Special Article

James B. Herrick Lecture

The Sad Plight of the Clinician–Clinical Investigator

“Don’t Boil the Frog in the Pot”

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Medicine is an art not a trade;
A calling not a business;
A calling in which your heart will be equally used as your head.

Medicine should begin with the patient,
continue with the patient,
and end with the patient.

William Osler

I consider it a great privilege and honor to have been selected to receive the 1989 James B. Herrick award. James Bryan Herrick was born on August 11, 1861, in the Chicago suburb of Oak Park, and he interned at Cook County Hospital. His remarkable and seminal contribution to our understanding of myocardial infarction is well known. He recognized the importance of science in medicine, and in his essay entitled “N.S. Davis”, he described the value and importance of hard work and of new knowledge and its application to our ability to provide better care to our patients. He was also aware, however, that the new technology and financial competition could have a deleterious effect on the humane care of patients. Dr. Herrick was president of the Association of American Physicians in 1923 and received the Kober medal in 1930. He was a great clinician and investigator of his time; the current sad plight of the clinician–clinical investigator is the main theme of my Herrick Lecture.

At the 1976 Herrick Lecture, James Warren first pointed out that the clinical investigator was an endangered species, a theme that subsequently has been emphasized by many other recipients of the Herrick Award, essayists, and editorialists. The problem is only getting worse, so we have to ask ourselves, why is enough not being done to correct the problem? Perhaps the explanation for this relates to the supposed experiment with the frog attributed to Senator Albert Gore who emphasized that if a frog is dropped into a pot of boiling water, the frog will jump out; but, if the same frog is put into a pot and the water is slowly heated, the frog will “stay put” until boiled alive. By analogy, we could observe that the clinician–clinical investigator is in the pot that is being heated slowly rather than rapidly, and therefore, the clinical investigator is being boiled alive. Because it is happening slowly, we are not taking much notice of it. The problem is worsening, however, because as almost everyone in academic cardiology knows, the clinician–clinical investigators are jumping out of academic cardiology in larger numbers and a smaller number are entering it.

Milieu in Which Medicine Exists

Physicians comprise a very small part of society; as a microcosm of society, we are probably in some state of equilibrium with the rest of society. It is my hypothesis that the good and the bad of society are also present in medicine and that society will determine, by their expectations and by funding, what goes on in medicine. A corollary of this is that we must pay attention to the desires and wishes of society, and, more importantly, that we must educate and guide it to do the right things.

Let us first recognize some aspects of the society of which we are a part. The common perception is that there is likely a failure of the leadership in the country; they fail to accept our problems and to correct them. It is interesting that Richard Darman, Budget Director, used the term, “now-noism,” which he has defined as the need for instant gratification that is present in our leaders and in many people. In the United States, a crisis is looming in science, evidenced partly by the poorer overall performance of our students in science and mathematics when compared with the performance of students in several other countries. This is being attributed in part to the “money-mad, me-first 1980s, when the country’s best and brightest aspire to be
bankers and lawyers and not chemists or rocket designers"; others have called this the "age of avarice." Thus, some problems in the United States can be attributed to poor leadership and to an attitude that places an emphasis on me, money, now-nonsense, and vanity (both individual and institutional). The questions that arise are: Have these problems of society infiltrated into medicine? And, if they have, what is the magnitude of the infiltration? The answers are open to different interpretations.

With this background of what is happening in society, let us now examine what is going on in medicine.

The Milieu Within Medicine

The last half century must represent a golden era of U.S. medicine and cardiology; recall, Andre Cour-

nand published his early paper on cardiac catheterization almost 50 years ago. The reasons for this golden era were 1) the high quality of the medical leadership; 2) our excellent goals, namely, patient care, research, and teaching; 3) importantly, access to almost unlimited resources; and 4) the great strengths of individual and group investigators, which included their energy, drive, ambition, devotion, initiative, entrepreneurism, individualism, and hard work (Table 1). This golden era is now in some danger.

There are two basic reasons for the threat. First, the resources are becoming very limited. Second, there is some change in our goals, with an increased focus on making money. Although the goals and intentions of most of those involved are excellently motivated, and many necessary changes had to be made, nevertheless, these two basic problems have led to others. For example, because of limited resources, there are few or no funds for clinical research, and a need has developed for the clinician–clinical investigators to devote more of their time and energy to making money for themselves and for their divisions, departments, and medical schools. The rapid growth and development of a multitude of diagnostic and therapeutic technologies have seemed like a panacea for our problems; thus, these technologies are being used to increase funds for the academician and the practitioner, to build new wings of hospitals and institutes, and to partly solve, either directly or indirectly, the financial problems of medical schools and hospitals. A shifting of goals has occurred, whereby making money, and perhaps making lots of it, has become an important and at times a primary goal both in academic medicine and in the private sector; these shifts have led to a denigration of physicians and investigators and to the seduction of clinical investigators into the private sector. The "runaway" technology has also contributed to some of the rapid increase in health care costs. Let us consider some of these issues in detail.

It has been repeatedly pointed out that there was a decrease in applications from and in funding of the clinical investigator. For example, Bernadine Healy in her presidential address to the American Heart Association in 1988 documented the decrease in applications to the American Heart Association and also a decrease in the number of applications and the number of total awards made to Physician-Investigators by the National Institutes of Health. In his 1981 Lewis Conner Memorial Lecture, Richard Remington pointed out that a choice between basic and clinical research should not be made and that both should be funded so they can flourish equally. Although it is unintentional, a choice seems to have been made; we are getting uncomfortably close to virtually eliminating funding for all physician-initiated patient-based clinical research.

The rapid growth and abuse of technology is beginning to be noticed in society. It was pointed out in U.S. News & World Report that physicians need to practice more of their cognitive skills and perform less testing. Amazing as it might seem, one of the areas of focus was the performance of unnecessary electrocardiograms; however, it is the least expensive of all cardiology interpreted techniques. In cardiology, we now possess many diagnostic and therapeutic technologies, for example, cardiac catheterization and angiography, stress testing, ambulatory electrocardio-

graphic monitoring, echocardiography-Doppler, radionuclide imaging, electrophysiological testing, signal-averaged electrocardiography, computed tomographic imaging, positron emission tomography, and magnetic resonance imaging. There is a rapid growth in numbers of pharmaceutical agents, cardiac surgery, implantation of pacemakers and other devices, and interventional cardiology. Imagine what is likely to happen when society discovers that at least some of these very expensive technologies are not being used appropriately all of the time.

In an important balanced review, many essays in Time in 1987 examined the breakdown of ethics in our society, including that which is occurring in science and in medicine. Specifically, Ezra Bowen observed:

Doctors (are) wandering through ethical thickets, freshly grown from a technology, that gives them haunting new powers over life and death (and) are
Let me emphasize that we in medicine cannot live apart from society and must pay appropriate heed to what society thinks of us and expects of us. Is the 1987 view of this essayist correct and applicable today? In a more recent article on medicine, the results of a poll of the public were revealed; 72% and 61% thought we kept up with the latest knowledge and provided quality medical care. On the other hand, 70% thought that we did a poor job of being fair in the prices we charge.21 What about the esteem in which they hold us? Thirty-eight percent hold us in the same prestige they did 10 years ago, 23% hold us in slightly higher esteem, but 37% hold us in lower esteem than 10 years ago.21 There is also a growing concern within medicine of a lowering of ethical standards.22-27

U.S. News & World Report informed the people that they were spending $173 billion annually on health care, or an average of $488 per person. Of this $488, the largest single amount, $104, went to physicians.28 U.S.A. Today told the public that the health care industry is largely interested in making more money29; it was stated that society should not junk the health care system, which after all does provide a high level of care, but that they should curb health care costs.29 The messages being given to the people seem clear. Health care costs too much, physicians have something to do with it, and they gain from the increased costs. The response of the people is also clear. They want the technological advances but do not want to pay more and more for them.

If we continue on our present route, we are likely heading to either rationing or socialization of health care or both. If one includes the poor and the disadvantaged people as part of society, and we must, then rationing and different levels of health care have always been a fact of life in the United States.30,31 Government, private hospitals, for-profit hospital chains, prepaid health care delivery systems, and physicians have possibly done less than is reasonable to support the health care of the poor and disadvantaged.32,33 Rationing and socialization for all might not be far away. Recently, J. Kitzhaber introduced a plan for the state of Oregon that establishes a rationing system for health benefits and guarantees every Oregonian basic health needs34,35; it was signed into law by Governor Neil Goldschmidt. This plan has run into problems; however, if eventually it, or some variation of it, is effectively enforced and is successful, it will be followed with great interest by society, with regard to its applicability to the rest of the United States.

One would have thought that the leadership in medicine would have been proactive and would have perceived long ago the threats to U.S. medicine and taken appropriate corrective action. It is likely that history will judge rationing or socialization of health care or both as the greatest failure of the present and immediate past leadership of medicine. Why have the leaders not been as effective as is necessary? Frank Press, president of the National Academy of Science, has observed that

... our internal dissension and the mixed, conflicting, self-serving advice emanating from our community are threatening our ability to inform wise policymaking.19

The old-fashioned notion that leaders set examples and that ethical behavior must begin at the top is still applicable today.36

Leaders will correctly tell us that the problems facing us are huge and difficult. On the other hand, we probably do not need leaders to solve simple and easy problems. In 1961, during ground-breaking ceremonies at the Manned Spacecraft Center in Houston, President John F. Kennedy said: “We choose to go to the moon in this decade and do other things, not because they are easy but because they are hard.” One aspect of leadership is the necessity to grapple with hard and difficult issues now.

Let us examine another aspect of leadership. It is no secret that medicine is in considerable trouble. The number of applicants to medical school is declining37; moreover, the best of the students are not applying to medical school. Of students who graduate, a shrinking number are going into internal medicine38,39; moreover, the scores of those taking the certifying examination in internal medicine are declining.40 Should not those responsible for medicine accept some responsibility for this problem? Senator Hubert Humphrey remarked, “We believe to err is human, to blame it on someone else is politics.” Are the leaders of medicine getting ready to play politics?

Clinician–Clinical Investigator

In my view, the clinician–clinical investigator, that is, the physician who combines excellent clinical care plus excellent investigation, is and has always been what I call the “excitement factor” in medicine. They have excited the medical students, the housestaff in internal medicine, and the fellows in subspecialty training. The advanced trainee has been influenced to go into academia because of this excitement factor. The questions that need to be asked are: Is the decline of interest in internal medicine and of academic medicine related to the problems and pressures felt by the clinician–clinical investigator? And, is the clinician–clinical investigator being increasingly perceived as a vehicle for generating more monies and, therefore, as being not different from a private practitioner? If the answers are yes, then one important step we can take to begin to correct some of the problems in medicine is to alleviate the threats to the clinician–clinical investigator. It must be done now.

It is appropriate at this time to recall some of the responsibilities of a medical school. These include 1) producing future generations of physicians; 2) developing, conforming to, and teaching the highest ethi-
cal standards; and 3) contributing to setting the standards of clinical practice. Importantly, we can advance these responsibilities by teaching them, and one way to do that is to set an example, that is, by practicing these standards; and 4) doing research, both clinical and basic. In all four of these goals, clinician–clinical investigators play a most important part. Also, if it had not been for the clinician–clinical investigator, advances in cardiology would likely not have been translated rapidly into improved patient care. Furthermore, if these investigators disappear from academic cardiology, the continuance of the golden era of cardiology will be in grave jeopardy.

The investigators also need to do their share of the task ahead. Their energy, drive, devotion, initiative, and hard work are essential for success (Table 1). Moreover, investigators should not participate in doing things that are perceived as self-serving. For example, Singer41 pointed out, “A scientist interviewed on television doesn’t always proclaim the whole truth,” and “Interest groups pushing their own political agenda can misuse scientific facts to advance their cause.” The danger of misleading the public about the true results of one’s study has been previously emphasized.42 Briefly, investigators have responsibilities and duties, too; importantly, they must not politicize their research, nor allow others to do so.

Possible Solutions

Most of us in medicine have the best of intentions and goals. The problems are complex and difficult; but can they be solved? I firmly believe that they can; the thought was best expressed by Ezra Bowen when he stated

> The real challenge would then become a redefinition of wants, so that they serve society as well as self, defining a single ethic that guides means while it also achieves rightful ends.19

The solutions are not easy and will need a considerable amount of time and effort. A start could be made, however, by doing the following things (Table 2).

First and foremost, both the National Institutes of Health and the American Heart Association should help by 1) setting up separate dedicated study sections for patient-based clinical research; 2) targeting 50% of the available funds to investigator-initiated patient-based clinical research; and 3) ensuring that monies for large clinical trials do not come from the above funds.

Second, industry is playing an important role in research in medicine. I believe that industry should help by allocating funds additional to those they provide now, for the explicit support of the clinical investigator for the percentage of time spent by the clinician–clinical investigator on industry-initiated or -related research.

Third, I believe what we need in medicine are bold leaders with vision who must educate, guide, and lead the people and the young in medicine. They must be prepared to act now and be willing to take risks. They must not be, and must not be perceived to be, self-serving. They must set examples and must have exemplary ethical behavior.

Money is essential. Most physicians are primarily concerned with good patient care; nevertheless, we must always remember that medicine is a “calling, not a business”71 and that the patient is the most important concern.1 Making money should not be overemphasized. William Shapiro14 said of our national Thanksgiving holiday, which is by-and-large not commercialized,

> Thanksgiving stands out as an oasis of tranquility and a reminder of the values that once tempered America’s materialism. This Thursday give thanks for the one holiday that cannot be bought.14

It should be our goal that people should say the same about medicine.

Our emphasis needs to be refocused on, first, patient care, research both clinical and basic, and teaching. Second, we need to support and nurture an endangered species, the clinician–clinical investigator. Third, we need to develop appropriate use of both diagnostic and therapeutic technologies. Importantly, there is a need for increased research devoted to patient outcomes and the value of additive testing.

### Table 2. Salvage of Clinician–Clinical Investigators

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<td>Should set up separate dedicated study sections for clinical research</td>
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<td>Dedicate at least 50% of funds to investigator-initiated patient-based clinical research</td>
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<th>Industry supported research</th>
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<td>Industry must allocate additional funds for support of clinical investigators for time spent doing industry-initiated or industry-related research</td>
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Fourth, we need a certain degree of self-restraint. Finally, it would certainly help our image in society if we volunteered medical service to the disadvantaged segments of our society. Incidentally, this would be in keeping with what many physicians, including James Herrick, have historically always done.

If we do all of these things, we will begin to cool down the boiling pot, and more dedicated and talented clinician–clinical investigators will likely enter and stay in academic medicine and cardiology.

It is appropriate that I end where I started, namely, with a single physician. In this instance, an individual in Maine proposed a plan to six small towns in Maine, whereby they supported half of his educational costs in medical school. In return, at the end of his training, he is practicing medicine and providing health care to the six small towns that had existed for some time without a physician.43 In other words, this single individual has taken the initiative to solve some problems and to serve the people. Similarly, medicine has to take the leadership role in solving the problems and in educating and guiding the people, government, and those in medicine to do the right things. Each and every one of us also has to make our contributions so that the golden era of U.S. medicine and cardiology can continue into the next century.

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James B. Herrick lecture. The sad plight of the clinician-clinical investigator. "Don't boil the frog in the pot".
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_Circulation._ 1990;81:1702-1706
doi: 10.1161/01.CIR.81.5.1702

_Circulation_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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