

VIEWPOINT

Will the Nation Need More Cardiologists in the Future Than Are Being Trained Now?

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This article supports the view that in the future our nation will need more general cardiologists who perform no high-tech procedures than we are currently training. It also addresses the reason graduates of American medical schools, especially women who make up 40% to 50% of the graduating class, are not choosing cardiology fellowship programs as they were previously. A remedy for this serious problem is offered. (J Am Coll Cardiol 2003;41:1838-40) © 2003 by the American College of Cardiology Foundation

I agree with Dr. W. Bruce Fye, the immediate past President of the American College of Cardiology, who believes there is already a shortage of cardiologists and that the shortage is getting worse (1).

I also agree with Drs. Fye and Lewis that graduates of American medical schools are not choosing cardiology as a profession as they were a few years ago, and that unfilled fellowship positions are awarded to excellent graduates of international medical schools (1,2).

In another superb article, Dr. Fye points out that few women are choosing cardiology as a profession even though about 40% of American medical school graduates are women (3). I also agree with that statement with regret, because women make excellent cardiologists.

DEFINITIONS

There are several types of cardiologists who attend adult patients: *invasive cardiologists*, who use high-tech procedures such as cardiac catheterization, coronary arteriography, coronary angioplasty, balloon dilation of the mitral valve, closure of the foramen ovale, and electrophysiologic procedures; *noninvasive cardiologists*, who use high-tech procedures such as echocardiography, nuclear studies, and magnetic resonance imaging; and *general cardiologists*, who are highly skilled in the long-term care of patients with heart disease or potential heart disease. They specialize in preventive measures, the meticulous long-term management of hypertension, heart failure, arrhythmias, and chronic cardiovascular (CV) disease. They are familiar with the guidelines for ordering invasive or noninvasive high-tech procedures, but do not perform high-tech procedures themselves. They also know the results of pertinent clinical trials. They may choose to limit their work to their office and refer patients to other cardiologists for high-tech procedures or hospital admission.

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We are not training a sufficient number of general cardiologists to meet the needs of the future. We may need to train a few more physicians who subspecialize in cardiology to meet the needs of the future, but that need is not as clearly evident as the demand for more general cardiologists.

WHY DOES THE PROBLEM EXIST?

The graduates of international medical schools who finish good American residencies make excellent cardiologists. Why do they choose cardiology rather than some other specialty? Why are they excited about learning more about the heart and circulation, whereas graduates of American medical schools are not choosing cardiology as they were previously? The teachers of the international medical students take the time to: lead them to appreciate the enormous value of the patient's history; marvel at the diagnostic value of the physical examination; stand in awe at the information that can be extracted from the electrocardiogram (ECG); and discover important abnormalities in the chest X-ray film. The teachers check the students' work and emphasize the value of the routine examination, even when high-tech means are available. Their students, in turn, become excited about what they are doing and want to learn more about the heart and circulation.

Are the students and interns in American medical schools stimulated by the attending teachers' intense interest in the details of the trainees' examination? Could it be that there is a tendency for the teachers in American medical schools and hospitals to subcontract the examination of patients to cardiologists who perform invasive and noninvasive high-tech procedures? Should this be the case, the trainees will be disappointed and will do as their teachers do—they will learn quickly to subcontract more and more of the examination to physicians they do not see, but who perform high-tech procedures. When this occurs, the trainee may not be excited about cardiology. In fact, some of them are actually "turned off" by such an approach.

I ask the reader not to misinterpret what I have written

Abbreviations and Acronyms

CV = cardiovascular
ECG = electrocardiogram

here because I believe that high-tech diagnostic and therapeutic procedures have revolutionized the field of cardiology. I do believe, however, that the ABCs of a cardiac examination require that the trainee becomes skilled in taking an accurate history, performing an adequate physical examination, and interpreting ECGs and chest X-ray films. *The data-gathering process must then be followed by thinking*, and the thinking process of the trainee must be checked by teachers who care about the patient and how much the trainee learns. After that, a high-tech diagnostic procedure may be ordered to further clarify the patient's problems.

Dr. Fye correctly addresses the fact that fewer women are choosing cardiology as their life's work even though they make excellent cardiologists and have contributed so much to the field (3). One of the reasons some women do not choose cardiology is obvious. *Some women in medicine are forced to choose a career that permits them to have children, and when they do, they must have a lifestyle that permits them to take care of their children.* These women currently see hospital-based cardiology as a demanding field that cannot be organized to permit the lifestyle they must have. Program directors must respond to their need. The remedy for this is to point out that general cardiology, as described earlier, can be organized so that it does permit women to have the lifestyle they desire and need. In fact, general cardiology also appeals to many men who are not currently choosing cardiology because they have little, if any, desire to personally perform invasive or noninvasive high-tech procedures.

It has also become apparent that many cardiologists who perform invasive and noninvasive procedures using high-tech means are spending more and more time doing just that. This is as it should be. Such cardiologists may not have time to follow a patient for a long period of time and ascertain if: preventive measures are being used properly; the patient's blood pressure, blood lipids, and the international normalized ratio are perfectly controlled; and the patient's heart failure and heart rhythms are treated adequately. Such cardiologists may become so subspecialized that they do not choose to manage CV problems outside of their own subspecialty. They often do not have a long-term relationship with patients.

A POSSIBLE REMEDY: TRAINING THE GENERAL CARDIOLOGISTS

Program directors could create two different educational plans for trainees who *wish to take care of people with heart disease, but do not wish to personally perform diagnostic or*

therapeutic procedures that use high-tech means or necessarily admit patients to the hospital. I personally favor plan two.

Plan One. The third year of the internal medicine training program could be organized to emphasize CV medicine, and an additional year could be added during which time the trainees devote their entire time to the study of the heart and circulation. The graduate of this type of program could be issued a certificate in internal medicine with a major in cardiology.

Plan Two. The graduate of a three-year internal medicine training program could enter a two-year program designed for training in general cardiology. During this period, the trainee would be exposed to invasive and noninvasive CV procedures that use high-tech means in order to learn the indications, limitations, and complications of their use, but would not become proficient in their performance. The training program should emphasize those items listed earlier in the definition of a general cardiologist. The graduate of such a program would be awarded a certificate in general cardiology by the subspecialty board of cardiology.

The creation of the training programs mentioned here would require a reorientation of the thinking of program directors, the shifting of money, and the approval of the American Board of Internal Medicine and Subspecialty Board of Cardiology. I believe such an approach will interest many residents of internal medicine, especially some women, who are currently avoiding cardiology as a career. The proposed remedy offered here is not set in concrete; it is offered to initiate debate and discussion. Obviously, creative program directors can, and should, develop the programs that fit their institutions.

The program for general cardiology must not be viewed as second-tier training. The training should be rigorous and as highly respected as the programs for subspecialty training in cardiac catheterization, angioplasty, echocardiography, electrophysiology, nuclear cardiology, and molecular resonance imaging. We must never forget that *the respect patients have for physicians is earned by the performance of each individual physician; it is never earned by machines alone.* Therefore, the general cardiologists will be respected by their patients if they manage their patients' problems with compassion and caring. In addition, it must be understood that the longer four-year training track is available to men and women who wish to become skilled in a subspecialty of cardiology. In fact, some trainees will undoubtedly shift immediately from the general cardiology program to a subspecialty training program, or choose to shift their course at a later time.

Some individuals will point out that a general cardiologist will not make as much money as the subspecialist who trains four years and learns to use a specific type of high technology. They are correct, but I have faith in young trainees and advise them to choose the field of medicine that excites them rather than the field that justifies a higher income. Should a large income be the goal, the trainees should become top administrators in health maintenance organizations. I strongly believe that general cardiologists will have

a happy and secure life because they are badly needed by numerous patients who are now underserved. I do not believe that they will be too envious of anyone else's income.

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