

Chapter 2

Medical School and Beyond

At last I was a medical student, on my way to becoming a real doctor. I was back in my hometown, living in my childhood home and the world was about to open up for me. I'd been waiting for this all my life.

During our first orientation session, I met a student who would become one of my best medical school friends. Julian Atkinson was from the upper part of the state and a graduate of The Citadel Military College, but he was quite the opposite of the square-shouldered, self-confident, rigid, military school-type so many of us imagine. He was a country boy, a hunting-and-fishing Baptist (without the Bible quoting) who had probably never been farther than twelve miles from home. He was a wonderful member of our four-man anatomy team, and he was the only person in the class more nervous than I, or more compulsive, although he would never admit it.

As medical students, Julian and I shared a special part-time job. On Saturday mornings, we were paid ten dollars to drive more than five hours to Columbia, the state capital, in the Medical College truck and bring back the cadavers of unclaimed bodies from the state mental hospital. In those days, there was no interstate highway, and we had to pick up some ice to keep the cadavers cool. I'll always remember the look on the faces of the ice workers when we drove our truck

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in, opened the box and said, "Please give us a load of ice before we go fishing."

During one Saturday morning cadaver run, we stopped in the town of Holly Hill so Julian could visit the restroom and buy a pack of cigarettes. As I waited in the truck, I heard a tap on the door. It was a hitchhiker we had passed about a mile back. He asked if he could have a ride to Charleston. I explained that we were medical students taking some cadavers to the school, so there was really no place for him to sit. The hitchhiker said that was fine with him; he himself was a pre-med student. He would be happy to ride in the back.

The young man climbed in the back of the truck. When Julian returned I either forgot to tell him that we had a hitchhiker or, more likely, couldn't resist the opportunity of giving my friend the fright of his life. We'd gone a few miles down the highway when Julian opened his pack of cigarettes. Our passenger, who could see us in the front seat through a glass window, decided he'd like a smoke too. He tapped on the window, and Julian swallowed his cigarette. To this day, I believe I saw cigarette smoke coming out his nostrils.



Much of the time we medical students affected an irreverent, jokey attitude toward the part of our education that had to do with dead human bodies. Of course, our so-called humor was our way of deflecting our unease at dealing with the human body.

We named our cadaver Ernest (because we were working "in dead earnest"). Not everyone appreciated our sense of humor. The three female students in our class were not amused at all when, the first night after receiving our cadaver, while they were washing the body, we childishly made disrespectful comments about their having been issued a male specimen. Although cadaver naming may

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still go on, our other pranks would now be considered unacceptable by students. Fortunately, on my third day of medical school, I received one of the most dramatic lessons in all my four years.

The anatomy laboratory housed multiple sets of skeletons and partial skeletons. These teaching materials were fragile, and at the beginning of each school year the broken parts were collected and incinerated. We students saw an opportunity for a souvenir—portions of the skull made marvelous ashtrays.

Our anatomy professor had spotted the loot protruding from our briefcases and back pockets as we left the lab. The next day, when we were all assembled for the morning lecture, the professor brought out the box that held the bones. He was so upset that his fiery red face suggested an impending stroke and his usually disciplined posture assumed the position of a coiled rattlesnake about to strike.

“These bones were once part of a human being,” he said. “Perhaps they once supported a mother worried about her children because she was, no doubt, a pauper. When she died, her body came to us because her family could not afford her mortuary expenses. Or the bones may have belonged to a patient who suffered from a painful illness that ultimately killed him. Had he lived longer, medical science might have found a way to save him.”

Our professor firmly informed us that if we could not, at this early stage in our career, respect a dead human body, we would never be able to understand and appreciate a live one.

“Imagine whatever you like about the person your cadaver may once have been, the pleasures and disappointments that were experienced by the person it once was. But if you cannot treat the dead with consideration for who they were in life, please leave the classroom immediately. There is no place in medicine for you.”

That was all it took. We never spoke of it again, but none of us ever forgot it.

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A skeleton was one kind of medical school teaching model. When I was a student, we had another kind as well. We had Miss Fanny Warshavsky.

Today, medical education has sophisticated teaching devices at its disposal. In addition to computers, there are elegantly constructed mechanical mannequins that can be programmed to simulate patients with various diseases. We had none of these devices, but we did have live patients, such as Miss Fanny, eager to demonstrate their symptoms. They were rewarded, if not with a medical cure, then by having a permanent home and plenty of sympathetic students to listen to their problems and take an interest in them.

The thought of a patient with a chronic disease living in a hospital and receiving expensive care for years is almost unimaginable today, but Miss Fanny was such a patient. She had developed severe and crippling rheumatoid arthritis, and had come to live quite comfortably in the hospital. She could neither walk nor feed herself, but she helped teach thousands of students about this most painfully deforming disease, as well as about courage and strength.

Miss Fanny patiently demonstrated the ravages of her disease to students, interns and residents in language that each could understand, depending on the stage of his training. Many a candidate for a specialization in internal medicine was examined at her bedside, and woe unto the inconsiderate student who unceremoniously threw off her bedcovers, failed to introduce himself or showed the lack of respect for a charity hospital patient that was pervasive among many medical students at certain stages of their careers. She had no compunction about feeding incorrect answers to a student she did not like, or, for one she did approve of, fully preparing him with the questions she knew would be asked. She was both a teaching machine and

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a human set of crib notes. All of her students left school with special knowledge about rheumatoid arthritis. More importantly, they never forgot the person with the disease. There were a few other resident teachers in our wards, although no one as memorable as Miss Fanny.

My mother had introduced me to Miss Fanny when I was ten years old, and I began visiting her as part of my family's plan to steer me to a career in medicine. No one was prouder than she when I first came into her ward wearing my medical student's white coat. I know she was proud because when we received our white coats, my family and I stood in front of the mirror for a full five minutes; Miss Fanny had me stand there for fifteen minutes. I never told anyone, but actually I had stood alone in front of the mirror admiring myself for twice that time. In the history of medicine, no stethoscope was fitted in so many positions in two pockets of a medical jacket and admired in such detail. I truly believe it was Miss Fanny's connections with the angels of heaven that secured my acceptance to medical school.



My memory of medical school consists mostly of people rather than events. Not only people, but pictures of people framed in sequence, as in a comic strip. When I remember them, it's as if I were reading their stories in the little balloons above the pictures.

For example, Dr. Andrews was a researcher and part-time instructor in anatomy. He was an “interesting” person, which euphemistically means we found him a little strange. He didn't socialize very much with humans—in fact his hobby, social life and research were devoted entirely to the psychology and well-being of apes.

Dr. Andrews had a federal grant to study a group of chimps, which were allowed to share his life and daily

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activities. He shunned intimate contact with humans, so there was no danger of his acquiring a wife to interfere with this research. It was not unusual for Dr. Andrews to take his subjects to drive-in movies or fast-food establishments, so most of the city was aware of this unusual research project at the Medical College.

Since my family occasionally invited my friends for dinner, I brought Dr. Andrews and two of his better-behaved chimps home for a kosher Friday night dinner. I don't recall most of the details of the evening, except that my mother insisted that the chimps wear yarmulkes to appease my grandmother, who was very much the traditionalist.



Much of what I learned during medical school was not on the formal curriculum, such as a very dramatic lesson I received on the power of belief. During my relatively innocent young life, I had never experienced drugs. I had barely even heard of marijuana until our second course of pharmacology. There, on the shelf of our laboratory, sat a massive, translucent bowl labeled “Cannabis. Do Not Disturb.”

I was curious as to what it would be like to smoke some of this material, and not just from a scientific standpoint. What would this do to enhance my weekend enjoyment, and what fun would I have smoking something that would, no doubt, produce all sorts of new sensations? I considered the research possibilities for five days. Finally, on the sixth day of class, I stopped by the lab after hours and took a quantity home to my room. After double-locking the door and parking my car around the corner in case anyone thought to drop by, I lay down on the sofa and began smoking.

While the thrill seeker in me was busily smoking, the scientist/detective in me was taking copious notes about my

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reactions. I described in detail the feelings I had: flushing in the head, tingling of the scalp and tightness in the chest. I felt that I could conquer anybody and anything. I experienced other sensations that were apparently unique to smoking cannabis. But as these receded, there was one other feeling that I couldn't shake: the feeling that I had done something quite wrong. I did not get much sleep that night.

On the seventh day, there were a number of bleary-eyed students filling the seats of the pharmacology class. The instructor began by pointing to the bowl of cannabis on the shelf.

"That bowl was full at the start of the term, just a week ago," he said. "It is now nearly empty, and I know why." He went on to say that he knew that many had participated in this act of curious clinical investigation. He then surprised us by announcing that he was undertaking a government-sponsored research project. He wanted to know, objectively, how smoking cannabis affected medical students who were bright, capable of giving a good history and able to describe their symptoms. He promised that there would be no repercussions for any illegality incurred during our "research."

I volunteered. I was particularly proud that I had kept written notes; only two others in our class had done so. We opened our notebooks and shared our scientific observations with the class. At the conclusion of our presentations, the instructor thanked us.

"Now, I have something to tell you. That bowl contained not a shred of cannabis. It was 100 percent Prince Albert smoking tobacco. I'm afraid your well-recorded sensations were all in your imagination."

The lesson so thoroughly taught by the instructor was, of course, the power of the mind, as well as the potent medicine of placebos. I was too amazed to be embarrassed at my gullibility. I have since made sure that those magic pills—placebos—are always part of my black bag.

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I loved lab exercises in medical school. They were my chance to indulge my passion for detective work to the hilt. But there was one lab in our sophomore year that threatened to run away without me.

The experiment was designed to demonstrate the symptoms and treatment effects of thyroid disease. We students were to take vital statistics—such as pulse, respiratory rate and other measures of metabolism—of a laboratory rat, then sacrifice the animal and study the tissues. The exercise called for performing a thyroidectomy, or removal of the thyroid gland, after all of the data had been obtained.

My lab partner and I disagreed considerably over the proper technique to use in the thyroidectomy. I must have been right, because three of his rats died after his procedure, and after we had spent a lot of time getting their basic metabolic data. (He failed the task, left medical school and, I believe, is a very successful businessman today.) In any case, I still needed to pass this course, but since each of our rats had died, we could not complete our assignment.

Then I had an idea: radioactive isotopes were just beginning to be used in treating hyperthyroidism, or an over-reactive thyroid gland. I thought that if we could give the rat radioactive iodine to destroy the gland, we would have a live subject from which we could continue getting a metabolic evaluation.

But I forgot one thing: there would be no scars or marks on the rat's neck. There were hundreds of rats in the cage, and they all looked alike. How could we identify our rat in a cage full of many other rats that had not had surgery?

Then I had another idea: I could use a Geiger counter to determine which of the rats had been heavily exposed to radiation. I borrowed a hand Geiger counter and came back late that night. I stretched out under the cage, pointing the Geiger counter upward, and after a very long time I finally

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isolated the rat. At that moment, a group of my classmates walked into the lab. Imagine their surprise when they saw me under the cage. Imagine the awkward explanations, the hilarity, the whispers in the hallway the next day. One classmate recently told me that this was the only thing he remembered from his sophomore year of medical school.



In medical school I learned how to extract every bit of information I could about the patient in the time we had together, but I never had enough time to know the patient as well as I would have liked. I learned how to use the tools of my trade—the stethoscope, the otoscope and all of the other scopes available—but I learned quickly that my eyes and ears were my most important “scopes.” I also used many of the complex instruments and the array of laboratory studies that were becoming available to the modern physician. I saw the importance of learning the history of medicine, which teaches us through discoveries of the past to be alert to unexpected clues given reluctantly and only for a very fleeting amount of time. Those are the clues that will lead to medical discoveries of the future.

No physician, young or old, believes that all of those marvelous medical discoveries are due to the brilliant planning of the scientific profession. Most of what passes for planning is really the result of serendipity, or discovery by chance. There are plenty of examples in history. It’s a good thing for all of us that Dr. Joseph Lister observed the destruction of a bacterial mess in the city drains when carbolic acid was thrown in as a cleansing agent. And a good thing when the agar molds in Dr. Alexander Fleming’s laboratory were contaminated by some escaped fungus material, floating up the stairway from the allergy laboratory on a lower floor. This led to the discovery of penicillin.

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Planned reasoning, on the other hand, led Dr. Fredrick Banting, an orthopedic surgeon, after a sleepless night, to think through the currently known information about diabetes and to reason out the treatment by insulin of this disease. The same type of planned reasoning was used in the discovery of the cause of AIDS.

There have been serendipitous discoveries and planned discoveries; the physician must be aware of both. But during my years of practicing medicine I have seen certain serendipitous situations occur that have made major advances in medical knowledge.

As a sophomore student in bacteriology, I was asked the question that has been asked of medical students for over a hundred years. Toward the end of the Civil War, deaths from amputation, the most common surgical procedure, were much greater in the North than in the South, even though the surgical technique was the same. Why?

Supplies of foodstuffs and medications were considerably worse in the South due to the naval blockade. In the North, there were factories, better agricultural production and generally a superior ability to outfit the troops with the needed materials to maintain health. Scientists and medical professionals looking at these facts would assume that the North would have a far better survival rate from amputations, but that was not the case.

The answer, when we realized it, was very simple. The Northern blockade effectively prevented any imported goods from entering the Southern states. One of those imported items, which probably seemed dispensable at the time, was silk thread. Confederate army doctors needed something else with which to suture wounds, and a common substitute was horsehair, which was quite strong, but kinky. In order to straighten it out, it was necessary to boil it. Without knowing it, Southern surgeons were sterilizing their equipment, with the resultant dramatic saving of lives. It took almost a hundred years for this mystery to be solved and, like the discovery of insulin, the answer was found by reasoning. We don't know

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who solved this mystery, but the information continues to be helpful. Now researchers consider sociology and history in understanding disease (for example, in the relationship of homosexual behavior to HIV). As a young doctor, I became more and more appreciative of the largess bequeathed me by my predecessors in medicine. Down the road, it would inspire me to make my own contributions.



It is a cliché (but like many clichés, it's true) that doctors hold their patients' lives in their hands. It is a great responsibility, one that has become heavier in recent years, with new medications that either help or harm depending upon the side effects of the drug given. Furthermore, medications have so many potential side effects that the physician must keep constantly abreast of all new drug interactions. The proliferation of new drugs with potential for harm may explain why pharmacy bills are high, why research and development of drugs are so expensive and why approval of apparently useful drugs seems endlessly delayed. It means that every effort should be made to prevent errors.

I learned this lesson while I was a sophomore medical student. We were asked to solve a very complex medication problem. The correct answer depended upon knowing a number of detailed clinical facts and converting these facts into a proper dosage for the patient, involving rather simple arithmetic but quite a few mathematical steps. The difficult part was obtaining all the clinical facts. I spent days gathering the facts before I finally turned in my paper. It was returned to me with the ignominious grade of zero.

I was very upset. There were as many as a hundred facts necessary to solve this rather complex puzzle, and I had done everything correctly—except that I had misplaced a decimal point. That was just a simple mathematical error, I thought.

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I obviously knew all of the other facts because I came to the right answer, with the exception of the decimal point.

I went, in some agitation, to see the professor. He looked me straight in the eye and said, “Mr. Banov, you are absolutely correct. You did all of these steps correctly. You knew a complex amount of information, and you did a splendid job. There is only one problem. Were this a real clinical situation, you would have just killed the patient by giving him ten times the dosage that he should have received.”

That lesson helped me prepare vaccines and extracts for people with allergic problems. In immunology, picking up the wrong bottle could result in a mistake of 1,000, 10,000 or 100,000 times the dosage. We tell our students that they might make an error and give two antibiotics one day instead of one, or three or maybe four. But there is no way they would be stupid enough to give 4,000 or 400,000 times the dose. Or is there? All they'd have to do is make one mathematical decimal point error, and the patient dies. They get the point. Constant attention to the possibility of making a decimal point error keeps us continuously on our toes.



In medical school, lessons about respect for the human body apparently needed periodic reinforcement. This we received in our junior year, during training in physical diagnosis. In the obstetrics clinics, for example, it was the fashion for students to wear the bloodiest shoes and socks possible. This meant that the wearer had been up all night studying and could not spare the time for sleep or a change of clothing.

Far worse was the insensitive attitude of the male students when approaching a female patient for a pelvic examination. Rough, cold, gloved hands and an unsympathetic attitude were the order of the day. There was no one to correct the eighty medical students in our class—no one but the female

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students, who had already suffered from the tasteless jokes and inappropriate humor of their male classmates during the past three years. Three years, it turned out, was plenty of time to plot their revenge.

Medical students and physicians in training at all levels make bets continuously about every possible subject—for example, whether a certain lazy professor would again reuse a previous exam rather than write a new one. Our two female classmates, newly minted junior medical students with starched white coats, had acquired a few IOUs from bets lost by their classmates. Now it was payback time.

At one weekend party, while enjoying a bit too much wine, a few male students promised that we would repay our debts to the female trainees. This seemed safe enough. After all, how bad could the payback be? We soon found out.

Recently returned from the gynecology rotation, they wanted us to see how it felt to be on a cold examining table with some indifferent, gum-chewing male examiners probing and prodding. Although I prefer to forget the details, I do remember the fear that these gals inspired in us as we went through the “experiment.” Our female classmates taught us a lesson in respect for the patient that has lasted a lifetime. The experience made a big impression on me and I asked (and the other students followed my lead) to be allowed to swallow gastric tubes, have intravenous lines inserted and even have a rectal exam—the ultimate in male indignity—so that we would be able to truly empathize with the patient. I now insist that all of my students and residents in training, when possible, try to experience some of the procedures commonly done on patients. It has certainly made all of us more caring physicians.



In his entire career, a physician never feels as knowledgeable and self-confident as he does at his medical school graduation.

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But that feeling dissipates with amazing speed. I remember entering Milwaukee County Hospital on my first day as a brand-new medical intern, with my starched white coat containing not one crease. As I walked confidently into the ward, I saw a group of nursing students gathered around the charge nurse. They were in the midst of a training session. The nurse instructor asked if the students might watch my first procedure, which, I was informed to my shock, involved removing the patient's eye.

While I knew a little anatomy of the eye from studying *Gray's Anatomy*, I'd had very little experience with ophthalmology. Removal of the eye was a bit out of my league as a fresh intern. Fortunately, the nurse instructor was quite accustomed to interns. My startled expression alerted her that I needed an explanation. The eye in question was artificial; they wanted to see me remove it from the patient so that routine nursing hygiene could be performed. This prospect was even more frightening to me, as I had absolutely no idea how to remove a glass eye. I think I may have seen an ophthalmologic surgical procedure from a far distant room or in an amphitheater, but that is about as far as it went. I was surrounded by a dozen or more nurses and, as I was to discover many times during my intern year, there was no way to escape. I took a deep breath, stepped forward and put my hands on the patient's eyelid. The prosthetic eye popped right out into my hand, and I smiled as if I had been doing this for years.

This was almost as humbling an experience as my first obstetrical delivery. That time I forgot to put on my rubber gloves. The senior nurse gave me a small slap on the hand, which is something I never expected. As a doctor, I thought I had authority over the nursing staff. But here, I realized, was a very experienced nurse who was truly in charge, who knew she was in charge and would always be in charge, in spite of the hundreds of young interns and residents passing through her hospital. My realization was another necessary, if deflating, rite of passage. But it's never too

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soon for a young physician to learn that he or she is part of a team, and all the members of the team make valuable contributions. Sometimes that means knocking the self-important physician down to size.

Sometimes the students knew more than the experts. During rounds with our senior professor at the hospital one day, we passed a patient sitting in the hall who had some type of undiagnosed neurological problem. It seemed as if every specialist as far as Chicago had been asked to review this patient's case, and no one had any inkling what the problem was.

One of the medical students accompanying us on rounds was a nun who had traveled extensively for the church before going to medical school. As we walked by the patient, she commented, "Oh, I haven't seen a case of leprosy like that since I left Hawaii."

Although we had been studying this patient for many weeks and consulted many specialists, it took this student less than five seconds to make the diagnosis of tubercular leprosy. This was a good lesson. Healthcare workers have varying degrees of experiences and those individual bits of information make each person having contact with an ill patient a different reference source. So the more opinions we get or the more consultations obtained on a difficult diagnostic case, the more likely we are to find the correct solution. Much of the success of medical treatment depends on the luck of a physician to have experienced certain rare conditions and the ability to apply this experience to a patient perhaps years later. I have observed that the physician who is too proud to get a second, third or even fourth opinion when needed is not acting in the patient's best interest. I would not feel comfortable having such a doctor for myself or my family. In this case, we all benefited by the expertise of a medical student and that wonderful healing agent known as "tincture of good luck."