

Chapter 22: Please Make My Heart Better

During my years here, I've become a fan of American sports, Major League Baseball and the National Football League in particular. It was one of the great American baseball players, Hall of Fame pitcher Jim Palmer, who once said something that struck me as relevant to what I had been doing over a long career as a surgeon. During a TV interview, Palmer said he could remember every pitch he'd thrown in a major league game. Even if he was speaking metaphorically, I can believe that. While I certainly don't recall every stitch I've made in every operation, I can describe the basic details—patient history, surgical procedure, and outcome—of each of the more than fifteen thousand cardiac surgeries I've performed. Those memories are etched in my mind even though my surgical routine was, well, routine throughout my career. When I got home from a day's work at the hospital, I would have a late dinner, and then, usually at around 10 p.m., I would start preparing for the following day. This entailed looking at all available information (lesson learned from Don) about the next day's patients, worrying (as is my nature)—and praying. My prayer the night before surgery was always the same: "Let the complicated become simple and the simple not become complicated." When my prayers were answered—as they usually were—the surgeries ended up being less memorable—a good thing. But there were exceptions: maybe the patient's condition was unusual, or the outcome was unexpected, or something surprising happened in the operating room. It's hard to forget those latter cases, in which surgery or its aftermath didn't go as you'd hoped. One of the most memorable surgeries of my career involved the simple becoming complicated. The experience was so draining that it made me reconsider the profession I'd devoted my life to—and not out of anger or disgust with the system, as had been the case with the malpractice suit. In this case it was the sheer emotional weight of the case. In the aftermath of a straightforward operation gone terribly wrong, I thought, I can't do this anymore. It's time to retire. The night before surgery, I always reviewed the charts of the person or people I'd be operating on. This took about forty-five to sixty minutes per patient. A lot of surgeons wait until the morning of the operation to do this review. Then they might say, "Something's wrong here, I'm not going to do this operation today." I never did that. I never canceled an operation at the last minute unless something happened with the patient overnight, such as their having a stroke or contracting a cold with a high fever and infection. I have been blessed with the ability to function at a high level on not much sleep, so I didn't care if it was one a.m. and I was scheduled to be at the hospital in five hours. I wanted the information then. I wanted to see everything in place. I took this approach not just for my sake, but also for the patients'. They trusted me to keep them alive. They were the bravest people, giving me that trust, and I didn't want to lose it. I wanted to do everything I could for them. Even after I assured myself I'd done everything possible to prepare, I worried. Just as patients and their families were filled with often conflicting emotions before surgery, so was I. I worried whether the next day I'd make someone a widow or have to tell someone they'd lost a parent. It was also impossible not to think about the aftermath of surgery, that someone I'd successfully operated on might develop complications hours later. What might I do the next day to lessen the chance of something like that happening? These sorts of thoughts went through my mind before every operation, in addition to the technical aspects of surgery. As an aside, here's something I never really told patients about. Everybody wants surgery first thing Monday morning, because they think the surgeon will have had a nice weekend and show up refreshed. I did better surgery later on in the day and week than early Monday morning. At the start of the workweek, I felt all the stress about the upcoming operations, because it was part of my job to imagine every possible thing that could go wrong. People don't want to have the second or third or

fourth operation of the day, but that's when I was at my best. Part of that was because I was warmed up and had better mobility in my hands. But there was also the emotional aspect, which weighed most heavily on me early in the morning. Once I was in the operating room, those emotions almost always vanished. I was completely focused on the work at hand. That's why the case of a young man I'll call William is so vivid in my memory. It was a rare instance when wrenching emotion pervaded the operating room. William was a twenty-two-year-old who came to me for evaluation as a candidate for open heart surgery. He was a tall, handsome, well-built college senior who was to graduate in the spring. He already had a job lined up in Boston at the investment bank UBS. His future was bright. But William was having shortness of breath when doing things like playing basketball or jogging. A physical exam done in preparation for his impending job had revealed a heart murmur. I had operated on his mother twice—the first time for an ascending aortic aneurysm and the second time, ten years later, for a leaky aortic valve. The aortic valve connects the main chamber of the heart to the aorta, the main artery in the body. There was a chance that William had been born with similar defects. Sure enough, an echocardiogram showed that William had a leaky aortic valve. Also, his aortic valve had two flaps instead of three. About 2 percent of the population have two flaps in their aortic valve. For most of these people, the aberration doesn't significantly affect cardiac function, and they can go on to live a normal life to age seventy or eighty with no issues. But about 10 to 20 percent of young people with two flaps have the problem that William had: a mild or moderate leak in the valve and a dilated aorta (William's measured 5.2 centimeters diameter—more than 2 centimeters larger than normal). In such cases there's a 2 to 4 percent chance each year of the aorta rupturing. Over ten years that means a 20 to 40 percent chance of rupture, which could have serious consequences, including death. So even though William was doing fine, these odds in combination with his mother's history made him a strong candidate for surgery. He was a little scared but trusted my judgment and consented to surgery. Because his situation wasn't an emergency, we agreed I'd perform the operation after William had graduated from college. I recommended, and William agreed to, what's known as a David procedure. This would entail replacing his ascending aorta with a Dacron graft, as well as repairing and then re-implanting his own aortic valve inside the graft. I explained to William that it was a more involved procedure than replacing his valve, but that I'd been doing it for twenty years with excellent outcomes. The advantage is that you retain your own valve rather than live with an artificial valve, which can fail and requires that you be on a blood thinner for the rest of your life. I told William the procedure would allow him to live a much more normal life. He liked that option. He was eager to actively enjoy the many years ahead of him as much as possible. The morning of William's operation was like most others. I talked with him and his mother, going over once again what exactly the procedure would entail, giving an estimate of how long it would take, and patiently answering any questions they had. I always encouraged patients and their families to write down questions they might have. They're afraid, they're preoccupied, and they might forget to ask you something important while you're with them. I always answered honestly, but I also always tried to reassure them that, although there's always risk, we'll do our best to minimize it. Although I told William and his mother how long the surgery would take, I followed my usual practice of not being too precise. I might say I'd be done around noon when, if things went as expected, I'd be done at more like eleven a.m. The purpose of building in this extra cushion was to ease the family's minds, so that they wouldn't start worrying if I hadn't shown up by 11:10. Of course, sometimes I would come to the waiting room at eleven and not be able to find the family because they were all wandering around! But usually they would be there waiting, eager to get the news. There's always the possibility surgery will last much longer than anticipated. If what I had estimated would be

four hours became more like seven hours, or if a patient was doing poorly, I thought it was important to keep the family updated. I'd have a social worker, nurse practitioner, or physician assistant find the family and explain to them that we had encountered a little problem, and that I'd be down to see them as soon as possible. When that happened, I would adjust the rest of the day's schedule as needed. Just as I didn't want to be like surgeons who reviewed a patient's chart the morning of an operation and decided then to cancel it, I didn't want to let an early operation gone long lead to canceling someone else's surgery. Of course, sometimes we don't have a choice despite all our best efforts. The patient and their family have their mind set on it, and are emotionally prepared for that day. I felt obligated to respect their bravery. If it meant operating late at night, I'd do it. Many times I entered the operating room consumed by thoughts about an upcoming operation, but once surgery was underway, those emotions disappeared. Everything else gets blocked out while you focus completely on the problem in front of you. In addition to your own work, you have to manage the rest of your team. Depending on the procedure, you might have with you as many as nine people, and a minimum of six. There could be two or three assistants, who might be your associates, resident doctors, physician assistants, and/or registered nurses. There's a perfusionist, who operates the heart-lung machine, which temporarily takes over the work of the heart and lungs during surgery to keep the patient's blood and oxygen circulating. There's also an anesthesiologist, a circulating nurse (who manages the area outside the sterile area of the operating room), and a scrub nurse (who assists the surgical team with donning gear and passing instruments). There could also be any number of medical students on hand. Everyone present is a highly trained professional, of course, but still, it's up to you as the surgeon to control the environment. You become demanding to make sure everybody's doing things the way you want them done. I always gathered the team before surgery to brief them on what I expected. Everybody knows their responsibilities, but there are always details to go over, such as whether it's predicted the patient will need two or five bypasses. Over time, others learned how I liked to work and adjusted accordingly. During surgery you keep communicating, but there isn't as much conversation as many people might think. Working with a good crew, you become like a well-practiced football team, everybody knowing what to do on a particular play, or a good orchestra, everyone working together to produce something greater than the sum of their parts. To offer one more metaphor, my role in the operating room was to be the captain of the ship. Even though the outcome depended on the crew, I was the one making the decisions. William's procedure went as smoothly as anyone could want. Over the course of four hours, we put him to sleep, opened his chest, replaced his aorta with a Dacron graft, repaired his aortic valve, and re-implanted his native coronary artery to the graft. His heart function was normal and he had no trouble coming off the heart-lung machine. At about eleven a.m., I stepped out of the operating room to dictate my notes about the morning's work. My team was to take the final steps: finish closing his chest and put a dressing on his wound. Suddenly William's heart started fibrillating, meaning that it was quivering instead of contracting. He had no blood pressure and was under cardiac arrest. He was expiring, and quickly. We started CPR, we shocked him, but the heart wouldn't come around. I was in distress—just a few minutes ago I was thinking how well everything had gone, and now this wonderful young man, whose mother was expecting me in the waiting room, was dying before my eyes. And I didn't know why! Compounding the problem was that the heart-lung machine had been dismantled. Typically, patients come off the machine when we're confident the body is ready to support itself. then watch the patient—blood pressure, echocardiogram, and so on— for half an hour before dismantling the machine. The reason for this watch period is that before an operation, the patient receives heparin (yes, the same blood thinner that in rare cases can cause the kinds of problems my patient Don

experienced). For most patients, heparin is critical; without it the heart-lung machine will form clots, and the patient will die. When the patient is off the machine, you reverse the blood thinner with a clotting agent, protamine, so that the patient doesn't bleed extensively from even the smallest cut. Once you've given the protamine, you can't simply return the patient to the heart-lung machine if there's a problem. You have to start that part of the process from scratch, which takes time. So with our other methods failing, I had no choice but to cut open his chest again. The heart was flaccid, not moving. He was close to death. I grabbed William's heart between my two hands and started pumping it myself, squeezing the heart rapidly to simulate its own action. In essence I was keeping this young man alive with my hands, pumping his heart for nearly ten minutes while my team prepared the heart-lung machine to once again take over the job. I prayed quietly to myself that this young man would not die while I literally held his heart in my hands. After several of the most stressful minutes of my life, we were able to get William back on the heart-lung machine. It took another two and a half hours in the operating room to sufficiently support his heart and get him back to baseline activity. Finally, we were able to reclose his chest and take him to the intensive care unit. I accompanied him to make sure he was stable. Meanwhile, I had sent a nurse to tell his mother why there was a delay, and that I would speak with her as soon as William's condition allowed me to. I was satisfied the heart had come back, but of course I wanted to know what had happened. It's possible small air bubbles inside the chambers of William's heart had dislodged when we moved him at the end of the operation. Usually these little bubbles clear up, but they can cause trouble if the air rises to the brain, causing a seizure, or goes to the coronary artery, causing fibrillation. William's case is a reminder that sometimes things seem to happen for no reason. We were fortunate that it happened in the operating room, where the team was already assembled and where we could quickly open his chest and support his heart. If it had occurred half an hour later, he might well have died. Even though William seemed to be doing well, I remained distraught. The big concern was that he would develop complications. Because we'd had to rip open his chest, would the bone fail to heal properly? Would he contract a severe infection, or have a stroke, or suffer kidney failure? I thought, If something happens to this young man, this may be my last operation. I shared that sentiment with some of my team. The emotional toll was so great because you don't expect an incident like this with such a young patient, someone who represents the future. When William's condition was stable, I went to the waiting room to talk with his mother. She grabbed me and started crying into my shoulder. I think she felt some guilt over her son's situation, because of the possibility of having passed on a congenital heart defect. I told her what had happened and that I didn't know why it had happened. I said that most likely, he would be OK, but that I couldn't tell her that for sure for another four to six hours, until he was awake and we knew how his kidney and other functions had come out. I remained at William's bedside for a few hours, delaying my other operation scheduled for that day until late in the evening. At around six p.m. he woke up. I brought his mother in to see him. He gave her a thumbs-up. She started crying again, but I think this time the tears were of a different sort. Anytime something bad happened with a patient, I would get angry and frustrated. Endless questions would go through my mind: What did we do wrong? Could we have done something differently? Should we not have done this? Should we have instead done that? You do the best you can, based on your knowledge and experience, but in those situations it's impossible not to question yourself. When the outcome is poor, it really hurts, because you've failed, and your failure has affected so many people. It's no real consolation to tell yourself how ill the patient was before the operation or that, as in William's case, it might have been some one-in-a-million set of circumstances. Even though I was grateful that this young man had survived, the circumstances haunted me. How could we prevent

this from happening again? Because there was no clear answer, I kept myself from becoming incapacitated the way I always did, by jumping right back into my work rather than avoiding it. There was always another patient waiting, another life we had to take carefully into our hands. I said earlier that, on a typical day, one thing I did when I got home from the hospital was prepare for the following day's surgeries. Another thing I did was worry about the patients I'd worked on that day. You can imagine what a relaxing home life this made for! Here, while Barbara might want to sit down and watch television with her husband, I'd be distracted and brooding. I often called the intensive care unit at eleven p.m., asking the staff on duty how my patients were doing. What were their vital signs? Were they bleeding? How was their kidney function? Had they had a stroke or heart attack? After all, my team and I might have done a great job on the operation itself, but what good is the surgery if the patient doesn't wake up? In the big picture, things aren't over just because the operation is finished. Those kinds of worries were always in the back of my mind. It wasn't until fortyeight hours after surgery that I was able to relax a bit. Anything can still happen after that, but it's a lot more likely to be routine. The day of William's surgery was anything but typical. When I checked in on William again, he was awake and alert, and his heart and kidney function were normal. Between that good news and the fact that he had been off a heart-supporting drug for six hours, I was fairly confident he was going to be fine. Only then did I feel that it was OK to go home. When I saw William the next morning, he looked perfectly normal. He had recovered from the near-fatal experience of less than twenty-four hours earlier. He was kept in the hospital for seven days instead of being discharged after the typical five days, but all his tests were normal, and his heart function was good. Within a few weeks he had recovered completely. Three months after surgery, he was back to normal activity and had returned to his job. One year after that horrible day in the operating room, I saw him for a follow-up visit, and his condition was perfect. His care was transferred to a local doctor, in Boston, where he'd have yearly checkups. William's case is a great example of how even during a straightforward operation, unpredictable things can happen suddenly. These are humbling experiences that remind us that we go from day to day never knowing what's going to transpire. William's case was an extreme example, one of the few times I was ready to walk out the hospital doors and never return. I thank God that William—and I—recovered. His success inspired me to stay with my profession, and I went on to perform many more complex and successful operations. As I mentioned earlier, my prayer before surgery was, "Let the complicated become simple and the simple not become complicated." What does complicated mean in this context? One aspect is the nature of the operation. You might do multiple procedures at the same time, as when a patient needs not only a bypass but also a valve repair or implant. Then there's the condition of the patient before surgery: What state is their heart in? How much is it damaged? What about their general fitness and lifestyle? Are they overweight? Do they smoke? Do they have diabetes or a kidney problem or dementia? All these factors can add up to a much higher average risk than if you're operating on an otherwise healthy person—like active, twenty-two-year-old William. While most surgeries are routine, in the sense that they are likely to be common procedures, all surgeries have potential complications. That's especially the case with open heart surgery, which has so many aspects: the heart-lung machine, blood transfusion, medications, and so on. In addition to the technical components, there's the unpredictable matter of the human being who's the patient. Presurgery testing should give a good indication of what you'll find once you start an operation, but there are no guarantees. Many times I expected patients to do poorly because they had a bad heart muscle, they'd had a heart attack or diabetes or lung problems, they were overweight, two or three of their valves were leaking, or some combination of those factors. And then I'd do the operation and the patient would recover beautifully

and quickly, with no complications. Other times, presurgery testing wasn't able to give the complete picture, as was the case with William. For example, I might find that the valve I'd planned to put in wouldn't fit the patient's aorta because the aorta was too small or too much calcium had built up in it. More often the patient's unique physiology meant a bad reaction to some part of the procedure, whether a blood transfusion, the blood thinner, drugs and anesthesia, or the heart-lung machine—the nonorganic elements used in surgery. There's no such thing as straightforward surgery because there's no way of predicting how it will go. That's why I say the patients and their families are the bravest people. The best I can do is explain to them all the potential risks; then the choice is theirs about how to proceed. That was always my method, whether I discussed the possibilities with parents of an infant, middle-aged professionals, or elderly retirees. I can still picture having this conversation with the oldest person I ever operated on, a ninety-nine-year-old man whose aortic valve was progressively closing. His name was Walter. He was thin and frail and looked every bit of his age. He had complained of severe shortness of breath, and I could tell during our conversation that he wasn't exaggerating. He had to catch his breath between words while we were talking. But mentally he was very sharp. I asked Walter if he lived alone and he nodded. He told me he would like to live a little longer, and to be able to breathe better. I told him his options: go home, take medication, and live a couple of months before the heart gives out, or try open heart surgery. I quickly added that at age ninety-nine, such a surgery would carry a high risk for stroke and complications. But I knew it could be done, and I was willing to do it. He burst into tears when I told him this. What was wrong? Slowly, pausing after every few words, Walter said these were tears of relief. He was happy that I had examined him, listened, and paid attention. This had not been the case with the first surgeon he had consulted. A few months earlier, Walter had gone to a large academic university medical center in Boston for a consultation with a highly recommended heart surgeon. While he was sitting in the waiting room, he overheard the surgeon chastising his secretary behind the frosted glass walls of his adjacent office. "You made an appointment with a ninety-nine-year-old man?" he heard the surgeon say. "Are you crazy? There's no way I'm doing surgery on someone that old." Afterward, the surgeon had walked into the examination room and brusquely told Walter to go home. "I'm sorry we had to waste your time, sir, but to be honest, there's nothing I can do for you," the surgeon said. According to Walter, the man never examined him, never even gave him an opportunity to speak. Walter was right to be upset with that first surgeon. That's no way to treat someone who is sick and desperate, no matter their age. You should have some compassion, humility, and respect. Walter wasn't asking for surgery in some vain attempt to live forever. The poor man could barely breathe. Fully aware of the risks, he came to the hospital a few days later. I spoke to him before the surgery. "Walter," I said, "I'm going to do my best to give you some quality of life in your remaining time. But I must tell you one more time. You know there's a high risk here and that you may not survive, right?" "I know," he said, slowly, pausing after each word. "And I appreciate you doing this, no matter what happens." "You do have your will in order and all arrangements made, just in case?" I asked. "I do," he said. "But I have faith in you, Doc." I shared with him my opinion that, all things considered, dying under anesthesia isn't the worst way to go. Such philosophical discussions are not the norm with a patient right before surgery. But Walter was not the norm. He agreed and managed a smile. "Doc," he said. "I may surprise you." He certainly did. The following year, I attended Walter's hundredth birthday party. He lived to be 102. Let me be clear: I'm not advocating surgery for nonagenarians. But Walter's case is a great reminder that you have to treat patients like unique human beings, not anonymous, generic numbers based on their age. If you refuse all elderly patients, someone will be denied a chance to live—to celebrate, perhaps, another birthday with friends or family. Walter's case raises a timely

issue for the medical profession. As we enter the twenty-first century, the baby boomers are getting older and living longer. With that longevity comes higher incidences of heart problems. What do you do for them? Because they often have other complications—diabetes, high blood pressure, depression, fragility, and so forth—their operations are going to be high risk. Currently the mortality rate for patients under seventy years of age who undergo cardiac surgery is about 1 to 4 percent. For those older than seventy, that risk skyrockets to 10 to 20 percent. Even if they survive the surgery, the older folks require lengthier stays in the hospital and are more prone to complications. Also, unlike Walter, about half of elderly patients who undergo heart surgery end up going not home, but to extended care facilities. Those are the facts. Moreover, I'm fully aware that the pressure is on surgeons and hospitals to refuse to perform on older, high-risk patients, because it negatively affects the hospital outcomes we love to advertise as proof of how wonderful we are. So yes, I understand all the arguments against doing these surgeries. Arguments that are likely to grow louder in the coming years, as more and more old patients come to us with conditions that might—might—be treatable with surgery. And despite all the reasons we should not, my philosophy is still that we should. I look at it this way: if I can save 50 percent of these people and give them a chance to live, it is worth the effort. Who am I to deny them the chance to live? You've got to have hope! Congress has recently passed the "Right to Try" bill to allow the use of non-approved FDA drugs as a last measure to help terminally ill patients get the potentially lifesaving investigational treatment they need, before it is too late. The change is already taking place. Over the past decade or so, new and less invasive technologies and procedures have been allowing us to replace heart valves in elderly, frail, and high-risk patients, or safely do a coronary artery stent or repair an aneurysm with less trauma to the body. My sense is that it won't be long before the idea of surgery for a ninety-nine-year-old isn't nearly as radical as it sounded when I operated on Walter. Another major league great, Edgar Martínez, is widely credited with saying, "Learn to control your emotions or they will control you." In the operating theater, I certainly learned to do that. You try to focus on the procedure, not the person. But that doesn't mean I was indifferent to the suffering of my patients. After all, I don't just work on hearts—I have one, too. And believe me, it was tested, particularly in my early years. Which is why I will always remember Shawn Johnson. His story, like his life, is much shorter than that of William or Walter or most of my patients, but it affected me in a more fundamental way than almost any other. When his parents brought him to see me again in 1977, Shawn was four years old. He had been born with a number of heart problems. He had no spleen, and his heart was twisted, with one chamber missing. But he had a keen intelligence and an endearing personality. Even at his young age, I recall being impressed by how articulate and perceptive he was. He was also compassionate—he had met other children in the hospital, and he was always asking me what I could do to help them, just like I helped him after his palliative surgery. Shawn's parents were dedicated and supportive, even as his condition worsened. They also tried hard to keep things positive, which I applauded. With the help of his mother, Shawn created a coloring book, in which he drew pictures of his surroundings in the hospital. There were little childlike renderings of IV machines, crash carts, and small figures in beds, some with smiley faces and others sad. He also wrote about his feelings on blood draws, intravenous fluids, and his interactions with the doctors and the nurses. The title of his booklet, written in big letters on the first page, was Please Make My Heart Better. I made that my mission. I so wanted this brave little boy to survive. His condition, however, was very precarious and complex— well beyond our hospital's capabilities at the time. Shawn, who was in a great deal of pain by that point, needed to go to a place that would give him the best chance of survival. I recommended to his parents Children's of Alabama, affiliated with the University of Alabama School of Medicine at Birmingham. It was also one of the

nation's preeminent centers for pediatric cardiac surgery at that time. His parents agreed, and with their help and support, I made arrangements for Shawn to be admitted. He was operated on just a few days later. The pediatric surgeons at Alabama were some of the best in the country. Yet despite their prodigious efforts, Shawn didn't survive the operation. I got a call from one of the surgeons immediately afterward. He told me they had done their best, and I knew that was true. I thanked him and got off the phone. For a moment I tried to remind myself of the importance of keeping my emotions in check. There was nothing more I could do for Shawn, and I had other patients who required my attention. But I couldn't help it. Shawn had given me a copy of his little coloring book before he had left for Alabama. After the call, I sat in my office, clutching that book, and I cried and cried. I still have it on my desk, forty-one years later. Please Make My Heart Better. I certainly tried, Shawn. That brave little boy had a bigger impact on my life than almost anyone realized, and still does. In the days and weeks after Shawn's death, I thought about what he and his parents had endured. Bleakly I pondered the randomness of life, of a universe that would doom a bright young child like Shawn to such a premature death. Although his condition was rare, I thought to myself, Who's to say the next child born won't have it? Who's to say my next child won't have it? That was chilling. At that point I was the father of two healthy children. I discussed my fears with Barbara, and told her that I couldn't bear the thought of a third, running the risk—however slight—that the baby would be born with a condition like Shawn's or any lifethreatening condition. I realize it was not a logical decision, but for once the emotions that I was supposed to keep under control were simply too powerful. The thought of seeing another kid that I loved suffer as Shawn had was just too much to bear. Barbara agreed. We did not have any more children

Chapter 23: Your Heart, My Hands

For the surgeon, focus is everything. It must be unwavering and absolute on a task that is sometimes mechanical and rote, occasionally creative and daring. In my line of surgery, at least, focus is almost always a matter of life and death for the person on the operating table. True, the medical team can, as is sometimes depicted on TV shows, banter about children or weekends or vacations or something in the news over the course of a three- or six-hour procedure. I never disallowed that in my surgeries. But I always felt that the surgeon must remain intent on the task at hand. Despite our concentration, despite our efforts to stay riveted on the delicate and time-consuming procedures we are performing, it wasn't always possible to avoid distractions completely. Much as I tried to keep it at bay, what was happening in the wider world had a way of showing up in my operating room. Drug addiction, the AIDS crisis, the obesity epidemic, third-world poverty, the ongoing national debate about abortion, and, of course, the equally passionate debate about health care. I have faced all of these formidable challenges, armed only with a retractor! But they couldn't be ignored. Not only because of what these issues mean to our society but because of what they mean to the most important people in my life outside of my family: my patients. It was through the realities of their lives, the circumstances or behaviors that had sometimes caused their conditions or brought them to me in the first place, that these often contentious societal issues managed to elbow their way into my surgery. I'd like to share with you some of their stories and how my life and my attitudes changed because of them and how I altered and impacted theirs. One day I received a call from another hospital. It was transferring a young Caucasian woman from nearby Fall River, Massachusetts, who needed urgent care. Twenty-three years old and twenty-four weeks

pregnant, she had contracted a staph infection that had spread to her heart. Angela was her name, and I visited her in the ICU. “Hello, Angela, I’m Dr. Singh,” I said. “How are you feeling?” She responded as most septic patients do. The fever that accompanies these infections leaves them disoriented and gasping for air. Their words are slurred and garbled, emitted in short staccato bursts as they struggle for breath. “Can’t breathe . . . Not feeling well . . . I can’t lie flat. . . Make me better. . . Get me out of here.” Angela also had a tale of woe to relate, which she gasped out to me in semi coherent pieces. She had recently broken up with her boyfriend. He had now abandoned her, even though she was pregnant with his child. She’d lost her job at a local factory. She lived alone. And when I posed the question to her, she admitted that she’d started to use drugs. Clearly Angela had issues, and I felt for her. But my first concern was saving her life. Imaging showed that her heart was enlarged and that her mitral valve—which allows blood to flow into the left pumping chamber of the heart—was seriously damaged. Instead of having a normal, smooth surface, the valve looked like a cauliflower, lumpy and bulbous, with an irregular surface. When the valve has deteriorated like this, small pieces of it can break loose. We call them snowflakes because that’s what they look like on an ultrasound. But despite their whimsical name, they are anything but benign. These small clumps can end up blocking arteries to the vital organs, leading to stroke, heart attack, kidney failure, and many more. Angela needed surgery fast. But because she was twenty-four weeks pregnant, there was a high risk that we could lose the baby. This presented a dilemma: Should we terminate the pregnancy, or proceed with the operation and hope for the best? Such a decision is obviously not one the surgeon can make on his own. I called her obstetrician and we discussed the options. But events quickly outpaced us. As I’d feared, one of those clumps from her diseased valve broke off and landed in her brain, causing a stroke. Surgery was postponed while she was treated for the stroke. It took about two weeks, but she responded well, recovering fully. Her speech improved and her mind cleared. I now felt it was imperative to move ahead with surgery as soon as possible, before another snowflake could go floating down her bloodstream and cause further havoc. She would require a mitral valve replacement with an artificial valve—unusual for someone of this age, but it had to be done. By now a team of physicians was consulting regularly together on Angela’s case: in addition to her obstetrician and me, an infectious disease specialist, a psychologist, and a social worker were involved—not to mention her parents, and Angela herself. We had to do surgery. That much was clear. But what about the fetus? Among the medical consultants, the recommendation was unanimous: the pregnancy needed to be terminated before we proceeded with the operation. Otherwise there was a risk Angela could die as well as the baby. It was up to me to present this to Angela and her family. I entered her room along with her obstetrician and the social worker. Angela’s parents sat nervously by her bedside. I remember their faces, creased by years of hard work and struggling to make ends meet, and now by anxieties about their daughter and unborn grandchild. Angela had mentioned her strong Catholic faith to me earlier, and I noticed her mother had rosary beads that she fingered nervously as I sat to talk to them. Angela looked understandably drained and distraught, although her eyes, clouded when she had first been brought in, were now clear. She listened intently as I began to explain what her team was recommending. “Angela,” I said, “you dodged a bullet here. You recovered from a stroke, and quickly. That’s very good. But in your current condition, there’s a high risk you could have another. That could be lethal, and if you die the baby will die, too. The safest way to proceed”—I paused, carefully choosing my words “is to take the baby away.” She sat upright in the bed. “You mean abortion?” “Yes.” She shook her head vigorously. “No way!” she said. “Sorry, Doctor, I can’t do that.” I tried to explain that the odds of the baby dying during surgery would be one out of three. “I know this is a difficult issue,” I said, “but do you really want to risk that? Do you really want to deliver a dead baby, even if you

survive?” Angela looked at her parents. Tears were flowing from her mother’s eyes, and I could see her praying silently to herself. Her father looked grim. This was obviously a very difficult decision for them. I didn’t want to force anything on a family that had already seen enough troubles. “Think about it,” I said. “Talk it over with your parents.” “I will,” she said. “Thank you.” Two days later I returned with the rest of the team. “So, Angela,” I said, “what have you decided?” “Doctor, I know it may sound crazy to someone who didn’t grow up the way I did, but we just can’t go through with the abortion,” she said. “It’s against my religion. So I’m willing to take a chance.” She paused and smiled. “Besides,” she said, nodding over to her parents, who were still at their bedside vigil and looking at me intently, “we have faith in you.” I appreciated her confidence, but a part of me thought, how can you let a tenet of your faith stand in the way of your possible survival? Do you think God really wants to put your life in jeopardy? I realized almost right away, though, that this was not my decision to make—or second-guess. “OK, we will do our best.” And we prepared for a high-risk surgery. The next day Angela’s chest was opened and she was placed on the heart-lung machine, which now had the responsibility of keeping both mother and unborn child alive. I opened the chamber of the heart and, as expected, found a mitral valve completely destroyed. As I was replacing it with a porcine valve, the anesthesiologist who was monitoring the fetus called to me. “Arun,” he said, “the fetus’s heart is dropping.” A normal heartbeat for a fetus is around 140 beats per minute. I looked at the monitor and saw that it had already dropped to one hundred. Beep-beep-beep, then beep.... beep ... beep. I watched YourHeartMyHan_HCtext2P.indd 224 1/25/19 6:02:38 PM YOUR HEART, MY HANDS 225 it slow down before my eyes to forty, then to twenty, and then silence and an ominous flat line. We tried giving Angela various medications, but that didn’t work. The baby’s heart had stopped beating. There was nothing I could do now but try to finish the valve replacement as quickly as possible. All the while I imagined myself having to tell Angela and her family, without adopting an “I told you so” tone, that the fetus had died during the surgery. But then, just as I was closing, the anesthesiologist spoke up again. “Arun, look, it’s coming back,” he said. Sure enough, the ultrasound machine started transmitting again, slowly at first, but the beeps were soon back to normal. The fetus had somehow survived. I breathed a sigh of relief. But we weren’t out of the woods yet. During the time the heart was stilled, the vital organs could have sustained damage due to the lack of blood. This could have affected the brain development or caused other problems. Would Angela’s unborn child suffer from developmental disabilities? There was a good chance of that now. Normally a patient getting a valve replacement like Angela’s would have been out of the hospital in five days. But because of her situation—the stroke, the infection, the pregnancy— she ended up staying two weeks. The obstetrician followed the baby closely after Angela’s discharge and reported to me that it seemed to be doing well. Angela was progressing, too. Her heart and valve function soon returned to normal. She soon came back to the hospital to deliver her baby, a beautiful, blue-eyed, blond girl. I visited mother and daughter in the neonatal ward. “Thank you, Doctor, for saving my life,” she said. “And my baby’s.” “She’s so pretty!” I said. “What’s her name?” Angela looked up at me and smiled. “Hope.” In the months following the surgery, I learned that Hope had beaten the odds twice. Not only had she survived high-risk surgery, she was developing normally. Last I heard, Mom had started a new life outside of Fall River. My experience with Angela and Hope confirmed two important truths. First, despite all our advanced medical technology and experience, my team and I still could not predict with certainty the outcome. Most of the time we made the right decision based on the evidence at hand. This time we didn’t, and I’m glad we were wrong. The other lesson: it is the patients and their families who have to make the final decision. They must do what they feel is right for them, and that decision may involve factors beyond what I can see in a blood test or on an MRI. Ultimately, Angela’s case attests to the fact that

while it may be my hands at work, it is your heart, and your life. i Angela's involvement with drugs was only part of her story. But for more and more of my young patients, it became the somber, one-note symphony that echoed through their often-abbreviated lives. These were young adults who, under normal circumstances, would never have met me; they would have had healthy hearts and, I'm certain, far happier outcomes. But because they'd succumbed to narcotics—particularly opioids like heroin—they would arrive in my surgery with infected heart valves and virulent organisms growing in their bloodstreams, usually the result of sharing dirty needles. I never refused these patients treatment, and I tried not to judge them. But it was frustrating to see the hold that this stuff had on them. They shared some behavioral traits, too. At first these patients always denied that they were using. I'd confront them with medical evidence to the contrary and they would invariably swear they'd never do drugs again. It was so sad to see these young lives destroyed. No case was sadder than that of Luciana, a strikingly beautiful young woman who lived in Central Falls, a working-class community outside of Providence. Luciana was Venezuelan; she'd come to the US as a teenager and spoke English with what I must admit was a charming accent. In her late twenties when I met her, Luciana seemed to have it all. She was young, tall, blue eyed, with high, supermodel-like cheekbones. She had an engaging, vivacious personality and a good sense of humor. And yet her life was the proverbial train wreck. She came to me, like Angela, in gasping, confused distress. A cherry-size mass had formed on her tricuspid valve, located between the right atrium and the pumping chamber. The growth was the result of staphylococcus, a virulent form of bacterial infection. This usually responded to penicillin, but Luciana's was resistant, and for a predictable reason. She was using heroin, which of course she refused to admit. We performed the surgery, removing the mass and replacing her tricuspid valve with a bovine version. It went well, and a couple of days later I visited her. I realized that in some ways this was going to be the hardest part. I finally had to confront her about her drug problem. "I would never use drugs!" she said when I raised the issue. "I'm a mother, I have two little boys. I couldn't do that to them." I knew from the social worker that she'd had two boys from two different men, both of whom had arrest records and were heroin users. I explained to her that the nature of her infection was likely due to using infected needles. I tried to underscore the severity of the situation. "Luciana," I said, "without this surgery you could have died. If you go back to drugs, this will very likely happen again, and I can't guarantee that the next time it won't be fatal." She began to cry. "I didn't mean for this to happen. I want to be a good mother. I can't leave my boys alone." She admitted that not only had she used heroin, she had also become so desperate for money to afford her habit that she had resorted to prostitution. That day Luciana promised me that for the sake of her children, she would never use drugs again. I saw her annually over the next several years. She'd bring the boys with her—they'd sit in my waiting room with coloring books or, later, handheld video games. I was pleased: Luciana looked healthier and seemed to have put narcotics behind her. She was, as they say, "clean." Until one afternoon about seven years after her surgery. When she arrived for her annual follow-up, I could see the difference right away. She had always been thin, but now she looked emaciated, her eyes were sunken, and her skin was sallow. I watched her as she sat down in the waiting room with her boys. The normally attentive mother seemed distracted and jumpy. I knew Luciana pretty well at this point, and I also knew the signs of addiction. I didn't mince words. "Tell me the truth," I said when she sat down in my office. "Are you using again?" She looked insulted. "Dr. Singh!" she said. "I can't believe you'd ask me that. Of course not." "You've lost a lot of weight, and you don't seem like yourself." "It was the South Beach Diet," she said, waving her hand dismissively. "A mistake. I'm back to my normal eating." "Really? You're not using drugs?" "I swear to Jesus Christ!" she exclaimed theatrically. "OK," I said skeptically. "You're sure? You know it will turn

up in the blood test if you have.” She looked down at her knee-high boots. “Well, I haven’t been using them recently,” she said. Luciana came back one more time, a few weeks later, to discuss the results of her blood test, which had confirmed my suspicions. This time I noticed that the boys’ demeanor had changed, as well. They were old enough now to be aware that something was not right with their mom. Even though they sat quietly in my waiting room doing their homework, I could see by the way they looked at her that they were concerned, too. When I presented the results of the tests to Luciana, she cried. She then recited a familiar, but not unreasonable, tale of woe. There was no means of support for her boys. Her family back in Venezuela was poor. The two fathers were gone, probably in jail. She finally confessed that she had gone back to heroin use “once in a while,” and that on occasion she had again resorted to selling her body for sex to support herself and the boys. She also acknowledged that, with this kind of behavior, she was putting her life in jeopardy. “I know the next time it might be too late for you to save me,” she said. “But what choice do I have?” I wanted to tell her that options might be open to her, and that she needed to go back to social services and talk with a social worker to figure out how she could avail herself of them. But I knew that she had gone that route once, and while it had worked for a while, she would probably dismiss it this time. For once I really had no answer. These were problems that my medical training had not prepared me for. I walked her out to the waiting room to say goodbye to the kids. I had a feeling this was the last time their mother would be visiting me as a patient. “Mom’s taking us to McDonald’s after this!” said the eight-year-old excitedly. I subsequently lost touch with Luciana and her family. A few years later, I did inquire with a social worker who’d known her. She said that as far as she was aware, the boys—by then in their teens—were doing well. Their mother was alive, but like so many others caught in the grip of addiction, she was still struggling with her demons. While it started in the 1980s, AIDS was still prevalent in the late 1990s and early 2000s. Whether care should be provided to these patients was a hot topic of discussion among health-care workers. Part of this, I’m sure, was the result of homophobia, at least in the initial stages of the epidemic, when it was seen as a “gay disease.” But later the debate turned on the dangers to those of us treating the afflicted. There were stories of EMTs, nurses, and physicians who had contracted the disease because they were accidentally exposed to an HIV-positive patient. I recall several of my surgical colleagues saying at a meeting that they would refuse to operate on a patient with AIDS. While I respected these men as professionals, I was outraged by this attitude. “So what are they supposed to do?” I asked. “Just go off somewhere and die? Or maybe we should put them on an island somewhere, like a modern-day leper colony?” Things got heated, although at Rhode Island Hospital it was mostly hypothetical until the day an AIDS patient was brought in for surgery. His name was Robert. He was thirtyfive years old, Caucasian, and an army veteran who had served in the first Gulf War. He also happened to be gay, and had probably contracted the disease from his male partner. Sadly, he had also been using drugs. As a result his aortic valve (the valve between the left pumping chamber and the main artery, the aorta) was leaking severely and his heart was quite enlarged. He could neither breathe nor lie flat due to severe heart failure. I met with the infectious disease specialist. Given the nature of AIDS treatments at the time, he told me that surgery could likely prolong Robert’s life another four or five years. If he didn’t have the procedure, he’d surely be dead in another month or two. It was our responsibility to help Robert. I gathered my team and told them that we’d be working on an HIV-infected patient. They weren’t happy. I understood their concern. In cardiac surgery we are awash in blood. It was not uncommon to get accidentally pricked by a surgical needle or splashed with blood during a long surgery. The fear at that time was that the slightest exposure could result in contracting the disease from the patient. “Arun, why should I put my life on the line for him?” asked one of our technicians. “For a lot of

reasons," I said, explaining that this man worked full time and had served his country honorably. "And maybe the most important reason," I said, "is because it's our job. We're here to save lives." It was the closest thing to a locker room speech I ever gave in my entire career. And I think it had the desired effect. The team reluctantly went along because they knew that, as the surgeon, elbow deep in this man's guts, I'd be taking the biggest risk. I won't pretend I wasn't a little nervous, too. How could I not be? But the preparation for Robert's operation was meticulous. We took all the precautions. My entire team of ten donned double gloves, gowns, masks, eyeglasses. We looked like a phalanx of robots walking into the OR that day. The surgery went smoothly. The valve was replaced and the patient was doing well. As I was putting in the last stitch, I was distracted—looking at the monitor, and asking one of my technicians a question—and the needle pierced Robert's body, right through my gloves and into my finger. Blood began to trickle out. For a moment we all froze. Quickly I squeezed my finger to allow it to bleed. I washed my hands with soap and water, then with Betadine, a highly concentrated disinfectant used to cleanse patients before surgery. And I prayed. As the team somberly finished up, I tried to cut the tension. "Well," I said, "the patient will survive. We'll see about the doctor." I don't remember if anyone laughed. I tried to reassure myself that the odds were very slim that I would contract the virus, because I had been stuck by a solid needle rather than a hollow one. But I was worried enough that I didn't tell Barbara. I just didn't want her and the boys worrying. Of course, I could never completely get it out of my mind. I now had to be tested periodically for HIV. A half dozen negative tests and ten years later, I was told that I could stop worrying. As for the patient, he returned to work. A few years later he moved out of state (not uncommon because of the stigma associated with the disease, particularly in that era). It is my fervent hope that, with the advances in our treatment of AIDS, Robert is still alive and well today.

i Near the end of my career, I was asked to see an Ethiopian girl in her twenties for a serious heart operation. She had just arrived a few days earlier from Addis Ababa, I was told, and had been taken to Providence, where she had a friend. When I walked in to examine her, I felt transported in time back to Darbhanga Medical College Hospital. There, as a young intern, I had treated the indigent people of the city. They were often stick thin, malnourished, and with an aura of death surrounding them. This was the first time I'd seen someone like that in America. I was shocked by her appearance: she weighed ninety pounds, was missing teeth, and had sunken cheeks and a distended belly. Addisalem was her name, and the friend who was there to translate told me that she was twenty-six years old. I would have guessed forty. Addisalem was clearly malnourished. But even though she now had access to better nutrition, she had developed serious heart disease because of her long period of starvation and a bout of rheumatic fever, a disease that has long since been eradicated here but is not unheard of in the third world. She was going to require triple heart valve replacement surgery. Her valves were as unsteady as she herself was on her feet. There had been no surgical therapy available for her in Ethiopia, and she had applied for an emergency visa for humanitarian reasons. Her application had been put in a pool for a lottery. She'd won, and had been granted a visa to come to this country, if she didn't die en route. As her friend explained this to me, I couldn't take my eyes off Addisalem. This girl's appearance reminded me of the sad young women I had seen in India. They'd come in looking much like her, desperate for help. But there had been no surgical treatment available for them in a poor place like Darbhanga, and most of them had ended up dying on the floor of our aptly named casualty room. They had been casualties, I realized now, of a failed society. Then it dawned on me: by God, this was now my chance to do something I could never do for those unfortunate women. ". . . Addisalem wants to know if you can make her better, Doctor," concluded her friend. I snapped back to attention. "Yes," I said, perhaps with more conviction than she expected, as the interpreter was slightly taken aback. "I mean, absolutely. Tell

Addisalem that we're going to fix her and make her feel better." And we did. A triple valve replacement is a long and involved operation, and because of her chronic malnutrition, her recovery took longer than a typical American patient's. But she did recover, and, with adequate nutrition, her health was fully restored. Addisalem subsequently learned English and got a job in a restaurant in Providence. During one of her follow-up visits, I asked her what her beautiful name meant. It was Addisalem herself who answered this time. "It means new world," she said, smiling, "like here." Addisalem later moved to New York to start a new career. I was so happy to see her making her way in the New World and her American dream. I was usually glad to see my patients in their follow-up visits. As with Addisalem, in the vast majority of cases, I was seeing improvement. Lives (and internal plumbing) rebuilt, and lives moving forward. That was not the story with Carl, when I first met him in my office for a consultation. I hasten to add that this was not because I disliked him. On the contrary. While Addisalem had been a victim of the dire conditions of her third-world homeland— where outbreaks of famine were all too common—Carl was a victim of overabundance. You could say that he and similar patients were victims of the American lifestyle. Men, often in blue-collar jobs, who worked hard and played hard, dismissing or simply ignoring the growing evidence and public health warnings about smoking, diet, and sedentary habits. When I met him, Carl—a machinist by trade—was fortythree years old and had amassed 235 pounds on his five-foot, seven-inch frame. That he needed coronary artery bypass surgery should have come as no surprise to anyone, given his lifestyle, and I suspect that's one reason that when he first came in for an appointment he was anxious, tense, and restless, pacing in my waiting room, while his wife sat quietly reading People magazine. When I examined him, I took a page out of my old medical school professor's book. Dr. Desai's first question to every patient had been about their most recent meal. He, of course, had been using that question to determine who was genuinely indigent and who was merely trying to get free hospital care. In this case I wished to confirm what I suspected already as the cause of Carl's coronary artery disease. Carl acknowledged that his diet consisted largely of doughnuts, cheeseburgers, and fries, typically washed down by beer. Oh, and he smoked two and a half packs of cigarettes a day. Exercise? "Yeah," he said, managing a weak joke. "As soon as I get off work on Friday night, I run to the bar." Very funny. Not only was Carl's lifestyle an almost guaranteed ticket to the cardiac care unit, so was his family history. His father had died at age fifty-seven of a heart attack; his mother had been killed by a stroke at sixty-one; Carl, who had three children ages thirteen to seventeen at the time, had not seen a primary-care doctor for a quarter century. I shook my head as he relayed all this. "Carl," I said, "if you had deliberately made it your mission in life to have every risk factor in the books for a heart attack, you couldn't have done a better job." He looked sheepish. "I know, I know. She's always on my case about losing weight and all that," he said, jerking his head in the direction of his wife, who sat stonily. "But. . ." He threw up his hands in a gesture that suggested he had no control over his doughnut consumption. Now he could hide from it no longer. A few weeks prior, he had started having chest pain and noticed shortness of breath. He'd tried to ignore it, thinking it might be acid reflux. A week of taking over-the-counter antacids had done nothing to improve the symptoms. One night he woke up with severe chest pain and couldn't breathe. His wife called 911, and he was rushed to a local hospital, where tests revealed he had had a heart attack. They also found that he had high blood pressure, mild diabetes, and elevated cholesterol, for which he'd never received any treatment. Further tests revealed that all his arteries were severely blocked. He was no longer a candidate for a coronary artery stent—the typical treatment for men suffering from this kind of "lifestyle" disease. Now Carl's best chance for survival was coronary artery bypass surgery. That's why he was sent to me. This was a common story. "I hate to tell you this," I continued after studying his test

results, “but on the inside, you look like an eighty-year-old man. You’ve got advanced heart disease.” He pursed his lips and looked at the floor like an errant schoolboy as his wife glared at him, shaking her head. “The good news is that I can fix this,” I said. I told him that the chance for a successful surgery was 99 percent and that he would probably be able to return to work as a machinist in three months. He perked up momentarily. “And I have more good news,” I continued. “This means you have a second chance at a healthy life. Stop smoking, lose weight, and get the diabetes and high cholesterol under control, and you will be fine.” At this, Carl—seemingly upbeat a moment earlier—broke down in tears. “Whatever you say, I’ll do it, Doc,” he said. “I just want a chance to see my kids grow up.” I reassured him that he would have that chance, if he took his lifestyle change seriously. As we were about to leave, Carl said he had one last question. A bit embarrassing, he admitted. I reassured him: “You can ask me anything.” “This surgery. How much is it going to cost?” It turned out that like some of the blue-collar workers I treated—but certainly not all—Carl had very little health insurance. He’d used that as an excuse for not seeing a primary-care physician. While I doubted he would have even if routine annual visits had been covered on his plan, I was concerned for him. The cost of a heart operation varies from state to state, but in Rhode Island at that time, around the year 2000, it was approximately \$100,000. That was way beyond Carl’s means. I arranged for him to meet with a social worker in order to get financial help. A week later I performed quintuple coronary artery bypass surgery on Carl. It went well. A few months later he returned to my office. I almost couldn’t believe it was the same person. He had lost significant weight and had quit smoking. He was walking regularly, taking his medication, and eating healthier. “Carl, you look great,” I said. “I’m very proud of you.” He confided to me that money was still an issue, but that he was determined to stick with his healthier lifestyle. His new primary-care physician would now monitor his progress. “Keep up the good work, and listen to what your doctor tells you,” I said. We shook hands, and he departed. Twelve years went by. I was near retirement when one evening I got an emergency call at home, telling me I needed to get to the hospital right away. “It’s an old patient of yours,” I was told. It was Carl. Now in his mid-fifties, he was almost unrecognizable, as he looked like a man in his seventies. Carl had rolled back all the improvements he’d made a decade earlier. He’d gained all the weight back. He’d resumed his two-pack-a-day smoking habit. He had stopped taking the cholesterol medication because, as he’d told his doctor, he couldn’t afford it. There was little I could do at this point. Two out of five of the bypass grafts I had done twelve years earlier were now closed, and all his native coronary arteries were blocked. He was no longer a candidate for reoperation or stents. While medication eased his symptoms, this script was now pretty much written. Fourteen months later he died in his sleep at age fifty-six, presumably of another heart attack. Carl’s decline and death, after such a promising restart, saddened me. His case is a reminder that patients have to take some responsibility for their own well-being. Surgery can repair a leaky valve or create a bypass to blocked arteries, but it is no match for a lifetime of smoking, poor diet, and an otherwise unhealthy lifestyle. Carl’s situation is also a sobering reminder of what I consider to be our great national shame: the lack of a workable, fair, cost-efficient health-care system. I’m not a health policy expert, and I don’t presume to have the answers. But I do think it’s just outrageous that in this country we do not have universal health care. It’s bad for our economy, our society, and our public health. It must change. How? I don’t know. And apparently neither does anyone in Washington. To be fair, I have lived and worked as a medical professional under three forms of health care: our current system here in the US, which is bankrupting this great country; the national health-care system in Great Britain, which, despite its many fine hospitals (such as Great Ormond Street), is ponderous and inefficient; and, of course, the almost nonexistent third-world health-care system of the India of my youth. All leave much to be desired. I

think it will be up to the next generation of political and medical leaders to find the solution. And it is about such future leaders I would like to speak. Those aspiring to careers in medicine were always welcome in my operating room. Whether they were premed in college, medical students, residents, or established medical professionals, such as nurses or physician assistants, I was always willing to take time to teach or show them what I was doing. I also encouraged the young people who visited to stick with their studies. Becoming a physician or surgeon is a long, hard path, but worth the effort. It is, I still believe, a wonderful profession. In how many other professions do you have an opportunity to save lives, contribute to the good of society—and get well rewarded for it? Sometimes the route that these students took would surprise me, to say the least. One day in the 1990s, I was performing surgery on an eight-year-old boy named Kyle. The child's condition was one I have mentioned before: tetralogy of Fallot. He had been born with a hole between the lower chambers of the heart and excessive heart muscle in the right chamber. It was the same procedure I'd performed on Jason, the first baby I'd ever operated on. Fortunately, the outcome this time was better. The operation was going very smoothly. The child's chest was open; the heart was supported on the heart-lung machine. I opened the chamber of his tiny heart and carved out extra heart muscle blocking the passage of the blood to the lung. As I was ready to apply the Dacron patch to close the hole in little Kyle's heart, I looked around the room. On this day a few medical students from Brown University had been invited to observe. One of them, a lovely young lady with blond hair, freckles, and blue eyes, looked particularly attentive and serious. When I caught her eye, however, she looked down, almost embarrassed. I asked her a few questions about the procedure. I do this not to put any medical students on the spot, but to help them learn. "Are you aware of the procedure we're performing here today?" She was, and she correctly identified it. "Good. Do you know what we're doing at this point?" She did. "You're about to patch the hole with a piece of Dacron cloth." "Very good," I said. I queried her further and was impressed with her answers. "You've done your homework, young lady," I said. "Well," she said, "I had the same procedure as a child, so you could say I'm pretty familiar with it." "You did?" I said. "Where did you have it done?" I expected her to say Boston, since that's where a lot of children had gone for heart surgery before I started the program at Providence. "Why, right here," she said. "You did my surgery." I must have stood there, frozen, for almost a minute with my forceps and Dacron patch held in midair. I couldn't believe it. I asked her name. When she told me, of course I remembered her and her parents. She had been the same age as this patient—about eight years old—when I operated on her. Now she was in her mid-twenties. "Jenny," I said, "I am so happy to see you here." Dr. Jennifer Souther, I can proudly say, completed medical school and became a primary-care physician in Rhode Island. Back in the 1980s, I closed the hole between the lower chambers of the heart of a four-year-old girl named Maria. A few weeks after the surgery, I got a letter, written in the hand of a child. I thought it might be from one of my young patients. But it was from one of Maria's neighbors in East Providence, a nine-year-old boy named John. He had seen how quickly his little friend had rebounded from surgery. She was already running around and playing with the other kids on the block, which she couldn't do before. Young John complimented me for doing such a good job. "Maria is doing really well," he wrote. "Thanks for taking such good care of her." I remember chuckling at the time at receiving such a letter. "Fan mail from a patient's neighbor," I told Barbara, handing her the note when I got home that night. "That's sweet," she said, smiling as she read it. "Isn't it nice to know that a nine-year-old appreciates your work?" In his letter John also said that he hoped to become a doctor someday and asked me for advice. "Study hard and get good grades" was the stock response. But I also told him that you had to have drive and passion to become a physician. It was a long road, I explained, and it would take many years, but I wished him

the best of luck. I never heard back from him and remember thinking that maybe I had unintentionally dissuaded a nine-year-old by telling him that his medical training would take ten years. A decade or so later, I was just about to scrub for open heart surgery when an orderly popped his head in the operating room and asked if he might watch the surgery. "Of course," I said (these were the days before HIPAA laws, I hasten to add). While I was performing the operation, the orderly, who was around twenty-two years old, stood at the head of the patient, approximately four feet away from me, watching and listening intently as I explained every step. After the operation was done, I asked him if he had any questions. "No," he said. "By the way, you don't know me, right?" "I don't think so," I said. "Did I operate on you or someone in your family?" "No, but you encouraged me to become a doctor." "I did? When?" He took out a letter and flashed it at me. It was in my handwriting. "I'm John," he said. "I wrote you after you did surgery on one of my neighbors, a girl named Maria. I told you I wanted to be a doctor, and you were nice enough to send a few encouraging words to a nine-year-old kid you didn't even know." "I do remember this!" I said. "Well, how are you, John?" "Great," he said. "You told me about how I'd need good grades, passion, and drive. Well, next year I'm starting medical school and I'm psyched." I was amazed that a note I had scribbled to a kid years earlier had made such a difference in his life. I'm happy to say that John went on to medical school in New York and became a primary care physician. Many of my young patients have gone on to successful and interesting careers outside of medicine. I never know when I'm going to run into them. One day I was at a medical conference at the Hotel Providence. There was a lot of commotion in the lobby. I saw TV crews and cameras. I walked over to the scrum of media to find out what was going on. At that moment a beautiful young woman with a tiara on her head and a sash across her red carpet-worthy dress—with the words "Miss RI" on it—was being escorted into the lobby by two gentlemen. She saw me, and, as if by design, the little entourage suddenly veered in my direction. To my shock, Miss Rhode Island came right up to me and planted a kiss on my cheek. I blushed as reporters and hotel staff looked at me quizzically. "Dr. Singh," the beauty queen said, "my parents noticed you here earlier. Do you remember me?" She had been a premature baby and I had performed heart surgery on her. She had probably been as big as my hand at the time, and now in her high heels and crown she towered over me. "You've certainly grown up," was about all I could manage. Her parents then came over, and we enjoyed a brief but pleasant reunion. And I got my picture taken with Miss Rhode Island! While they're not all doctors or beauty queens, I do regularly see and hear from my patients of all ages. I can't tell you how gratifying it is, considering the obstacles I've overcome, the hardships I endured as a child, and the challenges I faced in my training and over the course of my career. It's all worth it when those patients or their family members look me in the eye and tell me that they are alive today because of me. At moments like that, I would not trade my career for anything. But a few years into the new millennium, it became apparent that my career was coming to an end, whether I was ready or not.