Perspectives

Problem solving: A story for medical educators

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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 pursuit 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 everything you've learned, to forget. I told them that if I asked for their names, they wouldn't be able to respond. I turned to the student 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 pleased 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 crunched 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 aoshoshosh sound with his mouth, imitating the heart, 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.

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

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Sports physicals

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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 serology 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...
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 contagiosum” 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.

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