

Perspectives

Problem solving: A story for medical educators

Bennett Lorber, M.D., D.Sc. (Hon)

The author (AQA, Temple University, 1980) is the Thomas M. Durant Professor of Medicine and professor of Microbiology and Immunology, and chief of the Section of Infectious Diseases at Temple University School of Medicine.

In my more-than-30-year career as a medical school teacher, I have been repeatedly struck and dismayed by the following observation. Students coming to medical school are generally bright, filled with intellectual curiosity, and in possession of many other attributes important to professional competence, including problem-solving skills. We then put them in classrooms, lecture to them hour after hour, overwhelm them with information, and change them from creative, energized, idealistic go-getters into passive learners lacking the ability to solve even simple problems. When they later reach the clinical part of the curriculum, we must rekindle the flame of curiosity and help them to find anew the problem-solving bent they had when they arrived. The following true story illustrates this point, and serves as a reminder that we who teach in medical schools need to strive to support and foster the problem solving ability of those who arrive in our schools, and not breed it out of them.

On the first day of the medical school course in physical diagnosis, my task as preceptor was to perform a demonstration history and physical for the two second-year medical students assigned to me. I did that, but I wanted the students to be excited, to remember their first visit to the hospital for more than their first opportunity to wear their starched white coats and carry their new stethoscopes. I took them to the room of a man who had severe aortic stenosis, and who was to have an aortic valve replacement the next day. He had the loudest murmur I had ever heard. I prearranged the visit, and the patient was expecting us. At his bedside, I introduced the students to him and asked them to place their stethoscopes on his chest and listen for a moment. After some time, they raised their heads and looked at me expectantly.

I turned to the first student. "What did you hear?" I asked.

"I heard him breathing," she said.

I turned to the second student. "And what did you hear?"

"I heard him breathing, too," was his reply. Of course, the sound from the murmur was so loud that no breath sounds could be heard. I thought for a moment.

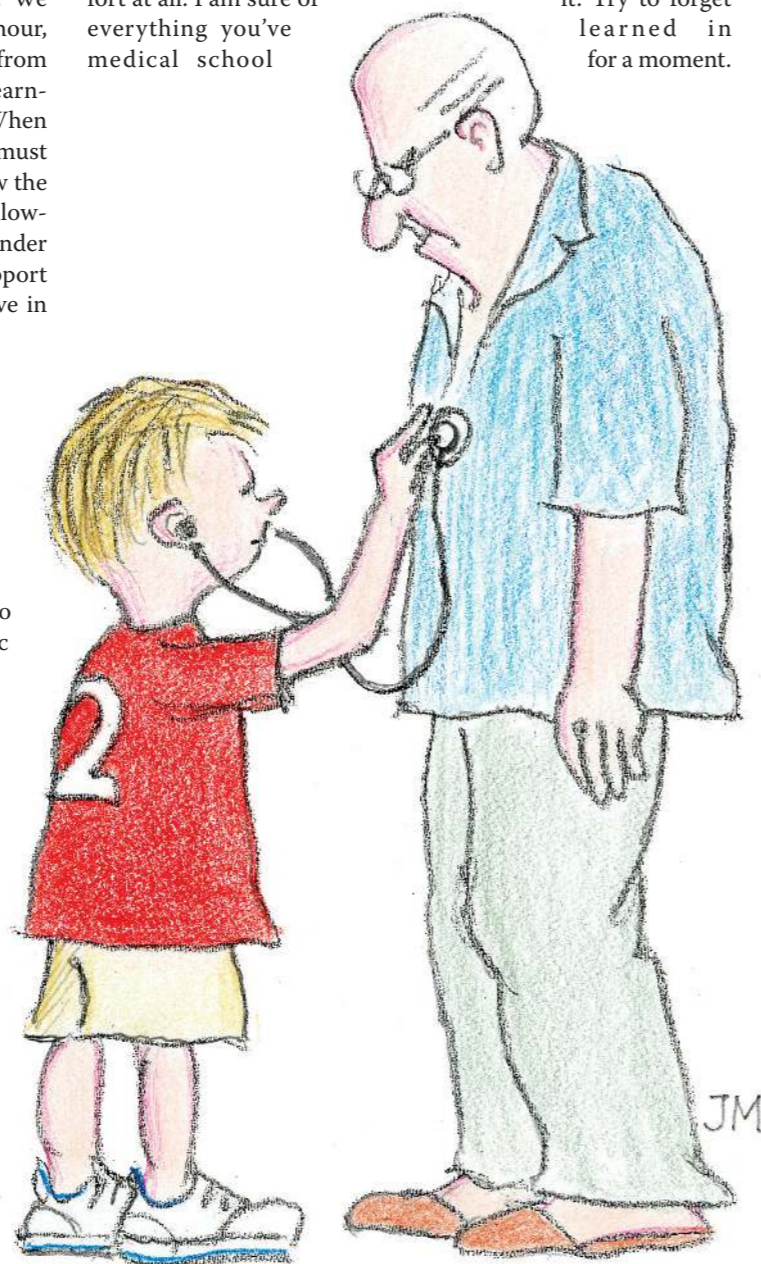
"Listen again," I urged. Again they listened and then waited for my next instruction.

"Try to imitate the sound you heard with your mouth," I said to one student.

A look of panic spread over his face and he froze.

"O.K.," I said, directing my comments to the other student. "Can you make the noise?" The blood seemed to drain from her face, and she silently shook her head.

I smiled, tried to soften my voice, and spoke with as much support and encouragement as I could muster. "Don't worry. Soon you'll be able to do this with no effort at all. I am sure of it. Try to forget everything you've learned in medical school for a moment."



Let's pretend you are back in elementary school. If I had asked you then what was inside your chest, what would you have told me?"

"The lungs," said one student.

"Good," I replied. "And what else?"

"The heart," came the response from the other student.

"Right," I said with a big smile. "Now, if you heard a noise and you couldn't tell whether it was coming from the lungs or the heart, could you think of a way to tell one from the other?"

Panic returned to their faces. At this point I felt certain that if I asked for their names, they wouldn't be able to respond. I turned to the patient who seemed to be getting a good deal of amusement out of the interchange and said, "Could you hold your breath if these students listen again?" He nodded affirmatively. I asked the students to listen once more while he held his breath. The lesson was clear, and they seemed a little sheepish. I spent a few more moments describing the murmur, and then dismissed them, to their obvious relief. I didn't really think anything about these events until a couple of hours later that evening.

My family and I were just finishing our evening meal when the phone rang. It was my grandmother. She asked if I could do her a favor. It seemed that my grandfather had not eaten his evening meal with his usual relish, and she was concerned. "Could you come check out your grandfather?"

"Sure," I said. "I'll be there in a little while." I turned to my eight-year-old son, Sam, and asked if he would like to accompany me on a little house call to see his great-grandparents.

When we arrived at their apartment, we were greeted at the door by my grandfather who looked well and was clearly peeved that my grandmother had called me. I asked him some questions, watched him walk, took his blood pressure, felt his

pulse, listened to his lungs and heart, and felt his abdomen. All was well. He did have a heart murmur that had been present for years.

When I finished, I handed the stethoscope to my son. "Here, Sam," I said, "check out your great-grandpa." He put the stethoscope earpieces in his ears and placed the diaphragm on my grandfather's chest. Sam closed his eyes and scrunched up his face the way he did when engaged in serious activity. After a few seconds he began nodding his head up and down, and, after a few more moments, he removed the stethoscope from his ears and handed it back to me. "What did you hear, Sam?" I asked.

He looked at me and answered, "His heart was making a noise like this." He then made a shooshing sound with his mouth, imitating the heart murmur to perfection. I was startled, particularly after my experience earlier in the day.

"How did you know that was his heart?" I inquired.

"Well, at first I thought it might be his breathing," Sam replied. "But then I noticed his chest was going like this." At this point he held his hands before him, palms parallel and fingers extended, and slowly moved his hands apart and then together in a to and fro motion. "It was going too slow to be his breathing, so I figured the noise must be from his heart."

"Sam," I asked, "how would you like to teach physical diagnosis to second-year students?"

The author's address is:

Section of Infectious Diseases
Temple University Hospital
Broad and Ontario Streets
Philadelphia, PA 19140
E-mail: lorberb@tuhs.temple.edu

Perspectives

Sports physicals

Dean A. Blumberg, M.D.

The author (AQA, Chicago Medical School, 1982) is associate professor of Pediatric Infectious Diseases at the University of California, Davis.

The first question I asked Mrs. Carter, who had brought her three children to the Pediatric Infectious Diseases Clinic, was, "Do you know why you are here today?" Mrs. Carter smiled, nodded yes, and suggested that she and I talk in another room while the kids giggled and played with the blood pressure cuff.

Three months ago, Mrs. Carter had undergone an evaluation as she was updating her life insurance. Her HIV serol-

ogy had turned up positive. She was told that there are many reasons for false positive HIV antibody assays. Did she have cross-reacting antibodies? Perhaps she had an autoimmune disorder? The HIV serology was repeated, and was again positive. A month later, she came down with a fever and a cough, ending up in the ICU with *Pneumocystis pneumonia*. HIV infection was confirmed.

Mrs. Carter started antiretroviral therapy. She took a leave of absence from her work at the beauty shop. Her husband changed jobs so he could help with the children. Instead of being out of town for weeks at a time, he now commuted four hours a day. And there was this enlarged cervical node, sched-

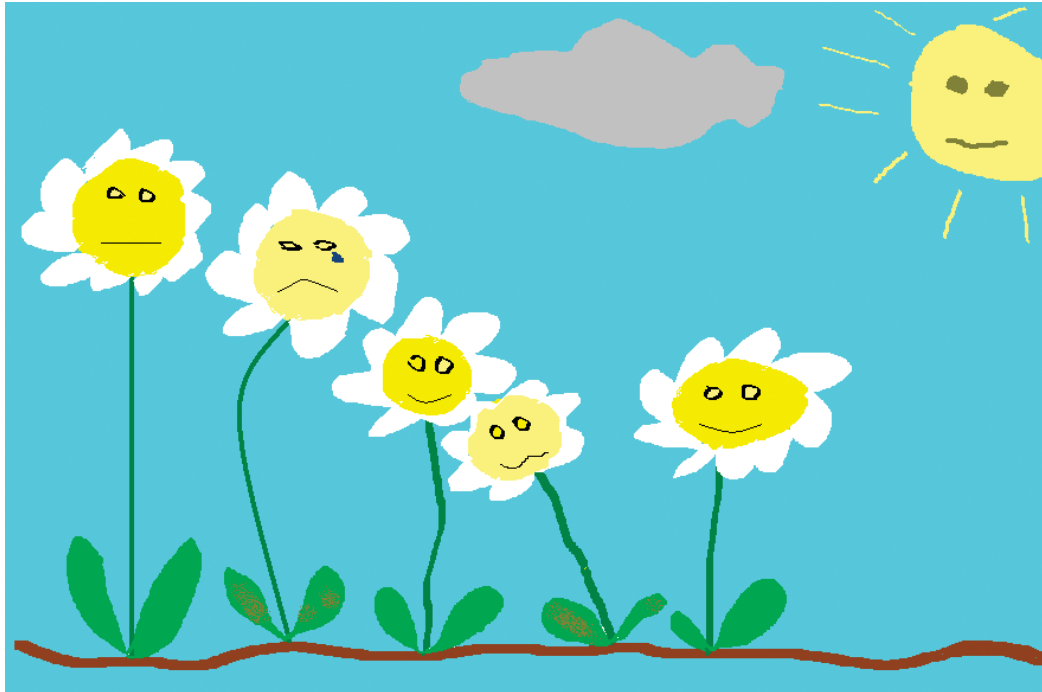


Illustration by the author

uled for biopsy tomorrow. Could be lymphoma, she was told.

Mrs. Carter thought she had acquired HIV from her first husband, who she described as having risk factors. Her current husband of eight years tested negative for HIV. She was horrified to think that she might have infected her children.

Mrs. Carter lived in a small rural town. Everyone knew everyone else. She was not sure how others would react to her diagnosis, was afraid her family would be ostracized. She hadn't figured out how or what to tell the kids yet. Their visit to our University clinic today, several hours' drive from home, was for "special sports physicals."

We returned to the exam room. I started with Keith, a nine-year-old boy. He had no unusual or frequent illnesses, was doing well in school, growing well. His exam was normal.

Next, I took a look at Donna, a seven-year-old girl. She was also healthy, Mrs. Carter said. She had had lots of ear infections as a kid, even requiring tubes, but plenty of children had that. The tubes fell out, and she still has a draining ear. Otherwise she's fine, doing well in school, active. Her height and weight were fifth percentile for age. Donna scratched her arm, and I asked about the bumpy excoriated rash. Mrs. Carter said Donna was diagnosed with "something contagious" a

few years ago, and they were waiting for it to go away. Indeed, it looked like molluscum contagiosum; it went from her elbow to her axilla. I tried to change my thoughts. I palpated axillary nodes bilaterally. My heart sank. I felt her spleen. I was cold and sweaty and lightheaded. I wanted to be alone, to curl up into a ball.

I smiled and looked at Gene, five years old. His grin went from ear to ear. Hardly ever sick, starting kindergarten soon, growing like a weed, developing well. His exam was normal.

The perinatal HIV transmission rate is about 30 percent in the absence of antiretroviral therapy/prophylaxis. One out of the three children's HIV serologies was positive. Combination antiretroviral therapy can reduce the perinatal transmission rate to less than two percent.

The author's address is:

Pediatric Infectious Diseases
UC Davis Medical Center
2516 Stockton Boulevard
Sacramento, California 95817
E-mail: dablumberg@ucdavis.edu