Three," Reed said.

Lang lifted his eyebrows, and stood with his mouth agape for two beats. "In twenty years' time, you've published three articles?"

Without documentation, Reed was in a hard spot, and Lang's examination made my skin crawl. I could easily picture myself on the stand being made to defend any number of cases in which things didn't turn out well and I hadn't got every last thing down on paper. Lang was sixty years old, bald, short, and loud. Spittle flew in droplets. He paced constantly, and rolled his eyes at Reed's protestations. He showed no deference and little courtesy. He was almost a stereotype of a malpractice lawyer—except in one respect, and that was the reason I'd come to watch this particular trial.

Barry Lang used to be a doctor. For twenty-three years, he had a successful practice as an orthopedic surgeon, with particular expertise in pediatric orthopedics. He'd even served as an expert witness on behalf of other surgeons. Then, in a turnabout, he went to law school, gave up his medical practice, and embarked on a new career suing doctors. Watching him, I wondered,

after all his experience did he understand something that the rest of us didn't?

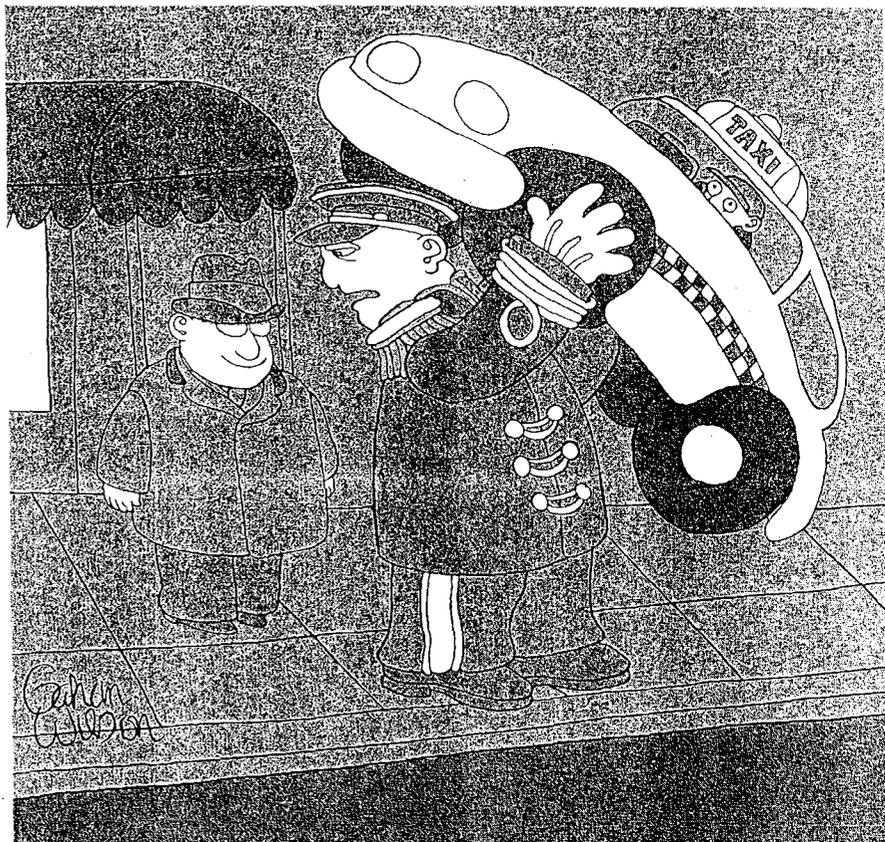
I went to see Lang at his office in downtown Boston, on the tenth floor of 1 State Street, in the heart of the financial district. He welcomed me warmly, and I found that we spoke more as fellow-doctors than as potential adversaries. I asked why he had quit medicine to become a malpractice attorney. Was it for the money?

He laughed at the idea. Going into law "was a money disaster," he said. Starting out, he had expected at least some rewards. "I figured I'd get some cases, and if they were good the doctors would settle them quickly and get them out of the way. But no. I was incredibly naïve. No one ever settles before the actual court date. It doesn't matter how strong your evidence is. They always think they're in the right. Things can also change over time. And, given the choice of paying now or paying later, which would you rather do?"

He entered law practice, he said, because he thought he'd be good at it, because he thought he could help people, and because, after twenty-three years in medicine, he was burning out. "It used to be 'Two hip replacements today—yeah!'" he recalled. "Then it became 'Two hip replacements today—ugh.'"

When I spoke to his wife, Janet, she said that his decision to change careers shocked her. From the day she met him, when they were both undergraduates at Syracuse University, he'd never wanted to be anything other than a doctor. After medical school in Syracuse and an orthopedics residency at Temple University, he had built a busy orthopedics practice in New Bedford, Massachusetts, and had a fulfilling and varied life. Even when he enrolled in night classes at Southern New England School of Law, a few blocks from his office, his wife didn't think anything of it. He was, as she put it, "forever going to school." One year, he took English-literature classes at a local college. Another year, he took classes in Judaism. He took pilot lessons, and before long was entering airplane aerobatics competitions. Law school, too, began as another pastime—"It was just for kicks," he said.

After he finished, though, he took the



"This one to your liking, sir?"

bar exam and got his license. He was fifty years old. He'd been in orthopedics practice long enough to have saved a lot of money, and law had begun to seem much more interesting than medicine. In July, 1997, he handed his practice over to his startled partners, "and that was the end of it," he said.

He figured that the one thing he could offer was his medical expertise, and he tried to start his legal practice by defending physicians. But, because he had no experience, the major law firms that dealt with malpractice defense wouldn't take him, and the malpractice insurers in the state wouldn't send him cases. So he rented a small office and set up shop as a malpractice attorney for patients. He spent several thousand dollars a month for ads on television and in the phone book, dubbing himself "the Law Doctor." Then the phone calls came. Five years into his new career, his cases finally began going to trial. This is his eighth year as a malpractice attorney, and he has won settlements in at least thirty cases. Eight others went to

trial, and he won half of them. Two weeks before the Reed trial, he won a four-hundred-thousand-dollar jury award for a woman whose main bile duct was injured during gallbladder surgery, forcing her to undergo several reconstructive operations. (Lang got more than a third of that award. Under Massachusetts state law, attorneys get no more than forty per cent of the first hundred and fifty thousand dollars, 33.3 per cent of the next hundred and fifty thousand, thirty per cent of the next two hundred thousand, and twenty-five per cent of anything over half a million.) Lang has at least sixty cases pending. If he had any money troubles, they are over.

Lang said that he gets ten to twelve calls a day, mostly from patients or their families, with some referrals from other lawyers who don't do malpractice. He turns most of them away. He wants a good case, and a good case has to have two things, he said. "No. 1, you need the doctor to be negligent. No. 2, you need the doctor to have caused damage." Many of the callers fail on both counts.

"I had a call from one guy. He says, 'I was waiting in the emergency room for four hours. People were taken ahead of me, and I was really sick.' I say, 'Well, what happened as a result of that?' 'Nothing, but I shouldn't have to wait for four hours.' Well, that's ridiculous."

Some callers have received negligent care but suffered little harm. In a typical scenario, a woman sees her doctor about a lump in her breast and is told not to worry about it. Still concerned, she sees another doctor, gets a biopsy, and learns that she has cancer. "So she calls me up, and she wants to sue the first doctor," Lang said. "Well, the first doctor was negligent. But what are the damages?" She got a timely diagnosis and treatment. "The damages are nothing."

I asked him how great the prospective damages had to be to make the effort worth his while. "It's a gut thing," he said. His expenses on a case are typically forty to fifty thousand dollars. So he would almost never take, say, a dental case. "Is a jury going to give me fifty thousand dollars for the loss of a tooth? The answer is no." The bigger the damages, the better. As another attorney told me, "I'm looking for a phone number"—damages worth seven figures.

Another consideration is how the plaintiff will come across to jurors. Someone may have a great case on paper, but Lang listens with a jury in mind. Is this person articulate enough? Would he or she seem unreasonable or strange to others? Indeed, a number of malpractice attorneys I spoke to confirmed that the nature of the plaintiff, not just of the injury, was a key factor in the awarding of damages. Vernon Glenn, a highly successful trial attorney from Charleston, South Carolina, told me, "The ideal client is someone who matches the social, political, and cultural template of where you are." He told me about a case he had in Lexington County, South Carolina—a socially conservative, devoutly Christian county that went seventy-two per cent for George W. Bush in the last election and produces juries unsympathetic to malpractice lawyers. But his plaintiff was a white, Christian female in her thirties with three young children who had lost her husband—a hardworking, thirty-nine-year-old truck mechanic who loved NASCAR, had voted Repub-

lican for the past twenty years, and had built the addition to their country home himself—to a medical error. During routine abdominal surgery, doctors caused a bowel injury that they failed to notice until, days later, he collapsed and died. The woman was articulate and attractive, but not so good-looking as to put off a jury. She wasn't angry or vengeful, but was visibly grieving and in need of help. If the family hadn't spoken English, if the husband had a long history of mental illness or alcoholism or cigarette smoking, if they'd been involved in previous lawsuits or had a criminal record, Glenn might not have taken the case. As it was, "she was darn close to the perfect client," he said. The day before trial, the defendants settled for \$2.4 million.

Out of sixty callers a week, Barry Lang might take the next step with two, and start reviewing the medical records for hard evidence of negligent care. Many law firms have a nurse or a nurse practitioner on staff to do the initial re-

view. Lang himself gathers all the records, arranges them chronologically, and goes through them page by page.

There is a legal definition of negligence ("when a doctor has breached his or her duty of care"), but I wanted to know his practical definition of the term. Lang said that if he finds an error that resulted in harm, and the doctor could have avoided it, then, as far as he is concerned, the doctor was negligent.

To most doctors, this is an alarming definition. Given the difficulty of many cases—unclear diagnoses, delicate operations—we all have serious "complications" that might have been avoided. I told Lang about a few patients of mine: a man with severe bleeding after laparoscopic liver surgery, a patient who was left permanently hoarse after thyroid surgery, a woman whose breast cancer I failed to diagnose for months. All were difficult cases. But, in looking back on them, I also now see ways in which I could have done better. Would he sue me? If he could show a jury how I might

THE OWL'S NIGHT

Here is a present
that yesterday doesn't touch.
When we reached
the last of the trees we noticed that we
were no longer able to notice.
When we looked at the trucks
we saw absence heaping up its selected things,
and pouring out its eternal tent around us.

Here is a present
that yesterday doesn't touch.
Silk thread slips between the mulberry trees,
letters on the night's notebook.
Only moths light our boldness
descending to the hollow of strange words:
Was this miserable man my father?
Perhaps I'll consider my situation here. Perhaps
I'll give birth, now, to myself, with myself,
and choose for my name vertical letters.

Here is a present
sitting in time's emptiness staring
at the trace of those who pass on the river's stalk
polishing their flutes with air . . . Perhaps speech
will become transparent, so we'll see windows in it, open.
Perhaps time will hurry, with us
carrying our tomorrow in its luggage.

Here is a present
without time.

He didn't find anyone here, anyone who remembered
how we left the door, a gust of wind. Anyone who remembered
when we fell off yesterday. Yesterday
broke over the floor, shrapnel gathered together
by others, like mirrors for their image, after us.

Here is a present
without place.

Perhaps I'll consider my situation, and scream at
the owl's night: Was that miserable man
my father, who makes me carry the burden of his history?
Perhaps I'll change my name, and choose
my mother's expressions and her customs as they ought
to be: This way she'll be able to joke with me
whenever salt touches my blood. This way she'll be able to
take care of me whenever a nightingale bites my mouth.

Here is a present
fleeting.

Here strangers hang their guns on
the branches of an olive tree, prepare dinner
quickly, from tin cans, and leave
quickly, for their trucks.

—Mahmoud Darwish

(Translated, from the Arabic, by Jeffrey Sacks.)

have avoided harm, and if the damages were substantial, he said, "I would sue you in a flash." But what if I have a good record among surgeons, with generally excellent outcomes and conscientious care? That wouldn't matter, he said. The only thing that matters is what I did in the case in question.

Lang insists that he is not engaged in a crusade against doctors. He faced three malpractice lawsuits himself when he was a surgeon. One involved an arthroscopy that he performed on a young woman with torn cartilage in her knee from a sports injury. Several years later, he said, she sued because she developed arthritis in the knee—a known, often unavoidable outcome. Against his wishes, the insurer settled with the patient for what Lang called "nuisance money"—five thousand dollars or so—because it was cheaper than fighting the suit in court.

In another case, a manual laborer with a wrist injury that caused numbness in three fingers sued because Lang's attempted repair made the numbness

worse and left him unable to work. Lang said that he'd warned the patient that this was a high-risk surgery. When he got in, he found the key nerves encased in a thick scar. Freeing them was exceedingly difficult—"like trying to peel Scotch tape off wallpaper," he said—and some nerve fibres were unavoidably pulled off. But the insurer wasn't certain that it would prevail at trial, and settled for three hundred thousand dollars. Both cases seemed unmerited, and Lang found them as exasperating as any other doctor would.

The third case, however, was the result of a clear error, and although it took place two decades ago, it still bothers him. "I could have done more," he told me. The patient was a man in his sixties whom Lang had scheduled for a knee replacement. A few days before the surgery, the man came to his office complaining of pain in his calf. Lang considered the possibility of a deep-vein thrombosis—a blood clot in the leg—but dismissed it as unlikely and ordered no further testing. The patient did have a

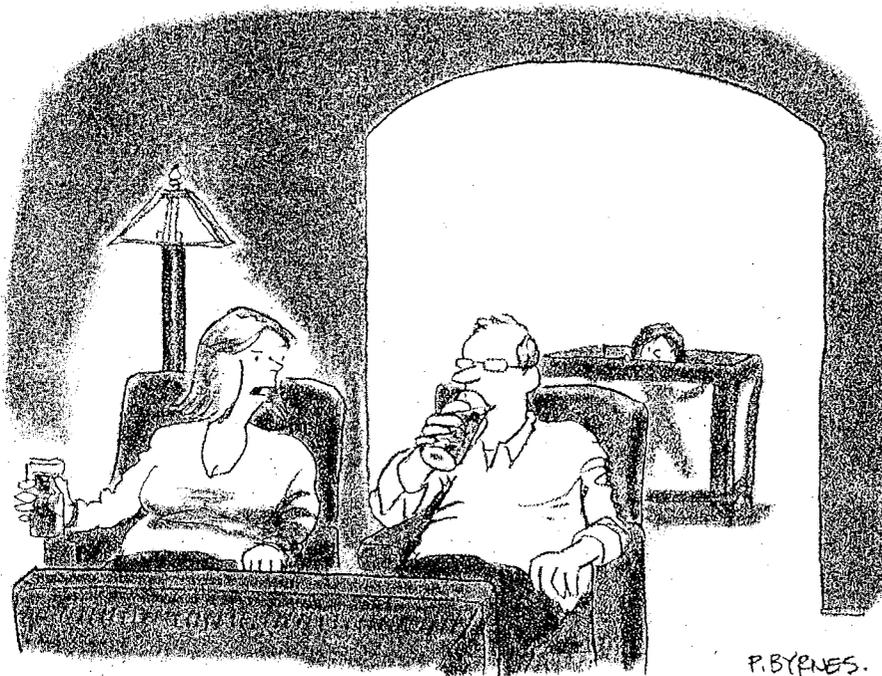
D.V.T., though, and when the clot dislodged, two days later, it travelled to his lungs and killed him. Lang's insurer settled the case for about four hundred thousand dollars.

"If I had been on the plaintiff's side, would I have taken that case against me?" he said to me. "Yes."

Being sued was "devastating," Lang recalled. "It's an awful feeling. No physician purposely harms his patient." Yet he insists that, even at the time, he was philosophical about the cases. "Being sued, although it sort of sucks the bottom out of you, you have to understand that it's also the cost of doing business. I mean, everybody at some time in his life is negligent, whether he's a physician, an auto mechanic, or an accountant. Negligence occurs, and that's why you have insurance. If you leave the oven on at home and your house catches fire, you're negligent. It doesn't mean you're a criminal." In his view, the public has a reasonable expectation: if a physician causes someone serious harm from substandard care or an outright mistake, he or she should be held accountable for the consequences.

The cases that Lang faced as a doctor, however, seemed to me to epitomize the malpractice debate. Two of the three lawsuits against him appeared unfounded, and, whatever Lang says now, the cost in money and confidence to our system is nothing to dismiss. Yet one of them concerned a genuine error that cost a man his life. In such cases, what do doctors believe should be done for patients and their families?

Bill Franklin is a physician I know who has practiced at Massachusetts General Hospital, in Boston, for more than forty years. He is an expert in the treatment of severe, life-threatening allergies. He is also a father. Years ago, his son Peter, who was then a second-year student at Boston University School of Medicine, called to say that he was feeling sick. He had sweats, and a cough, and felt exhausted. Bill had him come to his office and looked him over. He didn't find anything, so he had his son get a chest X-ray. Later that day, the radiologist called. "We've got big trouble," he told Bill. The X-rays showed an enormous tumor filling Peter's chest, compressing his lungs from the middle and pushing outward. It was among the



P. BYRNES.

*"You just come home and neglect her at night.
I'm the one who has to neglect her all day."*

largest the radiologist had encountered.

After he had pulled himself together, Bill Franklin called Peter at home to give him and his young wife the frightening news. They had two children and a small house, with a kitchen that they were in the midst of renovating. Their lives came to a halt. Peter was admitted to the hospital and a biopsy showed that he had Hodgkin's lymphoma. He was put on high-dose radiation therapy, with a beam widened to encompass his chest and neck. Still, Peter was determined to return to school. He scheduled his radiation sessions around his coursework, even after they paralyzed his left diaphragm and damaged his left lung, leaving him unable to breathe normally.

The tumor proved too large and extensive for a radiation cure. Portions of it had continued to grow, and it had spread to two lymph nodes in Peter's lower abdomen. The doctors told his father that it was one of the worst cases they had ever seen. Peter was going to need several months of chemotherapy. It would make him sick and leave him infertile, but, they said, it should work.

Bill Franklin couldn't understand how the tumor had got so large under ev-

eryone's eyes. Thinking back on Peter's care over the years, he remembered that four years earlier Peter's wisdom teeth had been removed. The surgery had been performed under general anesthesia, with an overnight stay at M.G.H., and a chest X-ray would have been taken. Franklin had one of the radiologists pull the old X-ray and take a second look. The mass was there, the radiologist told him. What's more, the original radiologist who had reviewed Peter's chest X-ray had seen it. "Further evaluation of this is recommended," the four-year-old report said. But the Franklins had never been told. The oral surgeon and the surgical resident had both written in Peter's chart that the X-ray was normal.

If the tumor had been treated then, Peter would almost certainly have been cured with radiation alone, and with considerably less-toxic doses. Now it seemed unlikely that he'd finish medical school, if he survived at all. Bill Franklin was beside himself. How could this have happened—to one of M.G.H.'s own, no less? How would Peter's wife and children be supported?

Thousands of people in similar circumstances file malpractice lawsuits in order to get answers to such questions. That's not

what Bill Franklin wanted to do. The doctors involved in his son's case were colleagues and friends, and he was no fan of the malpractice system. He had himself been sued. He'd had a longtime patient with severe asthma whom he had put on steroids to ease her breathing during a bad spell. Her asthma had improved, but the high doses resulted in a prolonged dementia, and she had to be hospitalized. The lawsuit alleged that Franklin had been negligent in putting her on steroids, given the risks of the medication, and that he was therefore financially responsible for the aftermath. Franklin had been outraged. She'd had a life-threatening problem, and he'd given her the best care he could.

Now, as an M.G.H. staff member, he decided to see the hospital director. He asked for a small investigation into how the mistake had been made and how it might be prevented in the future; he also wanted to secure financial support for Peter's family. The director told him that he couldn't talk to him about the matter. He should get a lawyer, he said. Was there no other way, Franklin wanted to know. There wasn't.

Here's where we in medicine have failed. When something bad happens in the course of care and a patient and family want to know whether it was unavoidable or due to a terrible mistake, where are they to turn? Most people turn first to the doctors involved. But what if they aren't very responsive, or their explanations don't sound quite right? People often call an attorney just to get help in finding out what happened.

"Most people aren't sure what they're coming to me for," Vernon Glenn, the South Carolina trial attorney, told me. "The tipoff is often from nurses saying, 'This was just wrong. This should never have happened.'" The families ask him to have a look at the medical files. If the loss or injury is serious, he has an expert review the files. "More often than you would think, we'll say, 'Here's what happened. We don't think it's a case.' And they'll say, 'At least we know what happened now.'"

Malpractice attorneys are hardly the most impartial assessors of care, but medicine has offered no genuine alternative—because physicians are generally unwilling to take financial responsibility for the consequences of their mistakes. Indeed, the one argument that has per-

sued many doctors to be more forthright about mistakes is that doing so might make patients less likely to sue.

What would most doctors do if someone close to them was hurt by a medical error? In a recent national survey, physicians and non-physicians were given the following case: A surgeon orders an antibiotic for a sixty-seven-year-old man undergoing surgery, failing to notice that the patient's chart says that he is allergic to the drug. The mistake is not caught until after the antibiotic is given, and, despite every effort, the patient dies as a result. What should be done? Unlike fifty per cent of the public, almost none of the physicians wanted the surgeon to lose his license. Medical care requires that a thousand critical steps go right every day, and none of us would have a license if we were punished every time we faltered. At the same time, fifty-five per cent of the physicians said that they would sue the surgeon for malpractice.

That's what Bill Franklin, with some trepidation, decided to do. Lawyer friends warned him that he might have to leave his position on staff if things didn't go well. He loved the hospital and his practice; Peter's oral surgeon was a friend. But his son had been harmed, and he felt that Peter and his young family were entitled to compensation for all that they had lost and suffered. Peter himself was against suing. He was afraid that a lawsuit might so antagonize his doctors that they would not treat him properly. But he was persuaded to go along with it.

At first, the Franklins were told that no lawyer would take the case. The error had been made four years earlier, and this put it beyond the state's three-year statute of limitations. As in most states at the time, one could not file a civil claim for an action long in the past—never mind that Peter didn't learn about the error until it was too late. Then they found a young Boston trial attorney named Michael Mone, who took the case all the way to the Massachusetts Supreme Court and, in 1980, won a change in the law. *Franklin v. Massachusetts General Hospital et al.* ruled that such time limits must start with the *discovery* of harm, and the precedent stands today. The change allowed the case to proceed.

The trial was held in 1983, in the town of Dedham, in the same courthouse where, six decades earlier, the anarchists

Sacco and Vanzetti had been convicted of murder. "I don't remember much about the trial—I've blocked it out," Bev Franklin, Peter's mother, says. "But I remember the room. And I remember Michael Mone saying those words we'd been waiting so long to hear: 'Ladies and gentlemen, this young man had a time bomb ticking in his chest. And for four years—*four years*—the doctors did nothing.'" The trial took four days. The jury found in favor of Peter, and awarded him six hundred thousand dollars.

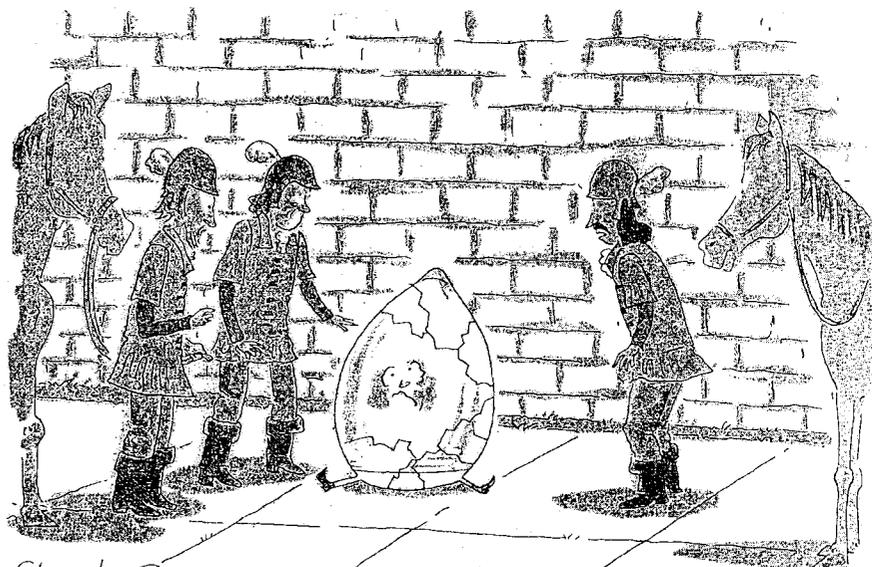
Bill Franklin says that he never experienced any negative repercussions at the hospital. His colleagues seemed to understand, and Peter's doctors did their very best for him. Peter continued to attend medical school. At the end of that long year, after six full cycles of chemotherapy, the lymph nodes in his chest continued to harbor residual cancer. He was given a new chemotherapy regimen, which so weakened his immune system that he almost died of a viral lung infection. He was in the hospital for weeks, and was finally forced to take a leave from school. The virus left him short of breath whenever he did anything more strenuous than climb half a flight of stairs, and with burning nerve pain in his feet. His marriage slowly disintegrated; a disaster can either draw people together or pull them apart, and this one pulled Peter and his wife apart.

Yet Peter survived. He eventually completed medical school, and decided to go into radiology. To everyone's surprise,

he was rejected by his top-choice residency programs. A dean at Boston University called the chairman of radiology at one of the programs to find out why. "This guy's a maverick! He's suing doctors!" was the reply. The dean told the chairman Peter's story and then asked, "If this was your son, what would you do?" Peter got in after that. He chose Boston University's program and, when he finished, he was asked to join the staff there. Soon, he was made a division chief. He remarried and is now a fifty-six-year-old expert on orthopedic imaging, with a brush mustache, a graying thatch of hair, and chronic lung and liver troubles from his chemotherapy. Four years ago, he started a teleradiology group that now interprets scans for a hundred and fifty centers across the country. He is also a specialist for professional sports teams, including the San Diego Chargers and the Chicago Bears.

He says that his ordeal has made him exceedingly careful in his work. He has set up a review committee to find and analyze errors. Nonetheless, the single biggest budget item for his group is malpractice insurance. As it happens, the most common kind of malpractice case in the country involves allegations that doctors have made the kind of error that Peter once faced—a missed or delayed diagnosis. I asked him how he felt about being responsible for a lawsuit that had made it easier to sue for such claims. He winced and paused to consider his answer.

"I think the malpractice system has run



Shanahan

"Thank goodness he was wearing a condom."

amok," he finally said. "I don't think that my little experience has anything to do with it—the system is just so rampant with problems. But, if you're damaged, you're damaged. If we screw up, I think we should eat it." Wasn't he contradicting himself? No, he said; the system was the contradiction. It helps few of the people who deserve compensation. His case was unusual, and even that involved a seven-year struggle before all the appeals and challenges were dismissed. At the same time, too many undeserving patients sue, imposing enormous expense and misery. The system, as he sees it, is fundamentally perverse.

The paradox at the heart of medical care is that it works so well, and yet never well enough. It routinely gives people years of health that they otherwise wouldn't have had. Death rates from heart disease have fallen by almost two-thirds since the nineteen-fifties. The survival rate among cancer patients is now almost seventy per cent. A century ago, ten in a hundred newborns and one in a hundred mothers died; today, just seven in a thousand newborns and fewer than one in ten thousand mothers do. But this has required drugs and machines and operations and, most of all, decisions that can as easily damage people as save them. It's precisely because of our enormous success that people are bound to wonder what went wrong when we fail.

As a surgeon, I will perform about four hundred operations in the next year—everything from emergency repair of strangulated groin hernias to removal of thyroid cancers. For about two per cent of patients—for eight, maybe ten, of them—things will not go well. They will develop life-threatening bleeding. Or I will damage a critical nerve. Or I will make a wrong diagnosis. Whatever Hippocrates may have said, sometimes we do harm. Studies of serious complications find that usually about half are unavoidable; and, in such cases, I might be able to find some small solace in knowing this. But in the other half I will simply have done something wrong, and my mistake may change someone's life forever. Society is still searching for an adequate way to under-

stand these instances. Are doctors villains if we make mistakes? No, because then we all are. But we are tainted by the harm we cause.

I watch a lot of baseball, and I often find myself thinking about the third baseman's job. In a season, a third baseman will have about as many chances to throw a man out as I will to operate on people. The very best (players like Mike Lowell, Hank Blalock, and Bill Mueller) do this perfectly almost every time. But two per cent of the time even they drop the ball or throw it over the first baseman's head. No one playing a full season fails to make stupid errors. When he does, the fans hoot and jeer. If the player's error costs the game, the hooting will turn to yelling. Imagine, though, that if every time Bill Mueller threw and missed it cost or damaged the life of someone you cared about. One error leaves an old man with a tracheostomy; another puts a young woman in a wheelchair; another leaves a child brain-damaged for the rest of her days. His teammates would still commiserate, but the rest of us? Some will want to rush the field howling for Mueller's blood. Others will see all the saves he's made and forgive him his failures. Nobody, though, would see him in quite the same way again. And nobody would be happy to have the game go on as if nothing had happened. We'd want him to show sorrow, to take responsibility. We'd want the people he injured to be

helped in a meaningful way.

This is our situation in medicine, and litigation has proved to be a singularly unsatisfactory solution. It is expensive, drawn-out, and painfully adversarial. It also helps very few people. Ninety-eight per cent of families that are hurt by medical errors don't sue. They are unable to find lawyers who think they would make good plaintiffs, or they

are simply too daunted. Of those who do sue, most will lose. In the end, fewer than one in a hundred deserving families receive any money. The rest get nothing; no help, not even an apology.

There is an alternative approach, which was developed for people who have been injured by vaccines. Vaccines protect tens of millions of chil-

dren, but every year one in ten thousand or so is harmed by side effects. Between 1980 and 1986, personal-injury lawyers filed damage claims valued at more than \$3.5 billion against doctors and manufacturers. When they began to win, vaccine prices jumped and some manufacturers got out of the business. Vaccine stockpiles dwindled. Shortages appeared. So Congress stepped in. Vaccines now carry a seventy-five-cent surcharge (about fifteen per cent of total costs), which goes into a fund for children who are injured by them. The program does not waste effort trying to sort those who are injured through negligence from those who are injured through bad luck. An expert panel has enumerated the known injuries from vaccines, and, if you have one, the fund provides compensation for medical and other expenses. If you're not satisfied, you can sue in court. But few have. Since 1988, the program has paid out a total of \$1.5 billion to injured patients. Because these costs are predictable and evenly distributed, vaccine manufacturers have not only returned to the market but produced new vaccines, including ones against hepatitis and chicken pox. The program also makes the data on manufacturers public—whereas legal settlements in medical cases are virtually always sealed from view. The system has flaws, but it has helped far more people than the courts would have.

The central problem with any system remotely as fair and efficient as this one is that, applied more broadly, it would be overwhelmed with cases. Even if each doctor had just one injured and deserving patient a year (a highly optimistic assumption), complete compensation would exceed the cost of providing universal health coverage in America. To be practical, the system would have to have firm and perhaps arbitrary-seeming limits on eligibility as well as on compensation. New Zealand has settled for a system like this. It has offered compensation for medical injuries that are rare (occurring in less than one per cent of cases) and severe (resulting in death or prolonged disability). As with America's vaccine fund, there is now no attempt to sort the victims of error from the victims of bad luck. For those who qualify, the program pays for lost income, medical needs, and, if there's a



permanent disability, an additional lump sum for the suffering endured. Payouts are made within nine months of filing. There are no mammoth, random windfalls, as there are in our system, but the public sees the amounts as reasonable, and there's no clamor to send these cases back to the courts.

The one defense of our malpractice system is that it has civilized the passions that arise when a doctor has done a devastating wrong. It may not be a rational system, but it does give people with the most heartbreaking injuries a means to fight. Every once in a while, it extracts enough money from a doctor to provide not just compensation but the satisfaction of a resounding punishment, fair or not. And although it does nothing for most plaintiffs, people whose loved ones have suffered complications do not then riot in hospital hallways, as clans have done in some countries.

We are in the midst of a flurry of efforts to "reform" our malpractice system. More than half of the states have enacted limits on the amount of money that juries can award someone who has been injured by a doctor, and Congress is considering a federal cap of two hundred and fifty thousand dollars on non-economic damage awards. But none of this will make the system fairer or less frustrating for either doctors or patients. It simply puts an arbitrary limit on payments so that doctors' insurance premiums might, at least temporarily, be more affordable.

Whether a cap is enacted or not, I will pay at least half a million dollars in premiums in the next ten years. I would much rather see that money placed in an insurance fund for my patients who suffer complications from my care, even if the fund cannot be as generous as we'd like it to be. There's no real chance of this happening, though. Instead, we're forced to make do with what we have.

In Courtroom 7A of the Edward J. Sullivan Courthouse in Cambridge, after seven years of litigation; more than twenty thousand dollars in payments to medical experts; the procurement of bailiffs, court reporters, a judge, and two-hundred-and-fifty-dollar-an-hour defense attorneys; time on an overloaded court schedule; and the commandeered

THURSDAY-MORNING QUARTERBACK



lives of fourteen jurors for almost two weeks, Barry Lang stood behind a lectern to make his closing argument on behalf of the estate of Barbara Stanley. "Dr. Reed is not a criminal," he told the jury. "But he was negligent, and his negligence was a key factor in causing Barbara Stanley's death."

It was not an open-and-shut case. Even in Lang's account, Reed was faced with a difficult medical problem: pathologists who contradicted each other about whether the first biopsy showed skin cancer; a second biopsy that failed to settle the issue; a distrusting patient who was angry with him, first for doing too much and then for doing too little. But, for the first time during the trial, Lang stopped his constant pacing. He spoke slowly and plainly. The story he told seemed lucid and coherent. In that fateful telephone conversation, he argued, Reed failed to offer Stan-

ley the option of a more radical skin excision that might have saved her life.

Judge Kenneth Fishman then gave the jury its instructions. Stanley's son, Ernie Browe, sat in the front row of the gallery on one side, and Kenneth Reed sat a row back on the other. Both looked drained. When the judge finished, it was late in the afternoon, and everyone was dismissed for the day.

The next morning, the jury began its deliberations. Just before noon, the court officer announced that a verdict had been reached: Dr. Kenneth Reed was *not* negligent in his care of Barbara Stanley. Stanley's son slumped in his seat, looked down at the floor, and did not move for a long while. Barry Lang promptly stood up to put away his papers. "It was a tough case," he said. Reed was not there to hear the verdict. He had been seeing patients in his office all morning. ♦

May 18, 2008

Doctors Say 'I'm Sorry' Before 'See You in Court'

By KEVIN SACK

CHICAGO — In 40 years as a highly regarded cancer surgeon, Dr. Tapas K. Das Gupta had never made a mistake like this.

As with any doctor, there had been occasional errors in diagnosis or judgment. But never, he said, had he opened up a patient and removed the wrong sliver of tissue, in this case a segment of the eighth rib instead of the ninth.

Once an X-ray provided proof in black and white, Dr. Das Gupta, the 74-year-old chairman of surgical oncology at the University of Illinois Medical Center at Chicago, did something that normally would make hospital lawyers cringe: he acknowledged his mistake to his patient's face, and told her he was deeply sorry.

"After all these years, I cannot give you any excuse whatsoever," Dr. Das Gupta, now 76, said he told the woman and her husband. "It is just one of those things that occurred. I have to some extent harmed you."

For decades, malpractice lawyers and insurers have counseled doctors and hospitals to "deny and defend." Many still warn clients that any admission of fault, or even expression of regret, is likely to invite litigation and imperil careers.

But with providers choking on malpractice costs and consumers demanding action against medical errors, a handful of prominent academic medical centers, like Johns Hopkins and Stanford, are trying a disarming approach.

By promptly disclosing medical errors and offering earnest apologies and fair compensation, they hope to restore integrity to dealings with patients, make it easier to learn from mistakes and dilute anger that often fuels lawsuits.

Malpractice lawyers say that what often transforms a reasonable patient into an indignant plaintiff is less an error than its concealment, and the victim's concern that it will happen again.

Despite some projections that disclosure would prompt a flood of lawsuits, hospitals are reporting decreases in their caseloads and savings in legal costs. Malpractice premiums have declined in some instances, though market forces may be partly responsible.

At the University of Michigan Health System, one of the first to experiment with full disclosure, existing claims and lawsuits dropped to 83 in August 2007 from 262 in August 2001, said Richard C. Boothman, the medical center's chief risk officer.

“Improving patient safety and patient communication is more likely to cure the malpractice crisis than defensiveness and denial,” Mr. Boothman said.

Mr. Boothman emphasized that he could not know whether the decline was due to disclosure or safer medicine, or both. But the hospital’s legal defense costs and the money it must set aside to pay claims have each been cut by two-thirds, he said. The time taken to dispose of cases has been halved.

The number of malpractice filings against the University of Illinois has dropped by half since it started its program just over two years ago, said Dr. Timothy B. McDonald, the hospital’s chief safety and risk officer. In the 37 cases where the hospital acknowledged a preventable error and apologized, only one patient has filed suit. Only six settlements have exceeded the hospital’s medical and related expenses.

In Dr. Das Gupta’s case in 2006, the patient retained a lawyer but decided not to sue, and, after a brief negotiation, accepted \$74,000 from the hospital, said her lawyer, David J. Pritchard.

“She told me that the doctor was completely candid, completely honest, and so frank that she and her husband — usually the husband wants to pound the guy — that all the anger was gone,” Mr. Pritchard said. “His apology helped get the case settled for a lower amount of money.”

The patient, a young nurse, declined to be interviewed.

Mr. Pritchard said his client netted about \$40,000 after paying medical bills and legal expenses. He said she had the rib removed at another hospital and learned it was not cancerous. “You have no idea what a relief that was,” Dr. Das Gupta said.

Some advocates argue that the new disclosure policies may reduce legal claims but bring a greater measure of equity by offering reasonable compensation to every injured patient.

Recent studies have found that one of every 100 hospital patients suffers negligent treatment, and that as many as 98,000 die each year as a result. But studies also show that as few as 30 percent of medical errors are disclosed to patients.

Only a small fraction of injured patients — perhaps 2 percent — press legal claims.

“There is no reason the patient should have to pay the economic consequences for our mistakes,” said Dr. Lucian L. Leape, an authority on patient safety at Harvard, which recently adopted disclosure principles at its hospitals. “But we’re pushing uphill on this. Most doctors don’t really believe that if they’re open and honest with patients they won’t be sued.”

The Joint Commission, which accredits hospitals, and groups like the American Medical Association and the American Hospital Association have adopted standards encouraging disclosure. Guidelines vary, however, and can be vague. While many hospitals have written policies to satisfy accreditation requirements, only a few are pursuing them aggressively, industry officials said.

“We’re still learning the most effective way to have these most difficult conversations,” said Nancy E. Foster, the hospital association’s vice president for quality and patient safety. “It’s a time of high stress for the

patient and for the physician. It's also a time where information is imperfect."

The policies seem to work best at hospitals that are self-insured and that employ most or all of their staffs, limiting the number of parties at the table. Such is the case at the Veterans Health Administration, which pioneered the practice in the late 1980s at its hospital in Lexington, Ky., and now requires the disclosure of all adverse events, even those that are not obvious.

To give doctors comfort, 34 states have enacted laws making apologies for medical errors inadmissible in court, said Doug Wojcieszak, founder of The Sorry Works! Coalition, a group that advocates for disclosure. Four states have gone further and protected admissions of culpability. Seven require that patients be notified of serious unanticipated outcomes.

Before they became presidential rivals, Senators Hillary Rodham Clinton and Barack Obama, both Democrats, co-sponsored federal legislation in 2005 that would have made apologies inadmissible. The measure died in a committee under Republican control. Mrs. Clinton included the measure in her campaign platform but did not reintroduce it when the Democrats took power in 2007. Her Senate spokesman, Philippe Reines, declined to explain beyond saying that "there are many ways to pursue a proposal."

The Bush administration plans a major crackdown on medical errors in October, when it starts rejecting Medicare claims for the added expense of treating preventable complications. But David M. Studdert, an authority on patient safety in the United States who teaches at the University of Melbourne in Australia, said the focus on disclosure reflected a lack of progress in reducing medical errors.

"If we can't prevent these things, then at least we have to be forthright with people when they occur," Mr. Studdert said.

For the hospitals at the forefront of the disclosure movement, the transition from inerrancy to transparency has meant a profound, if halting, shift in culture.

At the University of Illinois, doctors, nurses and medical students now undergo training in how to respond when things go wrong. A tip line has helped drive a 30 percent increase in staff reporting of irregularities.

Quality improvement committees openly examine cases that once would have vanished into sealed courthouse files. Errors become teaching opportunities rather than badges of shame.

"I think this is the key to patient safety in the country," Dr. McDonald said. "If you do this with a transparent point of view, you're more likely to figure out what's wrong and put processes in place to improve it."

For instance, he said, a sponge left inside an patient led the hospital to start X-raying patients during and after surgery. Eight objects have been found, one of them an electrode that dislodged from a baby's scalp during a Caesarian section in 2006.

The mother, Maria Del Rosario Valdez, said she was not happy that a second operation was required to retrieve the wire but recognized the error had been accidental. She rejected her sister's advice to call a lawyer, saying that she did not want the bother and that her injuries were not that severe.

Ms. Valdez said she was gratified that the hospital quickly acknowledged its mistake, corrected it without charge and later improved procedures for keeping track of electrodes. "They took the time to explain it and to tell me they were sorry," she said. "I felt good that they were taking care of what they had done."

There also has been an attitudinal shift among plaintiff's lawyers who recognize that injured clients benefit when they are compensated quickly, even if for less. That is particularly true now that most states have placed limits on non-economic damages.

In Michigan, trial lawyers have come to understand that Mr. Boothman will offer prompt and fair compensation for real negligence but will give no quarter in defending doctors when the hospital believes that the care was appropriate.

"The filing of a lawsuit at the University of Michigan is now the last option, whereas with other hospitals it tends to be the first and only option," said Norman D. Tucker, a trial lawyer in Southfield, Mich. "We might give cases a second look before filing because if it's not going to settle quickly, tighten up your cinch. It's probably going to be a long ride."

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