Noninvasive cardiovascular imaging is evolving at a rapidly accelerating pace, placing new demands on our profession for training, education, and advocacy. Two decades ago, cardiovascular imaging consisted primarily of echocardiography and nuclear scintigraphy. A trainee could master the basics of these techniques during a general cardiology fellowship. The application of imaging in practice did not require highly specialized knowledge, primarily because the available methods were limited in capability and scope. However, during the past decade, everything has changed. Computed tomography (CT) has progressed from single-slice scanners, too slow for any cardiac application other than calcium scoring, to the current generation utilizing 64 slices or more. Now CT can scan the whole heart in six seconds with submillimeter resolution, enabling noninvasive angiography. Cardiac magnetic resonance (CMR) has also improved greatly, permitting improved applications, such as viability testing. The “traditional” cardiovascular imaging technologies have also been evolving. Advanced computer processing in echocardiography has increased the speed and resolution of imaging, permitting development of new modalities such as strain and synchrony imaging. Near-annual leapfrogs in technology have also been evident in nuclear cardiology. These advances are resulting in a new paradigm in which highly trained “imaging specialists” employ multiple diagnostic modalities to provide answers to clinical questions. There seems little doubt that access to multiple imaging modalities within a single practice environment can lead to more rapid and accurate diagnoses. With these advances, however, have also come great challenges for the cardiovascular community, demanding new thinking about training, appropriate utilization, and efforts to ensure that well-trained physicians are allowed to provide services in the most appropriate environment.

MEETING TRAINING DEMANDS

How will we train the next generation—and the current one—to intelligently employ these new technologies and render diagnostic interpretations? During most current three-year general cardiology fellowships, achieving level 2 expertise in echocardiography and nuclear cardiology is feasible, but exposure to CT and CMR is incomplete or nonexistent. To address the need for broad and intensive imaging training, some centers have developed a dedicated one- or two-year advanced fellowship designed to achieve level 3 expertise in at least three of the four major diagnostic modalities. George Beller, MD, FACC, of the University of Virginia has been an important advocate for such training. For those already in practice (as well as trainees), the College offers educational courses, providing updates in individual and multiple imaging modalities. For example, the “Integrated Imaging in Clinical Cardiovascular Practice” program, first offered August 2005 in San Francisco is scheduled again in August 2006 (see http://www.acc.org for more information). This course brings together experts in all four modalities to explore the appropriate application of testing in specific clinical scenarios.

MAKING COST-EFFECTIVE CHOICES

A second major challenge is applying this testing in the most cost-effective manner. As a society, we simply cannot afford to perform all available tests in all patients. We must carefully balance the diagnostic yield with the cost and potential safety concerns (radiation and contrast). The College has been very proactive in this regard, convening panels of experts to review the current state-of-the-art and issue appropriateness guidelines indicating when to use particular imaging methods. We have recently completed this process for nuclear perfusion imaging and will shortly release guidelines for CT and CMR. Echo guidelines are anticipated within the next year. Adherence to these guidelines by our membership is critical. If we do not police ourselves, others will undoubtedly do this for us, but with less expertise and patient focus.

PROTECTING THE RIGHT TO PRACTICE

Finally, we must address aggressive challenges to the ability of appropriately trained cardiologists to provide diagnostic services for our patients. The cost of diagnostic imaging is growing faster than other health care components, which has made imaging a target for special scrutiny by federal and
private payers. The Center for Medicare and Medicaid Services (CMS) has targeted outpatient diagnostic imaging for payment reductions, sometimes neglecting the very real benefit that patients derive from a rapid diagnostic assessment performed by a physician intimately familiar with their clinical condition. The situation is complicated further by an effort by the American College of Radiology (under the ominous moniker “Manhattan Project”) to prevent non-radiologists from performing some imaging studies. The American College of Cardiology has joined with many other subspecialty societies to form the Coalition for Patient Centered Imaging to confront these external threats. The College firmly believes that the key requirement for performing any test is adequate training and expertise, not which “union card” practitioners carry. We will vigorously fight for the right of our patients to have their cardiologists perform needed tests in the most appropriate setting.

What does the future hold? If the past is any guide, progressive improvements will allow even more sophisticated image analysis, driving applications that cannot even be imagined today. The needs of the community—training, guidelines, and advocacy—will remain, and the College stands fully committed to serving its members in this regard.

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