



Nuclear cardiology, patient care, and the humanities

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Nuclear cardiology is clearly a well-recognized and established clinical discipline and has been so for at least 40 years. The clinical discipline emerged from the research domain in the late 1970s and has been utilized worldwide for decades. Parallel with nuclear cardiology's growth has been the evolution of the American Society of Nuclear Cardiology as a distinct and important entity, as well as the growth of the Journal of Nuclear Cardiology as a superb medical publication. Having had the opportunity to observe this evolution from its inception has been extremely satisfying.

Nuclear cardiology draws the vast majority of its practitioners and investigators from the cardiology domain, with a smaller pool of participants coming from the pure imaging fields of diagnostic radiology and general nuclear medicine. The cardiologist practicing nuclear cardiology may do so in the setting of noninvasive cardiac imaging, which also may include other imaging modalities such as echocardiography, computer tomography, or magnetic resonance imaging, in

association with patient care. Alternatively, the nuclear cardiologist may work exclusively or predominately in the laboratory, supervising and interpreting studies, with no, or relatively little, direct patient care. The latter individuals may have excellent technical backgrounds, inciteful understanding of potential errors and artifacts, and outstanding computational skills. However, such individuals, after initially trained as clinicians and cardiologists, run the risk of immersion in the technical and statistical issues of the laboratory to the extent that they professionally experience a loss of empathy and clinical emotional intelligence as a result of the absence of meaningful direct patient interaction. To my mind, imaging at its best requires an ongoing interaction of both the imager's interpretative skills and the clinician's interactive and interpatient skills. There should be symbiotic balance between these two poles of the clinical spectrum.

As imagers, it is easy to fall into a pattern where, over time, patients become mere statistics, represented by images and pixel densities. If this occurs, there is a dissociation from basic patient concerns. Then nuclear cardiologists and imagers may become hardened and insensitive to the patients they seek to serve. For example, it is important to consider what psychological stress is placed on patients by the studies performed and their results. How long should a patient have to wait before test results are available? Is the patients' family present during the study? Do they need to be spoken to as well? Will the patient be a candidate for surgery, stenting, or medical therapy and how much anxiety will each of these decisions produce? What is the social background of the patient undergoing the study? Are there any issues specifically resulting from ethnic diversity? What is the impact of calling a study equivocal as opposed to either positive or negative? How important is physical activity to the wellbeing of the patient? In short, when studies are interpreted what is known about the patient behind the image? Clearly it is impossible to deal with all these issues in each patient

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studied. Nevertheless, recognition of their importance remains highly relevant. As a nuclear cardiologist, one cannot live solely in a world of images; the system must also consider person, life, and other humanistic concerns.

While these issues are greatest in the imaging disciplines, clinical insensitivity exists today in all domains of medicine.¹ This problem is often enhanced by the use of electronic medical records and the external pressures placed on physicians to spend as little time as possible with each patient.² Physicians are often forced to approach the computer key board in the office or clinic before they actually approach the patient or use it simultaneously with obtaining a history. Physician burnout is rampant.^{3,4} The question of the best ways both to teach students and trainees and to remind us as practitioners of the importance of empathy, sensitivity, and meaningful patient interaction is not yet resolved. Is empathy intrinsic to the individual or can it be learned? I personally believe that having appropriate role models may be the best approach to dealing with this problem. However, do enough role models exist today?

Many general medical journals have attempted to address the growing current trend of the depersonalization of medicine by incorporating humanities into their publications. Patient-oriented essays, narrative medicine essays, medical points of view based on individual patients and clinical care, publication of poems, photographs, and paintings today all form relevant parts of many general medical journals such as the *New England Journal of Medicine*, *Journal of American Medical Association* and the *Annals of Internal Medicine*. These sections bring the individual patient back into the medical dialogue. It is exciting to see that the *Journal of Nuclear Cardiology* has followed suit in this regard.

In each issue of the *Journal of Nuclear Cardiology*, there are photos and/or paintings done by physicians, poems, points of view, and quotations by masters that are relevant to personal and professional life. A separate section deals with the history of nuclear imaging and the individuals upon whose shoulders the field has been built. Such endeavors are helpful in raising physician's sensitivities, broadening horizons, and making doctors more aware and better healers. The heightened awareness that results from introducing humanities into scientific publications cannot be underestimated.

The physician community also is currently challenged by the diagnostic abilities of artificial intelligence.⁵ There are those who advocate that such artificial intelligence approaches can ultimately replace physicians in many clinical arenas. Imaging is one of the prime targets of this movement. What will distinguish

humans from computers will likely be human judgement, empathy, and sensitivity. Bringing the humanities and the humanity of the patient into the discussion is one way to approach the issue of enhanced physician value in the era of artificial intelligence. Physicians should no longer seek shelter in the reading room or the computer room, while abandoning patient contact in the laboratory and the clinic. Systems of reference need to be changed and enhanced, viewpoints broadened, and the medical-social-cultural framework expanded. Medical publications must continue their efforts in this regard. Perhaps, the *Journal of Nuclear Cardiology* would be willing to consider a new section involving vignettes about individual patients undergoing studies and how the study impacted on their social and psychological as well as medical lives. It could be called "The Patient Behind the Image."

Nuclear cardiologists clearly must remain proficient and expert in the techniques practiced and the procedures performed. This will always remain of prime importance. But they also must never forget the patient behind the images: their fears, their joys, and their family life. When contemplating career choices, many of these patient care issues were primary stimuli for driving young and idealistic students into the field of medicine. The pressures of our time cannot allow us to deviate from those prior ideals and principles. There are many ways to navigate this journey. Greater interaction with the humanities in our professional lives and in our journals will no doubt help. We cannot allow the horizon line to fall so low that we can no longer see it.

Disclosure

Barry L. Zaret has no disclosures to report.

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